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Townsville Airport is an intrinsic part of the region’s community fabric and is playing a pivotal role to solidify Townsville North Queensland’s position as the capital of Northern Australia.

The airport connects Townsville to major metro areas as well as the outlying regions and from September 2015 re-instated its international status with direct flights to Denpasar, Indonesia. Passenger numbers have doubled over the past 20 years and despite the current economic climate we envisage the growth story to continue.

Not only does the Townsville Airport serve as a major regional passenger hub, but it has developed a world-class aviation services precinct – Northern Australian Aviation Centre of Excellence (NAACEX) which houses both Defence and Civil aviation support businesses. NAACEX is now home to Australia’s only purpose built aircraft painting organisation, Flying Colours Aviation.

As a partner of Townsville Enterprise, the region’s tourism and economic development organisation, we have aligned ourselves with the city’s leaders to identify aviation attraction needs through investment and tourism opportunities for Townsville North Queensland. We understand the importance of a collaborative approach to everything we do and consistently consult and engage with airline partners, business, tourism and community stakeholders.

The next five years will redefine the airport with the terminal redevelopment currently in the planning phase and scheduled for completion in 2018. With the last redevelopment of the terminal occurring in 2003, this project will transform the terminal into an airport the community can be proud of and an asset that can handle the projected increase in passenger numbers. Townsville Airport underwent an extensive community consultation process to ensure the development plans are the best they can be.

As we look into the future, our vision is to be Northern Australia’s aviation hub through engaging customers, connecting communities and providing exceptional experiences. We are committed to taking Townsville further by working with key industries, city leaders, tourism and business operators to grow our accessibility and domestic and international passenger numbers.

The Master Plan 2016 is a guide to the development of airport facilities, infrastructure and land use to meet the future requirements of the aviation industry and the community which it serves.

The document meets the requirements of Sections 70 to 72 and 76 to 77 of the Airports Act 1996 (Cth), being the airport’s primary planning document for the next five years.
EXECUTIVE SUMMARY

Townsville Airport has experienced growth in its operations over the past decade and continues to grow and support aviation operations in Northern Australia.

Townsville Airport

Townsville Airport is operated by Townsville Airport Pty Ltd (TAPL) under a long-term lease from the Commonwealth of Australia. The runway and taxiways are operated and maintained jointly with the Defence under terms of the Joint User Deed dated 9 June 1998.

The airport consists of three management areas including the Royal Australian Air Force (RAAF) Base Townsville, Townsville’s civilian airport and the Jointly Used Area (runways). TAPL leases and is responsible for the management of operations within the civilian use area (hereby referred to as the Civil Area) and has access to and use of the Jointly User Area (JUA) for civilian aviation operations.

TAPL has a 50 year lease plus a 49 year option over the Townsville Airport from the Commonwealth of Australia under the Airports Act 1996 (Cth) (Airports Act).

The 2016 Master Plan

The Airports Act outlines the requirements for the management and operation of Townsville Airport with specific provisions applying to master planning for joint user airports.

TAPL is required, under the Airports Act, to prepare a 20 year master plan to guide development of existing and proposed airport land uses and facilities associated with civilian operations. This plan is to be renewed every five years.

The Townsville Airport Master Plan 2016 – 2036 builds on the foundation of the 2011 Master Plan and several detailed studies undertaken in recent years including assessment of aviation traffic forecasts, road traffic access and environmental management.

This Master Plan demonstrates how Townsville Airport intends to accommodate forecast growth in aircraft movements and passenger activity, aviation support facilities and commercial developments.

Forecast Growth

Passenger numbers are expected to increase by an average 2.5 percent per annum over the next 20 years, increasing from 1.6 million in 2015 to 2.6 million in 2036.

Freight exports by air through Townsville Airport are not expected to significantly increase over the next 20 years.

Aviation and Land Use Development

This Master Plan details aviation infrastructure and land use development proposed to accommodate future growth in the airport. Development and land use of the airport is managed through four distinct precincts, which have been reconfigured from the previous Master Plan including:

- Aviation and Terminal Precinct
- Northern Aviation Precinct
- Northern Australian Aerospace Centre of Excellence (NAACE) Precinct
- Enterprise Precinct.

Preferred development for each precinct is detailed in Chapter 7 and considers the following overarching development objectives for Townsville Airport:

- Maintain compatibility between civil airport land uses and other external land uses
- Provide and manage core airport land for aviation infrastructure and services (i.e. to maintain the functionality of the airport at all times)
- Provide adequate additional land supply for complementary land uses that are able to support core aviation purposes. (i.e. Defence, regular passenger transport and general aviation flights and supporting services)
- Maximise development readiness of airport land
- Ensure adequate services can be provided to airport land to maintain airport operability and realise additional beneficial development opportunities as they arise in an orderly manner
- Maintain effective integration of airport land uses through appropriate development area design
- Develop and maintain appropriate development standards that reflect statutory and reasonable community and business expectations
- Ensure that land use planning reflects and facilitates the strategic direction for the airport throughout the long term planning period
• Ideally provide a development planning framework that is equitable to the community, airport lease holder and airport businesses and which attracts investment.

**Safeguarding the Airport**

TAPL is committed to safeguarding the airport for future operations. This is achieved through the preparation and implementation of Obstacle Limitation Surfaces (OLS) and Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) which assist with the protection of airspace required for airport operations around the airport.

The *Defence (Areas Control) Regulation 1989 (Cth)* provides Defence airspace with statutory protection against intrusion by structures which would pose a hazard to aviation.

**Managing Noise**

As a joint user airport, Townsville accommodates both civil and military aircraft movements with the Townsville Airport airspace entirely controlled by the Defence.

In accordance with statutory requirements, the Defence is responsible for the development of the Australian Noise Exposure Forecast (Joint ANEF) for Townsville Airport, of which TAPL contributes the civilian operations component. The 2036 Joint ANEF was endorsed by Airservices Australia on 29 January 2016.

TAPL, as the civil airport operator, has limited direct control over noise generated by aircraft operations and is responsible for the management of noise associated with ground running of civilian aircraft only. TAPL manages their responsibilities through restrictions on ground running activities and ongoing monitoring.

**Ground Transport**

As Townsville Airport continues to grow, so does the need to consider ground transport demands within and adjacent to the airport and manage these demands through appropriate development and planning. Ground transport planning considerations for the next five years include the closure of Halifax Street and extension of Meenan Street, removal of the Viscount Drive intersection on John Melton Black Drive, reconfiguration of short-term and premium long-term carparks and separation of the terminal pick-up and drop-off areas.

**Environmental Strategy**

TAPL is focussed on delivering safe and environmentally responsible aviation operations in accordance with legislative obligations. This is achieved through the development, implementation and continual improvement of its strategies, management systems and processes.

TAPL also promotes an environmental culture that is founded on stakeholder participation and shared ownership. Through this Master Plan, the airport will continue to build upon its achievements of the 2009 – 2014 Environment Strategy and fulfil its vision for sustainable airport growth and sound environmental management.

**Community and Stakeholder Engagement**

TAPL continues to consult and engage with the community and its stakeholders and demonstrates a strong commitment to community consultation and proactive communication about its plans for the future.

Townsville Airport will continue to communicate through regular briefings, meetings and forums with local, State and Commonwealth Governments, local businesses, industry partners and the broader community.

**Conclusion**

This Master Plan has been prepared to ensure Townsville Airport can meet the increasing demand on its facilities and services over the next five to 20 years. Key developments and improvements proposed as part of this Master Plan will facilitate this process to ensure the airport can continue to deliver significant, long-term economic and social benefits to Northern Australia.
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<td>Jointly use area</td>
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RAAF  Royal Australian Air Force
RevPax  Paying passengers
RFFS  Rescue and Fire Fighting Services
RPT  Regular Passenger Transport
SPP  State Planning Policy 2016 (Qld)
TACAN  Tactical Air Navigation
TAPL  Townsville Airport Pty Ltd
TCC  Townsville City Council
TCC Economic Development Plan 2013-2017
TCC City Plan  Townsville City Council City Plan 2015
TMR  Department of Transport and Main Road (Qld)
UXO  Unexploded Ordnance
VHF  Very High Frequency
VOR  VHF Omni-Directional Range
GLOSSARY

Aerodrome/Airport
A defined area on 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 / Aeroplane
Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

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

Airline Operator
The operator of a Regular Public Transport air service.

Air Traffic Control
Air traffic control service provided by Defence in the context of Townsville Airport.

Airport Environment Manager
TAPL employee or contractor, responsible for environmental risk assessment, development of appropriate training, monitoring and incident management and reporting procedures on Airport.

Airport Operator
The airport operator is the person(s) or organisation whose name appears on the licence document and / or in aeronautical aviation publication En Route Supplement Australia (ERSA).

Airport-lessee Company
A company that holds an airport lease under the Airports Act 1996 (Cth) (Airports Act) whose sole business is to run the airport.

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

Apron
The part of an airport used for (a) the purpose of enabling passengers to board, or disembark from aircraft (b) loading cargo onto, or unloading cargo from, aircraft and/or (c) refuelling, parking or carrying out maintenance on aircraft.

Aviation-Related Support Industry
Includes aircraft hangars, catering services, freight terminals, car rental and valet facilities, car parking, vehicle storage, taxi holding area amenities, fuel depots and hydrants, storage facilities, warehousing, offices, engineering support, maintenance activities, passenger terminals and aviation educational establishments.

ChemWatch
An initiative providing businesses with computer based chemicals management and data systems.

City Plan 2015
Townsville City Council Planning Scheme adopted 2015.

Civil Area
The Civil Use Area is one of the three areas defined by the Joint User Deed at Townsville Airport. TAPL occupies the Civil Use Area exclusively for civil aircraft operations.

Community Aviation Consultation Group
A mechanism to ensure appropriate community engagement on airport planning and operations, pursuant to the Airports Act.

Joint Obstruction Clearance Surface
For military purposes, obstruction clearance surfaces of buildings and structures within the vicinity of the RAAF base.

Joint User Aerodrome/ Facility
An airport under the control of the Defence in respect of which an arrangement under Section 20 of the Civil Aviation Act 1988 (Cth) is in force.

Joint User Deed
A Joint User Deed ratified on 9 June 1998 between the Commonwealth of Australia represented by the Defence and Australian Airports Limited (now Townsville Airport Pty Ltd (TAPL)) which defines the responsibilities of each party for the operation and management of the Townsville Airport.

Jointly User Area
The Jointly User Area is one of the three areas defined by the Joint User Deed at Townsville Airport. The Defence manages the Jointly Used Area. TAPL has access to and use of the Jointly Used Area for civil aircraft operations and contributes to maintenance of this area.
Joint ANEF
Australian Noise Exposure Forecast produced for civil and military operations at Townsville Airport by the Defence, in accordance with the requirements of the Airports Act.

Landside
The area of an airport and buildings to which the public normally has access, consistent with Section 9 of the Aviation Transport Security Act 2004 (Cth).

Major Airport Development
Has the meaning given by Section 89(1) of the Airports Act.

Major Development Plan
Means a Major Development Plan under Part Five Division Four of the Airports Act.

Military Use Area
The Military Use Area is one of the three areas defined by the Joint User Deed at Townsville Airport. The Defence occupies the Military Area exclusively as a RAAF Base.

Minister
The Federal Minister of the Department of Infrastructure and Transport.

Regular Public Transport Service
A service consisting of Regular Public Transport aircraft operations, as prescribed in the Civil Aviation Regulations.

Runway-Related Activities/Facilities
Activities and facilities include runways, taxiways, aprons, clearways, compass swing and engine run-up areas, glide path facilities, helicopter landing, parking and servicing, landing equipment, radar and all aircraft navigational aids.

Civil Area
The Civil Use Area is one of the three areas defined by the Joint User Deed at Townsville Airport. TAPL occupies the Civil Use Area exclusively for civil aircraft operations.

Townsville Airport Pty Ltd (TAPL)
Airport-lessee company of the Townsville Airport, formerly Australian Airports Limited.
1.1 Background

Townsville Airport is located approximately five kilometres west of the Townsville Central Business District, on coastal plains between Rowes Bay and the Bohle River. The Airport is on land wholly owned by the Commonwealth Government. Townsville Airport is a category two security controlled airport and is jointly operated under terms of a Joint User Deed (JUD) by the Defence (Defence) and Townsville Airport Pty Ltd (TAPL), a subsidiary of Queensland Airports Limited (QAL). Under the JUD, Townsville Airport is split into three management areas, the Military Use Area, Civil Area and the Jointly Used Area (Figure 1.1).

On 11 June 1998, the Commonwealth awarded a 50 year lease to Australian Airports (Townsville) Ltd (now TAPL) to operate the Civil Area of Townsville Airport, with an option to extend for another 49 years. TAPL is committed to promoting and supporting the aviation industry in Northern Australia with an emphasis on creating significant regional airport development in Queensland.

The Military Area and Jointly Used Areas of Townsville Airport are managed by the Defence. The Jointly Used Area primarily consists of runways and is utilised by both civil and military aircraft. The Civil Area is approximately 82 hectares in area and contains aviation and commercial infrastructure to the south. The northern portion of the Civil Area remains undeveloped.

Figure 1.1 Townsville Airport Locality Map
1.2 Contents of the Master Plan

The Townsville Airport Master Plan 2016 – 2036 (the 2016 Master Plan) builds upon the objectives of the previous Townsville Airport Master Plan 2011 (the 2011 Master Plan) and presents a concept for the ultimate development of the Civil Use Area, providing detailed concepts for the period covering the next 20 years.

The 2016 Master Plan has been developed in accordance with section 71(3) of the Airports Act 1996 (Cth) (Airports Act) which requires the plan to include the following:

- Development objectives for civil use of the airport
- Assessment of the future needs of civil aviation users of the airport
- Intentions for land use and related development of the Civil Area
- Australian Noise Exposure Forecast (ANEF)
- Flight paths at the airport
- Plans for managing aircraft noise
- Assessment of environmental issues reasonably associated with the implementation of the plan
- Plans for dealing with environmental issues.

In relation to the first five years of the master plan:
- Ground transport plan
- Detailed information on the proposed developments in the master plan
- The likely effects of the proposed development in relation to employment and the effects on the regional economy
- Environmental strategy.
2.0 THE MASTER PLAN

2.1 Purpose of the Master Plan

The 2016 Master Plan provides Townsville Airport Pty Limited (TAPL), the Defence, other Commonwealth Government agencies, Queensland State Government, Townsville City Council (TCC), and commercial and community stakeholders with an agreed, planned approach for the management of the Civil Area of Townsville Airport.

Management of the Civil Area includes the facilitation and regulation of future development and operation of airport services, airside and landside land uses, as well as demonstrating integration with off airport land uses, infrastructure and services.

The 2016 Master Plan is an evolving document, with a 20 year planning period. It builds on preceding master plans which are successively updated to more closely respond to changes in economic opportunities and community and stakeholder expectations.

The intention of the 2016 Master Plan is to form a solid strategic vision for the Civil Area that is consistent with the region’s growth expectations and requirements, whilst being adaptable to changing conditions. This plan must also be consistent with Defence operational requirements for the joint user facility, being Townsville Airport.

The 2016 Master Plan is the principal publicly available document that provides guidance over much of the Civil Area’s future expansion and operation.

The 2016 Master Plan also provides key information that is to be incorporated and appropriately accounted for in land use planning by state and local jurisdictions including the Australian Noise Exposure Forecast (ANEF). These tools apply, in conjunction with the *Defence (Areas Control) Regulation 1989 (Cth)*, to development both within and adjacent to airport and RAAF Base Land and in conjunction with the *Defence (Areas Control) Regulation 1989 (Cth)*, are used to guide planning controls for adjacent development, such as development height restrictions.
2.2 Background Studies

The 2016 Master Plan builds on the work undertaken for the 2016 Master Plan, additional studies prepared by TAPL, revised forecasts and the amended airport master planning criteria identified under the *Airports Act 1996 (Cth)* (Airports Act).

During the 2016 Master Plan development process, four working groups were established to identify the separate issues and provide input and guidance into corresponding chapters.

These working groups included:

- Aviation needs and airspace protection and planning
- Land use planning and development
- Ground transport
- Environment, sustainability and noise.

TAPL also engaged a number of consultants to assist in the preparation of the 2016 Master Plan to provide specific expertise. This included undertaking a number of technical studies to help further refine the master plan process.

Additional studies were commissioned by TAPL to assess legislative and policy framework and economic changes that have taken place during the past five years. Additional studies undertaken that supported the preparation of the 2016 Master Plan are listed in Table 2.1.

Table 2.1 2016 Master Plan Supporting Technical Studies

<table>
<thead>
<tr>
<th>Details of Study</th>
<th>Consultant</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAPL Property Development Study</td>
<td>RCP</td>
</tr>
<tr>
<td>Townsville Airport Master Plan Economic Study 2016 – 2021</td>
<td>AEC Group</td>
</tr>
<tr>
<td>Passenger Mix and Behavioural Study – Townsville Airport 2014</td>
<td>Proof</td>
</tr>
<tr>
<td>Passenger Forecasts for Gold Coast and Townsville Airports 2014</td>
<td>CAPA Consulting</td>
</tr>
<tr>
<td>Townsville Airport Stage 1 Commercial Development Strategy Study 2015</td>
<td>MXD Development Strategists, Urbis</td>
</tr>
<tr>
<td>Townsville Airport Terminal and Apron Planning 2014</td>
<td>AIRBIZ</td>
</tr>
<tr>
<td>Townsville Airport Services Master Plan 2015</td>
<td>GHD</td>
</tr>
<tr>
<td>Townsville Airport Civil Area – Traffic Study 2015</td>
<td>UDP</td>
</tr>
<tr>
<td>Townsville Airport Civil Area – Ground Transport Plan 2015</td>
<td>UDP</td>
</tr>
<tr>
<td>Townsville Airport Civil Area – Aviation Services Planning Study 2015</td>
<td>To70</td>
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<tr>
<td>Townsville Airport Civil Area – Environmental Studies 2015</td>
<td>AECOM</td>
</tr>
<tr>
<td>Townsville Airport Civil Area – Planning Study 2015</td>
<td>AECOM</td>
</tr>
</tbody>
</table>
2.3 Regulatory Framework

Townsville Airport is governed by Commonwealth legislation for the creation and execution of deeds of agreement for the use of Commonwealth land. The master planning process for the Civil Area of the Townsville Airport is controlled by a range of Commonwealth legislation regarding:

- Airspace protection
- Land use planning and development controls
- Environmental management
- Building and construction approval processes
- Pricing and quality of service monitoring.

The Civil Area is also affected by Defence legislation as a result of the airport’s joint use with Defence and its control over a large part of the combined airport land area, airport infrastructure and airspace.

Airspace administration and regulation is undertaken by the Civil Aviation Safety Authority (CASA) and Airservices Australia in accordance with the Airspace Act 2007 (Cth), the Airports (Protection of Airspace) Regulation 1996 (Cth) and the Civil Aviation Act 1998 (Cth). Airport safety considerations are generally administered by CASA through the Civil Aviation Act 1998 (Cth), the Civil Aviation Safety Regulations 1998 (Cth) and the Civil Aviation Regulations 1998 (Cth).

Aviation security is controlled under the provisions of the Aviation Transport Security Act 2004 (Cth). Security responsibility can apply to a range of stakeholders including TAPL, Australian Federal Police and Queensland Police. Additional Commonwealth and State police enforcement legislation may apply to the various police powers that exist.

Quarantine inspection services are the responsibility of the Commonwealth Department of Agriculture.

Environmental and cultural heritage provisions can also affect the airport’s operation under the Environment Protection and Biodiversity Conservation Act 1999 (Cth), the Aboriginal and Torres Strait Islander Heritage Protection Act 1982 (Cth), Heritage Protection Act 1982 (Cth), the Australian Heritage Commission Act 1975 (Cth), the Airports Act 1996 (Cth), Airports (Environmental Protection) Regulation 1997 (Cth) and the Airports (Building Control) Regulations 1996 (Cth).

Competitive trade policy arrangements including pricing surveillance administered by the Australian Competition and Consumer Commission are provided through the Prices Surveillance Act 1983 (Cth) and Trade Practices Act 1974 (Cth).
2.4 The Master Plan Process

2.4.1 Requirement for a Master Plan

Master planning for the Civil Area has been undertaken in accordance with the Airports Act since the airport’s privatisation in 1998. Three master plans have been prepared to date for the Civil Area in 1999, 2004 and 2011.

As part of the master planning process, TAPL is required to prepare a ‘Preliminary Draft Master Plan’, which is then placed on public display. Following this exhibition period, the proponent must consider all public comments received regarding the Preliminary Draft Master Plan and revise the document accordingly. The revised Master Plan is then submitted to the Commonwealth Minister for Transport and Regional Development as a ‘Draft Master Plan’. The ‘Final Master Plan’ is being the final document that will be approved by the Minister, including any amendments indentified during the assessment process.

Additionally, in accordance with section 10 of the Joint User Deed, any prepared master plans or Major Development Plans are to be provided to Defence upon completion.

Under section 72 of the Airports Act, a master plan must relate to a period of 20 years and include detailed information on development targets for the first five year period.

In previous master plans, development targets were mostly date specific. These previous plans were developed prior to the global financial crisis and the resultant unexpected economic downturn and decrease in commodity prices. Accordingly, some of these targets have been carried over to the 2016 Master Plan as TAPL is continuing to review aviation and passenger requirements in consideration of current and future forecasts.

2.4.2 Master Plan Objectives

Section 70 of the Airports Act requires Commonwealth Airport master plans to be prepared in order to achieve the following:

- To establish the strategic direction for efficient and economic development at the airport over the planning period of the plan
- To provide for the development of additional uses of the airport site
- To indicate to the public the intended uses of the airport site
- 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
- To ensure that all operations at the airport are undertaken in accordance with relevant environmental legislation and standards
- To establish a framework for assessing compliance at the airport with relevant environmental legislation and standards
- To promote the continual improvement of environmental management at the airport.

In addition, the current master planning provisions also require the Airport Environment Strategy (AES) and the Ground Transport Plan (GTP) to be integrated into airport and land use planning through their inclusion in the master plan document.

The 2016 Master Plan should seek to ensure that development is appropriately constructed to ensure adequate safety for property and people within the airport precinct.
2.5 Consultation

The master planning process was guided by consultation with a number of internal and external airport stakeholders. Stakeholders consulted during the initial development phase included targeted working groups and representatives from the Commonwealth Government (in particular the Defence), Commonwealth Government, State Government, and the TCC.

The TCC was consulted to ensure consistency with the new City Plan 2015 in force under State legislation. Consultation efforts also included notifying the State and local government of the intention to submit a Draft Master Plan to the Minister, a requirement under section 79 of the Airports Act.

Statutory consultation requirements for the preparation of an airport master plan are provided in section 80 of the Airports Act and include a requirement to notify a master plan for public comment, specifically to:

- A State government
- An authority of a State
- A local government body
- An airline or other use of the airport concerned
- Any other person.

Informal consultation is also able to be provided for through a Community Aviation Consultation Group (CACG) as recommended in the Commonwealth Government’s National Aviation Policy White Paper, December 2009 (Aviation White Paper). While the CACG consists of a sufficiently broad representation of stakeholders to help guide the master plan preparation process, further consultation has taken place to ensure that a broad cross section of stakeholders are consulted and to ensure that the master plan can be truly responsive of the region’s opportunities and needs.

For the duration of the 2016 Master Plan consultation will continue. Any significant development foreshadowed by the 2016 Master Plan will be subject to separate Commonwealth approval including environmental impact assessment, industry consultation and a further opportunity for public comment.

Details of the approvals process for development on airport land is discussed in Chapter 7 – Land Use Planning.
3.0 THE AIRPORT

3.1 Airport Site

Townsville Airport is situated approximately five kilometres west of the Townsville Central Business District, on a coastal flood plain between Rowes Bay to the east and the Bohle River to the west (Figure 3.1).

The Townsville Airport Pty Limited (TAPL) lease area is approximately 82 hectares and lies to the east of the Jointly Used and the Military Area of Townsville Airport. Land to the north and north-east of Townsville Airport forms part of the Townsville Town Common, which is a conservation reserve, whilst residential development lies south and south-east of the Civil Area. Industrial development is primarily located to the south west.

The main airport runway is located on a coastal plain and its elevation is no more than three to four metres above sea level. The runway is oriented in an approximately north-south direction and the northern end is approximately one kilometre from the coastline.
3.2 Airport History

The original aerodrome was located at Ross River and was licensed by the Department of Civil Aviation on 19 June 1930. The aerodrome was transferred to the City of Townsville in 1937 and the licence lapsed on 31 March 1941.

The present-day Townsville Airport was developed initially by the Townsville City Council (TCC) under a provisional licence granted on 26 January 1939 to allow use of the new Airport during favourable winds and when the Ross River site was unusable due to wet weather. Operations commenced in February 1939. The Royal Australian Air Force (RAAF) established a base at the Airport in December 1939 and the then Department of Air acquired the Airport in December 1940 and retained control after World War II. Part of the airport is still currently operated as a RAAF base.

The current main runway (01/19) was completed in 1958, with the latest resurfacing occurring in 2007. The secondary runway, which is presently substantially used for general aviation (GA) purposes, dates back to 1939. In August 1980, Qantas requested Government approval to commence international services through Townsville to the United States of America and New Zealand with B747 aircraft, commencing from February 1981. The Government approved the request and allocated five million dollars towards infrastructure improvements, including a new international terminal building and associated pavement works to accommodate B747 aircraft.

The Federal Airports Corporation assumed responsibility for the civil aviation area and operations in April 1989. The airport was leased to TAPL (formerly Australian Airports Limited) in 1998 for 50 years with an option for a further 49 years. Recent airport milestones are shown in Table 3.1.
### Table 3.1 Recent Airport Milestones

<table>
<thead>
<tr>
<th>Year</th>
<th>Milestone(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>International terminal constructed</td>
</tr>
<tr>
<td>1986-1988</td>
<td>Major redevelopment of terminal to meet demand</td>
</tr>
<tr>
<td>1989</td>
<td>Reconstruction of domestic apron for wide-bodied jets and F27 aircraft</td>
</tr>
<tr>
<td>1997</td>
<td>New public car park, access road improvements, emergency powerhouse and aircraft waste disposal building construction</td>
</tr>
<tr>
<td>2003</td>
<td>Construction of John Melton Black Drive as new access road</td>
</tr>
</tbody>
</table>
| 2004-2011| Mining boom kicked off in 2004 – seeing a dramatic acceleration in passenger numbers. Townsville also became a major port for the FIFO mining employment sector.  
Extension of staff/long term car parking area  
New hire car compounds  
Construction of first stage of Northern Australian Aerospace Centre of Excellence (NAACEX)  
Redevelopment of passenger set down area  
A complete runway overlay costing $20 million was completed in July 2007  
A terminal refurbishment, adding new check in counters, the upgrade of concessionaires and new carpet was finished in February 2007  
Work on the NAACEX project commenced in 2007 with a view to accommodating a variety of aviation-related businesses, including housing the Australian Defence Force Chinook and Black Hawk helicopters and opening a dedicated aircraft maintenance facility including a state-of-the-art aircraft painting facility  
BAE Systems moved into the NAACEX precinct in 2009 |
| 2011-2015| Relocation of TAPL administration and assets departments to permanent facilities  
Demolition of the former TAPL Administration Centre  
Establishment of Flying Colours Aviation (aircraft paint hangar) Northern Australia base in Townsville  
Weatherproofing (covering) of walkways and public car parking  
Construction of shade structure for taxi pickup area  
Car parking ticketing systems upgrade  
Rejuvenation of front of Terminal  
Realignment of traffic intersections (including Stinson Avenue – Halifax Street and Coral Sea Drive)  
Townsville Airport Terminal Redevelopment Major Development Plan (MDP)  
Regular Passenger Transport International flights resumed in September 2015 |
3.3 Relationship to Other Airports

Townsville Airport provides strategic and operational links to other Defence airports and establishments throughout Australia, as well as a ‘hub’ role for many other Central Queensland, North West Region and North Queensland regional airports.

The Airport also provides a significant link to Brisbane, Sydney and Darwin as well as forming one of the key ‘milk-run’ destinations along the Queensland east coast. The Airport forms the start and finish for a number of important regular passenger transport (RPT) routes including to Mount Isa, Cairns, Longreach and beyond as shown in Figure 3.2.

The Airport’s function as a hub for aviation travel in North Queensland plays an important role in not only the development of regional areas but also in maintaining the viability and development of other airports within the regions. A strong role for Townsville Airport in providing diverse, regular and cost competitive airline connections is likely to support continued economic growth within North Queensland and provide effective connectedness to communities of otherwise remote regional Queensland locations.

Townsville Airport’s effective function as a regional aviation hub is likely to be further strengthened and expanded with increased interest in North and North West Queensland regions for ‘Developing Northern Australia’ opportunities. This includes ongoing resource sector activity in the North West Region, North Queensland, Central Queensland and Galilee Basin regions, tourism along the coast and increased population and development growth in the urban centres.

The Townsville Central Business District (CBD) is well placed as the main administrative centre for North Queensland providing many services and the regional corporate headquarters for many private companies doing business in North Queensland.

The Airport is not only well placed in terms of its location close to the Townsville CBD but also has a direct regional business link to Mount Isa Airport and Longreach Airport, through joint ownership by Queensland Airports Limited (QAL).

A strong QAL corporate association also exists with the Gold Coast International Airport. The regional alliance provides potential opportunities for synergies in terms of:

- The provision of air services across the region
- More effective and standardised management practices
- Improved statistics gathering for regional business advocacy – e.g. for additional services to North Queensland.

Townsville’s relationship with the Gold Coast Airport also provides it with an alternative strengthened link into South East Queensland (i.e. apart from Brisbane Airport). This may provide significant travel and business benefits for the future through direct airline links between the two large regions.

3.3.1 Domestic and Regional Routes

Townsville Airport is a crucial gateway for the region’s tourism, mining and defence sectors. It directly links Townsville to the fly-in fly-out (FIFO) employment opportunities available in the North East and North West minerals provinces. Well established aircraft maintenance services are also in operation including the NAACEX Precinct and there is related potential for strengthening aircraft maintenance and aviation technology services. Significant scope remains for establishing new commercial air passenger routes.

Currently, airport passengers have the choice of flying to at least ten domestic and regional destinations.
### 3.3.2 International Routes

International flights have been reintroduced at Townsville during September 2015 with thrice weekly direct services to Denpasar, Bali. The new flight paths are reflected in Figure 3.2.

The Townsville City Economic Development Plan for 2013-2017 identifies a key objective for the Airport precinct to be the strengthening of commercial air access. The plan states a core activity is to ‘improve the level of air access to the region strengthening the development of Townsville Airport as the capital city transport hub for Australia and Asia-Pacific’.

This will see the expansion of current domestic, regional and international routes. Furthermore, it has been identified that international capacity is currently underutilised.

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Figure 3.2 Townsville Airport Route Map
3.4 Airport Corporate Planning

The TAPL Townsville Airport Business Plan 2016 (the 2016 Business Plan) identifies key airport strengths and challenges for the airport’s future including:

Strengths
- New, truly customer centric terminal product
- Large land bank with prime airside access
- Recomencement of international services
- Improved financial performance of mainline airlines
- Townsville Airport’s strong position within the community (e.g. international advocacy and community support for terminal charges increase)
- Diverse regional economy, strong long term growth profile
- A number of catalytic projects slated – Stadium and entertainment precinct, James Cook University, Casino redevelopment and Waterfront precinct.

Challenges
- Economy at a low point in economic cycle which drives softening in the agriculture, mining, government and construction industries
- Falling PAX numbers as a result of tightening capacity and softening economic conditions.

3.4.1 Strategic Vision

The 2016 Business Plan guides commercial activity and the development of the airport’s facilities and other business opportunities.

Apart from general economic conditions, constant challenges for effective business planning for the airport include:

- Changing government economic development policies, including regional development
- The need to integrate with Defence operations and airport facility requirements
- Continued urban growth in Townsville and ever changing dynamics between airport activity and the needs of surrounding development.

TAPL has recognised the need for further refinement to the airport’s vision to ensure strong stakeholder ‘buy-in’ and alignment with government policy. This is to ensure the airport maintains a strong position of adding value to the region by meeting demand and regional needs for aviation services while continuing to attract investment for further growth.

Amendments to the Airports Act require that airport master planning has a strong strategic direction. This should include a clearly stated vision that demonstrates an achievable ‘end point’ which is clearly aligned to an organisation’s corporate objectives and with the needs of its other stakeholders.

A revised vision and its intended operational implementation are more strongly reflected in the 2016 Business Plan. The 2030 vision for the airport is stated as:

“Townsville Airport, the Aviation Hub for Northern Australia”

The vision is intended to be implemented through the following overarching principles to grow the business and build shareholder value:

- Develop a ‘truly customer centric culture’
- Deploy IT and other innovative strategies in support of the customer focus principle
- Continued focus on developing our people, in particular their entrepreneurial and innovative capabilities.

The overarching principles are reflective of the key values that drive the strategic direction for the airport and are matters that are reflected in the outcomes and actions of the master plan.

The 2016 Master Plan provides an opportunity to extend TAPL’s customer focused vision through to its short and long term development planning. This should include how the concept of a ‘hub’ will translate through to the built form and the operational and regional service roles of the airport into the future.
3.5 Economic Significance of Townsville Airport

Townsville Airport fulfills a regional aviation hub role for Northern Queensland extending from the Gulf of Carpentaria through the North West and onto the North Queensland coast, as well as parts of Central Queensland.

The airfield also has a strategic role, as RAAF Base Townsville is an important foward operating base which supports Australian Defence Force operations, exercises and training in Australia’s North and North East.

The airport’s economic activity and contribution to the regional economy can be contextualised through an understanding of its role as part of government economic policy for the region. The airport’s role can be specifically identified through a range of business surveys and economic modelling.

These are used to estimate both direct and indirect multiplier effects for benefits that may be attributable to the airport which can be referenced to measures of Gross Regional Product (GRP), employment generation (both for the airport itself and other regional business categories) and other economic indicators.

Townsville Airport is a significant regional infrastructure asset, facilitating the movement of over 1.6 million passengers annually. The Townsville region’s Defence, tourism, FIFO mining, minerals processing, agricultural, education and health care services sectors all depend on the airport.

The 2016 Master Plan comes at a critical time for North Queensland. The region’s historically strong and diverse economy has slowed considerably in recent years, with the resource sector moderating and significant public employment cuts, impacting on regional activity and confidence.

Despite the current challenging conditions, the region is set to play an important role in Northern Australia’s development due to its strategic position in the agricultural, resources, tourism and services sectors.

Several near and long-term development projects have the potential to materially impact the future outlook for North Queensland and its aviation sector.

This section of the master plan identifies the current contribution of Townsville Airport to the North Queensland economy and assesses the anticipated contribution from development works over the initial five years of the master planning period utilising an Input-Output modelling approach as is discussed further in Chapter 11 – Development Program.
3.5.1 Economic Impacts and Key Airport Roles

Townsville Airport serviced approximately 1.6 million passengers (PAX) over 2014-15, with growth averaging 4.2 percent per annum since 2004-05. Townsville Airport accommodates approximately 400 flights weekly, with seat capacity of over 50,000.

Passenger growth at Townsville Airport is forecast to continue at an average rate of around 2.5 percent per annum, reaching approximately 2.64 million passenger movements by 2036 (Figure 3.3).

Growth over this period is expected to be driven by key economic and demographic drivers, including:

- The addition of new flight routes, including international flights
- Resident population growth, which is expected to continue to increase at over two percent per annum
- The growth of tourism in North Queensland, with a falling Australian dollar improving the outlook for domestic and international visitation
- A recovering regional economy, with a strong five year outlook for key North Queensland sectors including agriculture, tourism, construction and defence.

Projected revenue passenger forecasts are presented in Figure 3.4.

Through its current day-to-day activities, the Townsville Airport is estimated to support with the North Queensland economy:

- $875 million in output (including $380 million directly and $495 million indirectly)
- A $420 million (2.9 percent) contribution to gross regional product (GRP) (including $170 million directly and $250 million indirectly)
- $220 million in incomes and salaries paid to local households (including $95 million directly and $125 million indirectly)
- 3,350 full-time equivalent (FTE) jobs (including 1,600 directly, with over 600 within the Airport site, and 1,750 indirectly).

![Figure 3.3 Townsville Airport Historical and Future Passenger Movements](image-url)
The Townsville Airport Economic contribution shown in Tables 3.2 and 3.3 is based on Type I and Type II economic models.

Type I models are open models that show the direct effects of spending in a particular industry as well as the indirect or flow-on (industrial support) effects of additional activities undertaken by industries increasing their activity in response to the direct spending.

Type II or Closed models re-circulate the labour income earned as a result of the initial spending through other industry and commodity groups to estimate consumption induced effects (or impacts from increased household consumption as a result of more wages in the economy).

The following estimates consider both Type I and Type II flow-on impacts, however, it is generally assumed Type II effects have a tendency to overestimate observed impacts.

Townsville Airport’s economic contribution is expected to grow significantly over the coming years, reaching approximately $500 million contribution to GRP by 2020 - 21 and approximately $700 million by 2035 – 36 (Table 3.2).

In addition to economic activity supported by ongoing Airport operations, Townsville Airport will facilitate substantial construction works over the coming years. Construction works over the five years to 2021 are expected to provide significant stimulus to the North Queensland construction industry and economy (Table 3.3).

Across planned direct and facilitated developments, Townsville Airport is estimated to support the following one-off construction activity over the five years to 2021:

- $68.6 million in additional output (including $28.5 million directly and $40.1 million indirectly)
- $26.9 million contribution to GRP (including $7.4 million directly and $19.6 million indirectly)
- $13.1 million in incomes and salaries paid to households (including $3.4 million directly and $9.6 million indirectly)
- 178 FTE jobs (including 42 directly and 135 indirectly).

Overall, Townsville Airport represents influential and critical infrastructure for North Queensland. It is expected that TAPL will continue to play a significant and expanding role in driving and facilitating regional growth over the coming 20 years.

Table 3.2 Townsville Airport Economic Contribution ($2015)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Output ($M)</th>
<th>GVA ($M)</th>
<th>Income ($M)</th>
<th>Employment (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Impact</td>
<td>$380</td>
<td>$170</td>
<td>$95</td>
<td>1,600</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$215</td>
<td>$95</td>
<td>$55</td>
<td>700</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$280</td>
<td>$155</td>
<td>$70</td>
<td>1,050</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$875</td>
<td>$420</td>
<td>$220</td>
<td>3,350</td>
</tr>
</tbody>
</table>

Note: Totals may not sum due to rounding.
Source: AEC

Table 3.3 Construction Impacts to 2020-21 ($2015)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Output ($M)</th>
<th>GVA ($M)</th>
<th>Income ($M)</th>
<th>Employment (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Impact</td>
<td>$28.5</td>
<td>$7.4</td>
<td>$3.4</td>
<td>42</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$22.6</td>
<td>$9.8</td>
<td>$5.3</td>
<td>67</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$17.5</td>
<td>$9.8</td>
<td>$4.3</td>
<td>68</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$68.6</td>
<td>$26.9</td>
<td>$13.1</td>
<td>178</td>
</tr>
</tbody>
</table>

Note: Totals may not sum due to rounding.
Source: AEC
3.6 Planning Context

The Townsville Airport 2016 Master Plan complements State and Local Government land use planning regulations while ensuring the operational integrity and continued viability of the airport. The State and Local Government Planning Strategies of relevance to Townsville Airport are discussed in detail in Chapter 7 – Land Use Planning.

The airport land is owned by the Commonwealth of Australia and leased to TAPL. Townsville Airport is identified in legislation as a ‘regulated airport’, complying with the Airports Act and associated Regulations.

As a regulated airport, any project or development proposed for the airport must be assessed by the appointed statutory officer, the Airport Building Controller (ABC), who ensures that the project is consistent with the approved master plan and that it complies with relevant building codes and Australian Standards.

Any new project, development or change to existing facilities is also considered by the Airport Environment Officer (AEO) who monitors Townsville Airport and QAL’s compliance with the master plan and associated Airport Environmental Strategy (AES) and compliance with the Airports (Environment Protection) Regulations 1997 (Cth) (AEPR).

For as long as the airport land remains in the custody of the Commonwealth, this planning approval regime will remain under the legislative direction of the Commonwealth Minister.

The Townsville City Council local government area, in which the airport is situated, has incorporated mechanisms into its statutory planning instruments to identify and control activities which may have the potential to adversely affect safety or operational efficiency within the airport’s airspace.

There are also detailed planning controls related to development in the locality of the airport in the Townsville City Council Planning Scheme, through its Airport and Aviation Facilities Overlay and Code. Generally this overlay code reflects the Queensland State Planning Policy 2016 (SPP).

The code imposes height limits pursuant to the Airport’s Joint Obstruction Clearance Surfaces (JOCS) and Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS) surfaces and lighting zone controls, as well as regulating types of development which should or should not take place in surrounding areas in relation to potential attraction of birds and bats or because of potentially hazardous emissions.

The same code contains provisions bringing into effect the standards imposed by AS2021 in relation to aircraft noise, although this is not among controlled activities under the Airports Act.

The predominant land uses surrounding Townsville Airport are:

- Low-medium density residential to the east
- Open space and special use, to the north-east (i.e. cemetery and detention centre)
- Business and industry to the south
- Open space and special use to the west, including the Town Common, the RAAF Base Townsville and airfield.

The master planning process helps to ensure that sufficient land has been identified to meet the community’s demand for forecasted air transport growth and supporting activities.

The planning assessment process and development principles are further discussed in Chapter 7 – Land Use Planning.

3.6.1 Objectives

Townsville Airport has identified seven strategic objectives aligned with Commonwealth, State and local government policies. These include:

- Strategic Intent 1: Northern Australia’s Aviation-based Business Hub
- Strategic Intent 2: Sustainable Tropical Design
- Strategic Intent 3: Capacity, Integration and Operating Efficiency
- Strategic Intent 4: Safety and Security
- Strategic Intent 5: Environmental Management and Compatibility
- Strategic Intent 6: Diverse and Adaptable Land Use Opportunity
- Strategic Intent 7: Quality of Service.
3.7 Joint User Facility Arrangements

As previously mentioned, TAPL operates Townsville Airport under a long-term lease from the Commonwealth of Australia. The runway and taxiways are operated and maintained jointly with the Defence under terms of the Joint User Deed dated 9 June 1998.

The Military Area is controlled by the Defence and the Civil Area is managed by TAPL. The Jointly Used Area (JUA) is also controlled by the Defence, however is utilised by both civil and Defence aircraft (Figure 3.1).

3.7.1 Joint User Agreement Responsibilities

Defence occupies the 880 hectares of Military Area exclusively as a RAAF Base and controls the JUA for all military and civilian aircraft operations respectively. Defence has the responsibility of:

- Maintaining the JUA, specifically the airfield, runway and associated taxiway system
- Provision of air traffic control services
- Producing Obstacle Limitation Surfaces (OCS) and defining the joint obstacle clearance surfaces
- Producing a military Australian Noise Exposure Concept (ANEC) and defining the joint Australian Noise Exposure Forecast (ANEF) for military and civil uses
- Defence estate base planning and development to fulfil the military role of the RAAF Base Townsville and to ensure the ongoing compatibility with civil aviation development.

TAPL occupies the Civil Area exclusively and has access to and use of the JUA for civil aircraft operations. TAPL contributes to the annual maintenance costs for the JUA and is responsible for funding capital works required for civil aircraft operations in the JUA.

Airservices Australia (Airservices) has the responsibility to provide and maintain the navigational aids specifically required for civil operations and provision of Aviation Rescue and Fire Fighting (ARFF) services for Townsville Airport as well as undertaking its regulatory body functions, including technical endorsement of ANEF for airport master planning.

3.7.2 Joint Obstruction Clearance Surfaces

Buildings and structures within the vicinity of the RAAF Base are controlled by the Defence (Areas Control) Regulations 1989 (Cth) (DAC Regulation) based on the OLS as set by the Defence.

Both the DAC Regulation and the Airspace Protection Regulation establish a system for the protection of airspace at and around joint user airfields in the interests of the safety, efficiency or regularity of existing or future air transport operations into or out of airports. TAPL will
continue to work with local, State and Commonwealth bodies to protect the airspace surrounding Townsville Airport consistent with legislative requirements and Section 10.2 of the JUA.

3.7.3 Future Defence Development for Jointly User Area

As a military facility, RAAF Base Townsville includes the airfield runways and associated taxiways which are controlled by Defence. While these areas are outside the area affected by TAPL’s master planning responsibility, their future as determined by the Defence and the Commonwealth Government are still considered as important influences affecting the airport’s civil operation and development. This applies both in the short term (i.e. less than five years) and longer term (i.e. five – 20 years) planning periods.

Strategic development projects on the Military Area and JUA planned by the Defence, likely to have implications for the future development and operation of the airport, include:

- AIR 9000 Phase 5C – additional Chinooks and facilities (estimated 2014 - 2016)
- AIR 6000 Phase 2A/2B – Joint Strike Fighter (JSF) infrastructure (date to be finalised)
- AIR 7000 Phase 2 – AP-3C Orion Maritime Patrol replacement aircraft and infrastructure (estimated 2014 – 2020)
- AIR 5431 Phase 2/3 – Air Traffic Control Complex Infrastructure Project (AIP) (estimated 2016 – 2020) – Airservices proposal for a new incorporated fire station to be considered
- RAAF Townsville Redevelopment Stage 3 (estimated 2018 – 2020)
- Replacement of concrete thresholds runway 01/19 i.e. main runway (estimated 2016 – 2020).

The AIR 7000 Phase 2 Project includes a number of airport infrastructure improvements, which will affect the JUA. This includes an extension of the main runway at its northern end by approximately 406 metres.

The operational requirements for Defence aviation differs significantly to that of current and expected future civil aviation needs at the Townsville Airport. This substantially includes the types of aircraft involved, hours of operation, flight regularity as well as other associated security and aviation service requirements.

TAPL to date has not relied on Defence initiatives for the operation or development of the civil airport’s services, or development, although any advantages that may have incidentally benefited civil operations have been accepted and incorporated into the airport’s operations where appropriate. This has included improvements to air traffic control, runway and apron facilities, air navigation and ANEF determinations.
3.8 Facilities and Services – Civil Area

Townsville is a Civil Aviation Safety Authority (CASA) certified airport. The airport has facilities to provide for international, domestic interstate and regional airlines for passenger and freight services as well as GA, charter services and helicopter services. The airport does not have any dedicated facilities for the temporary storage (cold storage or otherwise) or other handling of freight other than through direct loading / unloading between plane and trucks on the terminal apron areas.

3.8.1 Facilities

Civil aviation facilities provided by Townsville Airport include:

- A dual international / domestic passenger terminal with ancillary passenger convenience, lounge and retail service facilities
- Short and long stay passenger car parking in close proximity to the passenger terminal and separate airport employee open air, ground level car parking
- Some passenger short stay car parking is provided with awning protection against weather
- Separate car hire car parking in close proximity to the passenger terminal with separate car hire servicing and long stay facilities located within the Enterprise precinct of the airport
- Taxi passenger drop-off and pick-up locations conveniently located adjacent to the passenger terminal
- Air freight loading facilities to lift pallets in and out of aircraft
- Aircraft maintenance hangars and associated facilities
- In-flight catering services to a range of RPT carriers
- GA facilities, including for helicopter emergency rescue, fixed wing medical transport aircraft, government aircraft facilities, charter air services (i.e. for helicopter and fixed-wing) and private aircraft storage and maintenance facilities, including administration buildings and hangars
- Aviation fuel facilities including fuel storage areas
- Meteorological facilities.

Facilities also shared with Defence include:

- Two runways comprising the main runway 01/19 and a secondary runway 07/25 (primarily for GA) and associated taxiways

3.8.2 Terminal Redevelopment and Major Development Plan

Townsville Airport is undertaking a redevelopment of the domestic and international terminal to upgrade the facilities, improve the layout and function, modernise the building and improve capacity constraints to accommodate projected passenger growth for the next 10 years.

TAPL has recently undertaken a Major Development Plan (MDP) approval for the terminal redevelopment pursuant to section 89(d) of the Airports Act as the proposed works will extend the terminal building’s gross floor space by more than 10 percent. As noted in the MDP, the existing building has a total floor space of 16,700m² which will be increased by 3,300m² to 20,000m² through the proposed redevelopment.

The proposed redevelopment is required in order to cater for current and expected growth in operations. In 2015 alone, 1.6 million passengers visited Townsville Airport.

Over the next 20 years, passenger movements are forecast to grow between two to three percent per year to reach a total of 2.64 million passengers by 2036 and thus this growth needs to be accommodated.
3.8.3 International Services

Townsville Airport is a declared restricted use international airport. This means it is an airport of entry and departure at which the formalities incident to Customs, Immigration, Health and similar procedures are made available on a restricted basis, to flights with prior approval only.

International commercial services re-commenced temporarily in December 2010 with direct services to Denpasar in Bali but subsequently ceased for an extended period, due to adverse economic conditions associated with the GFC and a subsequent downturn in overseas travel.

An announcement was made by the Prime Minister on 7 February 2015 that additional customs services would be provided to Townsville to ensure that international flights could be guaranteed from Townsville for the new flight routes between Townsville and Bali.

Jetstar commenced flights to Bali from Townsville three times per week in September 2015.

3.8.4 Domestic Services

Townsville Airport has become a dominant provider of domestic airline services, or RPT for travellers to and from North Queensland. The Airport is a large aviation facility in the North Queensland Region and serves as a central aviation hub to the North West Region, as well as connections to regional and capital centres across other parts of Australia as shown in Figure 3.5.

Carriers providing RPT services to and from Townsville Airport include Virgin, Qantas, Jetstar, Regional Express (Rex), Jetgo and Airnorth.

Direct daily flights to Brisbane are offered by Virgin, Qantas and Jetstar. Qantas and Virgin also offer direct flights to Melbourne and Sydney while Jetstar flies direct to Melbourne daily.

Regional services are offered by Virgin, QantasLink, Jetgo and Rex with Airnorth providing a direct service to and from Darwin.

On 28 September 2015, JetGo commenced services direct to the Gold Coast, via Rockhampton.

QantasLink flies to Cairns, Mackay, Rockhampton, Cloncurry and Mount Isa. Rex has services that connect Townsville with Cairns, Winton, Longreach, Hughenden, Richmond, Julia Creek and Mount Isa. Further connections with other parts of regional Queensland, including the Cape, Gulf Country and South Western and Southern Queensland are able to be made at Mount Isa and Cairns. West Wing Aviation provides daily flights to Palm Island approximately 55 kilometres to the northwest of the Airport.

3.8.5 Resource Sector Charter Services

Ongoing operation development of the resource sector within the North West Minerals province has seen the maintenance of mine-specific FIFO charter services to a number of private mine-site airfields, including Cannington Mine operated by BHP Billiton and Century Mine operated by MMG Limited. Charter services are currently provided by West Wing Airlines on an ad-hoc basis as well as Rex and Alliance.

Other carriers have operated in the past but have suspended services due to a downturn in mining activity brought on by a decrease in global commodity prices.
3.8.6 General Aviation Services

Townsville’s General Aviation (GA) has evolved during the life of the airport with accommodation being characterised by temporary low cost buildings. These buildings have often been used due to their surplus or superseded nature as the airport’s other services (i.e. notably RPT) have grown.

GA is dated accommodation and is limited to existing supply in the current position. GA has significance to the region, by providing access to a range of services to many remote areas as well as catering for an increasing private owner market for aircraft.

At Townsville Airport, GA includes light aircraft passenger flights to Palm Island, mail and other light cargo flights to regional locations including Julia Creek (e.g. Pelair / Jetgo), emergency health and rescue and air cargo services (e.g. Toll). GA also includes a range of private use light aircraft and helicopter flight services.

Aviation health services are operated from Townsville by the Royal Flying Doctor Service and CareFlight. These provide important and valuable services to remote regional centres and homesteads across Northern Queensland and provide a direct link to the Townsville Hospital and specialist health services located in Brisbane.

The CareFlight Rescue Service includes a number of helicopters based in Townsville together with Emergency Management Queensland (EMQ) rescue helicopters which provide an important service for both inland and offshore emergencies.

The different types of GA uses are shown in Table 3.4. TAPL has estimated that approximately 20 GA aircraft are based permanently at Townsville Airport with many more frequenting on a temporary basis. Flights cover to and from inland North Queensland and Central Queensland as well as along the coastal strip between Cairns and locations to the south of Townsville.

The airport provides both a key endpoint destination and stop-over for many GA flights, including for business, leisure, health and other services in Townsville, connection to RPT flights and for refuelling en route to other destinations.

The demand for GA activity centred on Townsville from other smaller regional and private airfields is likely to increase as the populations and business opportunities in Northern Australia increase. Economic growth within North Queensland has the potential to affect future land use and aviation infrastructure planning decisions for the airport into the future including decisions about whether to maintain and/or upgrade the secondary runway, aircraft parking and aviation services for GA aircraft.

The likely economic growth scenarios for the region should be considered in terms of how this might impact on aviation demands and any changes in the roles of other airports and their relationship to Townsville Airport as part of the master plan preparation process.

The existing GA facilities are largely ad hoc and dated in their asset usefulness. The current location of the bulk of the GA activity has also been recognised as increasingly conflicting with the operations of RPT services and associated growth requirements, to the point where there is now insufficient space for RPT services to be provided for if the current GA arrangements remain.

Table 3.4 General Aviation with Townsville Airport Base

<table>
<thead>
<tr>
<th>Use</th>
<th>No. of Aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Management QLD – rotor aircraft</td>
<td>2</td>
</tr>
<tr>
<td>Health – RFDS and CareFlight fixed wing</td>
<td>5</td>
</tr>
<tr>
<td>Regional service fixed wing aircraft – Westwing</td>
<td>2</td>
</tr>
<tr>
<td>Other charter fixed wing aircraft – Bluewater, Kimair</td>
<td>3</td>
</tr>
<tr>
<td>Other charter helicopter – Nautilus</td>
<td>5</td>
</tr>
<tr>
<td>Private fixed wing aircraft</td>
<td>3</td>
</tr>
</tbody>
</table>
The proposed relocation of GA facilities and operations to the Northern Aviation Precinct can provide the opportunity to facilitate proper long term planning and modernisation of the region’s GA services. This is in line with the airport’s vision as a regional hub, through the availability of serviced land for purpose-built GA facilities to meet current and future demands.

Key GA land use planning aspects that the 2016 Master Plan should address include:

- Development of shared government facilities (e.g. for police, rescue services and ministerial/government aviation transport services)
- Shared passenger services facilities
- Distinction between helicopter and fixed wing areas
- GA office facilities
- Public and workforce car parking areas
- Integration with rest of airport – notably RPT services to provide for complementarity between services.

Townsville Airport already plays a significant regional role as a focus for certain GA services. Consolidation of this role is not only likely to lead to long term security for the sector and services to the region, it is also likely to significantly add to the region’s economy through increased investment to further support or leverage off a demonstrated strong commitment towards the GA sector.
4.0 FORECASTS

4.1 Introduction

Planning for the airport services and facilities to meet the future needs requires the utilisation of growth forecasts. TAPL prepares passenger forecasts annually, along with aircraft movement forecasts which are developed for the medium-term (up to five years) and for the long-term.

This chapter provides an overview of the forecasts for civil aviation activities Townsville Airport in accordance with the requirements of section 71 (3)(b) of the Airports Act.

Townsville Airport aims to become the aviation hub of the Northern Queensland region, currently servicing predominately domestic and regional aviation markets and international services to Bali.

4.1.1 Historical Data

Queensland Airports Limited (QAL) collects historical passenger traffic and aircraft movement data for each of their airports. The Bureau of Infrastructure, Transport and Regional Economics (BITRE) also has historic movements available online.

BITRE provides economic analysis, research and statistics on infrastructure, transport and regional development issues to inform both Commonwealth Government policy development and wider community understanding.

Passenger Profile

Historic Regular Public Transport (RPT) passenger movements for the last ten years have been depicted in Figure 4.1.

In the 2011 Master Plan passenger figures were forecasted to be 2,000,000 (medium scenario) and 1,500,000 (low scenario) passengers in 2014. Historic passenger movements are reflective of the low growth scenario with 1,600,000 passengers passing through Townsville Airport in 2015.

Aircraft Movements

Historical RPT aircraft movements for the last ten years have been depicted in Figure 4.2. In the 2011 Master Plan aircraft movements were anticipated to be at around 30,000 for the year 2014. Historical data however shows that movements in 2014 were around 24,000. This coincides with the low growth experienced in passenger numbers in the last five years.
Figure 4.1 Historical Passenger Movements (QAL, 2015)

Figure 4.2 Historical Aircraft Movements (QAL, 2015)
4.2 Forecasting Methodology

The forecasts presented herein are the result of two independent forecasting processes – short to medium-term (FY2016-20) and long-term. The short to medium-term forecasts (FY2016-20) have been developed by QAL using an in-house forecasting model. Demand analyses were then used to develop long-term forecasts.

Forecasts of revenue passengers at Townsville Airport have been developed for the following passenger segments:

- Passengers travelling locally (outbound)
- Passengers travelling nationally (inbound)
- Passengers travelling internationally.

In developing aircraft movement forecasts, various sources have been taken into consideration however ultimately the forecasts generated continue assuming capacity lead growth. In summary, the forecasts are based on scheduled capacity, known and expected load performance, discussions with airlines and assessment of TAPL’s internal situation analysis.

4.2.1 Locally Travelling Passengers (Outbound)

The local (outbound) passenger movements have been forecast based on the following methodology:

- Calculate local (Northern Statistical District) demand for air travel per capita as – total air passenger movements / total population
- Develop a demand projection based on assumed changes in income (proxied by real Gross Domestic Product [GDP]) and airfares (driven by the price of oil). Demand elasticities, based on economic theory and empirical estimates, are used to convert the changes in income and airfares into changes in per capita demand for air travel to / from Townsville
- Multiply travel per capita by local population each year to forecast total demand for air travel by local passengers.

4.2.2 Nationally Travelling Passengers (Inbound)

The methodology adopted is the same as for local passengers, except that the population figures for visiting Australians are calculated as volume-weighted averages, where the weights are based on visitor volumes from each state.

4.2.3 International Visitors to Australia

The number of international passengers passing through Townsville Airport (on both international and domestic services) is assumed to grow at the same rate as visitor arrivals to Australia. The base case assumes that the annual average growth rate, of three percent seen over the last 20 years in Australia, will continue in visitor arrivals.

4.2.4 Data Sources

In developing passenger forecasts, various documents to substantiate the inputs and any assumptions deemed reasonable have been sourced.

These sources include (but are not limited to):

- QAL internal aviation data
- Passenger Forecasts Report (CAPA Consulting, February 2014)
- Passenger Mix and Behavioural Study (Proof, January 2015)
- Bureau of Infrastructure, Transport and Regional Economics.

Aircraft movement forecasts are also adapted to the assumptions obtained from the data sources listed above.
4.2.5 Risks and Uncertainty in Forecasting

With any aviation forecasts there will always be an acceptable level of risk and uncertainty associated (adapted from the Gold Coast and Townsville Airports Passenger Forecasts Report 2014). These risks and uncertainties have been taken into account with the main risks being:

- Short-term seat capacity
- Weakened domestic economy
- Exchange rate
- Escalating oil prices.

These risks are briefly discussed as follows.

**Short-term Seat Capacity**

The short-term forecasts are based on detailed capacity and load factor assumptions. There is always a risk that anticipated capacity does not eventuate as planned. Risks in the forecasts are managed by providing low and high capacity and load factor scenarios.

**Weakened Domestic Economy**

The Australian economy is still relatively fragile and could take some time to recover. This risk is addressed in the forecasts by building in some downside into the base case domestic GDP assumptions.

**Exchange Rate**

The value of the Australian dollar has eased against most major currencies during the past 12 months, making inbound travel cheaper for international visitors and outbound travel more expensive for Australian passengers.

The impact of exchange rates on travel behaviour must be viewed within the wider context of the price of travel.

The overall cost of international travel to and from Australia comprises an air component (airfares) and a ground component (spend in the destination). The latter is affected by the exchange rate, but the former is not. The airfare is often a major component of the cost of an overseas trip hence airfares are often important, if not more so, than the exchange rate in the destination country.

A historical analysis of aviation data finds no historical relationship between exchange rates and international passenger movements. This does not mean that exchange rates do not affect international passenger movements, but it does suggest that the exchange rate is not a dominant driver of travel behaviour.

It is anticipated that the previous devaluation of the Australian dollar in FY2013-14 is likely to be positive for inbound and domestic travel, and negative for outbound travel although it is reasonable to expect some substitution away from long haul travel and towards short haul travel within this wider trend (due to the lower overall cost of short haul travel).

**Escalating Oil Prices**

This risk is addressed in the forecasts by assuming a steady increase in the oil price, which has a direct impact on airfares. The price of oil is only relevant to the forecasts insofar as it affects airfares. The price of oil affects many other things (e.g. the relative price of driving vs flying, the prices of other goods and services), but these effects are too complicated to model and are likely to have only a minor impact on travel demand when compared with airfares (CAPA, 2014).

Within the models used to produce the demand-driven forecasts a 10 percent increase in the price of oil in a given year translates to a 2.6 percent decrease in passenger movements in that year.

This effect is driven by two relatively conservative assumptions:

- All of the increase in the price of oil is passed on to the consumer
- Airlines are unable to realise cost savings in other areas of the business over time.

In reality it is likely that the demand response to a change in oil will be smaller than the response in the model used in this forecasting because the hedging practices of airlines help to manage short-term variations in the oil price and airlines continue to find ways to cut non-fuel costs which enables them to absorb some of the fuel price increases, at least in the short-term.
4.3 Forecasts

4.3.1 Passenger and Aircraft Movement Forecasts

The most recent aviation forecasts were undertaken in late 2013 and showed that a slowdown in the domestic economy had occurred since the finalisation of the 2011 Master Plan which has caused a reduction in the demand for travel to and from Townsville. This is a temporary effect caused by businesses and government agencies responding to the new economic circumstances.

The reduced demand is likely to have been exacerbated by a decline in the resources sector with decreased mining exploration and mine development in Central Queensland and the North West Minerals Province as well as a reduction in State Public Service employment and travel across Queensland.

The forecasts found that while demand had reduced, airline yields were still regarded as relatively high and that further growth in seat capacity is likely once ‘business as usual’ travel patterns resume.

It has also been identified that paying passengers (RevPax) are expected to increase by an average of 2.5 percent per annum over the next 20 years, increasing from 1.55 million in 2015 to 2.64 million in 2036. This represents an average passenger growth of 54,500 per annum (Figure 4.3, Table 4.1).

In line with passenger growth, aircraft movements are expected to increase from 11,375 per annum to approximately 13,119 in 2016. This is an average growth of 92 aircraft movements per annum. (Figure 4.3)

### Table 4.1 RevPax Forecasts for Townsville Airport

<table>
<thead>
<tr>
<th>Year</th>
<th>Total RevPax</th>
<th>Annual Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1,550,501</td>
<td>-2.8%</td>
</tr>
<tr>
<td>2016</td>
<td>1,543,327</td>
<td>-0.5%</td>
</tr>
<tr>
<td>2017</td>
<td>1,616,690</td>
<td>4.8%</td>
</tr>
<tr>
<td>2018</td>
<td>1,698,002</td>
<td>6.5%</td>
</tr>
<tr>
<td>2019</td>
<td>1,764,412</td>
<td>3.6%</td>
</tr>
<tr>
<td>2020</td>
<td>1,827,147</td>
<td>3.0%</td>
</tr>
<tr>
<td>2021</td>
<td>1,879,537</td>
<td>2.9%</td>
</tr>
<tr>
<td>2022</td>
<td>1,931,788</td>
<td>2.8%</td>
</tr>
<tr>
<td>2023</td>
<td>1,983,962</td>
<td>2.7%</td>
</tr>
<tr>
<td>2024</td>
<td>2,036,041</td>
<td>2.7%</td>
</tr>
<tr>
<td>2025</td>
<td>2,088,010</td>
<td>2.6%</td>
</tr>
<tr>
<td>2026</td>
<td>2,139,853</td>
<td>2.5%</td>
</tr>
<tr>
<td>2027</td>
<td>2,190,928</td>
<td>2.4%</td>
</tr>
<tr>
<td>2028</td>
<td>2,241,862</td>
<td>2.3%</td>
</tr>
<tr>
<td>2029</td>
<td>2,292,645</td>
<td>2.3%</td>
</tr>
<tr>
<td>2030</td>
<td>2,343,273</td>
<td>2.2%</td>
</tr>
<tr>
<td>2031</td>
<td>2,393,747</td>
<td>2.2%</td>
</tr>
<tr>
<td>2032</td>
<td>2,444,049</td>
<td>2.1%</td>
</tr>
<tr>
<td>2033</td>
<td>2,494,186</td>
<td>2.1%</td>
</tr>
<tr>
<td>2034</td>
<td>2,544,163</td>
<td>2.0%</td>
</tr>
<tr>
<td>2035</td>
<td>2,593,994</td>
<td>2.0%</td>
</tr>
<tr>
<td>2036</td>
<td>2,643,694</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Forecast seat numbers by individual airlines prepared by QAL for the period to 2021, as shown Figure 4.4, show that steady growth is primarily expected to only occur in the regular passenger transport (RPT) jet services (i.e. to capital cities) whereas as air travel to regional centres to and from Townsville is expected to remain reasonably static over the same period.
Figure 4.3 RevPax Scenario Analysis for Townsville Airport

Figure 4.4 Forecast Seat Numbers by Airline for Townsville Airport
The forecasts generally take into account population growth for Townsville and the region as a whole. Strategic economic activity planned by Commonwealth and State governments for Northern Australia and likely Asian market and investment influences are yet to be fully accounted for in the forecasts.

Townsville Airport is also a potential competitor with other regional airports in North Queensland, most notably Cairns and Mackay Airports with the Whitsundays Airport (at Proserpine) and Hamilton Island Airport being heavily focused on tourism. Growth in the nearby regional airports has the potential to affect opportunities for Townsville Airport.

While it is unlikely that these factors will influence airport demand and growth during the first five-year period of the Master Plan, they may have significant influence on the long term strategic direction of the airport and its ancillary development.

4.3.1 Freight Forecasts

The 2011 Master Plan found that air freight does not have a material impact on TAPL’s infrastructure planning as the number of dedicated air freight services is very limited.

Based on planning scenarios at the time, the low number of dedicated air freight services is not expected to increase for airport planning at Townsville Airport over the next 20 years.

The majority of air freight at Townsville Airport is carried in the hold of RPT air services and it is an important factor in the financial viability of scheduled air services. The rate of growth of air freight will be closely correlated with the rate of RPT air services growth. The 2011 Master Plan found that current facilities for air freight are more than adequate for forecast throughput.

Since the 2011 Master Plan there has been significant interest by Commonwealth and State governments in developing Northern Australia initiatives. This includes potential opportunities to increase agricultural production in the North West. The likely long term influence this may have on domestic and international air freight services is yet to be determined.
4.4 Airport Metrics

Townsville Airport has adopted a set of planning criteria associated with the strategic intent of development of concepts for the airside, terminal and landside areas. This section briefly outlines the parameters facilitating future developments.

4.4.1 Airport Capacity

**Terminal**

Figures such as the airport busy hour have been determined and used in airport planning. The busy hour passenger forecasts for Townsville Airport are used to plan the terminal growth and utilisation.

International busy hour numbers are not provided as operations have just resumed as of September 2015, therefore no substantial historical information is available.

**Airside**

Forecast aircraft stand demand for Townsville Airport is detailed in [Table 4.2](#), specific to FY2016, FY2019, FY2028, FY2033 and FY2036.

The current international flight schedule complements the domestic busy hour forecasts, thus the stand demand will not need to account for an additional international Code C stand until 2020.

4.4.2 Fleet Mix

In developing aircraft movement forecasts the fleet mix must be taken into consideration. It is to be expected that airlines will utilise next generation aircraft in the medium to long term. Fleet renewal will affect airside and terminal planning in terms of aircraft parking positions. Proposed developments must take into consideration anticipated aircraft types to operate at the airport.

**Table 4.2 Domestic Aircraft Stand Demand**

<table>
<thead>
<tr>
<th>Domestic</th>
<th>2016</th>
<th>2019</th>
<th>2028</th>
<th>2033</th>
<th>2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code C</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Code B/C</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Stand-Off</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>11</strong></td>
<td><strong>12</strong></td>
<td><strong>15</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>
5.0 AIRCRAFT NOISE

5.1 Introduction

Aircraft noise is an important issue for airports around Australia and is critical to the protection of land use. Land use planning around the vicinity of an airport takes into consideration aircraft operations and flight paths in order to mitigate the encroachment of developments.

In accordance with section 71(3) of the Airports Act, this chapter addresses the relevant provisions of the Airports Act by:

- Producing forecasts relating to aircraft noise exposure levels over a 20 year planning period
- Identifying flight paths
- Outlining aircraft noise intrusion management at the airport.

The Airports Act 1996 (Cth) (Airports Act) limits the application of aircraft noise activities at an airport. Under the airports regulations, Townsville Airport Pty Ltd (TAPL) manages civilian ground-based noise. Noise generated by civilian aircraft operation at Townsville Airport during flight, taxi, take-off and landing is the responsibility of Air Services Australia. Ground based and aircraft noise generated by military activities at RAAF Townsville is the responsibility of the Defence.

TAPL manages ground-based noise through the implementation of its local ground running procedures. Noise implications for this aspect are addressed in Chapter 10 – Environmental Strategy as well as further detail regarding the environmental aspects, potential environmental impacts, managing the impacts, recent achievements and targets pertaining to minimising ground based noise.

5.1.1 Australian Noise Exposure Forecast

An airport is required to produce an Australian Noise Exposure Forecast (ANEF), as indicated in section 71(3) of the Airports Act. This provides an indication of the noise exposure around an airport over a 20 year planning period.

Detailed in the Australian Standard AS2021-2015 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction is a description of the ANEF system (explained further in Chapter 7 – Land Use Planning). It contains the land use compatibility advice for areas within the vicinity of airports by means of detailing prescribed noise levels and developments which are permitted underneath the flight paths associated with each threshold.

Aircraft noise charts produced using the ANEF system provide three different outputs of which two are associated with the 2016 Master Plan:

- Australian Noise Exposure Index (ANEI)
- Australian Noise Exposure Concept (ANEC)
- ANEF.

The ANEF produced for the 2016 Master Plan is based on the previous ANEF published in the 2011 Master Plan as well as a series of sensitivity analyses as a result of the review of input data provided along with consultation with TAPL, Airservices Australia and the Defence. The ANEF calculated is a standard 20 year ANEF projecting aircraft noise exposure on properties 20 years into the future.
5.1.2 Joint ANEF

As a joint user facility, the Defence is responsible for producing the joint civil-military ANEF (the joint ANEF). Under the Airports Act, TAPL supplies civil data the Defence for integration into the joint ANEF.

Under the Airports Act, TAPL is responsible for providing the joint ANEF in its master plan.

**ANEF Endorsement Process**

As a joint user facility, Airservices Australia will review the civil data for technical accuracy and then proceed to endorse the Joint ANEF as a combination of both civil and military components (Figure 5.1).

In conducting a review of the ANEF, a checklist is provided to Airservices Australia for technical accuracy evaluation. The contents of the checklist provide a great level of detail pertaining to the inputs and assumptions for the calculation (detailed in Section 5.2 – Noise Contours).

![Figure 5.1 Australian Noise Exposure Concept](image-url)
5.2 Noise Contours

5.2.1 RAAF Base Townsville / Townsville International Airport Composite 2036 ANEF

The Townsville Airport ANEF 2036 chart has been produced and now supersedes the joint civil-military 2030 ANEF endorsed by Airservices Australia.

The civilian data was developed and then submitted to the Defence on 15 July 2015 for integration into the joint ANEF for Townsville Airport. The Defence submitted the joint ANEF to Airservices Australia who endorsed the document on 29 January 2016. This joint ANEF is depicted in Figure 5.2.

Under the Airports Act, a joint ANEF must be provided in the final revised master plan. The methodology, inputs and assumptions used to develop the ANEF have been addressed in the succeeding subsections.

5.2.2 Methodology

This ANEF is based on the previous ANEF as part of the 2011 Master Plan, a series of sensitivity analyses conducted (inclusion of a proposed runway extension), along with consultation with Townsville Airport, Airservices Australia and Defence.

The ANEF has been produced in accordance with the Airservices Australia Guidelines for the Production of Noise Contours for Australian Airports. In calculating the ANEF, the United States Federal Aviation Administration’s Integrated Noise Model (INM) version 7.0(d) is utilised.

The ANEF contours generated in the software is largely dependent on the variables fed into the model. All inputs and assumptions generated have been completed in conjunction with TAPL, Airservices Australia and Defence as well as verified by the respective parties. The input data required by INM is listed below.

- Airport reference point
- Runway and helipad dimensions
- Terrain and meteorological parameters
- INM aircraft type selection
- Operational data
- Aircraft movements and runway usage
- Track allocation.

Core inputs are elaborated in the following subsections.

5.2.3 Fleet Renewal

The 2036 Townsville ANEF is a 20 year projection and as such, includes next generation aircraft. Many aircraft flying today will be replaced by new aircraft including the Boeing 737-MAX, Airbus A320-NEO and Bombardier Q400. It was therefore considered reasonable to substitute existing aircraft with these new, quieter aircraft.

The Boeing 787 or any similar next generation wide bodies were not modelled in the previous ANEF as the airport would need to make significant changes to the runway, taxiway and apron areas to accommodate aircraft of this size. This is not expected to be required within the planning horizon of the 2016 Master Plan.

The noise data for the three new aircraft types are based on the differences between the new aircraft’s existing or predicted certification data and the surrogate aircraft’s known data. This methodology is based on the Future Aircraft Noise Exposure Estimates methodology developed by United Kingdom Civil Aviation Authority (CAA) (CAA, 2003; CAA, 2007). The methodology of the adoption of the offsets used by CAA is accepted by Airservices Australia.

Table 5.1 shows what each new aircraft is based on and the conservative noise adjustments made to the new type.

### Table 5.1 Noise Performance Data Adjustment for Next Generation Aircraft

<table>
<thead>
<tr>
<th>Next Gen Type</th>
<th>Surrogate INM Type</th>
<th>Departure Adjustment</th>
<th>Arrival Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airbus A320NEO</td>
<td>A320-211</td>
<td>-4.0</td>
<td>-3.0</td>
</tr>
<tr>
<td>Boeing 737MAX</td>
<td>B737-800</td>
<td>-4.0</td>
<td>-3.0</td>
</tr>
<tr>
<td>DASH400</td>
<td>DHC830</td>
<td>No change</td>
<td>-3.0</td>
</tr>
</tbody>
</table>
Figure 5.2 Endorsed RAAF Base Townsville / Townsville International Airport Composite 2036 ANEF
5.2.4 Flight Movements and Paths

Flight Movements

Flight movements included in the ANEF are projected to 2036. These movements are based on current movements at the airport which have then been grown to reflect forecast aircraft movement figures. Movements are based only on civilian operations and encompass regular passenger transport (RPT) flights (both domestic and international), general aviation, freight and helicopters.

Total civilian aircraft movements at Townsville Airport applied to the 2016 Master Plan are detailed in Table 5.2. A total of 234 movements occur within a 24 hour period, including 189 daytime movements and 45 night time movements.

Flight Paths

Modelled tracks are based on radar data provided by Airservices Australia for the year 2015 and procedures published in the most recent Aeronautical Information Package (AIP) accessible via the Airservices Australia website. Noise and Flight Path Monitoring System (NFPMS) data retrieved from the Defence website is also taken into consideration when modelling tracks.

The tracks modelled are reflective of all three data sources. Both arrival and departure tracks have dispersion applied to reflect the breadth of current operations (Figures 5.3 – 5.5).

Table 5.2 Civilian Aircraft Movements at Townsville Airport

<table>
<thead>
<tr>
<th>Runway 01</th>
<th>Day</th>
<th>Night</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A320</td>
<td>3.1</td>
<td>0.9</td>
<td>4.0</td>
</tr>
<tr>
<td>A320 NEO</td>
<td>3.1</td>
<td>0.9</td>
<td>4.0</td>
</tr>
<tr>
<td>ATR72</td>
<td>2.4</td>
<td>0.7</td>
<td>3.1</td>
</tr>
<tr>
<td>B738</td>
<td>10.6</td>
<td>3.0</td>
<td>13.6</td>
</tr>
<tr>
<td>B738 MAX</td>
<td>10.6</td>
<td>3.0</td>
<td>13.6</td>
</tr>
<tr>
<td>DHC840</td>
<td>24.4</td>
<td>6.9</td>
<td>31.3</td>
</tr>
<tr>
<td>E190</td>
<td>8.1</td>
<td>2.3</td>
<td>10.4</td>
</tr>
<tr>
<td>SF34</td>
<td>4.1</td>
<td>1.2</td>
<td>5.3</td>
</tr>
<tr>
<td>GASEPF</td>
<td>36.9</td>
<td>10.3</td>
<td>47.2</td>
</tr>
<tr>
<td>GASEPV</td>
<td>25.1</td>
<td>7.1</td>
<td>32.2</td>
</tr>
<tr>
<td>LEAR45</td>
<td>1.5</td>
<td>0.4</td>
<td>1.9</td>
</tr>
<tr>
<td>BECS8P</td>
<td>13.8</td>
<td>3.9</td>
<td>17.7</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>143.7</strong></td>
<td><strong>40.6</strong></td>
<td><strong>184.3</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Runway 07</th>
<th>Day</th>
<th>Night</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BECS8P</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>GASEPF</td>
<td>9.3</td>
<td>0</td>
<td>9.3</td>
</tr>
<tr>
<td>GASEPV</td>
<td>5.4</td>
<td>0</td>
<td>5.4</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>17.7</strong></td>
<td><strong>0</strong></td>
<td><strong>17.7</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Runway 19</th>
<th>Day</th>
<th>Night</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A320</td>
<td>0.6</td>
<td>0.1</td>
<td>0.7</td>
</tr>
<tr>
<td>A320 NEO</td>
<td>0.6</td>
<td>0.1</td>
<td>0.7</td>
</tr>
<tr>
<td>ATR72</td>
<td>0.4</td>
<td>0.1</td>
<td>0.5</td>
</tr>
<tr>
<td>B738</td>
<td>1.9</td>
<td>0.4</td>
<td>2.3</td>
</tr>
<tr>
<td>B738 MAX</td>
<td>1.9</td>
<td>0.4</td>
<td>2.3</td>
</tr>
<tr>
<td>DHC840</td>
<td>4.5</td>
<td>0.8</td>
<td>5.3</td>
</tr>
<tr>
<td>E190</td>
<td>1.5</td>
<td>0.3</td>
<td>1.8</td>
</tr>
<tr>
<td>SF34</td>
<td>0.8</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>GASEPF</td>
<td>6.5</td>
<td>1.1</td>
<td>7.6</td>
</tr>
<tr>
<td>GASEPV</td>
<td>4.8</td>
<td>0.9</td>
<td>5.7</td>
</tr>
<tr>
<td>LEAR45</td>
<td>0.3</td>
<td>0.1</td>
<td>0.4</td>
</tr>
<tr>
<td>BECS8P</td>
<td>2.6</td>
<td>0.5</td>
<td>3.1</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>26.4</strong></td>
<td><strong>4.9</strong></td>
<td><strong>31.3</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Runway 25</th>
<th>Day</th>
<th>Night</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BECS8P</td>
<td>0.1</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>GASEPF</td>
<td>0.5</td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>GASEPV</td>
<td>0.2</td>
<td>0</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>0.8</strong></td>
<td><strong>0</strong></td>
<td><strong>0.8</strong></td>
</tr>
</tbody>
</table>
Figure 5.3 Modelled Flight Tracks and Historic Radar Tracks 2015
(Source: Airservices Australia Radar Tracks, 2015)

Legend
- Actual radar flight tracks
- Arrivals
- Departures
Figure 5.4 Arrivals and Departures – Townsville Airport
Figure 5.5 Arrivals and Departures – Townsville Airport
The allocation of flights to paths is based on the origin and destination of arriving and departing aircraft. Table 5.3 provides an indication of the city pairs flown in the last financial year.

Table 5.3 City Pairs

<table>
<thead>
<tr>
<th>City Pair</th>
<th>Departure Stage</th>
<th>Arrival Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alice Springs</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Brisbane</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Cloncurry</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cairns</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Gladstone</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Groote Eylandt</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Mt Isa</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Longreach</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Lawn Hill</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Melbourne</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Mackay</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Moranbah</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Rockhampton</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sydney</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

5.2.5 Runway Utilisation

Determining the runway usage for input into the ANEF calculation is important. Substantiating runway utilisation as close to real-time as well as taking into consideration future usage allows for a realistic and feasible output. As such, runway usage from the previous ANEF, NFPMS data and consultation with Air Traffic Control (ATC) has been taken into consideration. The figures (including approach, departures and circuits) applied previously included:

- RWY 01 – 70 percent
- RWY 07 – 22 percent
- RWY 19 – 8 percent.

Data for 2014 has been utilised. Current runway usage has been provided in the table below. Runway usage for each operation has been provided in Table 5.4, that is approaches, departures and circuits, followed by values for overall runway usage (inclusive of the three procedures).

Table 5.4 Runway Usage (NFPMS Reports, 2014)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>RWY 01</th>
<th>RWY 07</th>
<th>RWY 19</th>
<th>RWY 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach</td>
<td>65%</td>
<td>22%</td>
<td>12%</td>
<td>0%</td>
</tr>
<tr>
<td>Departure</td>
<td>82%</td>
<td>3%</td>
<td>13%</td>
<td>2%</td>
</tr>
<tr>
<td>Circuits</td>
<td>66%</td>
<td>29%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Overall (approach, departure and circuits)</td>
<td>74%</td>
<td>12%</td>
<td>13%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Published in the AIP are noise abatement procedures for Townsville Airport. The AIP states runway 19 is the preferred runway for landing and runway 01 is the preferred runway for departures. NFPMS data indicates that a majority of the time, 65 percent of aircraft land on runway 19 with 82 percent departing on runway 01.

Table 5.5 distinguishes the day / night split of runway usage applied in the previous ANEF (for comparative purposes) and what is current at Townsville Airport based on NFPMS data. The day period is defined as the time between 0700 and 1900 with night the period between 1900 and 0700.

It is assumed that limited general aviation aircraft operate during the night period and have therefore not been included. The night period consists of RPT movements.

Table 5.5 Runway Usage – Day (7 am – 7 pm) / Night (7 pm – 7 am)

<table>
<thead>
<tr>
<th>Runway</th>
<th>Previous ANEF Day</th>
<th>Previous ANEF Night</th>
<th>2036 ANEF Day</th>
<th>2036 ANEF Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>76%</td>
<td>24%</td>
<td>78%</td>
<td>22%</td>
</tr>
<tr>
<td>07</td>
<td>80%</td>
<td>20%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>19</td>
<td>80%</td>
<td>20%</td>
<td>84%</td>
<td>16%</td>
</tr>
<tr>
<td>25</td>
<td>-</td>
<td>-</td>
<td>100%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Totals may not add due to rounding.
5.3 Noise Management

Noise management of civil aviation operations at Townsville Airport is essential to minimising disruption and limiting annoyance to the surrounding community. Annoyance is defined as the level at which a member of the community finds the sounds received from an aircraft as interference. This perceived tolerance varies by individuals. To manage noise, there are various avenues which an airport can pursue in order to minimise annoyance whilst allowing for smooth flight operations. The land use planning framework for minimising noise is outlined in section 7.2.2 National Airports Safeguarding Framework. Various parties also play a role in the environmental ramifications of aircraft noise, this includes:

- TAPL
- The Defence
- Airservices Australia
- Townsville Airport Community Aviation Consultative Group (CACG).

Through the implementation of noise management strategies, the impact of aircraft noise can be effectively managed and ultimately can limit and minimise noise impacts on nearby residential communities which are exposed to such events.

5.3.1 Land Use Planning

The ANEF is the official forecast of noise exposure patterns around the vicinity of the airport constituting of contours underpinning the controls implemented by land use planning authorities. The system was developed as a land use planning tool aimed at controlling encroachment on airports by noise sensitive buildings. Under the ANEF system and as published in the AS2021-2015 the ANEF acceptability criterion has been provided in Table 11 ANEF Acceptability Criteria (Table 5.6).

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Acceptable</th>
<th>ANEF Zone of Site Acceptable</th>
<th>Conditionally Acceptable</th>
<th>Unacceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>House, home unit, flat, caravan park</td>
<td>Less than 20 ANEF1</td>
<td>20 to 25 ANEF2</td>
<td>Greater than 25 ANEF</td>
<td></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>
<td></td>
</tr>
<tr>
<td>School, university</td>
<td>Less than 20 ANEF1</td>
<td>20 to 25 ANEF2</td>
<td>Greater than 25 ANEF</td>
<td></td>
</tr>
<tr>
<td>Hospital, nursing home</td>
<td>Less than 20 ANEF1</td>
<td>20 to 25 ANEF</td>
<td>Greater than 25 ANEF</td>
<td></td>
</tr>
<tr>
<td>Public building</td>
<td>Less than 20 ANEF1</td>
<td>20 to 30 ANEF</td>
<td>Greater than 30 ANEF</td>
<td></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>
<td></td>
</tr>
<tr>
<td>Light industrial</td>
<td>Less than 30 ANEF</td>
<td>-</td>
<td>Greater than 40 ANEF</td>
<td></td>
</tr>
<tr>
<td>Other industrial</td>
<td>Acceptable in all ANEF zones</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1: The actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variation in aircraft flight paths. Because of this, the procedure of Clause 2.3.2 may be followed for building sites outside but near to the 20 ANEF contour. 2: Within 20 ANEF to 25 ANEF, some people may find that the land is not compatible with residential or educational uses. Land use authorities may consider that the ‘incorporation of noise control features in the construction of residences or schools is appropriate.
5.3.2 Curfews

There are currently no curfews that apply to the airport. Reduced night time flights are primarily a result of curfews that exist at other large airports with connecting flights to Townsville. As these other airports gradually redevelop, consideration of the likelihood of curfews being lifted elsewhere and the effects that this may have on Townsville will need to be considered.

5.3.3 Noise Abatement Procedures

Aircraft noise abatement procedures are in place at Townsville Airport. These are contained in the Townsville Airport (Aeronautical Information Package (AIP), applying to all aircraft arriving and departing where deemed appropriate. The AIP is published by Airservices Australia and can be accessed on their website via ‘Publications.’ Alternatively, hardcopies can be purchased from Airservices Australia and / or businesses facilitating the sale of AIPs.

The noise abatement procedures specify preferred runways for landings and departures. It also specifies preferred flight paths for each flight operation. Training aircraft have additional information available in the En-Route Supplement Australia (ERSA).

5.3.4 Noise Monitoring

Aircraft noise observations are routinely undertaken by the TAPL and Defence. The Defence provide NFPMs reports which are available for the public to view (Airservices Australia provide this data for other airports that do not serve as RAAF bases). These reports detail perceived noise levels at various noise monitoring locations. The flight paths, aircraft types, type of operation (arrival / departure / circuit) are provided for a holistic view.

5.3.5 Noise Inquiry

The Defence manages a toll free noise inquiry hotline for any community complaints for military aircraft whilst Airservices Australia address civilian aircraft concerns.

Aircraft noise inquiries received by TAPL are forwarded onto Airservices Australia to respond accordingly. TAPL and Defence work in partnership to respond to any public concerns.

5.3.6 Community Aviation Consultation Group

As part of the Commonwealth Government’s White Paper on National Aviation Policy 2009 (the Aviation White Paper) recommendations and subsequent Airports Act Amendment Bill, Townsville Airport has established a local CACG to help facilitate greater community consultation. The group helps enable greater community consultation on planning and development activities on the airport. Through community engagement the airport remains committed in cooperating with the local community as well as Local, State and Commonwealth Government representatives. This is achieved by taking a proactive approach through the CACG.

The CACG hold regular meetings where aircraft noise is discussed and CACG meeting minutes are available to the public on the Townsville Airport website.
6.0 AVIATION INFRASTRUCTURE

6.1 Introduction

Airfield infrastructure includes those areas used by aircraft to take-off and land, maneuver on airport land, load and unload passengers and cargo and to park when not in service. Key aviation infrastructure is also represented by the passenger terminal and access ways used by the public for RPT services. This represents a key factor of the airport’s civil aviation operations.

This Chapter outlines the extent of current aviation infrastructure and identifies future infrastructure requirements for the development of the airport. The likely development works program is discussed in Chapter 11 – Development Program.

6.2 Existing Infrastructure

The following subsections provide detail of the existing aviation infrastructure at Townsville Airport including runways and taxiways, apron and the passenger terminal as well as other aviation support facilities. This has been presented in Figure 6.1. Infrastructure discussed in this section refers to civilian aviation infrastructure unless otherwise specified.

6.2.1 Runways / Taxiways

There are two runways at Townsville Airport being:

- Runway 01/19 – main runway
- Runway 07/25 – secondary runway.

Runway 01/19 is 2,438 metres long and 45 metres wide and is equipped with a Category One instrument landing system (ILS). Runway 01 is considered a Code Four instrument precision runway and Runway 19 is a Code Four non-precision runway.

The runway is suitable for most aircraft operations although aircraft larger than Boeing 767 aircraft require a pavement concession. The runway strip is 2,558 metres long with a graded width of 150 metres, as published. The full runway strip width including the ungraded portion is 300 metres.

The secondary runway 07/25 is 1,100 metres long and 30 metres wide and is considered a Code Two instrument non-precision approach runway. The length, width and strength of this runway are adequate for light aircraft that use the runway in conditions of high crosswinds on the main runway.

6.2.2 Apron

Townsville Airport currently handles civilian aircraft including Airbus A321, A320, Boeing 737, Fokker F100, Bombardier Q400, De Havilland Dash 8 – 200 / 300, Embraer E170, E135, Saab SF340 and Cessna Caravan amongst numerous others. The listed aircraft are primarily used for RPT services. The remaining aircraft are generally light aircraft for various charter, courier, flying doctor services and personal flying operations. The current apron accommodates various aircraft types and their uses. The main apron for large aircraft can only accommodate aircraft up to Code C.

With the current configuration, the apron can accommodate up to six jet aircraft and three turbo-prop aircraft. There are three Code B/C stand-off positions for aircraft adjacent to the northern precinct of the terminal. In addition there are around 20 general aviation stand-off positions available. Helicopter facilities are also provided.

6.2.3 Terminal

The existing terminal building has a gross floor area of 16,700m². The ground floor of the terminal provides the majority of services including check in, security screening, international departure lounge, baggage collection, domestic departure lounge, Qantas Club lounge and a limited retail offering. The total floor area of the ground floor is 13,400m².

The first floor of the terminal is considered a mezzanine with an existing floor area of 3,300m². This area functions as the domestic departure upper concourse.
6.2.4 Aviation Support Facilities

A wide variety of civilian aviation support activities are accommodated at the airport in the vicinity of the TAPL corporate building area.

This includes TAPL management offices and workshop area, aviation and government offices, car rental facilities, freight companies, refuelling companies, flying schools, fixed wing aircraft maintenance facilities, charter companies, emergency and medical services, a flight catering facility amongst other aviation and commercial tenants. Car parking facilities are provided for all airport users.

Defence are responsible for the aeronautical aspect of the airport, that is air traffic control, non-directional beacon (NDB), airport lighting and a tactical air navigation (TACAN) system.

Aviation Rescue and Fire Fighting Service (ARRF) operations are the responsibility of Airservices Australia. They are also responsible for very high frequency (VHF) omni-directional radio range (VOR), distance measuring equipment (DME) and the ILS.

6.2.5 Freight

Freight from all aircraft is unloaded on the RPT apron area and transported by trolleys to the freight handling buildings which are currently located within the Aviation and Terminal Precinct.

Figure 6.1 Townsville Airport Lease Area
6.3 Overview of Proposed Development

In order to understand and establish the scenarios and options for the future development of the Airport and the Townsville Airport Master Plan 2016 – 2036 (the 2016 Master Plan), Townsville Airport commissioned the Terminal and Apron Planning Project in 2014. The project comprised a series of workshops hosted by an external consultancy agency which included representatives from TAPL, QAL and other consultants.

The process comprised two main elements, namely creating forecasts using domestic busy hour demand analysis to create passenger and aircraft stand (terminal and airside) requirements for the current period to 2036 and generating a number of options for terminal expansion to meet the needs of the different demand profiles over the period.

Assessments of existing and future requirements were subsequently developed to include the areas of opportunity and concern for current and forecast future capacity requirements. In the near to medium term, analysis indicated that as a minimum the existing domestic departures lounge would require attention in order to continue to meet the needs of the Airport and passengers.

It was subsequently decided following extensive evaluation of the options presented, that the terminal building development would be split into two stages; with Stage One (zero - five year requirements) being delivered by the end of 2018 and Stage Two (five-20 years requirements) being delivered by 2028.

The proposed changes throughout Stage One and Stage Two include:

- Extension of the upper concourse to provide two new club lounge facilities
- Extension of the ground floor to relocate engineering offices
- Reconfiguration of the existing international departure lounge to function as a swing international / domestic lounge for arrivals / departures area
- Rationalisation of existing underutilised office space to increase the overall capacity of the airside seating areas in the arrivals / departures area
- Upgrade and expansion of the security screening area to reduce landside congestion
- Rationalisation of the existing check-in area to accommodate additional check-in kiosks and/or Common Use Passenger Processing (CUPPs) facilities
- New escalator for access to upper concourse level to improve circulation and safety
- Contemporary retail offering airside that aligns with the current customer profile demands incorporating additional retail facilities
- Extension of the ground floor to provide additional baggage handling facilities to relieve existing areas of congestion.
6.4 Airfield Infrastructure Development

6.4.1 Capacity Monitoring

Based on forecast passenger busy hour demand, Stage One and Stage Two stand demand requirements have been developed to meet the current and future demands of both domestic and international flights. The airport currently has a total of up to six Code C, one Code B / C stand and two Code B commuter aircraft stands, with an additional three Code B stand-off apron facilities (Figure 6.2).

It is predicted that in order to meet the growing airport capacity over the period, the number of aircraft stands will need to increase to a total of 16 stands during Stage One (2021) and reach a total of 20 during Stage Two (2036).

6.4.2 Projected Developments (0-5 Years)

The first stage of apron development for the project is envisaged by TAPL to incorporate planning for balanced “whole-of-terminal” capacity, including airside developments.

Current and future forecasts anticipate that domestic flights will continue to dominate the mix of passenger aviation for the foreseeable future; however, international RPT services commenced in September 2015 and have slightly altered this mix from previous forecasts.

The demand analysis shows that international RPT flights could be serviced in conjunction with the domestic busy hour requirements and would not require additional Code C stands until 2017.

Figure 6.3 shows the option proposed for the next five years forecast capacity requirements. It can be seen that the total number of stands will increase from the current 10 RPT aircraft bays, to 13 RPT bays in 2021, and maintaining the number Code B stand-off bays.

Figure 6.2 Current Apron Layout
6.4.3 Projected Developments (Five to 20 Years)

Following the addition of three stands in the Stage One period, it is anticipated that this apron configuration will be able to meet the growth anticipated in traffic levels until 2026 when additional changes will be required. Figures 6.4 illustrates the final anticipated 2036 apron layout and the areas of pavement required to be strengthened to support that staged growth.

It can be seen in Figure 6.4, that an additional Code C stand are required to meet anticipated growth in aircraft numbers, including the potential addition of an elevated walkway to service the additional parking bays supporting inclusion of further aerobridges. Additional Code C stand-off bays are provided near the NAACEX precinct to increase capacity of the RPT active bays and support activities in the NAACEX precinct. With these additions, the total number of stands increases to 16 Code C bays and four Code B bays.

6.4.4 Defence

As a joint-user airport, Defence has also identified projects for development of the joint-user airside. The items which affect operations as a joint-user facility include:

- Runway extension
- Taxiway strengthening
- Taxiway widening and shoulders
- Aircraft wash bay.

Figure 6.3 Proposed Apron Layout Zero to Five Year Horizon
Figure 6.4 Proposed Apron Layout Six to 20 Year Horizon
6.5 Terminal Development

6.5.1 Planning Considerations

The key focus for Stage One terminal development works, is on delivering gains in performance, capability, facilitation and retail exposure that will deliver the greatest cost to benefit ratios. In the near to medium term, the differing requirements in international and domestic security, such as passenger screening, separation and border processing will dictate that some additional level of space in the terminal will be required to process and accommodate the growth of international flights.

In order to remain flexible into the future, TAPL has a strong preference for terminal facilities that make the most of shared international and domestic terminal areas wherever it is possible to do so. **Figures 6.5 and 6.6** show the existing layout of the ground and mezzanine floors, including the flow of passengers from international arrivals and departure (indicated in red) as well as the flow of domestic passengers (indicated in blue).

At present, all passenger processing facilities are located on the ground floor, with the mezzanine acting as a passageway to connect passengers with departure and arrival gates.

The current layout of the terminal has a number of possible constraints, for example, the Civil Area boundary is located such that expansion to the southern end of the terminal will be limited. Another constraint is the central location of passenger baggage processing equipment and plant.

Airport planning studies were undertaken to understand the current terminal capacity using forecast busy hour numbers, which were compared with the relevant measure of available terminal capacity (domestic and international). Whilst there were a number of areas requiring improvement from the domestic terminal capacity perspective, international elements of the terminal are sufficiently resourced in the near to medium term.
Figure 6.6 Existing Layout of the Mezzanine at Townsville Airport

Figure 6.7 Proposed areas of terminal redevelopment (target end of 2018)
6.5.2 Projected Developments (Zero to Five Years)

The redevelopment and expansion of the Airport terminal has been designed to ensure passenger number forecast demands are met for the next 10 years. The aim of Stage One of terminal development is to deliver improved locations and spaces for airline lounges, overcoming existing and future bottle-necks (at security, reclaim, departure lounge, and first level departure corridor) and providing passengers with suitable retail offerings and technology to improve their experience and facilitation as per Figure 6.7.

The following schedule is of key development objectives:

- New mezzanine airline lounges
- Expansion of the domestic departure lounge area
- Relocation of security screening and departure lounge exit
- Provision of common use self-service check-in and facilitation options
- Rejuvenation of existing terminal facilities to improve passenger experience.

6.5.3 Projected Developments (Five to 20 Years)

Stage Two of the terminal development planning envisages relocation of offices and Back of House (BOH) to allow for a connection from the relocated security in the south to the existing departure lounge. The space of the existing building footprint will be insufficient to accommodate the anticipated space requirements therefore expansion to the north will be required, as demonstrated in Figure 6.8. Proposed developments, triggered by passenger numbers, are listed as follows:

- Relocation of BOH offices and expansion of departure lounges
- Installation of second escalator to upper mezzanine
- Expansion of baggage handling facilities
- Expansion of arrivals hall
- Provision for additional aerobridges
- Reconfiguring domestic and international security processing.

Figure 6.8 Proposed Terminal Growth (For forecast demand of 2036)
7.0 Land Use Planning

7.1 Introduction

The TAPL lease covers an area of 82 ha and has been divided into various precincts according to the predominant existing and intended land uses. The 2011 Master Plan divided the airport into four precincts, which have been reconfigured for the 2016 Master Plan. The precincts are identified as follows and illustrated in Figure 7.1:

- Aviation and Terminal Precinct
- Northern Aviation Precinct
- Northern Australian Aerospace Centre of Excellence (NAACE) Precinct
- Enterprise Precinct.

The 2016 Master Plan represents a logical progression of the airport’s development based on pre-existing detailed planning. This includes any committed development that has been recalibrated based on revised assessment of economic opportunities, demand and planning policy considerations.

The airport has long been regarded as a significant Defence asset but is increasingly also seen as a strategically important civil aviation asset to help facilitate regional economic growth.

Townsville is already the largest city in Northern Australia with a population of approximately 190,000 people and is expected to have an annual population growth rate of approximately 1.9 percent between 2011 and 2031.

The airport’s role in servicing a large and growing urban area, as well as a vast regional space, has led to its recognition as an important regional transport hub. In addition, the airport is a recognised centre in its own right within the urban fabric of the city of Townsville.

The airport’s role as a regional hub has only recently been formally recognised within State policy frameworks. The airport’s recognition and potential to strengthen their role, also brings an increasing need to manage land use planning requirements affecting the airport. This includes:

- Maintaining compatibility between civil airport land uses and other external land uses
- Providing and managing core airport land for aviation infrastructure and services i.e. to maintain the functionality of the airport at all times
- Provide adequate additional land supply for complementary land uses that are able to support core aviation purposes i.e. Defence, RPT and GA flights and supporting services
- Maximise development readiness of airport land
- Ensure adequate services can be provided to airport land to maintain airport operability and realise additional beneficial development opportunities as they arise in an orderly manner
- Maintain effective integration of airport land uses through appropriate development area design
- Develop and maintain appropriate development standards that reflect statutory and reasonable community and business expectations
- Ensure that land use planning reflects and facilitates the strategic direction for the airport throughout the long term planning period
- Ideally provide a development planning framework that is equitable to the community, airport lease holder and airport businesses and which attracts investment.

This chapter discusses the planning intent for Townsville Airport, including strategic objectives, land uses and development control outcomes, pursuant to section 71(3) of the Airports Act.
Figure 7.1 Townsville Airport Land Use Precincts

LEGEND
- Joint User Facility Areas
  - Joint User Area
  - Military Area
  - TAPL Lease Area
- Residential Zones Category
  - Low Density Residential
  - Medium Density Residential
  - High Density Residential
  - Rural Residential
  - Character Residential
- Centre Zones Category
  - Neighbourhood Centre
  - Local Centre
  - District Centre
  - Principal Centre (CBD)
  - Specialised Centre
- Mixed Use
- Community Facilities and Open Space Zones Category
  - Sport and Recreation
  - Community Facilities
  - Environmental Management and Conservation
- Industry Zones Category
  - Low Impact Industry
  - Medium Impact Industry
  - High Impact Industry
- Rural Zones Category
  - Rural
- Other Zones Category
  - Emerging Community
  - Special Purpose
- Zone Precinct
- Zone Precinct Boundary
- Cadastre
  - Local Government Boundary
  - Suburb
- DCDB Townsville City Council
- Waterway or Waterbody

DATUM GDA 1994, PROJECTION MGA ZONE 55

Data sources:
- Townsville City Council Planning Scheme Zoning Map - © Copyright Townsville City Council, October 2014. (mosaic pdfs from TCC website for Townsville City Plan.)
- Joint User Facility Areas - Townsville Airport 2015. 1:40,000 (when printed at A4)
In addition to managing land use planning requirements affecting the airport, the airport must also always have regard for any long term Defence requirements. Whilst this can pose a number of constraints in terms of available land and managing some land use compatibility between potential civil airport / aviation support and nearby Defence land uses, it can also provide opportunities for civil airport land uses to leverage off Defence activities.

To ensure that these factors are considered, the master plan has regard for the following key documents potentially affecting land use planning:

- The White Paper on National Aviation Policy 2009 (the Aviation White Paper)
- Queensland Plan 2014
- Economic Directions Statement Queensland Airports 2013
- Defence asset planning announcements
- Queensland State Planning Policy 2014 (SPP)
- Defence White Paper 2016
- Townsville City Council City Plan 2015 (TCC City Plan).

Previous master plans for the airport have focused on undertaking proposed developments within a specified timeframe and stimulating commercial uptake of aviation support land within relevant precincts. This approach has proven to be overly optimistic after the effects of the Global Financial Crisis (GFC) and subsequent further decline in global commodity prices.

These external factors have undermined investor confidence and have softened economic activity.

The 2016 Master Plan has a strong strategic and outcome based focus for land use planning. It endeavours to identify and incorporate economic indicators as potential triggers for additional developments.

7.1.1 Heritage

A number of buildings located at Townsville Airport date back to World War II, however no buildings within the Civil Area are considered to be of heritage significance. Similarly, there are no items of Indigenous heritage value identified within the Civil Area to date and traditional owners of the land within the broader Townsville area have indicated that they are unaware of any sites of Indigenous significance within the Civil Area.

7.1.2 Tenure

The real property description of the Civil Area is Lot 2 in RP 748023, Lot 21 in RP 748033 and Lot 7 in RP 802404. The land is Commonwealth freehold land and is leased to TAPL on a 50 year lease with a 49 year option. The land is sub-leased by TAPL to a number of commercial operators and government agencies generally for variable term leases.

Key leaseholders for the civil lease area are shown in Figure 7.2. This information can be useful to facilitate the progression of development by identifying the readiness or otherwise of land for different aviation infrastructure, services or supporting commercial development in terms of potential tenure constraints.
Figure 7.2 Townsville Airport TAPL Sub-leases
7.2 Commonwealth Planning Policy

7.2.1 Land Use Planning

The Commonwealth Government retains responsibility for control over land use planning and development on airport land, including all leased land under the provisions of the Airports Act. Preferred land use outcomes are generally reflected in any master plan approved by the Commonwealth Minister for Transport.

The need for a Major Development Plan (MDP) is triggered for any development on Commonwealth airport land that meets any of the following criteria as outlined in section 89 of the Airports Act:

- Constructing, extending or altering a new runway (other than in the course of maintenance works), that changes flight paths, patterns or levels of aircraft noise
- Constructing a new building wholly or principally for use as a passenger terminal, where the building’s gross floor space is greater than 500m²
- Extending a building that is wholly or principally for use as a passenger terminal, where the extension increases the building’s gross floor space by more than 10 percent
- Constructing a new building, other than a passenger building, where the cost is greater than $20 million
- Constructing a new taxiway, which significantly increases the capacity of the airport to handle movements of passengers, freight or aircraft and the cost exceeds $20 million or such higher amount as is prescribed
- Extending a taxiway, where the extension significantly increases the capacity of the airport to handle movements of passengers, freight or aircraft and the cost exceeds $20 million or such higher amount as is prescribed
- Constructing a new road or new vehicular access facility or extending an existing vehicular access facility, where the construction significantly increases the capacity of the airport to handle movements of passengers, freight or aircraft; and the cost of construction exceeds $20 million or such higher amount as is prescribed
- Development of a kind that is likely to have significant impact on the local or regional community
- Development in relation to which the minister has given an approval under section 89a
- Development of a kind specified in the regulations.

TAPL has recently prepared an MDP for the expansion of the passenger terminal. This MDP was released for public exhibition in June 2015 and was approved by the former Minister for Infrastructure and Regional Development on the 11th of January 2016. Preparation of further MDPs are likely to be required for:

- Apron expansion areas within the Aviation and Terminal Precinct and Northern Aviation Precinct
- Passenger terminal forecourt vehicular redevelopment that has not been the subject of the Passenger Terminal MDP
- Relocation of GA and associated taxiway and apron redevelopment
- Future development likely to be affected by sensitive environmental factors identified in the airport environment strategy (AES).

The preparation of MDP is subject to requirements specified in section 91 of the Airports Act and is likely to affect individual precinct planning objectives and staging of some airport development. The need for developments requiring an MDP is likely to be triggered by the projected demand for aviation services.

Any MDPs must be considered by the Minister for Infrastructure and Transport following public comment and consultation as prescribed in the Airports Act. All developments are subject to formal building approval in accordance with the Airports (Building Control) Regulations 1996 (Cth), taking into account the consideration of the Airport (Environment Protection) Regulations 1997 (Cth) (AEPR).
### 7.2.2 National Airports Safeguarding Framework

The Aviation White Paper proposed the development of a national land use planning framework, namely the National Airports Safeguarding Framework (NASF). The NASF is part of the agreement by Commonwealth, State and Territory Ministers at the Standing Council on Transport and Infrastructure meeting on 18 May 2012.

The NASF is a national land use planning framework that aims to:

- Improve community amenity by minimising aircraft noise-sensitive developments near airports including through the use of additional noise metrics and improved noise-disclosure mechanisms
- Improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning through guidelines being adopted by jurisdictions on various safety-related issues.

The NASF Principles promote a national approach to improving planning outcomes near airports and under flight paths, noting that the responsibility for land use planning (outside of the boundaries of the major Australian airports) primarily rests with State, Territory and Local Governments.

The NASF Guidelines cover the following topics:

- Measures for managing impacts of aircraft noise
- Managing the risk of building generated windshear and turbulence at airports
- Managing the risk of wildlife strikes in the vicinity of airports
- Managing the risk of wind turbine farms as physical obstacles to air navigation
- Managing the risk of distractions to pilots from lighting in the vicinity of airports
- Managing the risk of intrusions into protected airspace of airports.

The Queensland Government already implements the NASF through its Queensland SPP and local planning schemes prepared by local governments. The TCC City Plan incorporates relevant NASF requirements as part of its suite of development outcomes adjacent to the airport. In addition, as a safeguard, the State planning minister can ‘call-in’ any development application to determine if where he decides that an inappropriate decision has been made.

### 7.2.3 State Planning Policy— Strategic airports and aviation facilities

The Queensland Government established State Planning Policy (SPP) to define specific matters of state interest in land use planning and development.

SPP ‘Strategic airports and aviation facilities’ was released by the Queensland Government in July 2014 Planning protects the operation of strategic airports and aviation facilities, and enables the growth and development of Queensland’s aviation industry.

Townsville Airport/RAAF Base Townsville is identified as a ‘strategic airport’ within the State Planning Policy. The SPP includes interim development assessment requirements to ensure that state interests are appropriately considered by local government when assessing development applications where the local government planning scheme has not yet appropriately integrated the state interests in the SPP.

The SPP is supported by a state interest guideline relating to ‘Strategic airports and aviation facilities’. The SPP includes a development assessment code for strategic airports and aviation facilities. Local governments (including the Townsville City Council) and development proponents are encouraged to use this code to assist in the integration of this state interest in both plan making and development assessment.

### 7.2.4 Building and Environmental Controls

Building approvals are obtained from the Airport Building Controller (ABC), who is appointed by the Secretary of the Department of Infrastructure and Regional Development (DIRD) under the provisions of the Airports Act.

All development is assessed on individual environmental risk under the development guidelines.CEMP’s are required for all development projects.

All building development is required to be approved by the ABC prior to construction. The ABC must ensure that any such development is consistent with the provisions of the approved Master Plan. This is discussed further in Section 7.4.
7.3 State and Local Planning Policies

Consistent with the intent of the revised section 71 provisions of the Airports Act, the 2016 Master Plan is expected to much more profoundly reflect the alignment between the stated specific development objectives and the overall strategic intent of the plan as a whole.

The 2016 Master Plan also seeks to ensure development approval processes for the Civil Area are aligned with State processes to maintain cohesion between broader strategic planning directions for the Townsville region.

7.3.1 Queensland State Planning Policy

The Queensland planning system is an integrated system that is driven through the *Sustainable Planning Act 2009 (QLD)* and the *Sustainable Planning Regulation 2009 (QLD)*. The Queensland SPP applies state-wide and influences the preparation of regional and local planning instruments (i.e. including local planning schemes). The provisions of the SPP need not be regarded for development approval purposes where a planning instrument is deemed by the state planning minister to have appropriately incorporated the provisions of the SPP.

This has recently been the case for Townsville City Council’s adoption of its Planning Scheme in 2014. Any subsequent amendments that may be made to the SPP will require consideration in addition to the Planning Scheme provisions for any development that is not located on airport land.

Airport planning matters are dealt with in the ‘Strategic Airports and Aviation Facilities’ section of the SPP, which recognises the importance of certain Queensland airports as strategic airports, including Townsville Airport, as well as articulating the ‘state interests’ through a range of requirements that apply to the making of planning schemes.

These requirements include:

- Facilitating development surrounding strategic airports that is compatible with, depends upon or gains significant economic advantage from being in proximity to a strategic airport, or supports the airport’s role as a freight and logistics hub

Protecting strategic airports by ensuring:

- Development and associated activities do not create incompatible intrusions or compromise aircraft safety in operational airspace
- Development avoids increasing risk to public safety in public safety areas
- Development mitigates adverse impacts of aircraft noise and is compatible with forecast levels of aircraft noise within the 20 ANEF contour or greater of strategic airports
- Protecting aviation facilities by ensuring development and associated activities within building restricted areas do not affect their functioning
- Identifying and protecting key transport corridors (passenger and freight) linking strategic airports to the broader transport network
- Including the SPP Code: Strategic Airports and Aviation Facilities (Appendix 5 of the SPP) or similar development assessment requirements.

Specific development assessment criteria for development outside of airport Commonwealth land are addressed in Appendix 5 of the SPP which include provisions for:

- Operational airspace
- Physical and transient obstructions
- Lighting and reflective surfaces
- Emissions
- Wildlife hazards
- Protection of aviation facilities
- Public safety areas
- Aircraft noise (i.e. application of ANEF to determination of compatible development).

Further detailed guidance regarding the application of SPP requirements concerning planning for strategic airports and aviation facilities is provided in the SPP.
7.3.2 TCC City Plan 2015

While the airport land is not statutorily affected by local planning scheme provisions, the plan should clearly demonstrate its regard for local planning scheme requirements, particularly in terms of strategic consistency as well as compatibility with any adjacent non-airport land use planning requirements. Opportunity exists for this requirement to be both reflected in the strategic intent of the master plan but also in the language that it uses to facilitate implementation of land use planning objectives.

The Queensland planning framework, which also determines all local planning scheme forms and some of the content, is very much a performance driven land use planning system that is driven by strategic directions and a range of planning outcomes.

The approach is best reflected in the Queensland Planning Provisions Version 4.0, which constitutes a statutory guideline under Queensland planning legislation. This general approach reflected in these planning provisions for local plan making should be incorporated into the 2016 Master Plan, where practicable.

This is particularly where the relevant outcomes are focused on the use of land for development that is not specifically reliant on aviation standards but is still able to demonstrate consistency with the provisions of the Airspace Protection Regulation which has been adopted to ensure the operational integrity of the Commonwealth airport is maintained.

Unlike a Queensland local planning scheme, an airport master plan tends to reflect a greater diversity of airport planning matters and can also be somewhat of a higher order document, thus reflecting development intent but still subject to further work being undertaken. This can be facilitated through the addition of listed land use strategies for the plan’s overall strategic intent as well as specific outcomes grouped on a precinct basis.

The TCC adopted its new local planning scheme (the TCC City Plan) following extensive public consultation, review by the State and the approval of the state planning minister. The Planning Scheme in conjunction with the assessable development criteria and provisions under the Sustainable Planning Regulation 2009, identifies the suite of development assessment criteria for all development that is under State jurisdiction.

Notwithstanding that, development within Townsville Airport is not statutorily affected by the Planning Scheme, the airport is identified as a Specialised Centre Zone within the context of the city’s overall planning framework. The Planning Scheme’s Strategic Framework recognises the city as the ‘second capital for Queensland’.

The existence of and economic development prospects for Townsville Airport represents a key facilitating factor for the Planning Scheme’s strategic intent. This is also consolidated through the airport’s recognition as a specialised centre.

Specialised centres incorporate major nodes of activity with a specific and limited function. The centres are intended to support and not undermine other activity centres within the hierarchy.

Specialised centres, such as Townsville Airport, do not have the breadth of activities of other activity centres but instead provide specific higher order, regional and national functions catering for a specific market or technological role and provide significant employment.

Priority Infrastructure Plan

The Planning Scheme also includes a Priority Infrastructure Plan (PIP) which outlines the Council’s preferred trunk infrastructure upgrade requirements to cater for future development growth. This affects water, sewer, local roads and stormwater drainage.

While TAPL is not statutorily bound by the provisions of the Planning Scheme, the airport is dependent on trunk infrastructure provided by the Council.

While detailed infrastructure integration is largely an operational matter associated with infrastructure planning, the 2016 Master Plan should reflect a need for future development to be compatible with the Council’s infrastructure planning requirements to ensure that appropriate infrastructure can be provided in a timely manner for airport development.
7.3.3 Relationship between Airport Planning and State / Local Government Planning

While the provisions of the *Sustainable Planning Act 2009* (QLD) and *Sustainable Planning Regulation 2009* (QLD) are administered by the State (i.e. through the Department of State Development), the Planning Scheme provisions and development approval requirements are administered by the Council as per the processes provided for in the State’s legislation.

The Planning Scheme provisions do not statutorily apply to the airport’s land but provide useful strategic context for the airport and any of its future development through the details in the Strategic Framework sections.

The 2016 Master Plan has regard for both state and local planning requirements. This applies most readily at the ‘strategic level’ for both State interests and Council planning intent. While aviation related facilities and services are consistent with the Council’s Planning Scheme requirements, further detailed consideration will need to be given to the provisions of the Strategic Framework which may serve to limit the scope for other supporting commercial opportunities on airport land.

This is likely to especially apply to any forms of development that are presently seen to be more effectively provided for within the Townsville CBD. e.g. hotel accommodation, some office facilities and general retailing.

7.3.4 Stakeholder Forums

The Townsville Airport Community Aviation Consultative Group (CACG) was established by TAPL and coordinates feedback to the airport on a range of airport planning matters. This has included the preparation of the 2016 Master Plan.

Scope exists for other specialised (i.e. issue specific) planning forums to be established in future as the need arises. These may or may not report directly through the CACG depending on TAPL preferences.
7.4 Strategic Plans

Apart from statutory Commonwealth and State planning requirements there are a range of other non-statutory strategic land use plans and strategic initiatives that potentially influence the airport’s future planning through the 2016 Master Plan as outlined below.

7.4.1 Commonwealth White Paper on Developing Northern Australia


This was undertaken to recognise issues and possible directions to capitalise on Northern Australia’s opportunities to meet growing global markets for commodities, both in the sense of realising those commodities for export and also as a catalyst for regional economic and population growth.

The Green Paper identified the key role that further resources and agricultural development may be able to play in supporting new or expanded global markets and for the overall development of Northern Australia. Regional airport hubs with direct international connections are expected to play a significant role in helping to advance economic development aspirations and opportunities.

The Development White Paper sets out a clear, well-defined and timely policy platform for realising the full economic potential of Northern Australia, including a plan for implementing these policies over the two, five, 10 and 20 year horizons.

Within the White Paper, the Government expresses support and potential partnerships with the private sector to provide concessional loans to airports through the New Infrastructure Pipeline for Northern Australia.

The importance of connections to the Asia-Pacific region is highlighted throughout the paper, acknowledging the Government’s support with additional funding to enable the establishment of a permanent border agency at Townsville Airport. This support for international accessibility and expansion is supported by a number of local strategic documents and is supported by the future directions within this master plan.

The airport’s potential role in facilitating economic growth within Northern Australia is already identified and supported through TAPL’s vision for the airport.

The Townsville Airport Economic Study is expected to help test and quantify the likely economic benefits that may be expected from the airport’s role in assisting development in Northern Australia as well as an indication of any likely timeframe effects that may apply.

7.4.2 Economic Directions Statement Queensland Airports 2013-2023

The Economic Directions Statement Queensland Airports 2013-2023 is a non-statutory policy statement of the previous Queensland Government, prior to the 2015 State Election which outlined the strategic direction for Queensland’s airports. The policy still stands until changed by the current government and highlights the following points:

- Townsville is included as an airport of ‘economic significance’ that is regarded as a potential catalyst for growth not only in Queensland’s major industries of resources, tourism, construction and agriculture, but also associated industries such as aviation training and maintenance, repair and overhaul facilities
- Townsville Airport is regarded as an important source of employment to the region
- Townsville is identified as anticipating significant additional capital investment that will create significant opportunities for the airport to strengthen its contribution to the state’s economic development
- Airports are accepted as progressing towards becoming part of multi-modal transport hubs to meet the demands for more globalised business supply chains
- Potential exists for airports, such as Townsville, to leverage off opportunities for airports of military significance
- Townsville is specifically identified for its potential in providing civilian support services to Defence aviation needs with potential flow-on effects for other civilian aviation business development.
Townsville Airport is recognised for its ongoing dynamic general aviation maintenance activities and is expected to continue to play a key role in helping to facilitate North Australia’s industry development, notably for:

- Resources
- Tourism
- Construction
- Agriculture

Townsville Airport is expected to continue to play an important role in aviation passenger movement as the population of Northern Australia increases with an expected growth of approx 1.9 percent per annum until 2031.

Industrial precincts are generally regarded as an increasing positive reality for most airports. Scope exists in future for airports to consider commercial association and/or facilitation of new technical innovation services. e.g. application and servicing of ‘drone technology’.

Key strategic principles that the policy adopts include:

- Airport protection from incompatible development
- State government approval processes do not impose undue costs or other burdens on airport growth and operations
- Support for appropriate airport development plans
- Protection of key airport transport corridors
- Support for greater collaboration between airports to enhance state competitiveness and better influence Commonwealth Government policy.

Townsville Airport is already well integrated with other key regional airports through the QAL / TAPL corporate structure which operates a number of key airports. Overall, the airport provides a consistent and practical contribution to many of the state policy outcomes for regional and state economic development.

The 2016 Master Plan recognises the airport’s planned growth and future development in the context of the state’s economic development directions.

Key priority actions of the policy that are likely to have significance for the master planning of the airport, particularly in relation to the required relocation of GA facilities, many of which provide state / regional significant services, include:

- Provision of advice and assistance to airport owners regarding airport master planning
- Developing appropriate tenure arrangements for state reserve leasehold land on, and nearby, to existing Airport land that supports economic development
- Working with councils to address effective co-existence with local communities and industries
- Working to remove any obstacles to the growth of passenger traffic in ways that do not restrict the future growth prospects of GA and training providers
- Encouraging better coordination and more efficient use of airports
- Providing advice regarding State government funding programs that may support airport development.

7.4.3 North West Queensland Strategic Development Study

The North West Queensland Strategic Development Study 2014 (North West Study) was prepared by MITEZ through the North West Queensland Strategic Development Study Working Group. The outcomes of the study are aimed to assist governments and major investors to develop their future interests in the region in the best interests of the North West Community. The study focuses on many of the issues and opportunities that are being considered as part of the Developing Northern Australia initiative.

Strategic development priorities of the study include:

- New mine exploration and development
- Irrigation and intensified agriculture
- Energy generation, security and export
- Supply chain productivity, efficiency and reliability.

Townsville Airport, particularly with its direct connections to Mount Isa, Winton and Longreach as well as to other regional and capital centres plays a significant transport connection role over the large distances that are experienced across the regions. Future expansion of the airport’s facilities and services to help maintain and expand the preferred economic development of the regions is consistent with the intent of the study.
7.4.4 Townsville City Economic Development Plan 2013 – 2017

The Townsville City Economic Development Plan 2013 – 2017 (TCC Economic Development Plan) provides key economic focus areas for additional and / or sustained economic growth in Townsville, building on its existing strengths and opportunities. The airport and its associated potential for increased aviation industry is identified as a key aspect of the city’s economic growth. The airport is recognised as a crucial gateway for the region’s tourism, mining and defence sectors including through the facilitation of fly-in fly-out (FIFO) workforces for the North West and North East mineral provinces. The plan identifies potential for strengthening aircraft maintenance and aviation technology services at the airport as well as establishing new commercial air passenger routes.

7.4.5 Community Considerations

Community considerations include use of airport land for ancillary passenger and some airport services. This can include the following:

- Control of liquor
- Commercial trading
- Gambling

Issues arising from these types of uses can be regulated under State laws. While these matters are not likely to significantly affect the outcomes of the 2016 Master Plan, they should be referred to for completeness.

7.5 Development and Building Assessment Process

The development and building assessment process that is undertaken is consistent with the requirements of the Airports Act, the Airports (Building Control) Regulations 1996 (Cth) and Airports (Environment Protection) Regulations 1997 (Cth) (AEPR).

Consideration of land use development aspects is in keeping with a performance-based approach as utilised by the Queensland planning system. Development is required to be consistent with that which is outlined in the 2016 Master Plan and construction of building is to be consistent with the Building Code of Australia (BCA). Significant specific concerns for Townsville also include the application of construction standards that are appropriate for the location’s cyclone designation under the BCA. Townsville is located within Category C which is the highest risk rating for cyclones and their potential effects on building construction.

Table 7.1 Potential Actions for Airport Land Use Plans

<table>
<thead>
<tr>
<th>Strategy / Action</th>
<th>Stakeholder Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update of Townsville Airport Design Guidelines for built development to be consistent with the Master Plan 2016</td>
<td>TAPL</td>
</tr>
<tr>
<td>The guidelines to identify preferred building scale, heights, site coverage, architectural treatments, universal access requirements, security integration and should address interface issues with surrounding land uses. This includes landscape guidelines for any specific areas which focus on sustainable landscape principles, sensitive to local climatic conditions and any areas which showcase a variety of Northern Queensland plantings</td>
<td>TAPL</td>
</tr>
<tr>
<td>Preparation of detailed Precinct Development Plans in keeping with the agreed development program contained in the 2016 Master Plan (to be completed with TAPL)</td>
<td>TAPL GA consultative taskforce (to be established)</td>
</tr>
<tr>
<td>Priority is to be given to a development plan for relocation of GA to Northern Aviation Precinct</td>
<td>GA operators and Townsville City Council (infrastructure services).</td>
</tr>
<tr>
<td>Note: specific project development may require the preparation of an MDP under the Airports Act 1996 (Cth)</td>
<td>TAPL, TCC, Defence</td>
</tr>
<tr>
<td>Preparation of an Infrastructure Implementation Plan that proposes staging and indicative costing of required infrastructure and services to support airport development</td>
<td>TAPL, TCC, Defence</td>
</tr>
</tbody>
</table>
7.5.1 Airport Land Use Planning Principles

Previously, the 2011 Master Plan has identified a variety of different overall development objectives and outcomes for each of the Airport’s precincts. The land use planning principles within the 2016 Master Plan have been finalised to reflect changes in Commonwealth, State, local aviation policy and economic triggers to provide a stronger focus on strategic outcomes.

7.5.2 Airport Land Use Planning Actions

Airport land use planning actions are summarised below for the Civil Area and will guide future land use planning through the implementation of the 2016 Master Plan (Table 7.1). The actions relate to matters that TAPL or prospective lessees of TAPL may need to undertake to enable development to take place in a manner that is consistent with the Airport’s Strategic Intent Objectives, or in a manner which is likely to catalyse airport investment. Specific precinct strategies and actions are also identified in Section 7.9.

7.5.3 Townsville Airport Development Controls

As discussed previously, the Civil Area is divided into five precincts for the purposes of management and planning for future development. This section provides the overarching Development Controls that apply to all new development within the airport site, with the following section providing the detailed intent and development controls for each precinct aligned with the Strategic Intent objectives for the 2016 Master Plan.

Northern Australia’s Aviation based Business Portal

- The terminal is preserved as the public face of the Airport being a key tourist and business gateway to Townsville and Northern Australia
- Development provides safe and economically efficient handling of passengers, freight and related support activities
- Development is consistent with the showcasing of the airport as a gateway and hub for Northern Australia travel
- Development including transport access located on airport land that provides for the effective integration of the Townsville Airport precinct with other airport precincts
- Ensure that all development design is reflective of the airport’s gateway and hub status for Northern Australia and is consistent with adopted Airport Design Guidelines

Development should maintain:

- The overall visual character of the Airport, specifically the low-rise terminal building
- The view of Castle Hill on departing the Airport
- Development shall accommodate future expansion, new technologies and changes in operations, with minimal disruption to ongoing airport operations
- Development shall be user oriented and sensitive to the needs of the airline industry, passengers, employees and the community in general. The level of service, efficiency of operation, convenience, safety, security and impact on the environment will be primary considerations
- Development shall provide convenient and efficient facilities and services commensurate of the tourist market both in the terminal and landside developments
- Building and construction methods utilised for any proposed use/activity will incorporate, if deemed appropriate, noise mitigation measures to minimise aircraft noise impacts, in accordance with Australian Standard AS2021-2000 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction
- Development complies with the Disability Discrimination Act 1992 (Cth) and Anti-Discrimination Act 1991 (Qld)
- Development is consistent with an Airport Signage Policy.

Sustainable Tropical Design

- Development shall incorporate complementary tropical landscaping that is consistent with and reflects Northern Australian ecosystems
- Landscaping and open space areas are provided in prominent locations to complement the airport’s important gateway function
- Car parks should be well landscaped to avoid undue prominence and to reinforce the attractiveness of the airport as a gateway to Townsville and Northern Australia.
Capacity, Integration and Operating Efficiency

- Development is consistent with airport safety, navigation and emergency operational requirements
- Development will not penetrate the defined OLS for the airport pursuant to Airspace Protection Regulation or the JoCS pursuant to the Defence (Areas Control) Regulations 1989 (Cth)
- Development is undertaken in a manner that maximises passenger safety and convenience including ensuring that passenger movement areas incorporate appropriate shelter from weather and/or separation from aircraft other than for boarding or disembarking aircraft.

Safety and Security

- Development ensures the safety and efficiency of aircraft operations
- The taxiways and aprons shall be developed to ensure safe and efficient aircraft operations
- Development will not impact navigational aids or other civil aviation operational facilities.

Development will comply with all relevant national and international aviation standards and in particular shall be in accordance with:

- CASA NPRM IFR Minima and Low Visibility operations (targeted for implementation in June 2011)
- Relevant governing national regulations issued under the Air Navigation Act 1920 (Cth) and Civil Aviation Act 1988 (Cth) and associated Regulations.

Environmental Management and Compatibility

- Environmentally sustainable development principles and appropriate environmental controls form a part of any new development in accordance with the AES
- Environmentally sustainable tropical design principles form a part of all new development design
- Development is cognisant of the overall drainage program for Townsville Airport
- Development will not create a hazard or nuisance to airport operations or to neighbouring occupations
- Stormwater quality exiting the lease area shall accord with the AEPR.

Diverse and Adaptable Land Use Opportunity

- Development will not create a hazard or nuisance to airport operations or to neighbouring occupations, including military operations
- Development is to be commensurate with the available trunk infrastructure (water, sewer, drainage and local road network); additional infrastructure may need to be provided as part of the development where the demand for infrastructure is likely to exceed the available level of service for the precinct
- The development of leased land within the precinct will need to demonstrate adequate drainage including integration into the remainder of TAPL’s and the Council’s drainage networks.

Ground Transportation, Access and Car Parking

- Development must be consistent with the Ground Transport Plan and capacity of the road network. This may include the need for the provision of additional road network analyses as part of any development proposals
- Wheelchair accessible car parking spaces are identified, provided in convenient and accessible locations for passengers and reserved for such access
- Car parking for general public use is appropriately shaded.

Vehicle parking areas should be sited and designed in a manner that will:

- Not inhibit safe and convenient traffic circulation
- Result in minimal conflict between customer, employee and service vehicles
- Where reasonably possible, provide the opportunity for shared use of car parking and integration of car parking areas with adjoining development to reduce the total extent of vehicle parking areas and the requirement for access points.

7.5.5 Precinct Development Controls

Land use planning requirements for each of the airport’s precincts are based on development opportunities that have been identified in previous 2011 Master Plans and further supported by other detailed studies as part of the 2016 Master Plan preparation process.
The precinct planning provisions are intended to provide the principal basis for future decision making and are to be considered in addition to the overall airport strategic vision and intent.

The proposed precincts are generally those that were identified in the previous Master Plan, though the leased area has now been divided into four Precincts as shown in the **Figure 7.1**. Some modification to the precinct boundaries was required to better accommodate the future expansion of the passenger terminal and associated apron and taxiway modifications.

The proposed expansion of the passenger terminal and associated apron areas for RPT services and associated removal and relocation of existing GA facilities provides an opportunity to reflect these changes in the precinct names. It is proposed that the two parts of Aviation Precinct should reconfigured as follows:

- Combine the existing Aviation and Terminals Precincts to create the Aviation and Terminal Precinct
- Establish the Northern Aviation Precinct
- Rename the ‘Northern Enterprise Precinct’ to ‘Enterprise Precinct’.

The precinct planning provisions are recommended through the use of the following descriptions for each precinct:

**Precinct Intent**
Outlines the purpose of the precinct in terms of the airport’s overall development and any specific function that the precinct is to play.

**Preferred Development**
Outlines examples of preferred development. This list is not intended to be exhaustive. Ultimately any development will be required to comply with the specific outcomes for each precinct.

**Specific Outcomes**
Outlines specific planning expectations for each precinct that all proposed development is expected to comply with. The specific outcomes can include, but are not limited to the treatment of site issues, impacts within the precinct or other adjacent land, design issues, types of use and the infrastructure matters. Specific outcomes are performance based requirements which may be achieved by a variety of ways so as to focus on actual outcomes and enable appropriate innovation to assist outcome realisation.

**Land Use and Airport Management Actions**
Intended to outline any additional precinct-specific actions that may be required to be undertaken by either TAPL or proposed tenants wishing to undertake new development. The strategies are intended to address further detailed matters to better help facilitate development outcomes for the precincts or their effective operation in keeping with the strategic vision and intent for the airport as a whole. Strategies and actions are also identified in terms of their indicative timing.

Indicative timing for the proposed land use and airport management actions are also provided and include:

- Short term – one to five years
- Medium term – five to 10 years
- Long term – 10 to 20 years.

An indicative structure plan is also proposed for each of the precincts to identify the spatial arrangement of proposed land uses, services and linkages to other airport and external locations. The recommended structure plans are likely to require refinement prior to final inclusion into the master plan, subject to finalisation of further detailed studies and preliminary consultation with TAPL and other stakeholders.

In 2013, it was identified that part of the Airservices Australia building (Building 2) within the Terminal Precinct would need to be demolished to allow for improved internal road networks. At the time, it was believed that the building may hold heritage value and thus a cultural heritage referral was made to the Department of Sustainability, Environment, Water, Population and Communities (now known as the Department of the Environment) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act).

Through the cultural heritage referral, it was confirmed that approval from the Commonwealth was not required. The proposal is yet to be submitted to the Airports Building Controller for demolition approval.
7.6 Aviation and Terminal Precinct

7.6.1 Precinct Intent

The Aviation and Terminal Precinct (Figure 7.3) is the aviation gateway for visitors to Townsville and Northern Australia and provides all RPT-based airside access and essential services to RPT flights and associated freight movements. Development is focused on customer air transport needs including associated support facilities and acts as the interface between regional land-based activities and air services to the regions.

New development should provide or support core passenger air services and business and personal travel needs for all domestic and international customers. All new development must ensure the safety and security of aviation operations.

It is intended as part changes to the terminal precinct that general aviation activities will be relocated. However this is beyond the zero to five year planning horizon as identified within the current master plan.

7.6.2 Preferred Development

- Advertisements
- Aviation-related support industry
- Airport security facilities for management and control of passengers and associated baggage through the terminal and to and from RPT aircraft
- Car parking for passengers/or airport employees consistent with the agreed Ground Transport Plan including hire vehicle parking and associated administrative premises (e.g. booking facilities)
- Car rental, valet and vehicle storage
- Communications facilities
- Conference and meeting facilities for passengers and airport employees
- Fuel facilities for RPT services
- Licenced premises for RPT passenger convenience
- Offices for the administration and support of RPT passenger movements, security through the passenger terminal and airport administration generally.

Figure 7.3  Townsville Airport Aviation and Terminal Precinct Structure Plan
Passenger terminals and facilities including:

- Support commercial services to manage passenger movements, security and RPT services and retail services for passenger convenience
- Public transport facilities, including public bus and coach services, charter buses, taxis and limousines
- Runway-related activities / facilities
- Shop / retail, including cafes and shops within the passenger terminal space for passenger convenience
- Taxi holding area, amenities, fuel facilities.

7.6.3 Specific Outcomes

1. Development continues to improve the public transport interface to the terminal.
2. Development minimises walking distances within the terminal and between landside buildings. Wherever possible, shade should be provided in this precinct, specifically in the carpark area, to minimise climatic impacts on pedestrians.
3. Staff and long-term vehicle parking areas are located further from the terminal to promote shorter walking distances for short-stay passengers and visitors.
4. Land should be provided to expand the RPT apron and standby apron for RPT services and operations.
5. Development ensures the safety and efficiency of RPT passenger and aircraft movements including taxiing operations.
6. Development accommodates aviation related administrative and commercial facilities where required to support RPT operations.
7. Development accommodates freight courier and support facilities.
8. Aircraft movement areas shall be designed to complement the proposed passenger terminal expansion (short and long term).
9. Development shall accord with the building requirements outlined by Airservices Australia;
10. The taxiways, aprons, aircraft parking and run-up facilities shall be configured to minimise aircraft noise and other environmental impacts generally.
11. Access shall be strictly controlled and the precinct shall be secured from adjacent precincts where applicable, with appropriate security perimeter fencing incorporating access control measures and surveillance monitoring as necessary.
12. Development will not create a hazard or nuisance to airport operations or to neighbouring occupation, including Defence operations.

13. Development shall be cognisant of the overall drainage program for the Airport.
14. Stormwater quality exiting the lease area shall accord with the AEPR or an approved Water Quality Management Plan will be adopted to comply with section 4.01 of the AEPR.
15. Development should optimise the efficient use of the external road network to provide a separate and distinct general aviation road access.
16. The development potential of the Aviation and Terminal Precinct is constrained by its proximity to aircraft movement areas. As such clearance requirements and height limitations of development within the precinct apply.
17. Development provides for the temporary accommodation and facilitation of GA related services where such development is to help implement the eventual relocation of GA services or where such development is required for safe operation purposes and replaces existing development or infrastructure.
18. Vehicular access is achieved via existing internal roadways. i.e. Gypsy Moth Court and Viscount Drive.
7.6.4 Management Actions

Land use and airport management actions for the Aviation and Terminal Precinct are outlined in Table 7.2.

7.7 Northern Aviation Precinct

7.7.1 Precinct Intent

The Northern Aviation Precinct (Figure 7.4) is a new dedicated area which supports the region’s GA service needs. Development is dedicated to the provision or support of a range of GA services through a range of modern facilities.

Development within the precinct does not compromise existing or future GA requirements for the region. While being separately focused on GA services, all development demonstrates a high level of practical integration with other airport precincts, notably the Terminal Precinct to facilitate interchange of passengers. Development within the precinct is a model for regional GA service provision through facilities that enable a high level of connection to the regions and integration with the passenger terminal and other services offered by Townsville.

7.7.2 Preferred Development:

- Aircraft parking including for government, non-government organisations, commercial charter and private GA purposes
- Apron areas for aircraft parking including for fixed wing and helicopter GA
- Car parking for GA operators or customers
- Fuel facilities for GA services
- Maintenance facilities to service GA based flights throughout Northern Australia
- Offices to administer a range of regional GA services operated from the airport, including joint user facilities
- Passenger terminals and ancillary amenity buildings
- Runway-related activities / facilities
- Taxi holding area, amenities, fuel facilities
- Small-scale retail facilities intended to support GA customers.

7.7.3 Specific Outcomes

1. Vehicular access to the precinct is generally via the Old Common Road.
2. Development is appropriate for the level of trunk infrastructure services that are supplied to the precinct, infrastructure is upgraded appropriately prior to any development being occupied or utilised.
3. Development is appropriately constructed to ensure adequate safety for property and people using the precinct in terms of storm surge risk and any associated flooding or potential damage.
4. All development is in accordance with an integrated development plan that seeks to maximise the effectiveness of GA service provision from the airport.
5. Development is of a character that is of a low scale and is reflective of the predominantly undeveloped surrounding area.
6. Development provides for a high level of service integration including potential shared usage of buildings and other facilities.
7. Development integrates with other aviation services development (e.g. helicopter services) that may not be located on airport land.

Table 7.2 Aviation and Terminal Precinct - Land Use and Airport Management Actions

<table>
<thead>
<tr>
<th>Land Use Planning and Airport Management Strategies and Actions</th>
<th>Indicative Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finalisation of Passenger Terminal Forecourt plan including proposed passenger vehicle, taxi, coach and rental car hire facilities, including car parking arrangements</td>
<td>Medium term</td>
</tr>
<tr>
<td>Precinct boundaries are to be amended subject to finalisation of GA Relocation Implementation Plan</td>
<td>Short to medium term</td>
</tr>
<tr>
<td>Formation of GA Relocation Taskforce for the required relocation of GA services and preparation of a strategy and plan(s) for implementation, including staging plan</td>
<td>Short to medium term</td>
</tr>
<tr>
<td>Preparation of detailed apron and any aviation services design, obtain any necessary approvals</td>
<td>Medium term</td>
</tr>
<tr>
<td>Prepare appropriate demolition plan for GA hangars including for management of asbestos, where applicable</td>
<td>Medium term</td>
</tr>
</tbody>
</table>
8. Development does not compromise the safe or efficient operation of other aviation services (i.e. including safety, lighting and communication services) or flights and associated taxiway usage.

7.7.4 Management Actions

Land use and airport management actions for the Northern Aviation Precinct are outlined in Table 7.3.

Table 7.3 Northern Aviation Precinct - Land Use and Airport Management Actions

<table>
<thead>
<tr>
<th>Land Use Planning and Airport Management Strategies and Actions</th>
<th>Indicative Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of a GA Relocation Taskforce to advise on appropriate strategy and plan(s) for GA relocation to precinct</td>
<td>Short term</td>
</tr>
<tr>
<td>Undertake site suitability investigations for future General Aviation development to determine:</td>
<td>Short to medium term</td>
</tr>
<tr>
<td>• Availability of adequate land area</td>
<td></td>
</tr>
<tr>
<td>• Affects from potential storm surge</td>
<td></td>
</tr>
<tr>
<td>• Need for fill</td>
<td></td>
</tr>
<tr>
<td>• Need for further land acquisition</td>
<td></td>
</tr>
<tr>
<td>• Trunk infrastructure requirements</td>
<td></td>
</tr>
<tr>
<td>• Determine site preparation costs for GA development</td>
<td></td>
</tr>
<tr>
<td>• Obtain necessary approvals</td>
<td></td>
</tr>
<tr>
<td>• Liaise with Council regarding the provision of adequate trunk infrastructure including arrangements for the ongoing maintenance for the access road</td>
<td></td>
</tr>
<tr>
<td>Develop agreed concept plans for government/non-government organisations and separate charter service buildings, hangars and maintenance facilities</td>
<td>Short to medium term</td>
</tr>
</tbody>
</table>
7.8 NAACEX Precinct

7.8.1 Precinct Intent

This precinct is home to the Northern Australian Aerospace Centre of Excellence (NAACEX) (Figure 7.5). Development within the NAACEX Precinct is recognised for its specialised aero services to aviation within the region.

Development supports both ‘line’ and ‘deep’ maintenance services for civil and military aircraft through modern, purpose-built aviation facilities that integrate with the Aviation and Terminal and Northern Aviation Precinct and airport infrastructure. The focus of development in the precinct is on the provision of regional-level aviation support services directly associated with the operation and maintenance of a range of aircraft.

7.8.2 Preferred Development

- Aircraft hangar’s
- Aircraft maintenance buildings, including hangars and workshops for maintenance or repair of a range of civil and military aircraft
- Aircraft parking areas for maintenance related activity
- Aircraft support infrastructure and services, including for aircraft fuelling, parking and movement of aircraft between other precincts and core airport infrastructure (i.e. runways and taxiways)
- Ancillary office facilities for aviation maintenance hangars and other buildings
- Aviation-related support industry
- Aviation support vehicle parking, including for airport safety and infrastructure monitoring
- Car parking for precinct workforces and visitors
- Communications facilities
- Runway-related activities / facilities.
7.8.3 Specific Outcomes

1. Development that promotes Townsville Airport as the NAACEX.
2. Development that facilitates airside access to aviation support facilities.
3. Development that accommodates aircraft/helicopter maintenance facility proximate to taxiways and in the short term the general aviation apron long term access is incorporated in the Northern Aviation Precinct.
4. Development that supports aviation freight and other support services and facilities.
5. Development is constrained by the low lying topography of the land in this precinct and extensive site works and drainage should be accounted for in future development.
6. Development should maintain the overall visual character of the area, including design that is reflective of an aviation technology precinct and as a key part of the airport’s role as the aviation hub for Northern Australia.
7. Development will recognise the potential ongoing need to preserve military support operations and ensure that such development does not work counter to the airport’s military functions.
8. Development shall be cognisant of the Airservices Australia cabling currently located under the area flagged for future apron and hangar areas, ensuring its compatibility or agreed relocation of the cabling in accordance with CASA and TAPL requirements.
9. Vehicular access into this precinct is from John Melton Black Drive via Wirraway Drive.
10. Development is to be compatible with a more extensive internal road network which will facilitate circulation in this precinct and includes extensions to Wirraway Drive, Mustang Court and other new roads.

7.8.4 Management Actions

Land use and airport management actions for the NAACEX Precinct are outlined in Table 7.4.

7.9 Enterprise Precinct

7.9.1 Precinct Intent

The Enterprise Precinct (Figure 7.6) provides a range of aviation commercial support services as well as business and training support services to the operation of the airport generally, including its other precincts.

Development located along John Melton Black Drive is intended to showcase the airport’s aviation support for commercial development for Northern Australia.

![Figure 7.5 Townsville Airport NAACEX Precinct Structure Plan](image-url)
7.9.2 Preferred Development

- Advertisements
- Aviation catering facilities for RPT and GA services
- Aviation-related support industry
- Aviation services, including fuel storage where such facilities are located away from direct frontage to John Melton Black Drive
- Car rental servicing and holding facilities for private vehicles
- Fast food outlet
- Freight and distribution centre
- Hotel
- Light industry that is aviation related, i.e. manufacture or servicing of aviation parts
- Offices used to support aviation businesses at the airport or operating elsewhere in Northern Australia or commercial activity that has a strong reliance on aviation travel to facilitate their business activities and for regional tourism
- Retail facilities, including small shops and cafes to support existing business activity
- Recreation and amenity facilities for airport employees
- Service station to support airport based vehicular traffic including rental cars
- Shop
- Short-term accommodation
- Training facilities for aviation related purposes and other businesses at the airport
- Warehousing and small scale wholesale distribution facilities for aviation freight through the airport

Table 7.4 NAACEX Precinct - Land Use and Airport Management Actions

<table>
<thead>
<tr>
<th>Land Use Planning and Airport Management Strategies and Actions</th>
<th>Indicative Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realignment of the boundary between the Aviation and Terminal Precinct and NAACEX Precinct</td>
<td>Short to medium term</td>
</tr>
<tr>
<td>Preparation of a Development Plan to demonstrate the preferred precinct lease and development arrangements, including road access and services location</td>
<td>Short to medium term</td>
</tr>
</tbody>
</table>

Figure 7.6 Townsville Airport Enterprise Precinct Structure Plan
7.9.3 Specific Outcomes

1. Development that is directly related to aviation support services and/or the management of rental car hire or other forms of car parking that is not located with direct frontage to John Melton Black Drive.
2. To the west of Wirraway Drive, development should facilitate airside access to aviation support facilities.
3. Sufficient development area is maintained and provided for along John Melton Black to enable the development of commercial development in keeping with the airport’s role as a diverse aviation business hub for Northern Australia.
4. Development continues to allocate priority to aeronautical activities where available land, in other precincts is limited.
5. Development of a light industrial nature is encouraged in this precinct, taking advantage of the precinct’s excellent access to the aviation transport network.
6. Development primarily accommodates non-aeronautical activities that meet the commercial objectives of the airport.
7. Development provides legible orientation to the principal street frontages, notably John Melton Black Drive and is of a high calibre design that is consistent with the adopted Airport Design Guidelines and Landscaping Guidelines.
8. Land within the precinct that is potentially constrained by the low lying and flat topography will need to demonstrate the suitability for proposed development including any requirement for fill. Filling of land will need to be undertaken in a manner that does not adversely affect adjoining development land or prejudice existing or proposed development from continuing or occurring.
9. Development for commercial, industrial and centre uses will have regard of the centres hierarchy and the need to appropriately integrate and be consistent with the strategic intent of the Council’s Planning Scheme.
10. Development will not create a hazard or nuisance to airport operations or to neighbouring occupation including Defence operations.
11. Development shall provide convenient and efficient facilities and services commensurate with the region’s aviation business needs including effective integration with the airport’s passenger terminal and other precincts.
12. Development will not create a hazard or nuisance to airport operations or to neighbouring occupation.
13. Development in this precinct shall be cognisant of the potential contaminated land located near the existing catering facility and ensure that any site works or construction is in accordance with relevant contaminated land remediation or use standards.
14. Public use carparks are well landscaped to avoid undue prominence and to reinforce the attractiveness of the airport as a gateway to Townsville and the North Queensland region. The majority of car parking that is associated with any commercial or light industrial development should be concealed within buildings to maximise the built form or open court yard-style landscaping to enhance the commercial amenity of the precinct.
15. Vehicular access into this precinct is from John Melton Black Drive, Viscount Drive or Wirraway Drive. Future provision for access off the proposed extension of Meenan Street will also be considered.
16. Car parking for tenant areas should be provided in the Enterprise Precinct.
17. Car parking for tenant areas should be provided in the Enterprise Precinct.

7.9.4 Management Actions

Land use and airport management actions for the Enterprise Precinct are outlined in Table 7.5.

Table 7.5 Enterprise Precinct - Land Use and Airport Management Actions

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</tr>
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</table>
7.10 Surrounding Land Uses

7.10.1 Land Uses Near the Airport

Townsville Airport is identified as a Specialised Centre under the Planning Scheme. The adjacent land to the east of the Civil Area consists primarily of low density residential development with some neighbourhood commercial businesses situated along Meenan Street between Clarke and Dearness Streets.

Land immediately to the south of the airport along Ingham Road is used for Medium Impact Industry uses including light scale industrial manufacturing, warehousing and vehicle sales. The land to the west of the civil lease area within the airport is land that is used for Defence purposes.

The land to the north of the Airport forms a part of the Town Common which is identified for environmental management purposes. This includes protection of natural low lying coastal wetland areas with connecting public access ways for pedestrian and bicycle users. Immediately to the north of the Town Common lie the coastal suburbs of Pallarenda with Rowes Bay situated at the southern end of the foreshore strip. Both locations consist of low density residential development. The foreshore area between Rowes bay and Pallarenda is popular amongst the public for a range of foreshore uses.

The intended land uses of adjoining land are reflected in the Council’s land use zonings in its Planning Scheme and are shown in Figure 7.7.

7.10.2 Townsville Central Business District

The Townsville Central Business District (CBD) is intended, by the Council, to be the principal activity centre for the city. This includes the location of key commercial business and human and commercial services as well as a range of cultural, sporting, entertainment and dining opportunities.

The CBD is located approximately five kilometres from the airport and is part of a well-defined centres hierarchy that forms a key component of the Council’s strategic and statutory land use planning for the city. The CBD is also intended to be a place for high density residential living both to realise land use planning efficiencies and to help rejuvenate the city centre.

Development outside of the CBD must not be in a form that could potentially compromise or undermine the long term viability of the CBD as effective centre. Development outside of the CBD, including the airport, is intended to compliment and not compete with CBD development. While aviation engineering and service businesses, including some office accommodation, are likely to be regarded as compatible development with the CBD, airport-based visitor accommodation (i.e. hotels) or non-aviation business related offices would not be regarded as development that is consistent with the Council’s centres hierarchy.

Although the airport is not under the jurisdiction of the Council Planning Scheme, its position as a strategic transport asset of the city and its partial reliance on the functionality of the city in influencing demand for aviation services to the city district and regions, warrants taking guidance from the Council’s centres planning in order to maintain strategic alignment with the City of Townsville.

7.10.3 Sensitive Development

Section 71a of the Airports Act requires that sensitive development be identified within a Master Plan. This includes the following uses:

- Residential dwellings
- Community care facility
- Pre-school
- Primary, secondary, tertiary or other educational institution
- Hospital.

Sensitive developments were not identified or mapped in the 2011 Master Plan but are indicated in the 2016 Master Plan in accordance with the provisions of the Act. The main sensitive developments are residential development located immediately east of the passenger terminal between Sunderland Street and Ingham Road, and also a primary school, preschool and aged care facility within the area (Figure 7.8).

The principal airport related effects to date on this area have been related to road traffic associated with passenger / worker travel to and from the airport. Changes to the local road network redirecting airport traffic solely onto John Melton Black Drive, other than for emergencies, is expected to significantly alleviate road traffic noise and improve safety.
Figure 7.7 Townsville Airport Surrounding Land Uses
Figure 7.8 Sensitive Land Uses in the Vicinity of Townsville Airport
Aviation noise is a matter which is expected to require ongoing management, especially for new development, in accordance with the NASF and Councils development controls, including accounting for the airports ANEF.

7.10.4 Obstacle Limitation Surfaces / Joint Obstacle Clearance Surfaces

Section 71(3) of the Airports Act outlines the effects on the OLS and the Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS) if development included within a master plan is to proceed. Protection of the airspace on the airfield and in the immediate vicinity of the airfield is required to ensure safe operation of aircraft and navigational aids by eliminating obstacles that may pose a hazard to flying aircraft.

Any changes in the proposed development for the 2016 Master Plan will either need to be compliant with existing OLS and PANS-OPS requirements or require further assessment in terms of aviation safety and the need for any changes in the declared airspace.

OLS (i.e. a civil procedure) and Obstacle Clearance Surfaces (OCS) (Defence determined) form agreed obstruction clearances prepared by Defence for the airport as a whole referred to as the Joint Obstruction Clearance Surfaces (JOCS) as shown in Figure 7.9. Regular assessments are undertaken by Defence to ensure that the risk of structures adversely affecting flight tracks is minimised.

JOCS are used in conjunction with other Defence height restrictions associated with facilities and structures to form declared areas under the Defence (Areas Control) Regulation 1989 (Cth) (DAC Regulation). The DAC Regulation areas for Townsville establish height limitations for development around the facilities, including the Townsville Airport. This information is used to regulate the height of structures on Commonwealth land by Defence and TAPL and by the State of Queensland for development outside of Commonwealth land through the SPP.

Queensland SPP mapping is provided by the Department of State Development which identifies height limitations around strategic airports, including for Townsville Airport.

Development that is not under State jurisdiction and is situated within the Civil Area must still have regard for the JOCS specified by Defence.

Development must include the following specific considerations:

- RADAR signal reflectivity
- Navigation aid infrastructure safety zones and signal direction
- Minimising sun glare from reflective surfaces
- Wind turbulence impacts during construction and of the finished facility
- Height limitations in respect of safety, efficiency and regulatory air services
- Height limitations including dishes and aerials in regard to air traffic control line of sight
- Thermal plumes or misting from roof vents
- Reduce airborne particulates that may arise as a result of construction and ongoing aviation operations
- Lighting that may illuminate above the horizontal.

7.10.5 Protection of Navigational Aids

CASA has the responsibility to provide and maintain navigational aids for civil operations. Defence also has its own facilities for defence operational purposes for which it has full responsibility. Facilities that have high electromagnetic or radio wave emissions may adversely affect the operation of such facilities and on-board aviation systems.

Lighting restriction areas for development outside of Commonwealth land is included in the SPP mapping with code provisions being included in Appendix 5 of the SPP. The provisions do not directly affect development on TAPL airport land. Such development is controlled by the ABC under the Airport (Building Control) Regulations 1996 (Cth). Consideration of the effect of proposed development on approach lighting and aircraft landing / take-off is a key consideration of the approval process.

Protection areas are also determined by CASA for the ILS. The ILS Building Restricted Areas apply to static objects such as hangars, other buildings, fences, towers and other above ground structures.

7.10.6 Hazardous Lighting

Hazardous lighting can pose an operational risk to aircraft that are landing and taking off and is regulated by CASA in accordance with the Civil Aviation Regulations 1988.

Development on TAPL lease land is required to be consistent with CASA requirements. This is an aspect that is normally considered at the detailed design phase for development although general consideration should also apply at a master planning stage.

7.10.7 Wildlife Strike

Wildlife strike can seriously affect aviation flights on take-off and landing. Restrictions have been put in place to limit the risk of incompatible development that may attract or encourage breeding of hazardous wildlife such as birds and flying vertebrates (e.g. bats) in the vicinity of the airport. This includes land uses involving the disposal of putrescible waste which should not be located with 15 km of the airport. NASF Guideline C relates to managing the risk of wildlife strikes in the vicinity of airports. Wildlife hazard zones are identified on SPP mapping for which development must comply with the code in Appendix Five of the SPP. The Queensland Minister for Planning has acknowledged that the Council’s Planning Scheme has duly adopted the provisions of the SPP.

Development likely to exceed the height limitations for specified zones shown in Figure 7.10 requires assessment against a code referred to in Appendix 5 of the SPP. The Queensland Minister for Planning has acknowledged that the Council’s Planning Scheme has duly adopted the provisions of the SPP.

Figure 7.9 Current Joint Obstruction Clearance Surfaces
7.11 Urban Development Strategy

MXD Urbis were commissioned to undertake a Commercial Development Strategy Study for Townsville Airport to provide the framework for future commercial development opportunities at the Airport.

The study identified that:

- The diverse local economy will only become more diverse in the future, as Townsville continues its evolution from regional centre to full metropolitan area
- The TCC are intending to reconfigure the CBD. This includes office, retail, accommodation uses, all of which have potential at Townsville Airport
- Due to Townsville Airport’s clear intent to cooperate with the local Council planning efforts, this provides a limit on the quantity and variety of development supportable at the Airport.

By identifying market, physical and financial conditions of the Townsville Airport, the report assisted in identifying the opportunities and priorities for urban development on the airport land.

The following development opportunities have been identified for the Airport including:

- The expansion of existing activity at Townsville Airport, most notably the NAACEX
- A retail service centre, with a petrol station and a variety of convenience retailing
- A hotel concept (different to the offering in the CBD) and supportive of an airport location
- An office development – however this is limited to tenants that would be unlikely locate in the CBD and that would benefit from a location at the Airport. This may include research and development-related activities
- An industrial development, particularly for service industrial uses such as self-storage and quasi-retail strata unit.

Over the next 35 years, the North Queensland region’s population is expected to grow by an average of 5,670 people per year to a population of 345,300 in 2050. As such, Townsville will grow from a regional centre to a small metropolitan area with associated growth and diversification of economic activity.
Figure 7.10 TCC Planning Scheme - Height Limitations
8.0 SERVICES & INFRASTRUCTURE

8.1 Introduction

Suitable service infrastructure is critical to supporting the successful operation of and allowing for future development of the Townsville Airport. TAPL is dependent on TCC’s infrastructure to provide these necessary services to the airport.

The airport is situated on Commonwealth land and is not bound by State or Local Government legislation, including those regulating the provision of trunk infrastructure. TAPL is required to negotiate the provision of services through formal agreements in order to ensure that orderly and adequately serviced development and growth can occur.

This includes accounting for any capital costs that may be associated with augmenting existing networks and ongoing charges for supply / treatment. The timing and potential staging of any required augmentation can also affect the ability of development to proceed in a timely manner in response to demand.

Apart from practical reasons to ensure effective integration with the Council’s infrastructure networks, section 70(2)(d) of the Airports Act requires potential land use conflicts between airport land uses and those on surrounding land to be minimised. Section 71(6) of the Airports Act also requires that the development objectives of the master plan are considered in terms of their consistency with the requirements of a planning scheme that applies to land near an airport.

Within the Queensland planning system, this also includes consideration of infrastructure planning requirements as reflected in a local government area planning scheme’s Priority Infrastructure Plan (PIP).

This chapter outlines current and future service infrastructure requirements for Townsville Airport.

8.1.1 Priority Infrastructure Plan and Infrastructure Charges Schedule

The Townsville City Council’s PIP addresses the provision of trunk infrastructure which could effect on the airport’s future development includes water, sewer, stormwater drainage and local roads. Charges for trunk infrastructure are calculated in accordance with Council’s adopted infrastructure charges schedule (ICS) within the relevant network catchment.

The infrastructure charges are calculated on different formulae for the different types of infrastructure, accounting for any existing infrastructure that is available and / or that has already been provided by a development. Charges are also indexed against consumer price indices annually.

8.1.2 Defence Infrastructure Services Integration

Infrastructure services, involving water, sewer and drainage in some instances are shared or integrated with Defence uses across the JUA. This creates an added dimension to the infrastructure planning for the airport in terms of the effects on the take-up rates of available infrastructure capacity and cost sharing for augmentation as well as maintenance of existing infrastructure.

While TAPL is not responsible for Defence’s infrastructure planning requirements it should have regard for any significant increase in Defence land uses, which may
have a bearing on the capacity of existing infrastructure and need for any upgrades. This includes in terms of the likely impact that this may have on development opportunities within the Civil Area.

8.2 Existing Interests and Easements

The Civil Area consists of a parcel of land that has been divided into a number of separate sub-leases with the addition of internal roads, open and enclosed drains and a range of service conduits for power and telecommunications.

Services conduits are of particular importance especially where they include aviation services necessary for safe and efficient aircraft operation.

8.2.1 Pre-existing Leases

Additionally, the Civil Area is divided into land that is for core aviation purposes (i.e. administered by TAPL) and sub-leases (with TAPL as the lessor and individual lessees who are undertaking the use of the land) for a range of aviation support purposes, including aircraft maintenance, general aviation (GA) uses, rental car hire and catering.

8.2.2 Easements

There are no formal easements across the airport’s land. Easements are usually for state provided services which do not always require a formal easement.

Access for service corridors or for commercial operator access purposes are formalised through sub-leases and other agreements by TAPL and the relevant parties.
8.3 Services

8.3.1 Water

The Civil Area receives potable water through Townsville City Council’s trunk water system. The recent review of water infrastructure trunk capacity and services identified that:

- Council supply of water is not adequate for current peak demand periods and work with Townsville City Council is underway to provide a new trunk water main to the Terminal and Aviation Precinct
- Water pressure and flow issues exist within the Northern Australia Aerospace Centre for Excellence (NAACEX) Precinct and there are issues with the capacity of the TAPL network to service the northern parts of the Civil Area
- Compliance upgrades will be required for the fire system to meet current standards with any new building work
- Some areas of the water main experience high incidences of pipe breakage indicating they are in need of replacement
- Lack of adequate valve isolation capability
- Need to upgrade potable water supply to future development areas

The above findings do not include any investigation of the precinct area designated for potential future general aviation services in the Northern Aviation Precinct. A detailed network analysis should be undertaken for this location, subject to further site suitability and development concept investigations being undertaken.

8.3.2 Waste Water Disposal

The Civil Area is connected to TCC’s reticulated sewerage system. Waste-water generated on airport land has an outfall to a common rising main within the Military Area which is then conveyed to the Cleveland Bay Outfall through the Council’s trunk sewer mains.

Investigations into the existing waste-water services, primarily for existing developed precincts identified that:

- Capacity issues are being experienced in the shared TAPL / Defence pressure main, notably during periods of high flow from Defence resulting in compromised discharge flows
- Difficulty in accessing the existing main along its route due to drains, trees and other obstacles
- Gravity sewer main generally free of any significant capacity issues
- Operational issues in the low pressure collection system for the NAACEX Precinct, notably in relation to limited storage capacity for existing pump stations
- Requirement exists for review of storage and emergency provisions (e.g. alarms, connections to standby power systems) for the waste-water system
- Sewerage system will require extension for new developments.

Defence usage of the waste water network can have implications on TAPL’s ability to progress future development plans where capacity or efficiency limitations exist. To ensure that infrastructure planning is aligned, TAPL will continue to work closely with Defence. There have been no investigations for the Northern Aviation Precinct or parts of the Enterprise Precinct. Detailed network analyses will be required in order to demonstrate site readiness for development in these locations, both for prospective investors and the Council (particularly in terms of reliance on its trunk sewer network).

8.3.3 Stormwater Drainage

Drainage represents an important aspect of the airport’s operational requirements. The importance is further exacerbated by the flat terrain of the airfield and the surrounding landscape especially during periods of heavy rain when flooding can occur. Additionally, the low elevation of the airport above sea level makes parts of the airfield potentially susceptible to the effects of storm surge. This includes both airside and landside parts of the airport.

The TAPL internal drainage network facilitates stormwater flow from the Jointly Used Area and neighbouring residential areas to the south, east and west to Mundy Creek in the north-east.

The effects of new development on drainage patterns within catchments are a key consideration of the Council and State and can have significant impacts on the siting and cost of proposed development. Development that is associated with airport uses has the potential to include significant areas of additional hardstand which can lead to significant increases in the amount and rate of runoff.

The Council has previously identified that its drainage network in the Garbutt catchment is regarded as
inadequate at the areas adjacent to and including the airport to meet current needs.

Further detailed network assessment, notably with respect to the receiving drainage network, is required. Additional development that is likely to significantly increase runoff and drainage surcharging will require augmented drainage to proceed. This is likely to involve widening of the drainage channels particularly at the outfall for the drainage catchment at Rowes Bay. Such works are most likely to be managed by the Council. The airport drainage network also has the potential to affect environmental management outcomes on airport land and is discussed further in **Chapter 10**.

TAPL will ensure that the future development of its land is fully integrated into the Council’s drainage planning for the catchments around the airport and that any costs that are likely to be associated with required augmentation works are recognised as a potential cost for the future development of its land.

A review of the existing and future drainage requirements identified that:

- Increased capacity of the detention basin that is located landside and to the south east of NAACEX, is required to accommodate further development of the NAACEX Precinct. This is also likely to apply to any additional development for the Northern Enterprise Precinct
- Gross pollutant traps are generally operating adequately
- Some apparent ponding exists in front of the passenger terminal during periods of heavy rain which needs to be rectified. Scope exists for this to be incorporated as part of any detailed design work for passenger terminal forecourt area improvement. There is significant inundation in areas of the long term car park during heavy rain adjacent to the constructed drains. This is largely affected by constraints to downstream flow within the stormwater drainage system which is managed by the Council
- There are apparent incorrect gradients adjacent to the eastern side of the GA area which causes ponding of drainage water
- Evidence exists of tidal inundation along the John Melton Black drain, the management of tidal water influx is regarded as a significant drainage management issue, notably during the wet season.

This includes the basin inadequacies apparent in the underground drainage pipe network, notably with respect to pipe sizes
- Detailed revised stormwater modelling and design is required for the airport’s development precincts in order to more effectively facilitate development occurring. This includes liaison with Council regarding its network management requirements.

### 8.3.4 Power

Townsville Airport is connected to the State power grid and also has standby generation. The airport has two separate feeders that originate from separate points in the network. The airport is connected to an 11kV supply with a 3MVA allowance. Less than 70 percent of this allowance is currently utilised allowing plenty of capacity for growth.

As a result of the connection to the State grid, the airport is subject to losses of power due to planned and unplanned outages. Standby diesel generators have been installed within the Civil Area to supply essential services during outages. The generators are used to supply emergency power for:

- Essential passenger Terminal operations
- Baggage handling and security screening.

The previous Master Plan identified the following potential future upgrades:

- An additional meter to the sub-station
- New sub-station central to future development in the NAACEX and Enterprise Precincts
- A new high voltage (HV) link to the Enterprise Precinct will be required upon commencement of the first power-intensive use
- Energy load assessments and possible improvement to power supply, specifically if landside development incorporates significant non-aviation users of power, will be investigated in the planning period of this 2016 Master Plan.

Power provision has generally been adequate for the airport’s needs over the past five years, primarily due to the depressed economic activity to that which was forecast in the 2011 Master Plan, resulting from the outcomes of the global financial crisis (GFC).

Increasing demands for energy efficiency and the
cost of electricity from grid suppliers has also focused attention on alternative, green-energy power supplies, which includes solar generated power. The likelihood of alternative power supplies to meet at least some of the airport’s power demands into the future is likely to be a matter of increasing interest to TAPL and its customers, many of whom increasingly have expectations of sustainable energy use for the stakeholders that they do business with.

An audit of the electrical distribution network and power assets on airport land was recently undertaken as part of the preparation of this Master Plan.

An overall planning approach for the staged upgrade of electrical power supply to the airport is recommended, and should consider the following:

- Improvements to the LV distribution are required for increased long term car parking, redevelopment of the passenger terminal, fuel facility relocation, catering facility relocation, increased public car parking and new GA area
- Improvements are required of the HV reticulation systems
- New standby generator system required as part of passenger terminal upgrade.

8.3.5 Telecommunications

The Civil Area is serviced by a range of landline and mobile service providers for telephone, mobile phone and internet services. National Broadband Network (NBN) services to the airport have recently been upgraded by Telstra. Telstra services are available to tenants of the terminal building and other businesses on TAPL land.

The Airport also has its own telecommunications services through the airport control tower operated by Airservices Australia. The tower is on Defence land and is not a responsibility of TAPL. Other telecommunications facilities are also all situated primarily on Defence or other Commonwealth land. Land around these facilities must remain protected from incompatible development.

The recent review of telecommunications infrastructure primarily related to the need to provide additional cabling, including via new routes to enable multiple paths of supply and higher capacity conduits to enable leasing of data. These changes have been recommended in order to improve the airport’s telecommunication
capability attractiveness for investors as well as ensure maximum efficiency for existing leaseholders.

8.4 Aviation Support Operations

Airside services include those considered necessary to ensure efficient and safe operation of aircraft while using Townsville Airport, high customer service levels to aviation travellers and efficient and safe handling of cargo and goods generally transferring to and from aircraft within the Civil Area.

These services represent an integral part of the airport’s operation and are considered to be core uses warranting priority planning for the airport’s future needs.

Key airside services offered within the Civil Area include:

- Catering facilities and services
- Aircraft refuelling
- Airservices Australia
- Freight / cargo handling
- Engineering and maintenance services.

An overview of the key existing services is provided below.

8.4.1 Catering / Cold Storage

Catering facilities for RPT services are located in the recently constructed Alpha Flight facilities on Coral Sea Drive (servicing Qantas and affiliated flights) and Sky Snacks (servicing Virgin and Rex) is located in old premises within the NAACEX Precinct and which must be relocated due to the age of the facilities.

Relocation plans are yet to be finalised and are likely to be influenced by the availability of development ready land at the airport. Alternative catering facilities may also be able to be provided through a range of potentially available industrial sites in Townsville. This would require transport to the airport for delivery to flights and may also have implications for temporary storage of catered meals.

Shops and businesses within the passenger terminal obtain all food and other supplies from Townsville local businesses and providers external to the airport. There is no separate loading bay for retail services within the passenger terminal. Shops within the terminal are both of a ‘stall type’ and separate shop area. There is limited capacity for the storage of goods or waste.

There are presently no cold storage facilities for general cargo purposes located within the airport. The need for cold storage is expected to be primarily influenced by any opportunities for perishable food export from Townsville, including as a result from any opportunities associated with the Developing Northern Australia initiative. At present there is no need for such facilities at the airport.

8.4.2 Aircraft Refuelling

Aircraft refuelling facilities for RPT and GA aircraft are presently provided through light tanker services. No in-ground fuelling connections are available to aircraft using the domestic airport services. Underground fuel storage is located immediately to the north of the existing Terminal which can be accessed by road tanker along John Melton Black Drive, Stinson Avenue and Avro Drive. The 2011 Master Plan identified relocation of the Joint User Hydrant Installation (JUHI), located adjacent to Avro Drive in the Aviation and Terminal Precinct, to a location within the NAACEX Precinct with new access point from west of Wirraway Drive.

The relocation of refuelling facilities has not yet occurred but is expected to become critical with the expansion of the passenger terminal and RPT apron areas.

Relocation of the airport’s GA operations will also require consideration of the provision of appropriate refuelling facilities.

While the intended provision of new facilities within the NAACEX Precinct may be appropriate for intended future RPT requirements, it is unclear whether this is also appropriate for future GA requirements.

8.4.3 Airservices Australia

Airservices Australia is currently situated in office premises located immediately to the east adjacent to the northern end of the Terminal. The offices are accessed by vehicle from Avro Drive. Airservices Australia provide important services to the region which include:

- Aviation Rescue and Fire Fighting (ARFF)
- Aeronautical data, including airport characteristics
- Domestic aviation telecommunications.

At other Australian airports Airservices provides tower
services to domestic aircraft. However at Townsville Airport these services are provided entirely by the Defence.

The relocation of the current Airservices Australia building is planned to make way for the Terminal and apron upgrades.

TAPL and Defence have recognised that that the current ARFF facility will also need to be relocated to ensure long term optimal services, with the final location yet to be determined.

8.4.4 Freight / Cargo Handling

Commercial freight and cargo handling for civil purposes is currently primarily facilitated through RPT flights. Townsville Airport also provides maintenance services to the operating airlines and facilitates considerable freight transport through Toll Group operating from the Airport site.

The majority of freight activity is tied to passenger aircraft movements. Cargo is usually small in nature and can be loaded and unloaded with passenger baggage. Additional cargo is also transported by Toll and charter services to regional locations. Cargo in these instances can be loaded / unloaded directly between trucks and aircraft. Transport vehicles currently use secure access off Avro Drive.

There are currently no specialised facilities for handling of different cargo types. Fresh produce is generally not handled through Townsville Airport, with most fresh produce flights (particularly international) being handled through Cairns Airport. Demand for domestic fresh foods produce to regional centres able to be serviced by Townsville is not expected to be a significant factor for the future. This is partly because of the small population size of many of the communities, their remoteness and greater and more practical ease of servicing by road transport.

Growth in agriculture for overseas export may have potential for increased aviation transport demand, particularly high value and perishable goods. Such potential is to be assessed as part of a more detailed economic assessment of the airport’s needs and potential impacts within the context policy frameworks for economic development in Northern Australia.

The need for additional freight handling facilities is expected to be subject to a more detailed assessment of projected demand for aviation freight to and from Townsville. The location of any additional cargo handling facilities in the future is also expected to be influenced by other likely land use requirements for the NAACEX as well as proximity to or integration with GA services. Future cargo handling warrants further monitoring of demand and potential further investigation in the medium to long term.
8.4.5 Engineering and Maintenance

Engineering and maintenance at Townsville Airport is currently provided as ‘line’ and ‘deep’ maintenance. Line maintenance involves maintenance that is carried out on the apron (i.e. on the line) and includes light checks of aircraft. Deep maintenance (or heavy maintenance) involves maintenance where the aircraft or its key components are taken apart and reassembled.

Line and deep maintenance services are provided as follows:

- Flying Colours Australia – represents the only remaining aircraft painting facility in Australia for both Defence and civil aircraft and can take up to A320 / B737 sized aircraft
- BAE Systems – a Defence deep maintenance specialist providing deep maintenance services for Chinook and Blackhawk Defence aircraft.

These services are currently located within the NAACEX Precinct. It is expected that these services will remain within the precinct with potential for their consolidation and / or increase in the diversity of services available.

Maintenance of aircraft has the potential to represent a significant regional service and business opportunity for Townsville Airport given its role as an existing hub for aviation in Northern Queensland. Potential may exist for this to increase as development in Northern Australia also increases.

Subject to more detailed economic consideration, it is likely that such demand will be more significant in the medium to longer term as the region progressively increases in population size and development.

Opportunities for aviation maintenance provision are also expected to be accentuated through the strong Defence presence in Townsville.
9.0 GROUND TRANSPORT PLAN

9.1 Purpose of the Ground Transport Master Plan

The purpose of the Ground Transport Master Plan is to provide:

- Guidance for future ground transport infrastructure development providing capacity to support growth and land use planning
- Ensure provision (both financial and land) is made for future infrastructure required
- Allow new infrastructure to be constructed in an orderly manner with minimal redundancy of infrastructure.

9.2 Existing Infrastructure

9.2.1 External Road Network

The TAPL lease area is connected to the external road network via John Melton Black Drive and Meenan Street. John Melton Black Drive can be described as a dedicated airport link road which in turn connects directly to the arterial road network. Meenan Street however provides connection to the airport from the arterial road network via residential streets. The road hierarchy for the surrounding road network and connections to the Airport is shown in Figure 9.1 as well as signal and roundabout controlled intersections.

The arterial roads shown in Figure 9.1 form part of the state controlled road network under the governing authority of the Department of Transport and Main Roads. Both Bundock Street and Woolcock Street generally provide two lanes in each direction with median separation. All other roads shown in Figure 9.1 are governed by TCC. All local roads provide a single lane in each direction.

9.2.2 Internal Road Network

The internal airport road network is shown in Figure 9.2 with respect to internal precincts.

9.2.3 Airport Access

Townsville Airport is currently accessible by two roads being John Melton Black Drive and Halifax Street. Currently over 60 percent of vehicular traffic accessing the airport travels via Halifax Street as opposed to John Melton Black Drive.

Figure 9.1 Existing External Road Network to the Civil Area
Direct access is provided to the Aviation and Terminal precinct via Halifax Street and John Melton Black Drive. Stinson Avenue connects the two access roads providing a two-way flow. Coral Sea Drive operates in a one-way loop from the intersection of Stinson Avenue / Halifax Street, along the front of terminal and reconnects with Stinson Avenue. The roadway along the front of the terminal divides into two where the roadway closest to the front of terminal is designated to taxis passing through the taxi waiting area and the other roadway designated to passenger pick-up and drop-off.

Access to the NAACEX Precinct is provided by Mustang Court from Wirraway Drive connecting to John Melton Back Drive which passes through the Enterprise Precinct.

9.3 Parking

9.3.1 Terminal Precinct

Designated parking within the Terminal precinct consists of short term, long term, rental, coach, and staff parking as shown in Figure 9.3. A taxi waiting area is also provided separate to designated taxi drop-off and pick-up areas. Parking along the front of terminal roadway is restricted to taxi drop-off and authorised vehicles whereas the passenger pick-up and drop-off share parking provided on both sides of the second roadway out from the terminal building. Emergency vehicle parking is provided at the far end of the passenger pick-up / drop-off area as well as the taxi drop-off area as shown in Figure 9.3.

Within the Terminal precinct there are three other private car parks, one of which is associated with the Townsville Airport Administration Office building and the other two are associated with freight and logistics businesses. Access to these car parks from Halifax Street is unrestricted.

On-street parking within the airport is prohibited however external to the airport four hour parking restrictions apply on Halifax Street.

Short term, long term, and premium long parking is paid parking.

The current terminal precinct parking supply and demand is summarised in Table 9.1.

<table>
<thead>
<tr>
<th>Car Park</th>
<th>Supply</th>
<th>Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Term</td>
<td>182</td>
<td>Underutilised</td>
</tr>
<tr>
<td>Premium Long Term Parking</td>
<td>114</td>
<td>Demand Exceeds Supply</td>
</tr>
<tr>
<td>Long Term</td>
<td>349</td>
<td>Meets Demand</td>
</tr>
<tr>
<td>Rental</td>
<td>250</td>
<td>Meets Demand</td>
</tr>
<tr>
<td>Staff</td>
<td>111</td>
<td>Meets Demand</td>
</tr>
<tr>
<td>Taxi Waiting</td>
<td>20</td>
<td>Meets Demand</td>
</tr>
<tr>
<td>Passenger Pick-Up / Drop-Off</td>
<td>16</td>
<td>Meets Demand</td>
</tr>
<tr>
<td>Taxi Pick-Up</td>
<td>8</td>
<td>Meets Demand</td>
</tr>
<tr>
<td>Taxi-Drop-off</td>
<td>19</td>
<td>Meets Demand</td>
</tr>
<tr>
<td>Emergency Vehicles</td>
<td>2</td>
<td>Sufficient Allocation</td>
</tr>
<tr>
<td>Airport Administration Office</td>
<td>15</td>
<td>Meets Demand</td>
</tr>
<tr>
<td>Freight and Logistics Businesses</td>
<td>23</td>
<td>Meets Demand</td>
</tr>
</tbody>
</table>

All other car parks within the airport are private or permit zoned areas.

9.3.2 Other Precincts

All other car parks within the airport are private or permit zoned areas. Parking associated with the NAACEX and Enterprise precinct along Avro Drive, Viscount Drive and Gypsy Moth Court is provided off-street with the majority of parking informal.

Table 9.1 Current Parking Supply and Demand at Townsville Airport
Figure 9.2 Townsville Airport Existing Internal Road Network

Figure 9.3 Existing Aviation and Terminal Precinct Parking
9.4 Public Transport

Currently no public bus routes service Townsville Airport. Public bus services are operated by Sunbus in Townsville. The closest route operating within the vicinity of Townville Airport is route 215 (and variant 205) along Meenan Street with a stop immediately north of Halifax Street approximately 560 m walking distance from the terminal building.

Various private shuttle bus services operate via the pick-up / drop-off area under a user licence agreement free of charge.

Taxi passenger drop-off operates via the dedicated taxi roadway closest to the terminal building free of charge. A channelised taxi rank facilitates passenger pick-up where taxis incur a surcharge for use of the airport facilities at a boom gate on exit.

9.5 Rental Cars and Valet Services

Rental car parking is located towards the northern end of the terminal building as shown in Figure 9.3. Each of the five rental car companies lease a number of parking spaces in the designated rental car park. A total number of 250 spaces are provided in this car park however not all these spaces are leased by the rental car companies. Currently no valet service is provided at Townville Airport.

9.6 Walking and Cycling

Pedestrian facilities within the airport include undercover walkways and pedestrian crossings. Undercover walkways along the front of terminal and connections to the long term and staff car parks provide shade and shelter from inclement weather.

John Melton Black Drive provides a sealed shoulder to accommodate cyclists access to the airport. A 40 km / hr posted speed limit applies to the airport internal road network which is closer to cycling speeds and allows vehicles and cyclists to share the road space safely. Bicycle racks are provided in the terminal precinct, however, no public shower facilities are available at the terminal.

9.7 Existing Issues Landside Transport

9.7.1 Airport Access via a Residential Street

Halifax Street is a residential street which provides approximately 60 percent of all vehicular access to the airport. The predicted growth in traffic associated with growth in airport operations will render access via Halifax Street, past residential frontages, unsustainable in terms of residential amenity. The reduced amenity results from loss of on-street parking, increasing traffic noise and difficulties associated with safe and efficient access and egress for residential properties.

9.7.2 Airport Access Capacity

A single sub-arterial lane with uninterrupted flow has a traffic carrying capacity up to 1,500 vehicles per hour. If traffic volumes increase as predicted (refer to Figure 9.1) and assuming a 70:30 directional split, a single inbound and outbound lane is viable until 2026 when a second inbound and outbound lane is required. This may be provided via two access roads providing a single lane in each direction as is the current configuration with access provided via Halifax Street and John Melton Black Drive, or a single road providing two lanes in each direction.

9.7.3 Halifax Street / Stinson Avenue / Coral Sea Drive Intersection

The intersection of Halifax Street / Stinson Avenue / Coral Sea Drive is a conflict point within the internal road network. Recently the priority of movement was swapped at the intersection so that Halifax Street traffic now gives way to Stinson Avenue traffic. Reasons for this change included:

• To reduce the frequency of queues extending from the intersection on Stinson Avenue blocking the short term and premium long term car park exit which occurred because Stinson Avenue was required to give way to over 60 percent of traffic entering the airport
• To encourage access to the airport via John Melton Black Drive by introducing a delay to vehicles accessing the airport via Halifax Street
• The intersection is also located at a critical point in the internal network where driver’s concentration is focused on wayfinding signage particularly for traffic approaching on Stinson Avenue where lane designation signage is not visible until on Coral Sea Drive. Changing the priority of this intersection
removes one decision making process from the Stinson Avenue traffic providing smoother traffic flow.

Since the change in priority at this intersection, there are residual safety concerns associated with vehicles travelling through the give-way intersection failing to slow if required to give way. The traffic associated with failing to slow is observed to occur outside of peak times and is therefore presumed associated with either short-cutting traffic or traffic destined for precincts other than the Terminal precinct.

The location of the intersection within the internal road network facilitates right turning movements onto Stinson Avenue. Traffic exiting Coral Sea Drive from the passenger pick-up / drop-off area wishing to exit the airport is then delayed by traffic on Stinson Avenue entering via Halifax Street. Not only this, the intersection at Halifax Street providing an exit from the airport generates a demand for right turning movements onto Stinson Avenue from Coral Sea Drive exiting the pick-up / drop-off area meaning that this traffic must give-way to traffic in both directions on Stinson Avenue resulting in queuing and congestion on Coral Sea Drive.

The location of the Halifax Street / Stinson Avenue intersection providing access to the internal road network makes wayfinding more difficult where drivers have to make a directional decision at the intersection as opposed to traffic entering via John Melton Black Drive where traffic passes all precincts and parking options on route to Coral Sea Drive and the passenger pick-up / drop-off area. Multiple entries may be confusing to drivers that do not visit the airport often.

The intersection of Halifax Street and Stinson Avenue also exhibits safety concerns with vehicles approaching on Halifax Street ignoring the change in priority movement to traffic accessing the airport via John Melton Black Drive.

9.7.4 Viscount Drive Intersection Safety

The intersection of John Melton Black Drive providing access to existing businesses along Gypsy Moth Court does not meet current design standards. Visibility on approach to this intersection from John Melton Black Drive is poor and the right turn storage length and width is insufficient to accommodate manoeuvres by articulated vehicles such as petrol tankers.

9.7.5 Short-cutting

The Halifax Street airport access facilitates residential traffic short-cutting along Stinson Avenue and John Melton Black Drive to and from Bundock Street. Stinson Avenue is intended as a low speed environment (40km / hr posted speed limit) to enable drivers to process wayfinding information. Whereas short-cutting traffic along Stinson Avenue tends to travel at higher speeds due to familiarity with the road network. For this reason, short-cutting traffic reduces the safety of the internal road network and contributes to the congestion on this road link.

9.7.6 Mixed Traffic through Terminal Precinct

The Halifax Street access to the airport internal road network requires drivers destined for the NAACEX precinct or Enterprise Precinct to travel via the Terminal precinct.

Drivers to the NAACEX precinct and Enterprise precinct are typically commuters, often daily passing through the Terminal precinct. This puts these drivers in a different mindset to Terminal precinct traffic who are often irregular patrons to the airport, unfamiliar with the road network and therefore preoccupied with processing wayfinding information whilst navigating the internal road network. As a result precinct traffic travels slower than commuter traffic passing through the Terminal precinct. For this reason it is best to separate precinct traffic to reduce driver frustration, maintain a low speed environment through the Terminal precinct and ultimately improve safety along Stinson Avenue.

9.7.7 Pedestrian Crossing Impacts

A key constraint to the existing airport road network capacity is the front of terminal pedestrian crossings. Currently pedestrians crossing the road in front of the terminal cause delays to vehicles including during daily peak periods when queues extend along Stinson Avenue. The flow on effect of queues on Stinson Avenue is the blockage of the short and premium long term car park exits. Drivers exiting these car parks have a limited time to exit the boom gate after paying at the ticket machine located at the terminal building.

The convergence of vehicles giving way to each other at the location of the pick up and drop off pedestrian
crossing further reduces the efficiency of pedestrian crossing capacity for vehicle movements causing a network constraint.

9.7.8 Circulating Terminal Precinct Traffic via Pick-Up / Drop-Off Lane

Vehicles are observed circulating Coral Sea Drive via the pick-up / drop-off lane and Stinson Avenue whilst waiting for passengers to arrive despite the availability of short term parking. Drivers elect to circulate in order to avoid paid parking where the majority of circulating traffic is assumed to be associated with Fly-In-Fly-Out (FIFO) or business passengers who travel on a regular basis.

Circulating traffic further compounds pedestrian crossing capacity issues at the pedestrian crossings situated in front of the terminal as discussed in Section 9.5.10.

9.7.9 Short Term Parking Underutilisation

Currently short term parking is underutilised. Vehicles, particularly at night are seen parked in the various other carparks within the airport, including the Toll car park and Townsville Airport Office car park, as well as on Halifax Street outside the airport.

Drivers are observed waiting in their vehicles for their passenger to call informing them they are on their way to the pick-up area. When the driver arrives at the pick-up area before the passenger and is moved on, the driver simply circulates as noted in Section 9.7.8. Again it is suspected that these vehicles parking in unauthorised car parks are waiting to pick-up FIFO passengers to avoid paid parking.

Various studies undertaken by Townsville Airports have identified Townsville as having a high proportion of meet and greet customers who park and meet incoming passengers in the arrivals hall. Even with these customers the short term parking is underutilised.

9.7.10 Short Term and Premium Long Term Parking Access Congestion

Currently the short term car park and premium long term car park are accessed from Coral Sea Drive prior to the pick-up / drop-off area and after the pick-up / drop-off area respectively. When queues on Coral Sea Drive extending from the pick-up / drop-off area occur, they delay access to the short term and premium long term car parks and discourage use. Vehicles accessing the premium long term car park having to travel via the pick-up / drop-off area further compounds the pedestrian crossing capacity constraint.

9.7.11 Front of House Security

The existing roadway designated for the use of taxis and authorised vehicles does not comply with best practice guidelines for front of house security. Currently there is no security point or physical barrier preventing an unauthorised vehicle entering the roadway closest to the front of terminal. In addition there is no physical protection preventing a vehicle from leaving the roadway towards the terminal building.

9.8 Existing Constraints

Existing physical constraints considered in the formulation of the ground transport master plan include:

- Communication Tower - The communication tower is situated within the existing rental car park. The relocation of this tower is to be avoided to reduce the cost of implementing the ground transport plan.
- Fuel Station - is located within the existing rental car park. The facility is to be relocated for safety and security reasons. The decommissioning and removal will take time and therefore its removal should not be a condition on implementation of the first stage (zero to five years) of the ground transport plan.
- Stinson Avenue - Stinson Avenue is the airports internal road network spine connecting John Melton Black Drive and Halifax Street. Changing the alignment of Stinson Avenue would change every access on Stinson Avenue and therefore is not considered a viable option for the short term. Relocation of Stinson Avenue should be considered at the time of the terminal extension, when other major road changes will be required.
- Terminal Building - Relocation of the terminal building is not feasible
- Distance between Stinson Avenue and the Terminal Building - The distance between Stinson Avenue and the terminal (approximately 130 m) is a physical constraint. Allowing for an offset from the terminal to the roadway, the remaining distance to Stinson Avenue is not conducive to the inclusion of an intersection mid-way, due to minimum intersection spacing requirements and the accommodation of weaving movements along this section.
• Halifax Street and John Melton Black Drive - Each of these roads provides a single lane in each direction therefore any changes to the internal road network must match in with the existing cross section
• Location of Airport Administration Office and Toll Business - The existing location of these facilities has been considered a constraint for the purposes of this study. Although it may be physically possible to relocate these existing facilities from the Terminal precinct, given that the administration office has recently been relocated and refurbished there are no plans to relocate these offices in this master planning period. The Commercial Development Strategy by MXD indicates a future plan to relocate the freight/logistics businesses to the commercial area of the airport. It is considered only as a possibility within the study period.

9.9 Stakeholder Engagement

A stakeholder engagement meeting was held on 23 June 2015 with representatives from the Department of Transport and Main Roads (DTMR), Townsville City Council (TCC), Airport, airlines and ground transport stakeholders in attendance. The key discussion topic focused on future airport access and the proposed extension of Meenan Street with the closure of Halifax Street by Townsville Airport shown in the zero to five year master plan.

Both DTMR and TCC wish to maintain an airport access from Ingham Road where alternative routes to the extension of Meenan Street such as the extension of Crowder Street or via the Defence base were proposed. Following this meeting the Defence base was consulted about an airport access via the Defence base and it was ruled out due to security reasons. Access via Crowder Street is an option although Crowder Street abuts the Defence base, the risk could be managed. It was noted however that diversion of airport traffic currently using Meenan Street and Halifax Street will introduce new impacts on residents along Crowder Street. In addition, established businesses along Meenan Street which rely on passing traffic generated by the airport will also be impacted by the diversion of airport traffic. Furthermore, this access to the Terminal precinct is unsustainable with respect to the airport internal road network operation as stated earlier within this report. For these reasons, the proposal to close off Halifax Street with the extension of Meenan Street remains in the master plan.

The feasibility of alternative access routes falls outside the scope of the airport master plan however discussion with DTMR and TCC are to continue beyond the master planning period.

A Crowder Street corridor was not included in the TCC city plan 2015 and this is further discussed in section 9.12.5 – Airport Access.

9.10 Future Parking Demands

Airport parking facilities need to accommodate the absolute peak of demand to provide adequate capacity. The peak may not occur on a weekly basis but may be annual, usually associated with an event such as the start of the Christmas holiday period. As a result, airport infrastructure is largely underutilised, however, failure to cater for peak demands may have financial and safety repercussions.

Currently over 90 percent of parking demand and traffic generated during the busiest hour is by the Terminal Precinct predominantly associated with passengers. Future transport infrastructure demands are therefore sensitive to changes in forecast passenger growth.
9.10.1 Terminal Precinct Parking Demand

In order to determine the peak demand for passenger short term parking, long term parking, passenger pick-up and drop-off, taxi pick-up and drop-off and car rental use, the following passenger survey information provides insight into the travel characteristics by Townville Airport passengers.

Passenger modal choice remains consistent over the last five years from 2010 with the following mode split:

- 44 percent Friend / Relative vehicle
- 10 percent Own vehicle
- 25 percent Taxi
- 11 percent Rental car
- 10 percent Other

Of those arriving by own vehicle or friend / relative the choice of car park also remains relatively consistent over the last four years with the following breakdown:

- 15 percent Short Term
- 9 percent Long Term
- 1 percent Other
- 2 percent Off-site
- 73 percent Did not park

Those that did not park used the passenger pick-up and drop-off facility. The duration of trip by local residents is as follows:

- 27 percent one to two days
- 37 percent three to seven days
- 15 percent one to two weeks
- 10 percent two to four weeks
- 12 percent longer than one month

The average party size at Townville Airport surveyed in 2015 was 1.6 passengers.

9.10.2 Short Term Parking

The demand for short term parking is dependent on the flight schedule during the busiest peak hour. If the flight schedule during the busiest peak changes then so will the timing, intensity and duration of the busiest peak.

Adopting the busiest hour yearly forecast by Airbiz in 2014 measured in passengers per flight, short term parking demand is expected to increase in 2016, 2021, 2026 and 2029 when new flights are introduced to the schedule during the busiest hour.

Noting that short term parking supply must cater for seasonal peaks the busiest hour total seat number is adopted for the purpose of calculating short term parking demand rather than passengers numbers at 80 percent of seat numbers. Even so, Table 9.2 indicates that there will be an oversupply of short term parking in the order of 98 spaces at the end of the master planning period, assuming passenger travel characteristics remain consistent.

Recognition of the meet and greet component of customers using the terminal building has been made in the recommendation of provision of 104 short term car parking spaces, above the projected demand based on passenger numbers.

Table 9.2 Short Term Parking Demand Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand</th>
<th>Difference From Existing Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(182 spaces)</td>
</tr>
<tr>
<td>2015</td>
<td>55</td>
<td>127 oversupply</td>
</tr>
<tr>
<td>2016</td>
<td>59</td>
<td>123 oversupply</td>
</tr>
<tr>
<td>2021</td>
<td>69</td>
<td>113 oversupply</td>
</tr>
<tr>
<td>2026</td>
<td>74</td>
<td>108 oversupply</td>
</tr>
<tr>
<td>2029</td>
<td>84</td>
<td>98 oversupply</td>
</tr>
</tbody>
</table>

9.10.3 Long Term Parking

The peak demand for long term parking occurs over a period of a month with passenger travel statistics suggesting the average trip duration is 12.2 days. Passenger travel statistics in Section 9.10.1 suggests the spread of passenger trip duration which is used to calculate the peak demand along with the monthly seasonal peak passenger numbers occurring in July 2015 with 148,175 passengers. However, it is assumed that trips longer than one month will not use long term parking.

Passenger growth is expected to occur at an average annual rate of 2.5 percent in accordance with Section 4.1. Growth during the peak season is typically less than annual growth since there is greater potential for growth out of peak season. It can be conservatively assumed that the peak season passenger numbers will grow at a rate of 2.0 percent per annum. Annual growth of passenger numbers results in annual increase in long
term parking demand unlike short term parking which is dependent on the busiest peak.

Calculated demand based on the monthly peak passenger numbers in 2015 reveals existing parking supply meets demand with an excess of 52 spaces. This is consistent with reports from Townville Airport staff. By 2021 it is anticipated that existing long term parking supply will reach capacity with an addition 161 spaces required to cater for peak demand by 2036 if passenger growth increases as forecast. (Table 9.3)

It should be noted that premium long term parking currently reaches capacity where the long term car park caters for overflow. Although long term parking supply currently meets demand until 2021, to increase revenue it is recommended that Premium long term parking is increased in the short term.

### Table 9.3 Long Term Parking Demand Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand</th>
<th>Difference From Existing Supply (463 spaces)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 – Existing</td>
<td>411</td>
<td>52 oversupply</td>
</tr>
<tr>
<td>2016 – start zero to five year master plan period</td>
<td>420</td>
<td>43 oversupply</td>
</tr>
<tr>
<td>2021 – end zero to five year master plan period</td>
<td>463</td>
<td>0 oversupply</td>
</tr>
<tr>
<td>2036 – end six to 20 year master plan period</td>
<td>624</td>
<td>161 shortfall</td>
</tr>
</tbody>
</table>

9.10.4 Staff Parking

Staff parking currently meets demand with no reports of staff parking demand exceeding capacity with an estimated oversupply of 10 spaces at any time. It is therefore suggested that the balance between supply and demand is correct and that only allowance for growth need be considered in the future. (Table 9.4)

The peak demand for staff parking coincides with the busiest hour when all aspects of the terminal building are operational including retail shops, food and beverage outlets, as well as additional customer service staff such as those patrolling the pick-up / drop-off areas.

Peak demand for staff parking is therefore expected to increase at the rate the passenger busiest hour increases in 2016, 2021, 2026, and 2029 when new flights are introduced to the schedule during the busiest hour.

It should also be noted that the expansion of the terminal building and introduction of international flights is expected to bring new opportunity for retail and food and beverage shops generating an increase in demand for staff parking at the commencement of use.

Busiest peak passenger forecasts reflect this growth with passengers numbers increasing by 18 percent between 2016 and 2021 well above the average annual passenger growth forecast of 2.5 percent per annum in accordance with employment projections for Townsville.

### Table 9.4 Staff Parking Demand Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand</th>
<th>Difference From Existing Supply (463 spaces)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 - Existing</td>
<td>101</td>
<td>10 oversupply</td>
</tr>
<tr>
<td>2016 + Terminal Expansion</td>
<td>109</td>
<td>2 oversupply</td>
</tr>
<tr>
<td>2021</td>
<td>128</td>
<td>17 shortfall</td>
</tr>
<tr>
<td>2026</td>
<td>136</td>
<td>25 shortfall</td>
</tr>
<tr>
<td>2029</td>
<td>155</td>
<td>44 shortfall</td>
</tr>
</tbody>
</table>

9.10.5 Public Passenger Pick-Up / Drop-Off

The demand for public passenger pick-up and drop-off parking is dependent on flight schedule during the busiest peak hour, similar to short term parking demand. If the flight schedule during the busiest peak changes then so will the timing, intensity, and duration of the busiest peak.

Analysing the current and forecast airport busy hours, measured in passengers per flight, public passenger pick-up / drop-off parking demand is expected to increase in 2016, 2021, 2026, and 2029 when new flights are introduced to the schedule during the busiest hour.

Noting that pick-up / drop-off parking supply must cater for seasonal peaks the busiest hour total seat number is adopted for the purpose of calculating pick-up / drop-off parking demand. Failure to cater for the busiest peak will result in queueing and road network congestion. Passenger travel statistics indicate that of the 54 percent of passengers that travel to the airport by private vehicle...
(either their own or a friend or relative's) 73 percent do not park in terminal car parks instead use the pick-up and drop-off facility.

A survey was undertaken at Townsville Airport recording the time a vehicle was parked kerb side in the shared public pick-up / drop-off area. On average vehicles were stopped for 37 seconds when picking up passengers and 49 seconds when dropping off passengers. It was observed that passengers consisted primarily from the business and mining sectors with little luggage.

During the busiest peak the passenger mix is likely to include a greater portion of passengers travelling for leisure with more luggage increasing the average time a vehicle is stopped to pick-up or drop-off passengers.

Specific to passenger pick-up, often the driver either cannot find their passenger or there is no parking available immediately where the passenger is positioned waiting to be picked up, particularly during the busiest hour. For this reason vehicles movements are often slower and less predictable for passenger pick-up than drop-off.

To ensure provision meets demand and to account for fluctuations in demand during the busiest hour, a factor of two is applied to the average time to pick-up and drop-off a passenger. It is assumed that 20 percent of the time a space is vacant during the busiest period making allowance for vehicles to pull in and leave the kerbside space as well as assuming that some spaces won’t become occupied straight away.

Specific to passenger pick-up, the distribution in demand peaks sometime after a flight lands where the peak is more concentrated than passenger drop-off. To ensure provision meets demand during fluctuations, a peaking factor is applied doubling the number of spaces based on an even distribution.

During the busiest peak the split between passenger pick-up and drop-off is conservatively assumed 80 percent / 20 percent split. The demand for pick-up and drop-off spaces during the busiest peak is summarised in Table 9.5. Note where the pick-up / drop-off area is combined, the shared use of spaces results in a reduction of the total number of spaces required since both the demand for pick-up and drop-off is based on 80 percent of passenger numbers during the busiest peak.

If pick-up and drop-off were to be separated, the current supply would result in a shortfall of two spaces in 2029 however since these spaces are currently shared, the demand would remain less than the supply.

9.10.6 Taxi Pick-Up / Drop-Off

The demand for taxi pick-up and drop-off is also dependent on flight schedules during the busiest peak hour. If the flight schedule during the busiest peak changes then so will the timing, intensity and duration of the busiest peak.

Passenger survey statistics indicate 25 percent of passengers arrive and depart Townsville Airport by taxi equating to 235 passengers during the busiest peak in 2015 increasing by 126 passengers to 361 by the end of the master planning period in 2036. Adopting the same assumptions for parking duration during pick-up and drop-off of passengers based on survey data, plus an additional 30 seconds added to the passenger drop-off time to allow for time taken to pay the driver, parking demand is shown in Table 9.6.

In regards to passenger pick-up by taxi, the pick-up facility operates differently to public passenger pick-up where a rank system is operated. To ensure capacity is provided during the busiest peak it is assumed that 80 percent of passengers are departing Townsville Airport during the busiest peak equating to an estimated

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand Drop-off</th>
<th>Demand Pick-Up</th>
<th>Demand (if combined)</th>
<th>Difference From Existing Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>7</td>
<td>10</td>
<td>12</td>
<td>4 oversupply</td>
</tr>
<tr>
<td>2016</td>
<td>7</td>
<td>12</td>
<td>14</td>
<td>2 oversupply</td>
</tr>
<tr>
<td>2021</td>
<td>8</td>
<td>14</td>
<td>16</td>
<td>0 oversupply</td>
</tr>
<tr>
<td>2026</td>
<td>9</td>
<td>14</td>
<td>17</td>
<td>1 shortfall</td>
</tr>
<tr>
<td>2029</td>
<td>10</td>
<td>16</td>
<td>19</td>
<td>3 shortfall</td>
</tr>
</tbody>
</table>
demand for 180 taxis by the end of the master planning period (2036) in the busiest hour taking into account the average party size of 1.6 passengers. Therefore it is recommended a minimum of three taxi bays are provided to load passengers simultaneously with a maximum of four required. It is also recommended that queue space for at least eight taxis is provided to ensure continuous operation of the taxi rank.

9.10.7 Rental Cars

Demand for rental car parking occurs when the least amount of cars are being rented. This occurs off season when passenger numbers are lowest. Therefore the number of parking spaces required equates to the number of unutilised rental cars during the low season based on the peak demand during the high season.

Similar to long term parking, car rental parking demand occurs over a period of days rather than the busiest peak given that hire car rental is measured in days. Passenger statistics over the last five years indicate that on average 11 percent of passengers use rental cars with the majority (36 percent) of passengers staying in Townsville between three to seven nights. Due to the cost associated with hiring a car, passengers staying for more than two weeks (10 percent) were assumed to not rent a car from the airport for the duration of their trip. Instead it is likely that these passengers have alternate access to a vehicle if visiting Townsville for the purpose of family, friends or work.

Similar to long term parking, growth during the busiest season is expected to be less than the annual average growth rate since there is less potential to increase passenger numbers on already high occupancy flights. However, because rental parking demand is determined as the difference between the high and low seasons, to be conservative it is assumed that passenger numbers will grow at the average annual rate of 2.0 percent. By the end of the 20 year master planning period it is forecast that an additional 55 rental car parking spaces will be required with the existing car park expected to reach capacity in 2026 (Table 9.7).

9.10.8 NAACEX Precinct and Enterprise Precincts

Parking within the NAACEX precinct currently exceeds demand. Provision of additional parking is to be considered as part of any future development application within the precinct as development proposals are largely unknown at this stage.

9.11 Future Traffic Generation

The internal road network not only services passenger generated traffic including staff associated with the Terminal Precinct, but also must consider capacity for commercial traffic associated with both the NAACEX and Enterprise precincts. Assuming most commercial

<table>
<thead>
<tr>
<th>Table 9.6 Taxi Pick-Up and Drop-Off Parking Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
</tr>
<tr>
<td>2015 - Existing</td>
</tr>
<tr>
<td>2016</td>
</tr>
<tr>
<td>2021</td>
</tr>
<tr>
<td>2026</td>
</tr>
<tr>
<td>2029</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 9.7 Rental Car Parking Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
</tr>
<tr>
<td>2015 – existing</td>
</tr>
<tr>
<td>2016 – start zero to five year master plan period</td>
</tr>
<tr>
<td>2021 – end zero to five year master plan period</td>
</tr>
<tr>
<td>2036 – end six to 20 year master plan period</td>
</tr>
</tbody>
</table>

Note: Based on the CAPA Gold Coast and Townsville Airports Passenger Forecasts February 2014
development (existing and future) operate between standard business hours, it will not affect the peak period as currently the passenger peak occurs after 6:30pm when commercial businesses are no longer generating traffic.

Similar to the passenger pick-up / drop-off and short term parking demand, the internal road network capacity is dependent on peak period traffic volumes which in turn are related to the flight schedule during the busiest peak hour. Therefore, peak hour traffic generation by the terminal precinct will increase in a stepwise fashion with the addition of flights during the busiest peak hour. However, traffic generation by commercial activities in the NAACEX and Enterprise Precincts is expected to grow more smoothly and independent of passenger capacity during the busiest peak hour.

Busiest peak forecast traffic volumes by precinct are summarised in Figure 9.4 as derived in the following sections.

9.11.1 Terminal Precinct

Traffic generated by the terminal precinct consists of short term parking, long term parking, rental cars, taxis, public passenger pick-up / drop-off where forecast traffic volumes during the busiest hour are summarised in Figure 9.5 and derived in the following section.

9.11.2 Passenger Generated Traffic

Traffic tube count data was collected in 2012 on Coral Sea Drive recording traffic volumes passing through the pick-up drop-off area over a period of 6.4 days. Historic passenger numbers show in fact there has been a slight decline since 2012 associated with the mining downturn reducing the number of FIFO passengers. However the 2014 Passenger Mix and Behavioural Study data reveals that passenger mode of travel choice and party size remains relatively consistent over the last five years. It has been observed that traffic has declined slightly since 2012 so a conservative approach of using the 2012 traffic tube count data as the base data to which growth has been added.

It should be acknowledged that it is a known occurrence that vehicles waiting to pick-up passengers circulate via Stinson Avenue and Coral Sea Drive thereby artificially inflating the count data. It is also acknowledged that passenger numbers fluctuate month to month throughout the year. Regardless, cross checking the pick-up / drop-off lane tube count data with derived pick-up / drop-off traffic volumes from passenger survey data, produces the same outcome.

As noted in the previous section, the internal road network capacity is required to cater for the busiest peak. For passenger generated traffic this is dependent on the flight schedule where growth is associated with additional flights in the busiest peak.

Townsville Airport commenced international flights to Bali, Denpasar, in September 2015 with three flights each way per week. For the purpose of this assessment busiest hour passenger forecast presented in Section 4.3 are adopted which considers flight schedule growth including the recent introduction of international flights to Bali.

Figure 9.4 Graph of Forecast Busiest Hour Traffic Volumes
It should be acknowledged that the busiest hour is restricted by the capacity of the aviation precinct to accommodate more flights or the terminal building to accommodate more passengers however this restriction is not expected to occur until after 2036 beyond the master planning horizon. Therefore it is possible that the road network may also require additional capacity in the future, or become the airport capacity constraint during the busiest hour.

Existing and future generated traffic movements are summarised Table 9.8 for each component in the Terminal precinct.

### 9.11.3 Staff Generated Traffic

Airline and terminal staff numbers are assumed to grow at the rate of passengers for the purpose of this assessment. In terms of the busiest peak hour, from a practical operational perspective, it is anticipated that staff arrival and departure will not coincide with the passenger peak hour in order to provide customer satisfaction. However to be conservative it is assumed that 20 percent of staff parking turns over in the busiest peak period (Table 9.9).

### 9.11.4 Other Traffic Generation

The Townsville Airport Office and Administration building and Toll Logistics are located in the Terminal precinct. Each of these buildings operate during business hours. It is therefore assumed that the majority of staff arrive and depart during the commuter peak periods. The timing of the busiest peak period associated with passengers currently occurs after business hours when these facilities are closed however the flight schedule may change in the future. It is therefore conservatively assumed that one movement per parking space is generated during the busiest peak hour. These buildings, operations, and parking are not expected to be expanded.

---

![Figure 9.5 Graph of Terminal Precinct Forecast Busiest Hour Traffic Volumes](image)

### Table 9.8 Peak Hour Traffic Generation – Passenger Generated Traffic

<table>
<thead>
<tr>
<th>Component</th>
<th>2015 - Existing</th>
<th>2021 - End 0-5 year period</th>
<th>2046 - End 6-20 year period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger forecast</td>
<td>745</td>
<td>945</td>
<td>1145</td>
</tr>
<tr>
<td>Pick-up / Drop-off*</td>
<td>184</td>
<td>233</td>
<td>282</td>
</tr>
<tr>
<td>Taxi*</td>
<td>116</td>
<td>148</td>
<td>179</td>
</tr>
<tr>
<td>Short Term Parking</td>
<td>38</td>
<td>48</td>
<td>58</td>
</tr>
<tr>
<td>Long Term Parking</td>
<td>23</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>Rental</td>
<td>51</td>
<td>65</td>
<td>79</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>412</strong></td>
<td><strong>523</strong></td>
<td><strong>633</strong></td>
</tr>
</tbody>
</table>

*Note: One movement via the pick-up / drop-off area or taxi rank however one inbound movement and one outbound movement is generated on the external road network.
therefore growth in traffic volumes associated with these components remains consistent over the master planning period (Table 9.10).

9.11.5 NAACEX and Enterprise Precinct

Traffic generation in the commercial area is associated with land use. Currently Townsville Airport has a large amount of vacant land available for development in the NAACEX and Enterprise Precincts as shown in Figure 9.2. As noted in the Townsville Airport Master Plan Planning Study, development in the NAACEX Precinct is earmarked to provide additional specialised purpose-built aviation facilities. The Enterprise precinct however is earmarked to provide for a diverse range of commercial opportunities such as offices, training facilities, retail facilities, warehousing, light industry, recreation and amenity facilities for airport employees, car servicing and holding facilities.

Existing development in the NAACEX and Enterprise precincts is industrial in nature where peaks are generated during the morning and evening commuter peaks associated with employment where throughout the day additional trips lesser than the commuter peak may also be generated. For the purposes of master planning and to ensure the road network provides sufficient capacity to allow for future development it is assumed that the commuter peak coincides with the Terminal precinct peak.

The existing commuter peak traffic volume is derived from historic count data.

Specific land use and timing of vacant land development is largely unknown however for the purpose of master planning to ensure capacity in the road network for the master planning horizon to 2036, growth of commercial traffic can be assumed in the absence of certainty.

In general the rate of land development is closely related to population growth and generation of employment opportunities. The Townsville Airport Stage One Commercial Development Strategy Study (the MXD report) identifies a mix of development consisting of office, industrial, hotel and retail. In all land use mix scenarios industrial development is the dominant land use with over 85 percent of future development. The MXD report also assumes an average development rate of 1.1 ha per year for the master planning period.

It should be noted however, in the last seven years, only two new tenancies have been taken up, resulting in a land development rate far lower than that forecast in the MXD report. Realistically existing business along Avro Drive are expected to be relocated to the Enterprise precinct which therefore does not generate additional traffic but redistributes existing traffic on the internal road network.

Slightly more conservative than the MXD report due to the reasons above, it is assumed that land development will proceed at a rate of 1.0 ha per year over the 20 year master planning period. Since industrial land use is the dominant land use identified in the MXD report, for simplicity, industrial traffic generation is adopted for the purpose of this assessment. Typically industrial development traffic generation is 0.9 trips per 100m² of Gross Lettable Floor Area (GLFA) with 35 percent lot area coverage in accordance with published rates in the Department of Transport and Mains Roads’ Road Planning and Design Manual. The peak hour traffic generation associated with the NAACEX and Enterprise Precincts is shown in Table 9.11.

9.12 Ground Transport Plan Design Principles

The strategies, criteria and constraints that influence the Ground Transport Plan are identified and discussed.

| Table 9.9 Peak Hour Traffic Generation - Staff |  |
| --- | --- | --- | --- |
| Component | 2015 Existing | 2021 End of 0-5 year period | 2036 End of 6-20 year period |
| Staff | 22 | 28 | 34 |

| Table 9.10 Peak Hour Traffic Generation –Administration Office and Toll |  |
| --- | --- | --- | --- |
| Component | 2015 Existing | 2021 End of 0-5 year period | 2036 End of 6-20 year period |
| Administration offic and Toll logistics centre | 23 | 23 | 23 |
below. The short term changes to improve capacity and efficiency are identified and further changes are specified to achieve the mid-term plan, to create a one way traffic flow to service the terminal and car parks.

9.12.1 Road Network Capacity

The roads servicing the terminal precinct have been shown to suffer capacity constraint due to a number of issues including circulating traffic, impacts of pedestrian crossings and capacity of pick up and drop off zones.

9.12.2 Reduce the Number of Pedestrians Crossing the Roadway

To increase the capacity of the internal road network requires increasing the vehicle throughput on Coral Sea Drive which is currently constrained by pedestrian crossings at the front of the terminal. Removing the pedestrian / vehicle conflict all together is impractical as this would result in the area between the terminal building and Stinson Avenue being unusable for the purpose of passenger parking.

Therefore the road network should be designed to reduce the number of pedestrians crossing the road. To reduce the need for passengers to cross the road, the pick-up and drop-off area must operate in a clockwise direction so that passengers embark and disembark terminal side of the roadway effectively halving the number of pedestrians crossing the road. Currently passengers may disembark on both sides of the pick-up and drop-off area which leads to some passengers having to cross the roadway.

The mid-term strategy (2021 to 2036) is to relocate Stinson Avenue east of its current alignment closer to the boundary of the airport. This move will permit traffic to circulate the public parking spaces via Stinson Avenue, Coral Sea Drive and Avro Drive (Figure 9.6). The strategy to move vehicular traffic to the perimeter of the public parking areas will reduce the number of high traffic pedestrian crossings from the terminal roads, thereby limiting traffic interruptions.

9.12.3 Double the Coral Sea Drive Traffic Lanes by Separation of Pick-Up and Drop-Off

To halve the queue length formed during peak periods it is recommended that pick-up and drop-off be separated so that should queuing form in one roadway the other is not impacted. Driver behaviour is fundamentally different for passenger drop-off versus pick-up. Drivers dropping-off passengers are simply looking for a kerb side position where as passenger pick-up drivers are not only looking for a kerb side position but also looking for their passengers which may be located anywhere along the length of the pick-up area. Traffic movements for passenger pick-up therefore typically occur slower and less predictable than passenger drop-off. Furthermore, if the drop-off area is congested, a driver looking to drop-off a passenger is likely to be more patient if the driver can see passengers disembarking and therefore knows the park will be available in a short period of time in comparison to drivers picking up passengers. It is therefore recommended that pick-up and drop-off areas be separated to reduce driver frustration and reduce information processing load on drivers navigating the pick-up / drop-off area.

The short term Ground Transport Plan (Figure 9.6) locates the drop-off and pick-up zones close to the terminal departure hall. This location is close to the existing zones and will simplify implementation.

The mid-term strategy (2021 to 2036), Figure 9.7 is to locate the drop-off and pick-up zones each side of the three lane Coral Sea Drive. This position is further from the terminal and provides for a further increase in spaces for drop-off and pick-up over the spaces provided in the short term plan.

The increased separation of the pick-up and drop-off zones from the terminal has an added benefit of improved security through dispersal of passenger congregation.

Table 9.11 Peak Hour Traffic Generation – NAACEX and Enterprise Precinct

<table>
<thead>
<tr>
<th>Component</th>
<th>2015 Existing</th>
<th>2021 Ends 0-5 year period</th>
<th>2046 End 6-20 year period</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAACEX Precinct</td>
<td>143</td>
<td>160</td>
<td>212</td>
</tr>
<tr>
<td>Enterprise Project</td>
<td>0</td>
<td>63</td>
<td>252</td>
</tr>
</tbody>
</table>
9.12.4 Business Precinct Access

It is recommended that Viscount Drive at the intersection of John Melton Black Drive is closed due to poor visibility and inadequate separation of right turning movements with access provided via Wirraway Drive requiring a new road connection between Wirraway Drive and Viscount Drive.

Closure of Viscount Drive will direct all access to the business precinct via Wirraway Drive virtually separating business traffic from passenger traffic.

The roads servicing the NAACEX and Enterprise Precincts in the period 2016 – 2021 are depicted in Figure 9.8 and 9.9 and for the mid-term 2022 – 2036 in Figure 9.10 and 9.11. The proposed future networks maintain a single point of entry but allow for future extension and connection to Old Common Road if future master

Wirraway Drive will provide a spine road supporting the development of the NAACEX and Enterprise Precincts over the short and mid-term (2016 to 2036) and long term (post 2036) development of the Northern Aviation Precinct.

Anticipated development of the NAACEX and Enterprise Precincts to 2036 can be accommodated by a single access point at the intersection of Wirraway Drive and John Melton Black Drive. After 2036, it is recommended that a secondary connection be provided through the Enterprise Precinct to John Melton Black Drive east of the proposed Meenan Street intersection.

The closure of Viscount Drive will permit more freedom in the location of connection of John Melton Black Drive to the relocated Stinson Avenue, thereby improving both the geometry of the access road and the amenity for customers of the airport.
12.5 Airport Access

A previous study commissioned by the Townsville City, Garbutt Land Use and Airport Access Study (Eppell Olsen, 2002) recommended the development of a new access corridor based on Crowder Street on the western boundary of Garbutt for the southern approach to the airport. The recommendation has not been advanced in the intervening period and Townsville City is not planning for this route to be developed as evidenced by the Crowder Street airport access option not being included in the roads priority infrastructure plans included in the Townsville City Plan published in 2015. The priority infrastructure plans show Meenan Street and Halifax Street as the southern access to the airport for the period to 2026.

As a Crowder Street access corridor to the airport is not in the forward planning of Townsville City in the life of this ground transport plan, the Crowder Street corridor has not been further considered in this ground transport plan.

Figure 9.7 Mid Term (Six to 20 Year) Ground Transport Network Configuration

The mid to long term strategy is to move the traffic flow in the terminal precinct to a clockwise perimeter road layout. The necessary provision of access to public parking either side of Stinson Avenue for vehicles entering the terminal precinct from Halifax Street is a constraint on the adoption of the perimeter one way flow system.

It is recommended that the Halifax Street access is closed at the Airport boundary, with alternate access provided by the extension of Meenan Street to John Melton Black Drive. Meenan Street between Halifax Street and John Melton Black Drive provides access to six driveways which is an improvement on the 19 residential lots fronting Halifax Street.

The proposed closure of Halifax Street will:

- Reduce the number of residents exposed directly to airport access traffic
- Remove a constraint for the adoption of the perimeter one way flow plan in the mid term.
The intersection of the extended Meenan Street and John Melton Black Drive will be configured to preclude right turns from Meenan Street to John Melton Black Drive and to restrict left turns from John Melton Black Drive to Meenan Street. This configuration is required to address Townsville City and Department of Transport and Main Roads stakeholder concerns of ‘rat running’ via this route.

In accordance with the Bundock Street / John Melton Black Drive (Old Common Road) intersection study, it is expected that the existing intersection will reach capacity prior to 2027 with the closure of Halifax Street. The intersection may be upgraded to increase the right turning movement capacity by provision of a second right turn lane on the John Melton Black Drive approach to Bundock Street. The upgrade is estimated to extend the life of the intersection to 2032 before again reaching capacity. It is therefore necessary to provide a second access route to the airport. Maintaining an access via Meenan Street limits the extent of customer re-education and provides an access to the south of the airport in the direction of the urban growth of Townsville.

Figure 9.8 Road Network including NAACEX and Enterprise Precinct 2016-2021
Figure 9.9 Short Term (Zero to Five Years) Ground Transport Network Configuration
Figure 9.10 Road Network including NAACEX and Enterprise Precinct 2022 – 2036
The recommendations for Halifax Street are summarised as follows:

- **2016-2021** Full closure of Halifax Street, including for pedestrian access
- **2021-2036** Ground Transport Plan, after relocation of Stinson Avenue
- Prior to relocation of Freight/Logistics tenants and buildings, provide an egress path for freight vehicles that does not require passage via the front of terminal, provide a protected egress lane to Halifax Street. Protection is required prevent entry to the terminal precinct from Halifax Street. (Protection option: proximity activated boom gate during normal business hours, backed up with a sliding security gate for out of hours times)
- After relocation of Freight/Logistics tenants - Restore full closure of Halifax Street.

### 9.12.6 Airport Front of House Security

In accordance with Guidance Material for Airport Front of House Security DIRD, there is no specific minimum distance that a roadway can be located with respect to the terminal however the following principles apply:

- Separation of mass gathering areas both inside and outside the terminal building
- Physical security measures to increase the distance to the terminal building
- Physical measures to reduce the speed at which a vehicle can approach the terminal building.

The existing roadway catering for taxis and special vehicles is located five metres from the terminal building frontage separated by a plaza area with no physical prevention from vehicles mounting the plaza area.

In line with the guideline material for airport front of house security, it is recommended that the distance be increased between the nearest roadway and the front of terminal building. Closing the existing front of terminal lane will require construction of a new lane. For constructability it is recommended that the existing
pick-up / drop-off roadway be maintained while a second lane is constructed within the short term and premium long term car park. The separation of the closest roadway to the terminal building is therefore increased to approximately 18 metres from five metres.

Noting in Section 9.12.3 it is recommended that passenger pick-up and drop-off areas are separated. Passengers arriving at the airport tend to move towards the terminal building after being dropped off unlike passengers waiting to be picked up who congregate. It is therefore recommended that the drop-off lane be located closest to the terminal building to further increase the distance between areas of congregation. The approach roadway length is restricted to approximately 80 m before a corner entering the drop-off area requires vehicles to reduce speed physically preventing vehicles from gaining high speed on the approach to the terminal building. It is also recommended that bollards are provided to physically prevent a vehicle from entering the plaza area.

The drop-off lane is aligned parallel to the terminal building physically restricting the angle of approach to the terminal building at high speed. In this scenario a vehicle would need to mount the plaza area at low speed in order to pass between bollards and the length of plaza to the terminal building being less than 20 metres also prevents a vehicle from approaching at high speed.

9.12.7 Loading Area

Currently deliveries are undertaken in the loading zone at the northern end of the terminal, accessed via Avro Drive via a designated loading bay.

9.12.8 Front of Terminal Car Park Strategy

To improve access to the short term and premium long term car park and increase capacity of pedestrian crossings located at the front of the terminal, it is recommended that the car park entry and exit points be reconfigured to avoid these vehicles passing along the front of terminal.

The parking at the front of the terminal is to be reconfigured to transfer unused capacity from the short term car park to the premium long term car park. This transfer will permit increased revenue from the premium long term car park. This approach is congruent with the Townsville Airport strategy for parking.

The mid-term Ground Transport Plan will locate high value spaces close to the terminal. This will have premium long term car park occupying the frontage near the terminal departure hall, permitting maximum reuse of existing park cover structures. Rental car parking will be located close to the extended terminal between Coral Sea Drive and Avro Drive.

Public parking for other uses (Short Term and Long Term) will take up the balance of the space within the perimeter roads. Residual space between the eastern airport boundary and the relocated Stinson Avenue will be allocated for staff parking. Relatively small numbers of staff crossing the roads will not materially impact on predicted traffic flow.

9.12.9 Taxi Facilities

In the short term plan, it is recommended that a bypass lane is provided to allow taxis to exit once loaded, rather than queue to exit as per the current configuration. The change will provide a further increase in capacity for taxi pick-up.

9.13 Revenue Opportunities Identified

9.13.1 Commercial

Closure of Halifax Street with a diversion via Meenan Street provides a single point of entry to the airport via John Melton Black Drive. A single point of entry provides an opportunity to create a gateway statement on entry and exit to the airport. In addition, access to the terminal via Stinson Avenue from John Melton Black Drive ensures all passengers must pass the parking options and advertising whereas currently Halifax Street provides direct access to the terminal and the pick-up and drop-off area.

With the closure of Viscount Drive at John Melton Black Drive all access to the Enterprise precinct, will be provided via a single intersection located at Wirraway Drive. This creates a gateway to the precinct as distinctly different to the Terminal precinct, separating traffic on arrival to the airport road network. Should a second access to John Melton Black be required to service this precinct, the second access may be located to the east...
of Meenan Street on John Melton Black Drive consistent with the MXD report.

The reconfiguration of access to all traffic entering via John Melton Black Drive (west of Meenan Street) increases the passing traffic and exposure for the commercial area north of John Melton Black Drive. This increased exposure should result in improved attractiveness of the commercial areas to new commercial customers in Townsville.

9.13.2 Parking Revenue

Optimising the mix of parking products (e.g. converting some short term car parks to premium long term car parks) would increase the utilisation and total revenue of existing car parking facilities.

A long term overflow car park should be considered to prevent the long term car park ever reaching capacity in order to maximise revenue income.

Gating private car parks after business hours should also be considered to discourage illegal parking and increase short term parking revenue.

Closure of Halifax Street is expected to reduce on-street parking by vehicles in residential streets and may encourage use of short term parking and therefore increased revenue.

9.14 Future Ground Transport Infrastructure

9.14.1 Order of Infrastructure Priority

The order of infrastructure priority for both parking demand and road network capacity aims to resolve existing capacity issues identified in Section 9.8 and cater for future demand identified in Sections 9.10 and 9.11. Some stages may be undertaken concurrently but generally are required to flow in the order as listed in Table 9.12 and Table 9.13.
9.14.2 Summary of Benefits in Priority Infrastructure Order

Table 9.14 provides a summary of benefits for each of the stages in the priority infrastructure order determined in Table 9.12.

Table 9.12 Order of Infrastructure Priority (2016 – 2021)

<table>
<thead>
<tr>
<th>Works</th>
<th>Stage</th>
<th>Infrastructure Priority</th>
<th>Trigger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closure of Halifax Street / Construction of Meenan Street Extension</td>
<td>1A</td>
<td>Construction of Meenan Street extension and intersection on John Melton Black Drive</td>
<td>Existing queueing and safety concerns at the intersection of Halifax Street / Stinson Avenue. Amenity of residents along Halifax Street</td>
</tr>
<tr>
<td></td>
<td>1B</td>
<td>Closure of Halifax Street at the airport boundary to both vehicular and pedestrian access</td>
<td></td>
</tr>
<tr>
<td>Removal of Viscount Drive Intersection on John Melton Black Drive</td>
<td>2A</td>
<td>Extension of Gypsy Moth Court between Viscount Drive and Wirraway Drive</td>
<td>Increased traffic volumes on John Melton Black Drive due to Meenan Street airport access increasing safety concerns at the intersection of Viscount Drive</td>
</tr>
<tr>
<td></td>
<td>2B</td>
<td>Cul-de-sac Viscount Drive at John Melton Black Drive</td>
<td></td>
</tr>
<tr>
<td>Short Term and Premium Long Term Parking Reconfiguration</td>
<td>3</td>
<td>Reduce the number of short term car parking spaces to cater for the 20 year master plan and increase premium long term parking. Reconfigure entry and exit locations</td>
<td>Existing congestion through shared pick-up / drop-off lane. Carpark reconfiguration</td>
</tr>
<tr>
<td>Separation of Pick-Up / Drop-Off</td>
<td>4A</td>
<td>Construct new pick-up lane within existing short term car park</td>
<td>Existing capacity of existing pedestrian crossings, capacity of pick-up and drop-off parking, and front of house security</td>
</tr>
<tr>
<td></td>
<td>4B</td>
<td>Convert existing shared pick-up / drop-off lane to drop-off only</td>
<td></td>
</tr>
<tr>
<td>Removal of Air Services Office</td>
<td>5</td>
<td>Demolition and removal of Airservices office</td>
<td>Early works to expand rental car park and future extension of drop-off lane in front of future terminal expansion.</td>
</tr>
<tr>
<td>Relocation of fuel farm</td>
<td>6</td>
<td>Construction of new fuel farm in future location, decommission and remove existing fuel farm located in front of the future terminal expansion</td>
<td>Early works to expand rental car park</td>
</tr>
<tr>
<td>Works</td>
<td>Stage</td>
<td>Infrastructure Priority</td>
<td>Trigger</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Reconfigure Terminal Precinct</td>
<td>7A</td>
<td>Move Stinson Avenue east, and configure for one way flow</td>
<td>Existing queueing and safety concerns at the intersection of Halifax Street / Stinson Avenue. Amenity of residents along Halifax Street</td>
</tr>
<tr>
<td>roads</td>
<td>7B</td>
<td>Construct new road between Coral Sea Dr and Avro Dr in front of new terminal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7C</td>
<td>Extend and add new lane to Coral Sea Dr and reverse direction of flow on the northern section of Coral Sea Dr</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7D</td>
<td>Reconfigure parking spaces to provide • Premium long term car parking in front of existing terminal • Rental car park in front of terminal extension • Short term and long term car parking in balance of space inside perimeter roads • Staff parking east of relocated Stinson Ave</td>
<td>Terminal extension - Demand for staff car park expected to reach existing capacity by 2021</td>
</tr>
<tr>
<td></td>
<td>7E</td>
<td>Relocate taxi pick up to front of existing terminal</td>
<td>Terminal extension</td>
</tr>
<tr>
<td></td>
<td>7F</td>
<td>Relocate public set down and pick up zones to Coral Sea Drive</td>
<td>Terminal extension, Stinson Ave relocation Existing drop-off reaches capacity by 2026</td>
</tr>
<tr>
<td></td>
<td>7G</td>
<td>Provide egress for freight vehicles to Halifax St</td>
<td>Stinson Ave one way flow</td>
</tr>
<tr>
<td>Expand parking</td>
<td>8A</td>
<td>Relocate Halifax Street south</td>
<td>Relocation of freight / logistics businesses</td>
</tr>
<tr>
<td></td>
<td>8B</td>
<td>Close all access to Halifax Street</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8C</td>
<td>Extend taxi waiting and bus parking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8D</td>
<td>Extend parking west</td>
<td></td>
</tr>
<tr>
<td>Works</td>
<td>Benefit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Closure of Halifax Street / Construction of Meenan Street Extension</td>
<td>Reduces traffic volumes on Stinson Avenue by removing other precinct traffic before entering the Aviation and Terminal Precinct. Limits conflicting traffic movements at the intersection of Halifax Street / Stinson Avenue where Halifax Street only services Toll and Airport Office&lt;br&gt;Provides single entry statement and improves way-finding&lt;br&gt;Provides new commercial opportunity for land development with increased traffic volumes passing undeveloped landfronting Meenan Street extension and John Melton Black Drive&lt;br&gt;Left turn only on the Meenan Street approach eliminates rat running via John Melton Black Drive by local residents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Removal of Viscount Drive Intersection on John Melton Black Drive</td>
<td>Remove geometry safety concerns&lt;br&gt;Reduces the number of intersections on John Melton Black Drive to preserve higher order road hierarchy&lt;br&gt;Provides a gateway to the Enterprise Precinct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Short Term and Premium Long Term Parking Reconfiguration</td>
<td>Increase revenue from Premium Long Term Parking where demand currently exceeds capacity and short term parking is underutilised&lt;br&gt;Relocate the car park entry points to Stinson Avenue to reduce traffic volume via Coral Sea Drive which currently contributes to congestion in the pick-up / drop-off area and queueing at pedestrian crossings&lt;br&gt;Locate the premium long term car park exit to the north of the entry in order to reduce the volume of traffic conflicting with entry movements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Separation of Pick-up / Drop-off</td>
<td>Provide capacity for pick-up to the end of the 20 year master planning period and provide capacity for drop-off to the end of the five year master planning period&lt;br&gt;Reduces friction and driver frustration&lt;br&gt;Reduces the number of vehicles conflicting with pedestrian crossings at any one crossing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Removal of Air Services Office</td>
<td>Increase prime front of terminal space for rental car parking and increase revenue potential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Relocation of Fuel Farm</td>
<td>Removal of front of house safety risk increased space for high return parking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Reconfigure Aviation and Terminal Precinct roads</td>
<td>The reconfiguration of the precinct roads to a one way circulation will improve traffic flow and reduce decision demands on drivers. The relocation of some perimeter roads will provide for increased parking opportunities within the road perimeter and reduce points of conflict between pedestrians and vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Expansion of staff car park</td>
<td>Triggered by the relocation of the Freight Logistics businesses in the terminal precinct, this opportunity increases available parking and therefore revenue potential</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9.15 Short Term Ground Transport Plan (Zero to Five years)

It is recommended that the short term master plan (zero to five years) consists of items one to six with reference to stage numbers in Table 9.12 and Table 9.14 for infrastructure priority and benefits respectively. The short term ground transport master plan drawings are diagrammed in Figures 9.7 and 9.8. In summary, these six items include:

- Closure of Halifax Street / Construction of Meenan Street Extension
- Removal of Viscount Drive Intersection on John Melton Black Drive including connection of Gypsy Moth Drive to Wirraway Drive
- Short Term and Premium Long Term Parking Reconfiguration
- Separation of Pick-up / Drop-off
- Removal of Air Services Office
- Relocation of Fuel Farm.

9.16 Long Term Ground Transport Plan (Six to 20 years)

The long term master plan (six to 20 years) consists of remaining items seven to eight with reference to stage numbers in Table 9.13 and Table 9.14 for infrastructure priority and benefits respectively. The long term ground transport plan drawings are diagrammed in Figures 9.6 and 9.10. In summary, these items include:

- Reconfiguration of terminal precinct roads for one way circulation flow and associated parking amendments
- Further expansion of parking, when and if the freight and logistics businesses relocate to the Enterprise precinct.
10.0 Introduction

TAPL promotes an environmental culture that is founded on stakeholder participation and shared ownership. TAPL is focused on delivering safe, healthy and environmentally responsible aviation operations in accordance with legislative obligations. This is achieved through the development, implementation and continual improvement of its strategies, management systems and processes.

This Airport Environment Strategy (AES) replaces the Townsville Airport 2009-2014 AES and is the fourth environment strategy prepared for the Civil Area since the Townsville Airport was leased by the Commonwealth Government in 1998. This AES represents the first environment strategy forming part of the 2016 Master Plan and has been developed in accordance with the Airports Act.

Integration of the AES into the 2016 Master Plan aligns the previously misaligned periods of the master plan and environment strategy documents. As a result, TAPL has reviewed this strategy over an extended period with the AES being in force for a period of six years, one year beyond the traditional review period.

This AES outlines the key environmental issues and management strategies to which TAPL is committed, to mitigate and manage its impact upon the natural environment, relevant to the following aspects:

- Environmental management
- Compliance (including stormwater, soil and groundwater, hazardous materials, ground-based noise and local air quality)
- Resource use (including energy efficiency, water resources, waste, sustainable development and climate change)
- Land and heritage (including biodiversity, wildlife hazard risk and cultural heritage).

Identification and mitigation of potential environmental impacts associated with the implementation of the 2016 Master Plan, including the development of airport facilities, is detailed in Chapter 11.0.

The environmental requirements set out in the AES, apply to all airport activities within the Civil Area of the Townsville Airport. This encompasses activities undertaken by airport operators, including TAPL staff, tenants and contractors.

TAPL, airport tenants, operators and contractors are responsible for ensuring that all reasonable steps are taken to comply with the AES. TAPL is obliged to make all airport tenants, operators and contractors aware of the requirements.

10.1.1 Objectives of the AES

The key objectives of the AES are outlined in section 71 (3)(h) of the Airports Act 1996 (Airports Act) and includes:

- Identification of the current environmental status of the Civil Area including areas of environmental significance
- Identification of sources of environmental impact associated with civil aviation operations at the airport
- Summary of the proposed environmental studies, review and monitoring of current and future activities associated with civil aviation operations at the airport and a timeframe for their completion and reporting
- Summary of measures to be carried out for the purposes of preventing, controlling or reducing the environmental impact associated with civil aviation operations at the airport and timeframes for their completion
- Details and outcomes of consultation undertaken in preparing the AES
- Any other matters that are prescribed under the Airports (Environmental Protection) Regulations 1999 (Cth) (AEPR).

10.1.2 Other Airport Users Obligations

TAPL

TAPL is responsible for the management of the Civil Area of Townsville Airport. TAPL also contributes to the maintenance of the Jointly Used Area (runways), under the terms of the JUD discussed in Chapter 3.0.

TAPL has a range of duties under the Airports Act and AEPR to identify sources of environmental impact from civil aviation operations and manage programs to control, limit or prevent these impacts. To maintain
compliance, TAPL provides regular updates to the Commonwealth on its progress in meeting the targets and objectives of the AES and submits an Annual Environment Report (AER) to DIRD, in accordance with regulatory requirements, detailing:

- The results of any monitoring undertaken
- Any pollution events or environmental issues and subsequent remediation plans
- TAPL's progress in achieving the targets and objectives of the AES.

**Department of Defence**

The Defence is responsible for the overarching environmental management of the Military Area and Jointly Used Area through the implementation of their own strategies, management systems and processes. However TAPL and Defence strive to facilitate cohesive environmental management across the wider land tenures.

**Airport Environment Officer**

The Airport Environment Officer (AEO) is the statutory regulator appointed by the DIRD to oversee the management of airport operations within the Civil Area at Townsville Airport. The AEO ensures management of the airport environment is undertaken in accordance the Airports Act and the AEPR.

This is achieved through regular monthly meetings with TAPL, site inspections and review of the AER.

**Airport Tenants and Operators**

Townsville Airport has a variety of tenants, contractors and other operators and the risk each poses to the environment is dependent on their activities. All airport operators have a responsibility to comply with the TAPL AES and prevent environmental harm that may arise from their operations. This includes undertaking relevant monitoring activities in line with their regulatory obligations and ensuring systems and / or procedures are in place appropriate to the nature and scale of operations at the airport.

All airport tenants and operators are assessed by TAPL for environmental risk and categorised according to the following revised environmental risk categories:

- Category One – Activities or operators with the potential to cause environmental nuisance
- Category Two – Activities or operators with the potential to cause material environmental harm
- Category Three – Activities or operators with the potential to cause serious, long term environmental harm
- Category Four – Activities or operators with the potential to cause serious, permanent environmental harm.

Tenants and operators must adhere to specific environmental management requirements relevant to their risk category.

**10.2 Environmental Management**

**10.2.1 Overview and Objectives**

Objective: To promote environmental management at Townsville Airport to minimise potential adverse impacts from airport activities on the environment.

TAPL maintains an Environmental Management System (EMS) to the ISO14001:2004 standard, to manage environmental aspects and impacts within the Civil Area at Townsville Airport. The Defence maintains a separate ISO14001:2004 EMS to manage its operations and to facilitate cohesive environmental management across the wider land tenures.

All airport operators are also required to have systems in place to manage environmental aspects and impacts associated with their activities.

**10.2.2 Environment Policy**

TAPL's Environmental Policy forms the foundation for the Airport Environment Strategy (AES), which is implemented through the EMS. The TAPL Environmental Policy, including objectives, is provided in Figure 10.1 and is a living document that is periodically reviewed. The current version of the Policy is available on the Townsville Airport website townsvilleairport.com.au.

**10.2.3 Environmental Management System**

The TAPL EMS, updated in 2012, is maintained to ISO14001:2004 standard. This system provides the detailed framework for implementing the Environmental Policy and also defines applicable legislative requirements and significant environmental aspects.
associated with TAPL’s activities, including procedures to minimise adverse environmental impacts.

The key objectives of the TAPL EMS are to set objectives and targets (including those set in this AES) and mechanisms to achieve these objectives and targets.

The TAPL EMS also strives to engage and partner with relevant stakeholders, including airport operators, to ensure the continual improvement of their environmental management practices at airport.

TAPL has developed procedures to manage environmental aspects associated with civil aviation operations for defining responsibility and authority, processing and investigation of non-compliance, mitigation of impacts and implementation of corrective and preventative actions.

The TAPL EMS is reviewed annually to ensure adequacy and effectiveness and regularly audited, to monitor its implementation and conformity to the ISO14001 standard.

10.2.4 Legislative Framework

Townsville Airport is located on Commonwealth land and is subject to compliance with relevant Commonwealth legislation, which is principally the Airports Act and Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act).

Under the Airports Act, with reference to the AEPR, TAPL is required to develop and implement an AES that outlines how environmental impacts associated with airport operations within the Civil Area are prevented, controlled or mitigated in accordance with environmental standards for federally-leased airports.

Some aspects of environmental management are outside the scope of this AES including noise and pollution generated by aircraft (excluding ground running). These matters are regulated by the Commonwealth through other legislation and managed by other organisations. TAPL is however, committed to working with airlines and third parties to reduce the environmental impact of their operations at the airport.

The EPBC Act details requirements for the management of matters of national environmental significance such as threatened flora and fauna species. The EPBC Act also details the requirement for approval of activities involving Commonwealth land and activities by Commonwealth agencies.

In addition to Commonwealth legislation, Townsville Airport is required to comply with Queensland State legislation where Federal legislation is silent. TAPL will consider state legislation to achieve best practice environmental standards assessed against Schedule 4 of the AEPR.

10.2.5 Environmental Monitoring and Reporting

Environmental monitoring is undertaken within the Civil Area of Townsville Airport to demonstrate compliance with legislative requirements, to identify trends and highlight areas requiring management for continual improvement and to enhance awareness and understanding of the environment.

Table 10.1 outlines the revised environmental monitoring program to be undertaken at the airport. The frequency of monitoring is included as a guide only and is subject to change in response to onsite environmental conditions and / or monitoring program review. Monitoring sites are identified in Figure 10.2.

TAPL analyses monitoring results and provides a summary to DIRD in the AER. If a non-conformance or declining trend is identified, corrective actions are implemented to achieve compliance and improve performance.

Copies of monitoring results and reports are provided by TAPL to the AEO. Environmental incidents are reported through the EMS incident reporting system including notification of the AEO. Incidents are followed up to avoid reoccurrence, which may include initial investigations and ongoing monitoring and site management.

Management programs are discussed in more detail in Sections 10.3 – 10.14. All monitoring activities associated with the AES are undertaken by suitably qualified staff or consultants with laboratory analyses conducted at National Association of Testing Authorities (NATA) accredited facilities. These will ensure that all necessary environmental requirements are met over the next five years.
Townsville Airport Pty Ltd promotes an environmental culture that starts with the Chief Operating Officer based on participation and shared ownership. Airport employees, tenants, visitors, business partners and contractors are encouraged to communicate any environmental issues, concerns, improvements or lessons learned to facilitate continuous improvement in environmental management across all organisations at the airport.

Our Vision
To provide safe, healthy and environmentally responsible operations at Townsville Airport. Reducing and maintaining the risk of harm to persons, property and the environment as low as reasonably practicable through a continuing process of hazard identification and risk management.

Our Mission
Protection of the Environment is considered a critical corporate value in planning for future development and undertaking operations at Townsville Airport. The development, implementation and continual improvement of strategies, management systems and processes ensure that operations at Townsville Airport are conducted in a safe, secure, efficient and environmentally responsible manner in accordance with regulatory requirements.

Our Objectives
Legislation & Regulatory Requirements: To develop, implement and maintain policies, procedures and systems to ensure operations at Townsville Airport comply with applicable legislation, regulations, standards and industry best practice.

Assurance: To develop, implement and maintain an Environmental Management System (EMS) that identifies environmental aspects, control measures and feedback mechanisms which is audited and reviewed regularly to facilitate continuous improvement.

Culture: To define roles and responsibilities which are accountable for the effectiveness of the EMS starting with the CEO and senior management.

To provide adequate resources including finance, to facilitate the fullfillment of Townsville Airport's environmental responsibilities.

To develop, embed and continually encourage an environmental culture where environmental aspects are a priority for all operations at Townsville Airport, recognising the importance and value of an effective EMS.

Risk Management: To minimise and maintain at or below an acceptable level, pollution and the risk of harm to persons, property and the environment at Townsville Airport through a continuous process of identifying, recording and reviewing risks, environmental objectives, targets and indicators.

Communication: To develop, implement and maintain successful tools that encourage open communication, delivery of key messages and awareness of responsibilities under the EMS to airport employees, tenants, visitors, business partners and contractors.

Training: To ensure there are sufficient skilled and trained resources available to develop, implement, maintain and improve the EMS.

Infrastructure & Facilities: To develop, implement and maintain a maintenance system that ensures new and existing infrastructure and facilities at Townsville Airport are kept clean, safe, operational and compliant with applicable legislation, regulations, standards and industry best practice.

Participation & Action: To actively encourage airport employees, tenants, visitors, business partners and contractors to participate in the EMS.

Version Number: 3.0
Responsible Area: Environment
Author: Environment Officer
Approved By: Chief Operating Officer
Approval Date: October 2016
Next Review Date: October 2017

Figure 10.1 Townsville Airport Pty Ltd Environment Policy
10.2.6 Environmental Research

TAPL has engaged James Cook University to undertake environmental research on the airport under a co-operative agreement. This agreement fosters a greater understanding of flora and fauna at Townsville Airport and facilitates the input of university experts in relation to their management.

10.2.7 Training, Communication and Awareness

As a minimum, TAPL’s environment staff are required to hold tertiary qualifications in a relevant field e.g. environmental management and/or environmental science.

TAPL also promotes environmental awareness through site induction programs and identifies training requirements for staff and airport operators whose work may have an adverse environmental impact at Townsville Airport. Training may include environmental awareness, management, spill response and awareness of legislative responsibilities.

TAPL undertakes environmental audits of tenants to further promote environmental management awareness and communicate associated issues with civil aviation operators.

Airport users, including tenants, their subtenants, contractors and subcontractors have similar obligations to those of Townsville Airport. These other airport users are required to undertake all relevant actions allocated to tenants in the Airport Environment Strategy and take all reasonable and practicable steps to ensure the Airport Environment Strategy is complied with.

Environmental management issues are also communicated to internal and external stakeholders through a number of committees and forums including the Townsville Airport Community Aviation Consultation Group (CACG), Runway Safety Committee and Wildlife Hazard Management Committee, as well as the Aerodrome Reporting Officer, Aviation Team and lunchbox meetings.

Involvement of the local community and airport users in the development of this strategy has been through consultation described in Section 2.5.
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Parameter(s) Monitored</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenant audits</td>
<td>Activities with potential to harm the environment</td>
<td>As required (Category 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 yearly (Category 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annually (Category 3 and 4)</td>
</tr>
<tr>
<td>Stormwater</td>
<td>Integrity of stormwater control devices</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td>Heavy metals and analytes against Schedule 2 of the AEPR</td>
<td>3 (wet season)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 (dry season)</td>
</tr>
<tr>
<td>Groundwater and Soil</td>
<td>Heavy metals and analytes against Schedule 2 of the AEPR</td>
<td>6 monthly</td>
</tr>
<tr>
<td>Hazardous materials</td>
<td>Use and storage of hazardous substances and manifests</td>
<td>Annually and as required</td>
</tr>
<tr>
<td></td>
<td>Integrity of known asbestos</td>
<td>5 yearly and as required</td>
</tr>
<tr>
<td>Ground-based noise</td>
<td>Ground running activities and construction noise</td>
<td>As required</td>
</tr>
<tr>
<td></td>
<td>Noise enquiry register</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td>Review of Defence noise monitoring data</td>
<td>Annually</td>
</tr>
<tr>
<td>Local air quality</td>
<td>Review of Queensland Department of Environment and Heritage Protection (DEHP) monitoring data (Pimilico station)</td>
<td>Annually and as required</td>
</tr>
<tr>
<td></td>
<td>National Pollutant Inventory</td>
<td>Annually</td>
</tr>
<tr>
<td></td>
<td>Landside point source air quality monitoring</td>
<td>As Required (Category 3 and 4)</td>
</tr>
<tr>
<td>Energy and sustainable</td>
<td>Energy and fuel consumption</td>
<td>Annually</td>
</tr>
<tr>
<td>development</td>
<td>Building performance through the Terminal building management system</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td>Carbon footprint, including ozone depleting substances, in accordance with National Greenhouse and Energy Reporting Act 2007 (NGER Act)</td>
<td>Annually</td>
</tr>
<tr>
<td>Water resources</td>
<td>Analytes against the Australian Drinking Water Guidelines and standards</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td>Potable water consumption</td>
<td>6 monthly</td>
</tr>
<tr>
<td></td>
<td>Analytes against Schedule 2 of the AEPR</td>
<td>As Required</td>
</tr>
<tr>
<td>Waste</td>
<td>Volumes of waste generated by TAPL facilities and activities and percentage recycled</td>
<td>Annually</td>
</tr>
<tr>
<td>Effect of climate change</td>
<td>Fire fuel loads</td>
<td>Annually</td>
</tr>
<tr>
<td></td>
<td>Structural integrity of TAPL buildings and infrastructure</td>
<td>As required</td>
</tr>
<tr>
<td></td>
<td>Adequacy of stormwater control devices to manage increased stormwater volume</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td>Tropical cyclone forecasts in cyclone season</td>
<td>Weekly</td>
</tr>
<tr>
<td></td>
<td>Storm event monitoring</td>
<td>Inspections of high risk construction site undertaken after significant rainfall amounts</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Flora and fauna species composition and abundance</td>
<td>2018, 2021 and as required</td>
</tr>
<tr>
<td></td>
<td>Weed species abundance and distribution</td>
<td>Annually</td>
</tr>
<tr>
<td>Wildlife hazard risk</td>
<td>Airside Wildlife monitoring (bird counts)</td>
<td>Weekly</td>
</tr>
<tr>
<td></td>
<td>Species counts</td>
<td>Weekly</td>
</tr>
<tr>
<td></td>
<td>Wildlife strikes and near misses</td>
<td>Monthly and annually</td>
</tr>
<tr>
<td></td>
<td>Wildlife species abundance and distribution</td>
<td>6 monthly</td>
</tr>
<tr>
<td></td>
<td>Mosquito breeding grounds and abundance</td>
<td>Weekly</td>
</tr>
<tr>
<td>Cultural heritage</td>
<td>Presence of cultural or European heritage artefacts</td>
<td>As required</td>
</tr>
</tbody>
</table>
Figure 10.2 Environmental Management Areas and Monitoring Sites in the Civil Area
10.2.8 Environmental Site Register

TAPL has developed and maintains an Environmental Site Register (ESR) for the Civil Area of Townsville Airport. This register collates information from a range of existing TAPL environmental management registers (e.g. contaminated sites) and creates a whole site approach to environmental monitoring and management.

The TAPL ESR identifies the location of every site within the Civil Area that has been or has the potential to be a source of environmental impact and / or is subject to environmental monitoring and auditing. The register is a living register that is periodically reviewed and also includes areas considered to be of environmental significance as defined in Section 10.2.9.

Details within the ESR include the environmental condition of the site, previous environmental site assessments, remedial plans and monitoring results. Suspected contaminated sites identified within the Civil Area of Townsville Airport are illustrated in Figure 10.2.

10.2.9 Areas of Environmental Significance

TAPL is required to identify areas of environmental significance within the Civil Area of Townsville Airport.

The methodology to identify areas of environmental significance was developed in 2015 in conjunction with development of the 2016 Master Plan to ensure consistency with relevant legislation. Consultation was undertaken in relation to the review of the method at Townsville Airport with DIRD.

Areas of environmental significance include:
- Those areas considered matters of national environmental significance under the EPBC Act
- Matters of state environmental significance under the SPP
- Areas identified as being of cultural heritage significance.

In the context of habitats and vegetation communities, these areas must also demonstrate a high level of connectivity or ecological functionality in order to be considered an area of environmental significance.

There are no areas of environmental significance currently recorded on the ESR for the Civil Area of Townsville Airport. TAPL does however, acknowledge the presence of areas of environmental significance in the vicinity of the Civil Area including the Townsville Town Common and Great Barrier Reef Marine Park and World Heritage Area.

The Civil Area of Townsville Airport drains away from the Townsville Town Common and into a network of constructed channels and eventually flowing onto the Rowes Bay outlet, which forms part of the Great Barrier Reef Marine Park and World Heritage Area.

10.2.10 Achievements in Environmental Management 2009-2015

- Reviewed and revised the TAPL Environmental Policy to align with updated regulatory requirements
- Developed and implemented standard requirements for Construction Environmental Management Plans (CEMP’s) through the TAPL CEMP proforma
- Defined methodology for the identification of areas of environmental significance at airport and the environmental sites register. Identified and delineated environmental sites including areas of environmental significance
- Reviewed and revised the TAPL environmental audit program including categorisation of environmental risks associated with airport tenants and operations
- Reviewed and revised the environmental inspection and audit program and reporting procedure for civil aviation operations at Townsville Airport. Roll-out of the revised TAPL inspection and audit program
- Established regular meetings with the AEO, on a minimum monthly basis, to communicate AES progress
- Reviewed and revised TAPL EMS training, communication and awareness procedures to ensure effective communication and reporting of environmental issues at airport
- Developed and implemented the TAPL Environment Alert and Environment Handbook to facilitate communication of the AES and EMS to TAPL tenants and staff
- Hosted work experience students from local schools and provided airport tours to primary schools and scout tours to educate students on airport operations including environmental management
- Financially contributed to the ‘Buy a Bale’ campaign to provide meaningful support for farmers and facilitate environmental management in the greater Townsville area.
region

- Reviewed the adequacy and effectiveness of TAPL EMS annually and updated accordingly to maintain ISO14001 standard
- Included environment as a standard agenda item to internal and external stakeholder consultation committees and meetings
- Developed and implemented environmental management clauses to all new lease agreements
- Revised the Queensland Airports Limited (QAL) Procurement and Sustainability Policies to enhance socially responsible, safe, environmental and sustainable procurement
- Undertook gap analysis of the TAPL EMS.

10.2.11 Proposed Targets for Environmental Management from 2016

Table 10.2 lists the proposed targets to meet TAPL’s objective for environmental management at Townsville Airport.

Table 10.2 TAPL Environmental Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review and update the TAPL Development Guidelines and development controls including provisions for CEMP requirements, for new development at airport</td>
<td>2016</td>
</tr>
<tr>
<td>Continue to undertake tenant environmental audits and assess new airport operators for environmental risk</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to ensure all construction projects are assessed for environmental management practices including the requirements for preparation of specific Construction Environmental Management Plans (CEMP’s) for all new development</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Maintain and review TAPL Environmental Management System (EMS) to ISO14001 standard</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Implement environmental management awareness training and inductions for TAPL staff, airport operators and contractors</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to undertake environmental monitoring in accordance with the TAPL Environmental Monitoring Program</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to promote sound environmental management practices in the fields of energy, waste, water, resource and wildlife management as part of our general environmental duty of care.</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
10.3 Stormwater

10.3.1 Overview and Objectives

Objective: To monitor stormwater quality in accordance with statutory requirements and minimise impact to stormwater quality from activities under TAPL operational control.

The Civil Area of Townsville Airport is situated approximately two kilometres west of Rowes Bay, in the upper reaches of the Captains Creek catchment. Rowes Bay forms part of the Great Barrier Reef Marine Park and World Heritage Area (Figure 10.2).

Stormwater enters the Civil Area from residential development and airport land (under the management of the Defence) to the south and west. An internal drainage network directs the majority of this stormwater into the upper reaches of Mundy Creek, which discharges into Rowes Bay.

There are no naturally occurring waterways or waterbodies within the Civil Area of Townsville Airport and the Civil Area drains away from the Townsville Town Common.

10.3.2 Potential Environmental Impacts

Surface water is an integral part of the natural environment and stormwater management is essential to maintaining aquatic ecological health and hydrological regimes and mitigating flood risk.

The TAPL internal drainage network also plays a role in flood mitigation within the local catchment. Changes to this drainage or in the surrounding area have the potential to detrimentally impact flood management of the local area.

Civil aviation activities with the potential to impact stormwater quality at Townsville Airport include:

- Construction, earthworks and vegetation removal
- Weed and pest control
- Aircraft refuelling
- Vehicle and aircraft washdown
- Aircraft, vehicle and mechanical plant and equipment maintenance
- Storage, handling, use and disposal of hazardous materials
- Historical land uses such as landfill and waste disposal
- Waste management infrastructure and storage
- Surrounding land use (including activities undertaken within the Military Area and Jointly Used Area of Townsville Airport).

Civil aviation activities have the potential to lead to the following environmental impacts:

- Contamination from spillage, leakage or seepage into stormwater infrastructure
- Contamination from disturbance of actual and / or potential acid sulphate soils
- Sedimentation leading to eutrophication of waterways and changes to hydrological regimes
- Introduction and / or spread of pest animals and weeds
- Degradation and / or loss of aquatic ecological values
- Creation of mosquito breeding habitat leading to public health risk.

10.3.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with civil aviation activities at Townsville Airport, including impacts to stormwater, are assessed as part of the TAPL EMS as detailed in Section 10.2.

Stormwater within the Civil Area is managed through the TAPL Water Quality Management Plan. Stormwater quality is monitored at sites within the internal drainage network and the stormwater retention basin, and along Mundy Creek downstream of the Civil Area (Figure 10.2). Stormwater quality is measured in accordance with the requirements and prescribed analytes of the AEPR. Parameters include physio-chemicals e.g. dissolved oxygen, heavy metals, hydrocarbons and nutrients.

The Defence also undertake stormwater quality monitoring within the military and Jointly Used Area before water enters the Civil Area.
Table 10.3 TAPL Stormwater Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAPL will engage the Defence to investigate a collaborative approach to stormwater</td>
<td>2017</td>
</tr>
<tr>
<td>monitoring and management across airport land, such as the sharing of water</td>
<td></td>
</tr>
<tr>
<td>quality monitoring results and collaborative management strategies</td>
<td></td>
</tr>
<tr>
<td>Implement the stormwater quality monitoring and management through the TAPL WQMP</td>
<td>2016</td>
</tr>
<tr>
<td>(2016 half yearly)</td>
<td></td>
</tr>
<tr>
<td>Continue to provide guidance to stakeholders on stormwater quality improvement</td>
<td>Ongoing</td>
</tr>
<tr>
<td>strategies</td>
<td></td>
</tr>
<tr>
<td>Continue to implement the Stormwater Quality and Drainage Strategy to achieve</td>
<td>Ongoing</td>
</tr>
<tr>
<td>stormwater design objectives for future developments</td>
<td></td>
</tr>
<tr>
<td>Install stormwater treatment devices at all new discharge points</td>
<td>As Required</td>
</tr>
<tr>
<td>Continue to ensure all CEMP(s) incorporate measures to minimise potential adverse</td>
<td>As Required</td>
</tr>
<tr>
<td>impacts to stormwater associated with construction activities</td>
<td></td>
</tr>
<tr>
<td>Undertake event based stormwater monitoring in accordance with the TAPL Water</td>
<td>As Required</td>
</tr>
<tr>
<td>Quality Management Plan</td>
<td></td>
</tr>
</tbody>
</table>

Management measures have been developed and are being implemented through the TAPL EMS to prevent, control or reduce potential impacts to stormwater quality at Townsville Airport, including:

- Environmental inductions
- Spill response and reporting procedures
- Waste handling procedures
- Vegetation removal and weed and pest control procedures
- Installation and maintenance of stormwater treatment devices
- Installation and maintenance of pollution control devices including oil-water separators and bunding
- Tenants and construction audits
- Stormwater management design considered in new development and infrastructure design
- Erosion and sediment control measures implemented through construction and operational EMP’s
- Involvement in catchment risk management committees and forums.

Airport tenants, contractors and operators are required to ensure appropriate systems and / or procedures are in place to manage specific environmental risks associated with their activities. In accordance with the TAPL EMS, airport tenants, contractors and operators undertaking any construction activities are required to prepare and implement a relevant construction or operational EMP outlining measures and responsibilities for reducing and managing that risk.

TAPL undertakes regular inspections of the Civil Area and tenants, contractor and operator activities to ensure compliance. Where activities have resulted in stormwater contamination, airport operators are required to undertake relevant measures to monitor, manage or remediate contamination caused by their operations.

TAPL also maintains an interest in catchment issues that they are unable to directly manage, through involvement in stakeholder programs.

10.3.4 Achievements in Stormwater Management 2009-2015

- Reviewed, updated and implemented the stormwater monitoring program to improve efficiency, include water clarity testing (e.g. turbidity) and to allow further delineation of stormwater quality entering and exiting the Civil Area
- Prepared and implemented the stormwater monitoring through the TAPL Townsville Airport Water Quality Management Plan 2010
- Developed and implemented standard stormwater management requirements for CEMP’s through the TAPL CEMP proforma, including distribution of an environmental management information handbook to operators at the airport
- Maintained existing gross pollutant traps within the Civil Area
- Reviewed and updated spill management and reporting procedures
• Trial installation of heavy water hydrocarbon boom downstream of apron to improve water quality and improve management of hydrocarbon spill risk
• Maintained and rectified the stormwater retention basin treating runoff from developed areas before exiting the Civil Area
• No increase in rate of stormwater runoff flow per unit area within the Civil Area from 2009 – 2014
• Conducted annual erosion and sedimentation inspections across the Civil Area prior to the wet season
• Engaged upstream stakeholders including the Mundy Creek Landcare Group to discuss opportunities to improve stormwater quality and management.

10.3.5 Proposed Targets for Stormwater Management from 2016

Table 10.3 lists the proposed targets to meet TAPL’s objective for stormwater quality management at Townsville Airport.

10.4 Soil and Groundwater

10.4.1 Overview and Objectives

Objective: To monitor soil and groundwater quality in accordance with statutory requirements and minimise impact to soil and groundwater quality from activities under TAPL operational control.

The Civil Area of Townsville Airport is situated on sub-coastal land predominantly characterised by thin, sandy loam soils overlying heavy clay subsoils. These soils are poorly draining and highly dispersive with adverse chemical properties causing corrosion of underground services and have the potential to become acid sulphate soils when exposed to air. Groundwater in this area is shallow and flows towards residential development to the south-east.

Townsville Airport, including the Civil Area, has operated as an active airport since 1939, including as an intensive military base during World War II. The airport overlies various depths of imported fill, some of which is known to be contaminated (Figure 10.2).

There is also a possibility of dangerous items of Unexploded Ordnance (UXO) present in the Civil Area.

10.4.2 Potential Environmental Impacts

TAPL has a responsibility to ensure the Civil Area is not polluted and that contaminants do not impact soil or groundwater features on site or in the surrounding area. TAPL must undertake all practicable measures to minimise environmental and health risks associated with soil and groundwater contamination within the Civil Area.

Civil aviation activities with the potential to impact soil and groundwater at Townsville Airport include:

• Construction and earthworks
• Grounds maintenance including vegetation removal and weed control
• Storage, handling, use and disposal of hazardous materials
• Aircraft refuelling
• Vehicle and aircraft washdown
• Aircraft, vehicle, and mechanical plant and electrical equipment maintenance
• Car parking
• Historical land uses such as landfill and waste disposal
• Importation and placement of fill materials
• Waste management infrastructure, storage and disposal
• Demolition of buildings containing hazardous materials
• Surrounding land use, including activities undertaken within the Military Area and Jointly Used Area of Townsville Airport.

Civil aviation activities have the potential to lead to the following environmental impacts:

• Contamination from spillage, leakage or seepage or residual runoff from hardstand areas
• Contamination from disturbance of actual and / or potential acid sulphate soils
• Erosion.
10.4.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with civil aviation activities at Townsville Airport, including impacts to soil and groundwater, are assessed as part of the TAPL EMS as detailed in Section 10.2.

The majority of operations that take place within the Civil Area are on impervious surfaces that greatly reduce the likelihood of contamination.

Soil and groundwater quality within this area are identified through the TAPL Contaminated Land Register. Activities with the potential to impact upon soil or groundwater quality undergo a risk assessment to facilitate the development of appropriate training, monitoring and incident management and reporting procedures.

Soil erosion and sedimentation inspections are conducted annually across the Civil Area. Groundwater quality is monitored within known or suspected areas or areas with the potential for contamination within the Civil Area including aviation hardstands and historical landfill areas (Figure 10.2). The Defence also undertake groundwater quality monitoring within the Military Area.

Groundwater quality is measured in accordance with the requirements and prescribed analytes of the AEPR. Parameters include heavy metals and hydrocarbons.

Additional management measures have been developed and are being implemented through the TAPL EMS to prevent, control or reduce potential impacts to soil and groundwater quality at Townsville Airport, including:

- Environmental inductions
- Spill response and reporting procedures
- Waste handling procedures
- Vegetation removal and weed and pest control procedures
- Installation and maintenance of pollution control devices such as bunding
- Tenant and construction audits and routine inspections of the Civil Area
- Maintenance of the ESR and Chemwatch program
- Implementation of acid sulphate soil management measures through CEMP’s as required
- Implementation of soil and groundwater management measures through construction and operational EMP’s.

Airport tenants, contractors and operators are required to ensure appropriate systems and / or procedures are in place.
place to manage specific environmental risks associated with their activities.

Tenants, contractors and operators undertaking Category two activities may also be required to prepare and implement a relevant construction or operational EMP, or provide information similar to a construction or operational EMP, if advised to do so by the ABC and / or AEO.

TAPL undertakes regular inspections of the Civil Area and tenants, contractor and operator activities to ensure compliance. Where activities have resulted in soil or groundwater contamination, airport operators are required to undertake relevant measures to monitor, manage or remediate contamination caused by their operations.

10.4.4 Achievements in Soil and Groundwater Management 2009-2015

- Implemented the groundwater monitoring program
- Conducted groundwater monitoring of the Civil Area in the wet season to characterise groundwater flow and composition to facilitate quantification of human and environmental health risks
- Prepared and implemented the TAPL Townsville Airport Water Plan
- Conducted erosion and sedimentation inspections across the Civil Area annually prior to the wet season
- Developed and implemented standard soil and groundwater management requirements for CEMP’s through the TAPL CEMP proforma
- Engaged independent consultants to manage large construction works within the Civil Area
- Reviewed tenant groundwater monitoring and reporting
- Installation and maintenance of pollution control devices such as bunding
- Reviewed and integrated the contaminated sites register into the TAPL Environmental Sites Register
- Delineated areas of contamination and integrated into the TAPL Environmental Sites Register mapping interface.

10.4.5 Proposed Targets for Soil and Groundwater Management from 2016

Table 10.4 lists the proposed targets to meet TAPL’s objective for soil and groundwater management at Townsville Airport.

Table 10.4 TAPL Soil and Groundwater Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and implement a Contaminated Site Management Plan with priority actions for</td>
<td>2017</td>
</tr>
<tr>
<td>assessment and remediation works, as required</td>
<td></td>
</tr>
<tr>
<td>Develop Environmental Site Assessment Guidelines to guide new developments and lease</td>
<td>2017</td>
</tr>
<tr>
<td>terminations, based on existing Development Guidelines and development controls</td>
<td></td>
</tr>
<tr>
<td>Review and update the TAPL Environmental Site Register</td>
<td>Annually, or more frequently as</td>
</tr>
<tr>
<td>Implement the groundwater quality monitoring and management through the TAPL Water</td>
<td>required</td>
</tr>
<tr>
<td>Quality Management Plan</td>
<td>Half Yearly</td>
</tr>
<tr>
<td>Establish and implement a consistent approach to conducting inspections of erosion</td>
<td>2017</td>
</tr>
<tr>
<td>and sedimentation across the Civil Area</td>
<td></td>
</tr>
<tr>
<td>Continue to guide tenants to progressively remediate contaminated sites on a risk</td>
<td>Ongoing</td>
</tr>
<tr>
<td>basis where practicable</td>
<td></td>
</tr>
<tr>
<td>Complete the TAPL Water Quality Management Plan</td>
<td>2016</td>
</tr>
<tr>
<td>Continue to ensure all CEMP(s) incorporate measures to minimise potential adverse</td>
<td>As Required</td>
</tr>
<tr>
<td>impacts to soil and groundwater associated with construction activities</td>
<td></td>
</tr>
<tr>
<td>Asbestos action plan across the site, both from the environmental and human health</td>
<td>Address through monthly</td>
</tr>
<tr>
<td>hazard perspective</td>
<td>meetings</td>
</tr>
<tr>
<td>Groundwater monitoring and storage tank and smaller contaminated sites</td>
<td>Address through monthly</td>
</tr>
<tr>
<td></td>
<td>meetings</td>
</tr>
</tbody>
</table>
10.5 Hazardous Materials

10.5.1 Overview and Objectives

Objective: To ensure storage, handling and use of hazardous materials are carried out in accordance with applicable requirements and where feasible, substitute, minimise or eliminate their use.

Hazardous materials used in association with civil aviation operations and activities within the Civil Area are managed according to their nature and scale of the associated activity.

The use, handling, storage and disposal of hazardous materials within the Civil Area is managed in accordance with regulatory requirements for Workplace Health and Safety and the TAPL EMS and Aerodrome Emergency Plan.

10.5.2 Potential Environmental Impacts

TAPL has a responsibility to ensure all hazardous materials used in association with civil aviation operations and activities are managed appropriately to ensure that contaminants do not impact the Civil Area or surrounding environment. Civil aviation activities in which hazardous materials could affect the environment include:

- Bulk fuel storage and handling including aviation, unleaded and diesel fuels
- Aircraft refuelling
- Vehicle and aircraft washdown
- Aircraft, vehicle and mechanical plant and electrical equipment maintenance
- Construction, earthworks and demolition
- Quarantine operations
- General airport operation, construction, maintenance and landscaping including weed and animal pest control.

Civil aviation activities have the potential to lead to the following environmental impacts:

- Release of hazardous materials
- Water, land and air contamination
- Human and ecosystem health impacts.

10.5.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with civil aviation activities at Townsville Airport, including the use, storage, handling and disposal of hazardous materials, are assessed as part of the TAPL EMS as detailed in Section 10.2.

Hazardous materials in the Civil Area are managed in accordance with regulatory requirements for Workplace Health and Safety and the TAPL EMS and Aerodrome Emergency Plan. These mechanisms outline procedures for spill response, major incident response, stormwater retention basin maintenance, incident reporting and tenant and construction auditing as well as maintenance of TAPL’s hazardous materials registers including Chemwatch.

Hazardous materials are periodically substituted or replaced where feasible, with all associated handling and disposal works undertaken by TAPL staff or contractors with the appropriate relevant licences.

Airport tenants, contractors and operators are required to ensure appropriate systems and/or procedures are in place to manage specific environmental risks associated with their activities.

Tenants, contractors and operators undertaking Category two activities may also be required to prepare and implement a relevant construction or operational EMP, or provide information similar to a construction or operational EMP, if advised to do so by the ABC and/or AEO.

TAPL undertakes regular inspections of the Civil Area and tenants, contractor and operator activities to ensure compliance.

10.5.4 Achievements in Hazardous Materials Management 2009-2015

- Implemented and maintained the Chemwatch for provision of manifest and Safety Data Sheets (SDSs) for substances used by TAPL
- Maintained and implemented the TAPL Asbestos Register
- Developed and updated the TAPL Environmental Sites Register from existing contaminated sites,
asbestos and Chemwatch registers

- Reviewed and revised the TAPL environmental audit program including categorisation of environmental risks associated with airport tenants and operations
- Removal of asbestos from the Civil Area and TAPL infrastructure in line with regulatory procedures
- Maintained and implemented the TAPL spill response procedures and Aerodrome Emergency Plan
- Developed and implemented standard hazardous materials management requirements for CEMP’s through the TAPL CEMP proforma.

10.5.5 Proposed Targets for Hazardous Materials Management from 2016

Table 10.5 lists the proposed targets to meet TAPL’s objective for hazardous materials management at Townsville Airport.

10.6 Ground-based Noise

10.6.1 Overview and Objectives

Objective: To ensure all developments and airport activities comply with relevant ground-based noise regulations whilst striving for continuous improvement

Townsville Airport is located in an existing urbanised area and noise sensitive receptors neighbouring the Civil Area primarily consist of residential and commercial premises.

Under the Regulations, TAPL is responsible for managing noise generated by ground-based activities within this area. Ground-based noise generated by military activities at Townsville Airport is the responsibility of the Defence and noise generated from aircraft during flight, landing, take-off and taxiing is the responsibility of Airservices Australia.

Noise enquiries are received and responded to by TAPL and Airservices Australia. Generally, TAPL receives a low volume of noise enquiries related to ground-based noise.

10.6.2 Potential Environmental Impacts

TAPL has a responsibility to manage noise generated by ground-based activities within the Civil Area to ensure they do not adversely impact upon neighbouring noise sensitive receptors. Civil aviation activities with the potential to generate ground-based noise include:

- Aircraft ground running and movement
- Aircraft maintenance and testing activities
- Fixed and mobile plant and equipment use
- General airport and infrastructure maintenance activities
- Construction and demolition works
- Internal road network traffic
- Tenant activities.

Civil aviation activities have the potential to lead to the following environmental impacts:

- Nuisance to airport operators and the community
- Disruption in roosting and breeding behaviour of local fauna.

Table 10.5 TAPL Hazardous Materials Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review hazardous materials on site and examine options to substitute, minimise or eliminate their use</td>
<td>2017</td>
</tr>
<tr>
<td>Continue to conduct asbestos audits of all facilities under TAPL operational control as per regulatory guidelines</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Maintain and review the TAPL Asbestos Register and develop a maintenance and containment strategy as per regulatory guidelines</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to undertake environmental audits of tenants and airport operations associated with the use of hazardous materials and provide guidance to stakeholders on appropriate management</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to store and manage hazardous substances and dangerous goods on airport land in accordance with regulatory requirements</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to implement emergency response plans for hazardous materials spills</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
10.6.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with civil aviation activities at Townsville Airport, including the ground-based noise, are assessed as part of the TAPL EMS as detailed in Section 10.2.

TAPL receives noise enquiries directly and from Airservices Australia. All noise enquiries reported to TAPL are entered into the TAPL Noise Enquiry Register, investigated and appropriate corrective actions implemented as required. Noise enquiries are also monitored and collated monthly to identify any trends or issues.

Noise measurements are undertaken by TAPL in response to noise enquiries as required. The Defence also undertake noise monitoring within the Military Area to identify trends in ground-based noise generated at Townsville Airport.

Management measures have been developed and are being implemented through the TAPL EMS to prevent, control or reduce potential impacts associated with ground-based noise in the Civil Area. This includes environmental awareness and inductions, tenant and construction audits. Aircraft ground running policy has been developed and is reviewed of the policy in response to airport operation issues and tenant feedback. TAPL also ensures regular servicing and maintenance of all vehicles, plant and equipment to assist with minimising ground-based noise.

Airport tenants, contractors and operators are required to ensure appropriate systems and / or procedures are in place to manage specific environmental risks associated with their activities.

In accordance with the TAPL EMS, airport tenants, contractors and operators undertaking Category three or four activities are required to prepare and implement a relevant construction or operational EMP outlining measures and responsibilities for reducing and managing this risk. Construction and operational EMP’s are developed in accordance with Section 10.2 and are required to include appropriate noise management and suppression measures such as restricted work hours to reduce and minimise noise impact. Construction sites are also regularly inspected to ensure they meet their CEMP requirements.

TAPL maintains an interest in noise issues that they are unable to directly manage, through involvement in stakeholder committees including the TAPL CACG.

10.6.4 Achievements in Ground-based Noise Management 2009-2015

- Monitored and responded to all ground-based noise enquiries received directly and by Airservices Australia
- Developed and implemented standard ground-based noise management requirements for CEMP’s through the TAPL CEMP proforma
- Reviewed and updated the TAPL Ground Running Policy
- Conducted regular inspections of construction and ground running activities within the Civil Area
- Reviewed and revised the TAPL environmental audit program including categorisation of environmental risks associated with airport tenants and operations
- Provided input to TCC’s Master Planning to assist with the development of appropriate land use planning for areas surrounding Townsville Airport
- Engaged the Defence to discuss opportunities to improve ground-based noise management.

10.6.5 Proposed Targets for Ground-based Noise Management from 2016

Table 10.6 lists the proposed targets to meet TAPL’s objective for ground-based noise management at Townsville Airport.

10.7 Local Air Quality

10.7.1 Overview and Objectives

Objective: To ensure all developments and airport activities comply with relevant air quality regulations whilst striving for continuous improvement.

Townsville Airport is located within an urbanised area and air quality in the local airshed has been monitored by the Department of Environment and Heritage Protection (DEHP) for more than a decade.

Under the AEPR, TAPL is responsible for managing air emissions generated by ground-based activities
associated with civil aviation operations at Townsville Airport, within the Civil Area boundary only.

Air quality outside the airport boundary is subject to the provisions of the Queensland Environmental Protection Act 1994 (QLD). Air emissions generated by aircraft are regulated by the Air Services Act 1995 and their regulations.

Data published by the DEHP shows air quality in the airshed that encompasses Townsville Airport meets the criteria of relevant regulations and National Environment Protection (Ambient Air Quality) Measures 1998 (Cth).

TAPL also has a responsibility to report air emissions to the Australian Government under the National Environment Protected Measures, where relevant thresholds are triggered. To date, TAPL has not met the threshold for reporting.

10.7.2 Potential Environmental Impacts

TAPL has a responsibility to manage air emissions generated by activities within the Civil Area to ensure they do not adversely impact upon neighbouring sensitive receptors. Accepted limits of air pollutants are defined by Schedule 1 of the Airports (Environment Protection) Regulations 1997 (Cth).

Civil aviation activities with the potential to generate air emissions include:

- Aircraft ground operations including refuelling
- Vehicle, plant and equipment operations
- Use of air-conditioners, pumps and generators
- General aviation maintenance including spray painting and paint stripping activities, workshop activities and cleaning operations using organic solvents
- Use of ground power units and auxiliary power units
- Use, handling, storage and disposal of hazardous materials
- Removal and / or damage to asbestos containing materials
- Grounds maintenance including vegetation removal and weed control
- Construction and demolition works.

Civil aviation activities have the potential to lead to the following environmental impacts:

- Airborne pollution including contributions to climate change and ozone depletion
- Release of asbestos fibres
- Reduced visibility for aircraft
- Sedimentation of internal drainage network
- Public nuisance
- Offensive odours.

10.7.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with civil aviation activities at Townsville Airport, including the local air quality, are assessed as part of the TAPL EMS as detailed in Section 10.2.

TAPL maintains and updates an air emissions inventory to identify and manage risks associated with air emissions and local air quality.

Additional management measures have been developed

Table 10.6 TAPL Ground-based Noise Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review noise monitoring data collected by RAAF Base Townsville</td>
<td>Annually</td>
</tr>
<tr>
<td>Timely investigation of any reported inappropriate noise generation</td>
<td>As required</td>
</tr>
<tr>
<td>Continue to ensure all CEMP’s incorporate measures to minimise potential adverse noise impacts associated with construction activities</td>
<td>As required</td>
</tr>
<tr>
<td>Continue to review and enforce the TAPL Ground Running Policy</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to engage with the local community on noise issues</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to investigate noise abatement measures and where feasible, integrate into airport operations</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
and are being implemented through the TAPL EMS including:

- Environmental awareness and inductions
- Tenant and construction audits
- Environmental compliant management through the TAPL Customer Information Service
- Incorporated dust control measures into Method of Work Plans and CEMP’s as standard
- Procedures for the use, handling, storage and disposal of hazardous materials
- Stabilisation of disturbed areas
- Collection and disposal of ozone-depleting substances from air-conditioning units
- Avoidance of pest controls containing methyl bromide
- Maintenance of vegetation cover in undeveloped areas
- Implementation and review of the TAPL Asbestos Management Plan
- Procedures for earthworks and weed control activities in windy conditions
- Maintenance of vehicles, plant and equipment to prescribed standards.

Airport tenants, contractors and operators are required to ensure appropriate systems and/or procedures are in place to manage specific environmental risks associated with their activities as detailed in Section 10.2.

A CEMP is required for all development and is to include specific measures to appropriately manage environmental risks posed by construction activities, including air emissions.

TAPL controls emissions from minor point sources through regular site inspections and the implementation of tenant EMP’s. TAPL manages dust emissions from construction activities through mitigation strategies detailed in construction EMP’s.

10.7.4 Achievements in Local Air Quality Management 2009-2015

- Developed and implemented the TAPL Refrigeration and Air Conditioning Risk Management Plan including an internal audit procedure and licencing requirements for recovery and removal of refrigerants
- Maintained and updated the TAPL Ozone Depleting Substances Register
- Responded to environmental complaints in accordance with the TAPL Customer Information Service
- Developed and implemented standard air emission management requirements for CEMP’s through the TAPL CEMP proforma
- Reviewed, updated and integrated the contaminated sites register into the TAPL ESR and delineated areas of contamination and integrated into the TAPL ESR mapping interface
- Conducted regular inspections of construction activities within the Civil Area
- Reviewed and revised the TAPL environmental audit program including categorisation of environmental risks associated with airport tenants and operations.

10.7.5 Proposed Targets for Local Air Quality Management from 2016

Table 10.7 lists the proposed targets to meet TAPL’s objective for local air quality management at Townsville Airport.

10.8 Energy Efficiency and Sustainable Development

10.8.1 Overview and Objectives

Objective: To minimise and improve efficiency of energy consumption for facilities and activities under TAPL operational control and incorporate sustainable development principles into new and existing TAPL facilities in a manner that minimizes cost and natural resource use.

The consumption of renewable and non-renewable resources expend natural resources and often create by-products, such as greenhouse gas emissions, which require further management.

Townsville Airport operates 24 hours a day and in the FY2013-14, TAPL consumed 7,353 MWh of electricity, a decrease of 280 MWh (or approximately 4 percent) from the previous reporting period. Energy consumption is expected to increase with the impending growth and expansion of Townsville Airport and passenger numbers.

TAPL is committed to environmental sustainability through the appropriate management of energy and fuel consumption associated with facilities and activities.
under its operational control. This is achieved through the measuring of its carbon footprint and development and implementation of measures to reduce energy and fuel use, where practicable. Why TAPL does not trigger the reporting requirements under NGER, NGER reporting is undertaken periodically to facilitate ongoing changes in emissions. In 2014-2015, TAPL did not meet the requirements for emission reporting under the NGER Act.

Resource use efficiency is promoted through environmentally sustainable development. TAPL is committed to sustainable development of the Civil Area through its energy and water efficiency initiatives.

10.8.2 Potential Environmental Impacts

Energy Efficiency

Activities under TAPL’s operational control that consume energy or fuel and / or have the potential to generate greenhouse gas emissions include:

- Use of electricity through lighting (internal, street, carpark, air-conditioning, refrigeration, operation of terminal, sewer pump stations etc.
- Use of fuel through vehicle, plant and equipment operation, generator use, aircraft ground running activities, food preparation by operators
- Release of methane associated with historical land uses (landfill).

Civil aviation activities have the potential to lead to the following environmental impacts:

- Generation of greenhouse gas emissions
- Depletion of natural resources.

Sustainable Development

Inappropriate planning and infrastructure design have the potential to increase operation costs and associated resource consumption, generate excessive waste and degrade the natural environment.

10.8.3 Measures to Prevent, Control or Reduce Environmental Impact

Energy Efficiency

Environmental risks associated with facilities and activities under TAPL’s operational control, including energy and fuel consumption, are assessed as part of the TAPL EMS as detailed in Section 10.2. Risks associated with the potential for environmental impact have appropriate control measures detailed in the TAPL EMS.

TAPL maintains and updates annual air emissions and energy consumption inventories to identify and manage risks associated with greenhouse gas emissions. Additional management measures are implemented to facilitate management of energy and fuel use including environmental awareness and inductions and tenant and construction audits.

Airport tenants, contractors and operators are required to ensure appropriate systems and / or procedures are in place to manage specific environmental risks associated with their activities as detailed in Section 10.2.

A CEMP is required for all development and must include specific measures to appropriately manage environmental risks posed by construction activities, including energy and fuel use.

Table 10.7 TAPL Local Air Quality Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue to undertake air emissions audit in line with National Pollutant Inventory</td>
<td>2016</td>
</tr>
<tr>
<td>Review air quality monitoring data collected by DEHP Pimilico Monitoring Station</td>
<td>Annually</td>
</tr>
<tr>
<td>Continue to maintain and review the TAPL Ozone Depleting Substances Register and identify options to substitute, minimise or eliminate their use</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Review the TAPL Refrigeration and Air Conditioning Risk Management Plan and continue to recover and remove refrigerants within the Civil Area accordingly</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Ensure appropriate servicing and maintenance of TAPL plant and equipment</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to ensure all CEMP(s) incorporate measures to minimise potential adverse impacts to local air quality associated with construction activities</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to provide guidance to stakeholders on air quality improvement strategies</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
Known and potential contaminated sites with the potential to generate methane gases are managed as outlined in Section 10.4 Sustainable Development.

TAPL implements a number of sustainable development measures through the TAPL EMS as detailed in Section 10.2. Development Guidelines have been developed and are implemented within the Civil Area with the aim of integrating sustainability principles and technologies into new developments and existing facilities.

TAPL also operates a Building Management System in the terminal to optimise lighting, air-conditioning and other automated functions. Tenants are also encouraged to consider sustainable design and resource efficiency in their facilities and operations through environmental awareness and induction programs and annual audits. Landscaping guidelines have been developed and implemented at the airport with the aim to utilise drought resistant species to minimise water usage.

TAPL also adopts the revised QAL Sustainability and Procurement Policies to ensure products purchased have a minimal impact upon the environment where practicable.


- Incorporated energy conservation into environmental awareness and inductions
- Review of carbon management program in 2015 to identify measures to improve carbon management
- Installation of a building management system (BMS) in terminal to control lighting, air-conditioning and other automated functions
- Overall 7.3 percent reduction in energy use across TAPL facilities and operations from 2011
- Installation of 30kW solar system on the TAPL administration building resulting in a 50 percent reduction in energy use
- Drafted the TAPL Emissions Reduction Plan outlining an action plan to identify possible reductions through appropriate control measures
- Replacement of terminal lighting with LED fixtures resulting in a 58 percent reduction in energy use
- Upgrade of short term carpark lighting to low energy street lights
- Incorporation of energy efficiency measures in TAPL Development Guidelines

- Continued investigations into use of renewable energy sources within the Civil Area including ongoing negotiations with current electricity provider
- Replaced half of TAPL fleet with more fuel efficient vehicles.

10.8.5 Proposed Targets for Energy and Fuel Management from 2016

Table 10.8 lists the proposed targets to meet TAPL’s objective for energy and sustainable development at Townsville Airport.

10.9 Water Resources

10.9.1 Overview and Objectives

Objective: To minimise and improve efficiency of water use at all facilities under TAPL operational control. TAPL is committed to environmental sustainability through the appropriate management of water consumption associated with facilities and activities under its operational control. TAPL reduced its water consumption associated with its operations by four percent from FY2012-13 to FY2013-14 whilst tenants within the Civil Area reduced their water consumption by 35 percent from the same reporting period.

Consumption of water resources is however, expected to increase over time with the impending growth and expansion of Townsville Airport.

10.9.2 Potential Environmental Impacts

The consumption of water resources at Townsville Airport has the potential to deplete town water supply as well as increase pressure on existing service infrastructure. Facilities and activities under TAPL’s operational control that consume water resources include:

- Aircraft and vehicle washdown
- Aircraft water uptake and waste disposal
- Commercial kitchen facilities
- Cooling towers associated with air-conditioning units
- Cleaning, amenities and hygiene management
- Construction works
- General maintenance activities including irrigation and bushfire risk management.
10.9.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with facilities and activities under TAPL’s operational control, including water consumption, are assessed and managed through the TAPL EMS as detailed in Section 10.2.

TAPL implements a number of measures to facilitate water resource management within the Civil Area in an effort to prevent, control or reduce consumption including:

- Maintaining and reviewing the TAPL water consumption inventory for facilities and activities under its operational control
- Water quality testing of potable water for aircraft uptake
- Water conservation awareness through inductions and TAPL Development Guidelines
- Tenant and construction audits
- Utilisation of stormwater captured from the terminal building to irrigate terminal gardens
- Encourage the use of water sensitive design in the new infrastructure
- Development and implementation of TAPL Landscaping Guidelines to guide tenants, contractors and staff in water efficiency landscape design and species selection.

Airport tenants, contractors and operators are required to ensure appropriate systems and / or procedures are in place to manage specific environmental risks associated with their activities as detailed in Section 10.2.

Tenants are also encouraged to utilise sensitive water design in their facilities.

10.9.4 Achievements in Water Resources Management 2009-2015

- Overall 20 percent reduction in water use in the Civil Area from 2009
- Incorporation of water conservation into environmental awareness and inductions
- Installation of a BMS in terminal to control lighting, air-conditioning and other automated functions
- Implemented potable water quality monitoring through the TAPL Townsville Airport Water Quality Management Plan
- Installation of rainwater tanks at terminal building to capture and reuse stormwater in terminal gardens
- Upgraded water meters and detected and rectified leaks where identified
- Regular monitoring and maintenance of water meters and water infrastructure to identify and rectify leakage
- Conducted annual water audits to quantify water usage and delineate between tenant and TAPL operations
- Incorporation of water efficiency measures and sensitive water design in TAPL Development Targets (2016-2021)

Table 10.8 TAPL Energy Efficiency and Sustainable Development Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop procedure for carbon measuring for all facilities and activities under TAPL operational control, in line with NGER Act, and complete carbon footprint analysis</td>
<td>2017</td>
</tr>
<tr>
<td>Develop a strategy to manage and reduce greenhouse gas emissions, including participation in an affiliated carbon accreditation program and incorporating actions identified in the drafted TAPL Emissions Reduction Plan</td>
<td>2018</td>
</tr>
<tr>
<td>Incorporate sustainable design principles into airport environmental management guidelines for use by tenants, contractors, and TAPL staff</td>
<td>2018</td>
</tr>
<tr>
<td>Continue to provide guidance to tenants on techniques for measuring emissions and reducing energy consumption</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Support and facilitate fuel reduction initiatives by aircraft operators where possible</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to improve building performance through cost-effective improvements to operation and maintenance practices</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Incorporate sustainable design principles into development guidelines, encouraging adoption of energy and water efficiency measures where feasible</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to identify sustainable development opportunities</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
Guidelines

• Facilitated tenant water sensitive design initiatives including the installation of 2040L rainwater tank at the AVIS car rental facility to capture and reuse stormwater for vehicle washdowns
• Review and update of TAPL Landscaping Guidelines to ensure water sensitive design and species selection utilised, where practicable, in landscaped areas.

10.9.5 Proposed Targets for Water Resources Management from 2016

Table 10.9 lists the proposed targets to meet TAPL’s objective for water resource management at Townsville Airport.

10.10 Waste

10.10.1 Overview and Objectives

Objective: To minimise waste consumption and decrease waste to landfill.

Waste, as defined in the AEPR, includes refuse in any form, discarded or disused plant or equipment and industrial by-products. TAPL is committed to minimising waste generated by its facilities and activities by implementing appropriate systems for containment and disposal in accordance with relevant standards and legislative requirements.

Waste management within the Civil Area is guided by the TAPL Waste Management plan and principles of the waste management hierarchy framework of the Queensland Waste Avoidance and Resource Productivity Strategy 2014-2024. (Figure 10.4)

10.10.2 Potential Environmental Impacts

Waste streams generated or with the potential to be generated at Townsville Airport include general waste, organics including food scraps and vegetation material, recyclable items including paper, glass and plastics, liquid sanitary and trade waste, hazardous wastes including oils, construction materials and discarded plant and equipment, and e-waste including computers and other electronic equipment.

Facilities and activities under TAPL’s operational control that generate waste or have the potential generate waste include:

• Vehicle and aircraft washdown
• Cleaning, amenities and hygiene management
• General maintenance activities including landscaping and vegetation / weed management
• Aircraft operations
• Vehicle, plant and equipment maintenance
• Terminal operations
• Commercial kitchens
• Administration / offices
• Construction and demolition works.

Inappropriate waste management has the potential to lead to the following environmental impacts:

• Increased demand on local landfill space
• Depletion of natural resources
• Increased energy use associated with recycling of waste
• Increased fuel consumption associated with

Table 10.9 TAPL Water Resource Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review water audit methodology to delineate and quantify potable and non-potable water consumption associated with facilities and activities under TAPL operational control</td>
<td>Annually</td>
</tr>
<tr>
<td>New developments to incorporate water sensitive urban design features, where feasible</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to monitor opportunities to improve resource use during tenant audits</td>
<td>As required (Category 1) 3 yearly (Category 2) Annually (Category 3 and 4)</td>
</tr>
<tr>
<td>Monitor potable water quality to aerobridges in accordance with the TAPL Water Quality Management Plan</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Strive to minimise resource use associated with construction activities</td>
<td>As required</td>
</tr>
</tbody>
</table>
transport of waste
• Water, air or soil contamination through incorrect waste disposal
• Increased safety risk to aircraft through presence of foreign object debris (FOD) in airfield and increased attraction wildlife attraction.

10.10.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with facilities and activities under TAPL’s operational control, including waste generation and disposal, are assessed and managed through the TAPL EMS as detailed in Section 10.2.

TAPL implements a number of measures to facilitate waste management within the Civil Area in an effort to prevent, control or reduce consumption. Waste receptacles are provided at various locations within TAPL managed facilities and on ground (airside and landside) to collect general and organic waste materials. Receptacles are collected and disposed of at an approved waste management (landfill) facility.

TAPL minimises waste to landfill through the implementation of the TAPL Public Place Recycling Program. Co-mingled bins are provided at TAPL buildings including the terminal. Recyclable materials are collected and sorted by an approved agent.

Trade waste, including wastewater, generated by airport operators is collected and treated on site before release to the sewer network. Treated output is monitored by Townsville City Council to ensure appropriate treatment prior to transfer to the Mount St John’s Wastewater Treatment Plant, to the west of Townsville Airport. All hazardous materials and waste products are handled, stored and disposed of in accordance with relevant legislative requirements.

TAPL also adopts the QAL Sustainability and Procurement Policies to ensure all products purchased have a minimal impact upon the environment where practicable.

TAPL also conducts regular inspections of the Civil Area and Jointly Used Area to ensure FOD is recovered and disposed of appropriately and waste is appropriately contained and covered to minimise wildlife attraction.

Airport tenants, contractors and operators are required to ensure appropriate systems and / or procedures are in place to manage specific environmental risks associated with their activities as detailed in Section 10.2.

TAPL also continues to encourage and facilitate best practice waste management of tenant and operator facilities and operations through awareness, inductions and stakeholder meetings.

10.10.4 Achievements in Waste Management 2009–2015

• Installed comingled recycling bins in terminal
• Encouraged environmental awareness through inductions, Environmental Alerts, distribution of information sheets to tenants
• Incorporated waste volume reporting clauses into new tenant leases
• Developed and maintained the TAPL Waste Volume Register and associated waste tracking certificates
• Developed and implemented the TAPL Regulated Waste Transport and Tracking Procedure to quantify waste generation and disposal volumes in the Civil Area
• Conducted public area waste audit for the terminal and TAPL operations
• Erected signage at waste disposal areas to encourage use
• Developed and implemented the TAPL Waste Management Plan to identify waste streams, waste generating activities and actions for improved waste management at airport
• Implemented paperless office initiative in TAPL
administration buildings and reduced office waste generation accordingly.

10.10.5 Proposed Targets for Waste Management from 2016

Table 10.10 lists the proposed targets to meet TAPL’s objective for waste management at Townsville Airport.

10.11 Climate Change

10.11.1 Overview and Objectives
Objective: To improve preparedness against and manage potential impacts of climate change on airport infrastructure and operations.

According to the CSIRO and the Townsville City Council’s Coastal Hazard Adaptation Study 2012, the climate in Townsville is predicted to be warmer and drier with decreasing annual rainfall and increasing frequency of hot days and extreme fire risk conditions.

Townsville is also expected to experience more severe cyclones more often than previously, though the total number of cyclones to impact Townsville is predicted to remain steady. The risk of storm surge is also expected to increase with sea level rise.

TAPL is committed to managing the potential impact of climate change on civil aviation operations and infrastructure through identification and management of associated risks.

Section 10.8 discusses managing climate change in the context of greenhouse emissions generated by facilities and activities under TAPL’s operational control.

10.11.2 Potential Environmental Impacts

Changes in climatic conditions have the potential to impact civil aviation operations through:

- Deterioration of infrastructure and increase in frequency in maintenance
- Increased demand for natural resources (e.g. energy for air-conditioning) and associated operational costs
- Increased grounds maintenance
- Loss of productivity associated with airport shutdown in extreme weather conditions
- Increased stress on vegetation and turfed areas increasing exposed ground and aircraft hazard (e.g. wildlife attraction and dust)
- Increased fire risk.

10.11.3 Measures to Prevent, Control or Reduce Environmental Impact

TAPL manages climate change risk through the TAPL EMS as detailed in Section 10.2. Development Guidelines have been developed and are implemented within the Civil Area to guide sustainable and structurally sound development, suitable for cyclonic exposure.

Energy and water efficiency measures have been implemented to reduce natural resource use associated with TAPL facilities and activities. Landscaping guidelines have been developed and implemented at the airport with the aim to utilise drought resistant species able to withstand predicted weather conditions.

Firebreaks are maintained along the Civil Area boundary to manage fire risk. Extreme weather conditions are further managed through the Townsville Aerodrome Emergency Plan, Townsville Airport Cyclone Plan and TAPL regularly participates and contributes to local and

Table 10.10 TAPL Waste Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review terminal public place recycling system with terminal expansion</td>
<td>2017</td>
</tr>
<tr>
<td>Review waste streams and management practices for opportunities to reduce waste generation requiring disposal to landfill</td>
<td>2017</td>
</tr>
<tr>
<td>Continue to implement and review the TAPL Waste Management Plan and waste minimisation initiatives therein</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to support airport tenants to expand their waste avoidance, reuse and recycling programs</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to provide waste management training and inductions for TAPL staff, airport operators and contractors</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
State adaptive planning processes and committees.

10.11.4 Achievements in Climate Change Management 2009-2015

- Promoted climate change awareness through environmental awareness programs and inductions
- Promoted sustainable development design through TAPL Development Guidelines and tenant audits
- Reviewed and updated the Aerodrome Emergency Plan and Cyclone Plan
- Participated in local and State adaptive planning committees and forums
- Maintained fire breaks along Civil Area boundary
- Maintained vegetation cover across undeveloped areas of the Civil Area.

10.11.5 Proposed Targets for Climate Change Management from 2016

Table 10.11 lists the proposed targets to meet TAPL’s objective for climate change management at Townsville Airport.

10.12 Biodiversity

10.12.1 Overview and Objectives

Objective: To appropriately manage biodiversity values at Townsville Airport with due regard for mitigation of bird and wildlife strike risk.

The Civil Area of Townsville Airport is a highly modified environment and characterised by landscaped gardens and turf grassed areas in association with development and infrastructure and weed dominated vegetation to the north in association with an undeveloped portion of land.

The Civil Area of Townsville Airport does not contain or lie adjacent to any areas of environmental significance as defined in Section 10.2.9. Areas of environmental significance are present in the vicinity of the Civil Area including the Townsville Town Common to the north and Great Barrier Reef Marine Park and World Heritage Area, five km to the east.

The Civil Area drains to the east, away from the Townsville Town Common, and towards the coastal waters of Rowes Bay via Mundy Creek (Figure 10.2). The Civil Area and broader airport environs provide limited habitat value for birds including the nationally threatened Eastern Curlew (Numenius madagascariensis) and a number of migratory birds including the Fork-tailed Swift (Apus pacificus), Eastern Great Egret (Ardea modesta), Barn Swallow (Hirundo rustica), Rainbow Bee-eater (Merops ornatus) and Satin Flycatcher (Myiagra cyanoleuca). These species have been observed to utilise the Civil Area and surrounding land for opportunistic foraging purposes but not roosting or breeding purposes.

10.12.2 Potential Environmental Impacts

TAPL is committed to managing biodiversity within the Civil Area and reducing the potential impact of its operations on biodiversity of the surrounding area.

Civil aviation activities with the potential to impact upon biodiversity include:

- Grounds maintenance activities including vegetation clearing and slashing
- Weed and animal pest control
- Hazardous wildlife procedures
- Vehicle or aircraft movements
- Construction and demolition works

Sub-optimal habitat for two species listed under the EPBC Act including the Eastern curlew and the endangered Australian Painted Snipe (Ecological Values of Townsville Airport 2015)

Table 10.11 TAPL Climate Change Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undertake climate vulnerability and adaptation study to identify potential impacts of climate change on airport infrastructure and operations and recommend new requirements for pavement and building standards and airport drainage</td>
<td>2018</td>
</tr>
<tr>
<td>Incorporate recommendations of study into development and environmental management guidelines, where feasible</td>
<td>2019</td>
</tr>
<tr>
<td>Continue to manage extreme weather events through the Townsville Aerodrome Emergency Plan and relevant supporting plans</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
Civil aviation activities have the potential to lead to the following environmental impacts:

- Loss of opportunistic foraging habitat
- Degradation of opportunistic foraging habitat
- Reduce native biodiversity
- Introduction and / or spread of weed and animal pest species
- Direct injury to fauna through vehicle collision or wildlife hazard procedures
- Disturbance of potential acid sulphate soils.

Surrounding land use may also impact upon biodiversity within the Civil Area through predation by domestic dogs and cats, and habitat clearance associated with development. Declared animals, such a feral pigs, may also impact on airport operations.

10.12.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with civil aviation activities at Townsville Airport, including impacts to biodiversity, are assessed as part of the TAPL EMS as detailed in Section 10.2.

Biodiversity within the Civil Area is monitored through periodic ecological surveys and maintenance activities (such as weed control) as well as species abundance reporting associated with the TAPL Wildlife Hazard Management Plan.

Management measures have been developed and are being implemented through the TAPL EMS. These measures include:

- Environmental inductions
- Spill response and reporting procedures
- Waste handling procedures
- Landscaping procedures and guidelines with an emphasis on using locally sourced, endemic species
- Vegetation and grounds maintenance
- Weed and animal pest control procedures
- Installation and maintenance of pollution control devices such as bunding
- Tenant and construction audits and routine inspections of the Civil Area
- Relocation of fauna from construction sites
- Hazardous wildlife management procedures and training.

Airport tenants, contractors and operators are required to ensure appropriate systems and / or procedures are in place to manage specific environmental risks associated with their activities as detailed in Section 10.2.

CEMP’s are required for all new developments. CEMP’s or OEMP’s outline measures and responsibilities for reducing and managing risks to biodiversity.

10.12.4 Achievements in Biodiversity Management 2009-2015

- Conducted periodic terrestrial and aquatic ecological assessments of the Civil Area including targeted searches for species of environmental significance
- Implemented weed control measures in accordance with best practice
- Implemented animal pest control measures;
- Implemented erosion and stormwater control measures and monitoring to monitor potential environmental impact to biodiversity
- Developed the Townsville Airport Weed and Pest Management Plan 2016-2021
- Implemented and reviewed the TAPL Wildlife Hazard Management Plan
- Partnered with James Cook University to research hazardous wildlife utilising the airport
- Contributed to the Common Interest Working Group to facilitate the management of the Townsville Town Common
- Contributed to the Town Common Revitalisation Program and annual biodiversity studies of Middle Reef and Magnetic Island
- Participated in weed control and rehabilitation activities in the Townsville Town Common
- Hosted work experience students from local schools and sponsored pre-launch celebration of the Common Interest Working Group
- Conducted tenant and construction audits
- Complete weed survey and mapping of the northern section of the Civil Area and preparation of the Townsville Airport Integrated Weed Management Plan.

10.12.5 Proposed Targets for Biodiversity Management from 2016

Table 10.12 lists the proposed targets to meet TAPL’s objective for biodiversity management at Townsville Airport.
10.13 Wildlife Hazard Risk

10.13.1 Overview and Objectives

Objective: To minimise and manage bird and wildlife strike risks at Townsville Airport and vector risks associated with facilities and activities under TAPL’s operational control.

TAPL maintains and implements the wildlife hazard management plan across the TAPL lease and Jointly Used Areas of Townsville Airport, with the objective of minimising risks to aviation safety and wildlife conservation. TAPL is also responsible for managing mosquitoes in the Civil Area and associated risks to human health.

Townsville Airport lies adjacent to a number of bird habitat areas including the Townsville Town Common. TAPL is collaborating with the Defence and other aviation and non-aviation stakeholders to identify high risk activities and areas within three, eight and 13 km of Townsville Airport in accordance with the National Airports Safeguarding Framework (NASF) Guideline on Managing the Risk of Wildlife Strikes in the Vicinity of Airport.

Townsville Airport lies adjacent to potential mosquito breeding grounds and civil aviation operations have the potential to impact on wildlife hazard risk through the creation of hazardous wildlife habitat through inappropriate airport maintenance and operation activities, species selection in landscaping and grounds maintenance activities and through poor quarantine management.

10.13.2 Potential Environmental Impacts

TAPL is committed to managing wildlife hazard risks at Townsville Airport and reducing the potential impact of its operations on wildlife hazard risks on airport and to surrounding land.

Civil aviation activities have the potential to impact on wildlife hazard risk through the creation of hazardous wildlife habitat through inappropriate airport maintenance and operation activities, species selection in landscaping and grounds maintenance activities and through poor quarantine management.

10.13.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with civil aviation activities at Townsville Airport, including impacts to wildlife hazard risk, are assessed as part of the TAPL EMS as detailed in Section 10.2.

Daily airside monitoring of wildlife is conducted by airside safety officers in accordance with the wildlife hazard management plan. Hazardous wildlife are monitored regularly through opportunistic observations, periodic species abundance reporting associated with the TAPL Wildlife Hazard Management Plan.

Additional management measures have been developed and are being implemented through the TAPL EMS to prevent, control or reduce potential impacts to biodiversity.

These measures include:

- Environmental inductions
- Landscaping procedures and guidelines with an emphasis on avoiding bird attracting species

| Table 10.12 TAPL Biodiversity Management Program for Townsville Airport |
|---------------------------------|------------------|
| Targets (2016-2021)             | Timeframe        |
| Complete flora and fauna assessment of airport land under TAPL operational control | 2017 |
| Complete weed survey and mapping of airport land under TAPL operational control | 2017 |
| Implement Weed and Pest Management Plan | 2017 |
| Investigate opportunities for involvement in programs to increase biodiversity values within local region | Ongoing |
| Investigate opportunities to collaborate with airport neighbours on weed and animal control measures | Ongoing |
| Continue to ensure all CEMP(s) incorporate measures to minimize potential adverse impacts to flora and fauna associated with construction activities | As required |
• Waste handling procedures
• Vegetation and grounds maintenance
• Weed and animal pest control procedures
• Tenant and construction audits and routine inspections of the Civil Area
• Periodic ecological surveys of Civil Area
• Wildlife strike reporting and monitoring procedures
• Analysis of the ecological integrity and biodiversity of the Townsville Town Common to facilitate hazardous wildlife risk assessment.

Analysis of the ecological integrity and biodiversity of the Townsville Town Common to facilitate hazardous wildlife risk assessment.

The Australian Department of Agriculture conducts regular mosquito surveillance of the terminal and Townsville City Council inspect and apply mosquito treatment to the airport internal drainage network.

Airport tenants, contractors and operators are required to ensure appropriate systems and / or procedures are in place to manage specific environmental risks associated with their activities as detailed in Section 10.2.


• Implemented, reviewed and updated the TAPL Wildlife Hazard Management Plan
• Implemented the TAPL Mosquito (Vector) Management Plan
• Reduction in wildlife strikes by 43 percent from 2008 to 2014 (strikes per 10,000 aircraft movements)
• Conducted periodic terrestrial and aquatic ecological assessments of the Civil Area
• Implemented weed control measures in accordance with best practice
• Maintained grass heights within Jointly Used Area to reduce bird attraction
• Revised and updated wildlife hazard management procedures
• Erected bird deterrents (e.g. bird spikes) to TAPL buildings and infrastructure to reduce attraction
• Conducted active wildlife management activities including harassment to deter bird visitation and removal of nests within the TAPL lease and Jointly Used Areas
• Maintained DEHP Damage Mitigation Permit to take birds and wildlife that present a hazard to aircraft
• Continued stakeholder engagement and information sharing through the TAPL Wildlife Hazard Management Committee
• Facilitate external stakeholder mosquito management programs within the airport.

10.13.5 Proposed Targets for Wildlife Hazard Management from 2016

Table 10.13 lists the proposed targets to meet TAPL’s objective for wildlife hazard management at Townsville Airport.

10.14 Cultural Heritage

10.14.1 Overview and Objectives

Objective: To appropriately manage activities under TAPL operational control to minimize potential adverse impacts to items of indigenous or built heritage value. The Civil Area of Townsville Airport is a highly modified, built environment and does not contain or lie adjacent to any areas of cultural significance (i.e. Indigenous or built, natural value) as defined in Section 10.2. Areas of cultural heritage value are however, in the vicinity with RAAF Base Townsville and the airfield recognised as areas of built heritage significance. There is a potential for artefacts Indigenous or built heritage value to be present under the Civil Area.

10.14.2 Potential Environmental Impacts

TAPL is committed to managing cultural heritage values within the Civil Area and reducing the potential impact of its operations on heritage values of the surrounding area. Civil aviation activities with the potential to impact upon heritage values include grounds maintenance activities and construction, excavation and demolition works.

Civil aviation activities have the potential to impact upon cultural heritage values through the loss or damage to unknown, buried artefacts in the surrounding area.

10.14.3 Measures to Prevent, Control or Reduce Environmental Impact

Environmental risks associated with civil aviation activities at Townsville Airport, including impacts to potential cultural heritage values, are assessed as part of...
the TAPL EMS as detailed in Section 10.2.

Potential heritage values are managed to the measures implemented through the TAPL EMS including environmental awareness training and inductions; and inspections during maintenance activities and construction / demolition works.

Airport tenants, contractors and operators are required to ensure appropriate systems and / or procedures are in place to manage specific environmental risks associated with their activities as detailed in Section 10.2.

Developments involving excavation and earthworks are required to undertake these activities in accordance with their CEMP, which outlines specific measures for managing suspected artefacts including notification and stop work procedures.

TAPL continues to liaise with local Indigenous groups including the Wulgurukaba and Bindal People on cultural matters associated with the Civil Area through the TAPL Indigenous Reference Group.


- Continued Indigenous community engagement through the TAPL Indigenous Reference Group

- Developed and implemented standard requirements for heritage management in CEMP’s through the TAPL CEMP proforma
- Reviewed and updated the TAPL Development Guidelines and development controls including provisions for CEMP requirements, for new development at airport
- Conducted heritage assessment of buildings earmarked for demolition to confirm heritage value.

10.14.5 Proposed Targets for Cultural Heritage from 2016

Table 10.14 lists the proposed targets to meet TAPL’s objectives for heritage management at Townsville Airport.

Table 10.13 TAPL Wildlife Hazard Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review and update the TAPL Mosquito (Vector) Management Plan</td>
<td>2016</td>
</tr>
<tr>
<td>Identify wildlife hazard risks within three, eight and 13 km of Townsville Airport in accordance with NASF Guidelines</td>
<td>2016</td>
</tr>
<tr>
<td>Complete airside (Jointly Used Area) vegetation mapping and assess links between vegetation and hazardous species visitation</td>
<td>2018</td>
</tr>
<tr>
<td>Investigate opportunities to collaborate with airport neighbours on reduce wildlife hazard risk</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to review and implement the TAPL Wildlife Hazard Management Plan</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

Table 10.14 TAPL Heritage Management Program for Townsville Airport

<table>
<thead>
<tr>
<th>Targets (2016-2021)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue to include heritage awareness training and inductions for TAPL staff, airport operators and contractors</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to promote communication between TAPL and local Indigenous groups</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Continue to ensure all CEMP(s) incorporate measures to minimize potential adverse impacts to heritage values associated with construction activities</td>
<td>As required</td>
</tr>
</tbody>
</table>
11.0 DEVELOPMENT PROGRAM

11.1 Introduction

The Townsville region has a strong and diverse economic base, including strategic transportation links, youthful age profile, skilled workforce and an attractive lifestyle.

Investment in aviation and airport infrastructure will contribute to the enhancement of services and capacity of the Townsville region. The future development of the airport is crucial to the growth and development of the Queensland economy, having the opportunity to become a key gateway into Australia.

This Chapter has been prepared to guide the future development of the airport and meet the requirements under sub-sections 71(3)(gb) of the Airports Act.

Townsville Airport must consider the proposed developments (both aviation and non-aviation), employment levels and the local and regional economy of the airport within the context of Queensland.

The potential future key developments have been identified within both five and twenty-year periods within the master plan for both aviation and non-aviation development and infrastructure.

For clarity, ‘aviation’ development relates to those services and facilities that contribute to airline services, airport operations, freight, administration, aviation catering, parking, hangars, aprons and other related services.

This Chapter also reinforces the need to prepare a number of Environmental Management Programs relating to specific environmental impacts at the airport, as discussed in further detail in Chapter 10. Additionally, the ground transport infrastructure and developments discussed in Chapter 9 are outlined in the following sections within the master planning periods.

The identified Defence projects that may impact upon Townsville Airport operations are also listed, with potential external stakeholder developments, such as local road improvements to be undertaken by TCC, also identified for consideration of the future development of the airport site.

11.2 Potential Future Key Developments – Planning Horizon

As identified throughout the Master Plan, the future development of the airport must be considered within both five and 20 year periods based on demand and need.

Within the first five years to 2021, the following key developments are identified:

- Terminal and apron expansion
- Infrastructure related upgrades such as electricity and water
- Expansion of car parks and road upgrades to accommodate anticipated passenger growth
- Other improvements to the Northern Australia Aerospace Centre of Excellence (NAACEX) and Enterprise Precincts, based on demand.

Within the twenty-year planning horizon of 2016 to 2036, the following key developments have been identified:

- Further stages of expansion for the terminal and apron
- Additional upgrades to roads and car parks to accommodate anticipated growth
- Further development of the Northern Aviation Precinct and associated infrastructure to support this growth
- Potential aviation development leases and NAACEX expansion.

Economic Contribution Assessment

Approach

Economic modelling in the following sections estimates the activity supported by the Townsville Airport currently and forecast for 2021 and 2036. I-O modelling is used to examine the direct and flow-on activity expected to be supported within the North Queensland region. A description of the I-O modelling framework used is provided in Appendix A.

I-O modelling describes economic activity through the examination of four types of impacts which are defined and described in the table below.
I-O multipliers can be derived from open (Type I) models or closed (Type II) models. Open models show the direct effects of spending in a particular industry as well as the indirect or flow-on (industrial support) effects of additional activities undertaken by industries increasing their activity in response to the direct spending.

Closed (Type II) models re-circulate the labour income earned as a result of the initial spending through other industry and commodity groups to estimate consumption induced effects (or impacts from increased household consumption as a result of more wages in the economy).

The following estimates in Table 11.1 consider both Type I and Type II flow-on impacts, however, it is generally assumed Type II effects have a tendency to overestimate observed impacts.

### Table 11.1 Economic Activity Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>Refers to the gross value of goods and services transacted, including the costs of goods and services used in the development and provision of the final product. Output typically overstates the economic impacts as it counts all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.</td>
</tr>
<tr>
<td>GVA</td>
<td>Refers to the value of output after deducting the cost of goods and services inputs in the production process. GVA defines the true net contribution and is subsequently the preferred measure for assessing economic impacts.</td>
</tr>
<tr>
<td>Income</td>
<td>Measures the level of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the project.</td>
</tr>
<tr>
<td>Employment</td>
<td>Refers to the part-time and full-time employment positions generated by the economic shock, both directly and indirectly through flow-on activity and is expressed in terms of FTE positions. One FTE job is defined as one person working full time for a period of one year.</td>
</tr>
</tbody>
</table>

Source: AEC (2015)

### Economic Contribution Assessment
Townsville Airport currently contributes to the North Queensland regional economy on an ongoing annual basis: (Table 11.2)

- $875 million in output (including $380 million directly and $495 million indirectly)
- $420 million (2.9 percent) contribution to GRP (including $170 million directly and $250 million indirectly)
- $220 million in incomes and salaries paid to local households (including $95 million directly and $125 million indirectly)
- 3,350 FTE jobs (including 1,600 directly, over 600 within the Airport site, and 1,750 indirectly).

### Table 11.2 Townsville Airport Economic Contribution ($2015)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Output ($M)</th>
<th>GVA ($M)</th>
<th>Income ($M)</th>
<th>Employment (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Impact</td>
<td>$380</td>
<td>$170</td>
<td>$95</td>
<td>1,600</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$215</td>
<td>$95</td>
<td>$55</td>
<td>700</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$280</td>
<td>$155</td>
<td>$70</td>
<td>1,050</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$875</td>
<td>$420</td>
<td>$220</td>
<td>3,350</td>
</tr>
</tbody>
</table>

Note: Totals may not sum due to rounding. Source: AEC
Future Contribution

By 2021 under the medium forecast scenario (Table 11.3), Townsville Airport’s total economic contribution to the North Queensland economy (including direct and indirect activity) is expected to increase to:

- $1.0 billion in output
- $495 million contribution to GRP
- $260 million in incomes and salaries paid to households
- 4,100 FTE jobs.

By 2036, Townsville Airport’s total estimated economic contribution (Table 11.4) increases to:

- $1.4 billion in additional output
- $720 million contribution to GRP
- $375 million in incomes and salaries paid to households
- 5,950 FTE jobs.

Table 11.3 Projected 2021 Contribution ($2015)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Output ($M)</th>
<th>GVA ($M)</th>
<th>Income ($M)</th>
<th>Employment (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low Scenario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Impact</td>
<td>$415</td>
<td>$185</td>
<td>$100</td>
<td>1,800</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$225</td>
<td>$105</td>
<td>$55</td>
<td>750</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$300</td>
<td>$165</td>
<td>$75</td>
<td>1,200</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$940</td>
<td>$455</td>
<td>$230</td>
<td>3,750</td>
</tr>
<tr>
<td><strong>Medium Scenario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Impact</td>
<td>$455</td>
<td>$200</td>
<td>$115</td>
<td>1,950</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$255</td>
<td>$110</td>
<td>$60</td>
<td>850</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$330</td>
<td>$185</td>
<td>$85</td>
<td>1,300</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$1,040</td>
<td>$495</td>
<td>$260</td>
<td>4,100</td>
</tr>
<tr>
<td><strong>High Scenario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Impact</td>
<td>$480</td>
<td>$215</td>
<td>$120</td>
<td>2,100</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$265</td>
<td>$120</td>
<td>$61</td>
<td>850</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$350</td>
<td>$195</td>
<td>$90</td>
<td>1,400</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$1,095</td>
<td>$530</td>
<td>$270</td>
<td>4,350</td>
</tr>
</tbody>
</table>

Note: Totals may not sum due to rounding.

Source: AEC
Development Program Works

The following sections provide estimates of the one-off construction employment associated with the Townsville Airport development program works over the five years to 2020-21.

Ongoing operational employment associated with these projects has been incorporated into Townsville Airport’s forecast economic contribution (see Section 4, Economic Contribution Assessment).

Development Works Program

Development works assessed over the 2015-16 to 2020-21 period include:

- Townsville Airport Terminal upgrade
- Other industrial, commercial and retail development expansion.

Townsville Airport Terminal Upgrade

The Townsville Airport terminal building is an aging asset that needs significant layout and functional improvements to accommodate projected passenger growth and address emerging capacity constraints. Customer feedback has indicated satisfaction with the terminal facilities is progressively declining. A lack of adequate space in the airport lounge facility, conflicting passenger flows in the upper concourse and limited offerings of food and beverage are identified as key areas to be addressed to enhance passenger satisfaction.

The terminal upgrades across the facility will improve movement of passengers throughout the terminal and better utilise the existing building footprint to accommodate and facilitate future passenger growth.

Industrial, Commercial and Retail Expansion (Other Precincts)

In order to facilitate anticipated industry growth, Townsville Airport will require additional development across the Aviation, Commercial and NAACEX precincts.

Economic Impact Assessment

Airport Terminal Upgrade

The $39 million construction phase of the Townsville Airport Terminal upgrade is expected to directly generate output of $18.6 million within the North Queensland economy and a further $26.2 million through flow-

Table 11.4 Projected 2036 Contribution ($2015)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Output ($M)</th>
<th>GVA ($M)</th>
<th>Income ($M)</th>
<th>Employment (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low Scenario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Impact</td>
<td>$485</td>
<td>$215</td>
<td>$120</td>
<td>2,100</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$270</td>
<td>$120</td>
<td>$60</td>
<td>850</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$350</td>
<td>$200</td>
<td>$90</td>
<td>1,400</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$1,105</td>
<td>$535</td>
<td>$270</td>
<td>4,350</td>
</tr>
<tr>
<td><strong>Medium Scenario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Impact</td>
<td>$650</td>
<td>$290</td>
<td>$170</td>
<td>2,900</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$370</td>
<td>$160</td>
<td>$85</td>
<td>1,150</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$480</td>
<td>$270</td>
<td>$120</td>
<td>1,900</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$1,500</td>
<td>$720</td>
<td>$375</td>
<td>5,950</td>
</tr>
<tr>
<td><strong>High Scenario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Impact</td>
<td>$675</td>
<td>$350</td>
<td>$200</td>
<td>3,500</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$420</td>
<td>$185</td>
<td>$95</td>
<td>1,400</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$575</td>
<td>$315</td>
<td>$145</td>
<td>2,250</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$1,670</td>
<td>$850</td>
<td>$440</td>
<td>7,150</td>
</tr>
</tbody>
</table>

Note: Totals may not sum due to rounding.

Source: AEC
on activity (Table 11.5). Estimates of the economic contribution to the North Queensland economy are provided in the table below.

A total of $17.6 million in GVA activity is estimated to be supported within the North Queensland economy over the course of construction, including $4.8 million directly and $12.8 million indirectly.

The construction activity is estimated to result in $8.5 million in incomes (wages and salaries) paid to local households, including $2.2 million through direct activity and $6.2 million indirectly.

A total of 116 FTE jobs for North Queensland residents are estimated to be supported as a result of the construction activity including 27 direct FTE jobs and 88 FTE jobs supported indirectly.

11.3 Potential Future Key Developments – Planning Horizon – Zero to Five Years

Table 11.6 provides an outline of potential development at Townsville Airport from 2016 to 2021.

Development may occur earlier or later than the anticipated timeframe, depending on demand and a number of other developments that will stimulate the requirements for infrastructure at the airport.

Any new development proposed at the airport site will need to meet the specific Precinct Development Controls and Specific Outcomes as discussed in Chapter 7.

Table 11.5 Terminal Upgrade Construction Phase Economic Impacts ($2014-15)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Output ($M)</th>
<th>GVA ($M)</th>
<th>Income ($M)</th>
<th>Employment (FTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Impact</td>
<td>$18.6</td>
<td>$4.8</td>
<td>$2.2</td>
<td>27</td>
</tr>
<tr>
<td>Indirect Impact (Type I)</td>
<td>$14.8</td>
<td>$6.4</td>
<td>$3.4</td>
<td>44</td>
</tr>
<tr>
<td>Indirect Impact (Type II)</td>
<td>$11.4</td>
<td>$6.4</td>
<td>$2.8</td>
<td>44</td>
</tr>
<tr>
<td>Total Impact</td>
<td>$44.9</td>
<td>$17.6</td>
<td>$8.5</td>
<td>116</td>
</tr>
</tbody>
</table>

Note: Totals may not sum due to rounding.
Source: AEC

Table 11.6 Potential Future Key Developments at Townsville Airport (0 – 5 years)

<table>
<thead>
<tr>
<th>Services Aviation and Terminal Precinct</th>
<th>Type of Development</th>
<th>Additional Employees</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Redevelopment</td>
<td>3300m² new build/ refurbish existing</td>
<td>116 FTE during construction / 27 FTE after</td>
<td>Construction jobs will generate 116 FTE</td>
</tr>
<tr>
<td>Apron Expansion</td>
<td>Two Aircraft</td>
<td>Two FTE</td>
<td>Accommodate aviation growth</td>
</tr>
<tr>
<td>Ground Transport Plan</td>
<td>Various improvements detailed in Chapter 9</td>
<td>Four FTE</td>
<td>Transport improvements</td>
</tr>
<tr>
<td>Services Infrastructure Upgrades</td>
<td>New trunk infrastructure and compliance works</td>
<td>One FTE</td>
<td>Impacts all precincts, predominantly supporting Terminal. Consultation with Council required to facilitate.</td>
</tr>
</tbody>
</table>

**NAACEX Precinct**

| Ground Transport Plan                  | Various improvements detailed in Chapter 9 | One FTE | Transport improvements |

**Enterprise Precinct**

| Services Infrastructure Upgrades       | New trunk infrastructure and compliance works | Nil | Services upgrades to support future development |
11.4 Potential Future Key Developments – Planning Horizon up to 2036

Table 11.7 outlines the identified development and infrastructure at the airport over a 20 year period to 2036.

Similarly, these projects may be brought forward or rolled over depending on realised demand and need for such development.

Table 11.7 Potential Future Key Developments at Townsville Airport (20 years)

<table>
<thead>
<tr>
<th>Services</th>
<th>Type of Development</th>
<th>Trigger / Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aviation and Terminal Precinct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal Stage Two</td>
<td>redevelopment of Terminal building</td>
<td>Passenger (PAX) numbers</td>
</tr>
<tr>
<td>Apron Stages Two and Three</td>
<td>expansion</td>
<td>PAX / aircraft demand</td>
</tr>
<tr>
<td>Road network</td>
<td>Expansion Stage Two</td>
<td>PAX numbers and traffic increase</td>
</tr>
<tr>
<td>Road network</td>
<td>Road reconfigurations and relocation of</td>
<td>Terminal extension and demand for staff car park expected to reach existing capacity by 2021</td>
</tr>
<tr>
<td></td>
<td>transport infrastructure</td>
<td></td>
</tr>
<tr>
<td><strong>NAACEX Precinct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aviation facilities</td>
<td>Expansion (Stage One A and Stage Two)</td>
<td>On demand only – MXD estimate 75000m²</td>
</tr>
<tr>
<td><strong>Enterprise Precinct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airport service facilities</td>
<td>Stage Two expansion</td>
<td>On demand only - MXD estimate 26,500m²</td>
</tr>
<tr>
<td><strong>Northern Aviation Precinct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Aviation (GA) Facilities</td>
<td>Apron and Services</td>
<td>Apron expansion into current GA area will trigger this development</td>
</tr>
</tbody>
</table>

11.5 Future Key Defence Developments

Future development of the Defence facilities at Townsville Airport may affect the existing operations and infrastructure requirements of the airport. It is therefore important to identify and understand Defence’s general aspirations for development on the airport land.
Table 11.8 Future Key Defence Developments

<table>
<thead>
<tr>
<th>Development</th>
<th>Trigger / Comment</th>
<th>Impact on Townsville Airport</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1004</td>
<td>Annual maintenance</td>
<td>Night works (if required), displaced runways (if required), MOWP</td>
</tr>
<tr>
<td>Defence National Aircraft Pavement Maintenance Program 2015</td>
<td>Various maintenance projects to sustain the joint use infrastructure</td>
<td></td>
</tr>
<tr>
<td>P0006</td>
<td>Replacing the aged concrete thresholds at each end of the runway</td>
<td>Runway impacts, displaced thresholds for duration of work</td>
</tr>
<tr>
<td>National Airfield Maintenance Work (RWY Thresholds)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIR9000 Phc Replacement Chinook Facilities (2014-16)</td>
<td>Simulator facility under construction. All replacement aircraft to be delivered by August 2015.</td>
<td>Nil</td>
</tr>
<tr>
<td>AIR 7000 Ph 2 P-8A Poseidon Aircraft Infrastructure (2014-20)</td>
<td>Runway extension for new Defence Aircraft 406m runway extension. New aircraft taxi through rinse. No hydrant refuelling line to MOLAs. Aircraft arrestor to remain as is. Proper runway seal, threshold not moved, this is wholly for PA so outside Jointly Used Area (JUA). Completion due for 2020.</td>
<td>Runway impacts, displaced threshold during works Impact on Obstacle Limitation Surface (OLS), Procedures for Air Navigation Services – Aircraft Operations (PANS OPS) and annual survey</td>
</tr>
<tr>
<td>AIR 6000 Ph 2A/2B Joint Strike Fighter Infrastructure</td>
<td>Minimal infrastructure will be based at Townsville. Deployable Mission Rehearsal Trainer is inside two shipping containers with a carport.</td>
<td>Noise</td>
</tr>
<tr>
<td>AIR 5431 Ph 2/3 Air Traffic Control (ATC), Radar (and Aviation Rescue and Fire Fighting Station)</td>
<td>New ATC and approach control centre. New building for radar and ATC. New fire station to be built after demolition of ATC. Airfield Lighting Equipment Room remains at current location. Bureau of Meteorology instruments will need to be relocated. Dates still being discussed. Will be needed for runway extension</td>
<td>Minor operational</td>
</tr>
</tbody>
</table>
11.6 External Agency Future Actions and Other Priorities

Throughout the 2016 Master Plan, priorities have been identified for development in relation to the Townsville Airport both on airport land and in the surrounding area.

Whilst external agencies may have identified priorities in areas surrounding the airport site and these priorities may be outside of airport control, they may still have the potential to impact on airport operations.

Table 11.9 lists the developments and actions outlined in the 2016 Master Plan and identifies the external agency likely to be responsible for future action.

11.7 Existing and Future Development Overview

As noted previously, Chapter 7 outlines the parameters of the preferred development for each of the Townsville Airport Precincts encompassing the overall intent, preferred development, specific outcomes, land use and airport management actions.

11.7.1 Aviation and Terminal Precinct

The terminal is the public face of the airport, being a key business gateway to the Townsville and North Queensland region.

TAPL’s last terminal redevelopment occurred in 2003. However, since that time, the airport’s passenger and airline market share makeup has changed considerably. Townsville is now seeing a resurgence of the duopoly market and the terminal upgrade will be a practical, cost effective solution that optimises existing infrastructure.

In addition to the proposed terminal redevelopment, the precinct as a whole is to be redeveloped to meet further passenger growth and further increase non-aeronautical revenue.

The current internal road network creates congestion at peak times. Car parking is to be expanded and enhanced in line with demand over the master planning period. Additionally, the redevelopment and apron expansion has been earmarked to meet passenger expectations and demand over the master plan horizon.

11.7.2 NAACEX Precinct

A number of road infrastructure upgrades have been identified for the NAACEX Precinct to accommodate anticipated growth in demand over the five and twenty year periods.

Additionally, discussions will remain active with the Defence in regard to possible expansion for the NAACEX Precinct.

Table 11.9 Future Key External Agency Developments

<table>
<thead>
<tr>
<th>Development</th>
<th>Trigger / Comment</th>
<th>External Agency</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Roads</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meenan Street access extension</td>
<td>Required for Ground Transport Plan</td>
<td>TCC</td>
<td>Facilitation</td>
</tr>
<tr>
<td>Close Halifax Street</td>
<td>Required for Ground Transport Plan</td>
<td>TCC</td>
<td>Facilitation</td>
</tr>
<tr>
<td><strong>Drainage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stormwater</td>
<td>Downstream capacity</td>
<td>TCC</td>
<td>Coordination</td>
</tr>
<tr>
<td>Sewer</td>
<td>Metering / pressure connections</td>
<td>TCC</td>
<td>Approval</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire</td>
<td>Terminal and development upgrades</td>
<td>Fire and Rescue Service</td>
<td>Approval</td>
</tr>
<tr>
<td>Electrical</td>
<td>Belgian Garden feeds</td>
<td>Ergon Energy</td>
<td>Approval</td>
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<tr>
<td>Electrical</td>
<td>Dedicated feeder</td>
<td>Ergon Energy</td>
<td>Facilitation</td>
</tr>
</tbody>
</table>
11.7.3 Enterprise Precinct

The infrastructure and capital works have been assessed to determine the requirements to make the Northern Enterprise land ‘lease ready’.

Further installations and leases to aviation and aviation support industries will be developed as required.

11.7.4 Northern Aviation Precinct

Limited development of infrastructure and facilities is identified for the Northern Aviation Precinct within the 2016 Master Plan period with the possibility that the new General Aviation facilities will be required as apron expansion occurs within the six to 20 year period.

11.8 Future Environmental Considerations

Chapter 10 discusses a number of Management Programs which have been identified as a priority to be implemented in the future.

These include:

- Environmental Management Program
- Stormwater Management Program
- Soil and Groundwater Management Program
- Hazardous Materials Management Program
- Ground based Noise Management Program
- Local Air Quality Management Program
- Energy Efficiency and Sustainable Development Program
- Water Resource Management Program
- Waste Management Program
- Climate Change Management Program
- Biodiversity Management Program
- Wildlife Hazard Management Program
- Heritage Management Program.

Within each Management Program, there are a series of priorities and actions specific to the environment. These are detailed in Chapter 10.

This series of Management Programs for Townsville Airport will ensure that all necessary environmental requirements are met over the next five years and provide a framework for future management of environmental aspects of the airport.

11.9 Future Studies and Opportunities

In addition to the future program of development, there are also additional studies and plans that should be prepared to support the vision and ongoing development of Townsville Airport.

These future studies and opportunities are:

- Update of Airport Design Guidelines for built development to be consistent with the Master Plan 2016
- Prepare detailed Precinct Development Plans in keeping with the agreed development program contained in the 2016 Master Plan
- Prepare an Infrastructure Implementation Plan that proposes staging and indicative costing of required infrastructure and services to support airport development.
12.0 REFERENCES


TO70. 2015. *Townsville Airport Aviation Services Planning Study – August 2015.* TO70, Melbourne.


## APPENDIX A

### Airports Act 1996 (Cth)

<table>
<thead>
<tr>
<th>Requirements under Part 5, Division 3, Section 71(3) Contents of Draft or Final Master Plan</th>
<th>Chapter / Section Response</th>
</tr>
</thead>
</table>
| 71(3) In the case of a joint user airport, a draft or final master plan must specify:  
(a) the airport lessee company’s development objectives for civil use of the airport; and | Chapter 3 – The Airport, Section 3.8.1 |
| (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 | Chapter 3 – The Airport, Section 3.5 |
| (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:  
(i) in all cases—landside, surface access and land planning/zoning aspects; and  
(ii) if the leased area includes one or more runways or taxiways—airside aspects; and | Chapter 7, Section 7.7.1 Strategic Vision and Objective, Section 7.7.2 Airport Land Use Planning Actions, Section 7.8 Townsville Airport Development Controls |
<p>| (d) an Australian Noise Exposure Forecast (in accordance with regulations, if any, made for the purpose of this paragraph) for the areas surrounding the airport; and | Chapter 5 – Aircraft Noise, Section 5.1.1 Australian Noise Exposure Forecast |
| (da) flight paths (in accordance with regulations, if any, made for the purpose of this paragraph) at the airport; and | Chapter 5 - Section 5.3.4 Flight Movements and Paths |
| (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 Defence Department, for managing aircraft noise intrusion in areas forecast to be subject to exposure above the significant ANEF levels; and | Chapter 5 - Section 5.4 Noise Management |
| (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 | Chapter 10 – Environment Strategy, Section 10.3 Stormwater, Section 10.3.2 Potential Environmental Impacts, Section 10.4 Soil and Groundwater, Section 10.4.2 Potential Environmental Impacts, Section 10.5 Hazardous Materials, Section 10.5.2 Potential Environmental Impacts, Section 10.6 Ground-based Noise, Section 10.6.2 Potential Environmental Impacts, Section 10.7 Local Air Quality, Section 10.7.2 Potential Environmental Impacts, Section 10.8 Energy Efficiency and Fuel, Section 10.8.2 Potential Environmental Impacts Section 10.9 Water Resources, Section 10.9.2 Potential Environmental Impacts, Section 10.10 Waste, Section 10.10.2 Potential Environmental Impacts, Section 10.11 Sustainable Development, Section 10.11.2 Potential Environmental Impacts Section 10.12 Climate Change, Section 10.12.2 Potential Environmental Impacts |
| (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 | Chapter 10 – Environment Strategy, Section 10.3 Stormwater, Section, 10.3.3 Measures to Prevent, Control or Reduce Environmental Impact, Section 10.4 Soil and Groundwater, Section 10.4.3 Measures to Prevent, Control or Reduce Environmental Impact |</p>
<table>
<thead>
<tr>
<th>Requirements under Part 5, Division 3, Section 71(3) Contents of Draft or Final Master Plan</th>
<th>Chapter / Section Response</th>
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</thead>
<tbody>
<tr>
<td>(ga) in relation to the first 5 years of the master plan—a plan for a ground transport system on the landside of the airport that details: (i) a road network plan; and (ii) the facilities for moving people (employees, passengers and other airport users) and freight at the airport; and (iii) the linkages between those facilities, the road network and public transport system at the airport and the road network and public transport system outside the airport; and (v) the arrangements for working with the State or local authorities or other bodies responsible for the road network and the public transport system; and (vi) the capacity of the ground transport system at the airport to support operations and other activities at the airport; and the likely effect of the proposed developments in the master plan on the ground transport system and traffic flows at, and surrounding, the airport; and</td>
<td>Chapter 9 – Ground Transport Plan Section 9 Future Ground Transport Infrastructure Section 9.3 Short Term Ground Transport Plan (0-5 years)</td>
</tr>
<tr>
<td>(gb) in relation to the first 5 years of the master plan—detailed information on the proposed developments in the master plan that are to be used for: (i) commercial, community, office or retail purposes; or (ii) for any other purpose that is not related to airport services; and</td>
<td>Chapter 6 – Aviation Infrastructure Section 6.3 Airfield Infrastructure Development Section 6.4 Terminal Development Chapter 11 – Development Program Section 11.3 Potential Future Key Developments – Planning Horizon – 0-5 years Section 11.4 Potential Future Key Developments – Planning Horizon – up to 2035</td>
</tr>
<tr>
<td>(gc) in relation to the first 5 years of the master plan—the likely effect of the proposed developments in the master plan on: (i) employment levels at the airport; and (ii) the local and regional economy and community, including an analysis of how the proposed developments fit within the planning schemes for commercial and retail development in the area that is adjacent to the airport; and</td>
<td>Chapter 11 – Development Program Section 11.3 Potential Future Key Developments – Planning Horizon – 0-5 years</td>
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</tbody>
</table>
### Requirements under Part 5, Division 3, Section 71(3) Contents of Draft or Final Master Plan

<table>
<thead>
<tr>
<th>Chapter / Section Response</th>
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<tr>
<td><strong>(h)</strong> an environment strategy that details:</td>
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<tr>
<td><em>(i)</em> the airport lessee company’s objectives for the environmental management of the airport; and</td>
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<tr>
<td><em>(ii)</em> the areas (if any) within the airport site which the airport lessee company, in consultation with State and Federal conservation bodies, identifies as environmentally significant; and</td>
</tr>
<tr>
<td><em>(iii)</em> the sources of environmental impact associated with civil aviation operations at the airport; and</td>
</tr>
<tr>
<td><em>(iv)</em> the studies, reviews and monitoring to be carried out by the airport lessee company in connection with the environmental impact associated with civil aviation operations at the airport; and</td>
</tr>
<tr>
<td><em>(v)</em> the time frames for completion of those studies and reviews and for reporting on that monitoring; and</td>
</tr>
<tr>
<td><em>(vi)</em> the specific measures to be carried out by the airport lessee company for the purposes of preventing, controlling or reducing the environmental impact associated with civil aviation operations at the airport; and</td>
</tr>
<tr>
<td><em>(vii)</em> the time frames for completion of those specific measures; and</td>
</tr>
<tr>
<td><em>(viii)</em> details of the consultations undertaken in preparing the strategy (including the outcome of the consultations); and</td>
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<tr>
<td><em>(ix)</em> any other matters that are prescribed in the regulations; and</td>
</tr>
<tr>
<td><em>(j)</em> such other matters (if any) as are specified in the regulations.</td>
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</tbody>
</table>

*Paragraphs (a) to (h) do not, by implication, limit paragraph (j).*

**Note 1:** Aiside means the part of the airport grounds, and the part of the airport buildings, to which the non travelling public does not have free access.

**Note 2:** Landside means the part of the airport grounds, and the part of the airport buildings, to which the non travelling public has free access.

### Requirements under Regulation 5.02: Contents of draft or final master plan – general

<table>
<thead>
<tr>
<th>Chapter/Section Response</th>
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</thead>
<tbody>
<tr>
<td><strong>(1)</strong> For paragraphs 71 (2) (j) and (3) (j) of the Act, the following matters are specified:</td>
</tr>
<tr>
<td><em>(a)</em> any change 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;</td>
</tr>
<tr>
<td><em>(b)</em> for an area of an airport where a change of use of a kind described in subregulation 6.07(2) of the Airports (Environment Protection) Regulations 1997 is proposed:</td>
</tr>
<tr>
<td><em>(i)</em> the contents of the report of any examination of the area carried out under regulation 6.09 of those Regulations; and</td>
</tr>
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</table>

*Chapter 7 – Land Use Planning*

**Section 7.10.4 Obstacle Limitation Surfaces / Joint Obstacle Clearance Surface**

*Chapter 10 – Environment Strategy*

*Chapter 6 – Aviation Infrastructure*

**Chapter 7 – Land Use Planning**

**Chapter 11 – Development Program**
### Requirements under Regulation 5.02: Contents of draft or final master plan – general

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Chapter/Section Response</th>
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<tbody>
<tr>
<td>(ii) the airport lessee company’s plans for dealing with any soil pollution referred to in the report.</td>
<td>Chapter 10 – Environmental Strategy Section 10.4 Soil and Groundwater</td>
</tr>
<tr>
<td>(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.</td>
<td>Chapter 7 – Land Use Planning</td>
</tr>
<tr>
<td>3) For subsection 71 (5) of the Act, a draft or final master plan must:</td>
<td>Chapter 8 – Services and Infrastructure Section 8.2 Existing Interests and Easements</td>
</tr>
<tr>
<td>(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</td>
<td></td>
</tr>
<tr>
<td>(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.</td>
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### 5.02A Contents of draft or final master plan—matters to be specified in environment strategy

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Chapter/Section Response</th>
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<tbody>
<tr>
<td>(1) For subparagraphs 71 (2)(h)(ix) and (3)(h)(ix) of the Act, the matters in this regulation must be specified in an environment strategy.</td>
<td>Chapter 10 – Environment Strategy</td>
</tr>
<tr>
<td>(2) The environment strategy must specify any areas within the airport site to which the strategy applies that the airport-lessee company for the airport has identified as being a site of indigenous significance, following consultation with: (a) any relevant indigenous communities and organisations; and (b) any relevant Commonwealth or State body.</td>
<td>Chapter 10 – Environment Strategy</td>
</tr>
<tr>
<td>(3) The environment strategy must specify the airport-lessee company’s strategy for environmental management of areas of the airport site that are, or could be, used for a purpose that is not connected with airport operations.</td>
<td>Chapter 10 – Environment Strategy Section 10.1.2 Roles and Responsibilities</td>
</tr>
<tr>
<td>(4) The environment strategy must specify: (a) the training necessary for appropriate environment management by persons, or classes of persons, employed on the airport site by the airport-lessee company or by other major employers; and (b) the training programs, of which the airport-lessee company is aware, that it considers would meet the training needs of a person mentioned in paragraph (a).</td>
<td>Chapter 10 – Environment Strategy Section 10.2.7 Training, Communication and Awareness</td>
</tr>
</tbody>
</table>
### Requirements under Part 5, Division 3, Section 71A: Draft or final master plan must identify proposed sensitive developments

1. A draft or final master plan must identify any proposed sensitive development in the plan.

2. A sensitive development is the development of, or a redevelopment that increases the capacity of, any of the following:
   - a residential dwelling;
   - a community care facility;
   - a pre school;
   - a primary, secondary, tertiary or other educational institution;
   - a hospital.

2A. A sensitive development does not include the following:
   - an aviation educational facility;
   - accommodation for students studying at an aviation educational facility at the airport;
   - a facility with the primary purpose of providing emergency medical treatment and which does not have in patient facilities;
   - a facility with the primary purpose of providing in house training to staff of an organisation conducting operations at the airport.

3. In this section:
   - aviation educational facility means any of the following:
     - a flying training school;
     - an aircraft maintenance training school;
     - a facility that provides training in relation to air traffic control;
     - a facility that provides training for cabin crew;
     - any other facility with the primary purpose of providing training in relation to aviation related activities.
   - community care facility includes the following:
     - a facility that provides aged care within the meaning given by the Aged Care Act 1997;
     - a nursing home within the meaning given by the National Health Act 1953;
     - a retirement village within the meaning given by the Social Security Act 1991;
     - a facility that provides respite care within the meaning given by the Aged Care Act 1997.

1. For subsection 71 (5) of the Act, a draft or final master plan must address the things in this regulation.

2. In specifying its objectives for the airport under sub-paragraph 71 (2) (h) (i) or (3)(h)(i) of the Act, an airport lessee company must address its policies and targets for:
   - continuous improvement in the environmental consequences of activities at the airport; and
   - progressive reduction in extant pollution at the airport; and

<table>
<thead>
<tr>
<th>Chapter/Section</th>
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<tbody>
<tr>
<td>Chapter 7 – Land Use Planning Section 7.10.3 Sensitive Development</td>
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<td>Chapter 10 – Environment Strategy</td>
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<td>Chapter 10 – Environment Strategy</td>
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<td>Chapter 10 – Environment Strategy Section 10.3 Stormwater</td>
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<td>Chapter 10 – Environment Strategy Section 10.4 Soil and Groundwater</td>
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<tr>
<td>Chapter 10 – Environment Strategy Section 10.7 Local Air Quality</td>
</tr>
<tr>
<td>Chapter 10 – Environment Strategy Section 10.12 Biodiversity</td>
</tr>
</tbody>
</table>
### 5.02B Contents of draft or final master plan—things to be addressed in environment strategy

| (c) development and adoption of a comprehensive environmental management system for the airport that maintains consistency with relevant Australian and international standards; and | Chapter 10 – Environment Strategy  
Section 10.2.3 Environmental Management System |
|---|---|
| (d) identification, and conservation, by the airport-lessee company and other operators of undertakings at the airport, of objects and matters at the airport that have natural, indigenous or heritage value; and | Chapter 10 – Environment Strategy  
Section 10.14 Cultural Heritage |
| (e) involvement of the local community and airport users in development of any future strategy; and | Chapter 10 – Environment Strategy  
Section 10.2.7 Training, Communication and Awareness |
| (f) dissemination of the strategy to sub-lessees, licensees, other airport users and the local community. | Chapter 10 – Environment Strategy  
Section 10.2.7 Training, Communication and Awareness |
| (3) In specifying under subparagraph 71(2)(h)(ii) or (3)(h)(ii) of the Act, the areas within the airport site it identifies as environmentally significant, an airport-lessee company must address:  
(a) any relevant recommendation of the Australian Heritage Council; and | Chapter 10 – Environment Strategy  
Section 10.14 Cultural Heritage |
| (b) any relevant recommendation of the Department of Environment regarding biota, habitat, heritage or similar matters; and | Chapter 10 – Environment Strategy |
| (c) any relevant recommendation of a body established in the State in which the airport is located, having responsibilities in relation to conservation of biota, habitat, heritage or similar matters. | Chapter 10 – Environment Strategy |
| (4) In specifying the sources of environmental impact under subparagraph 71(2)(h)(iii) or (3)(h)(iii) of the Act, an airport-lessee company must address:  
(a) the quality of air at the airport site, and in so much of the regional airshed as is reasonably likely to be affected by airport activities; and | Chapter 10 – Environment Strategy  
Section 10.7 Local Air Quality |
| (b) water quality, including potentially affected groundwater, estuarine waters and marine waters; and | Chapter 10 – Environment Strategy  
Section 10.3 Stormwater  
Section 10.4 Soil and Groundwater  
Section 10.9 Water Resources |
| (c) soil quality, including that of land known to be already contaminated; and | Chapter 10 – Environment Strategy  
Section 10.4 Soil and Groundwater |
| (d) release, into the air, of substances that deplete stratospheric ozone; and | Chapter 10 – Environment Strategy  
Section 10.7 Local Air Quality |
| (e) generation and handling of hazardous waste and any other kind of waste; and | Chapter 10 – Environment Strategy  
Section 10.5 Hazardous Materials |
| (f) usage of natural resources (whether renewable or non renewable); and | Chapter 10 – Environment Strategy  
Section 10.8 Energy Efficiency and Fuel  
Section 10.11 Sustainable Development |
| (g) usage of energy the production of which generates emissions of gases known as ‘greenhouse gases’; and | Chapter 10 – Environment Strategy  
Section 10.7 Local Air Quality  
Section 10.8 Energy Efficiency and Fuel |
<table>
<thead>
<tr>
<th>5.02B Contents of draft or final master plan—things to be addressed in environment strategy</th>
<th>Chapter/Section Response</th>
</tr>
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<tbody>
<tr>
<td>(h) generation of noise.</td>
<td>Chapter 10 – Environment Strategy Section 10.6 Ground-based Noise</td>
</tr>
<tr>
<td>(5) In specifying under subparagraph 71(2)(h)(iv) or (3)(h)(iv) of the Act the studies, reviews and monitoring that it plans to carry out, an airport-lessee company must address: (a) the matters mentioned in subregulation 5.02A(2) and sub-regulations 5.02B(3) and (4); and (b) the scope, identified by the airport-lessee company, for conservation of objects and matters at the airport that have natural, indigenous or heritage value; and (c) the approaches and measures identified by the airport-lessee company as its preferred conservation approaches and measures; and (d) the professional qualifications that must be held by a person carrying out the monitoring; and (e) the proposed systems of testing, measuring and sampling to be carried out for possible, or suspected, pollution or excessive noise; and (f) the proposed frequency of routine reporting of monitoring results to the airport environment officer (if any) for the airport, or to the Secretary.</td>
<td>Chapter 10 – Environmental Strategy (outlined above)</td>
</tr>
<tr>
<td>(6) In specifying under subparagraph 71(2)(h)(vi) or (3)(h)(vi) of the Act, the measures that it plans to carry out for the purposes of preventing, controlling or reducing environmental impact, an airport-lessee company must address: (a) the matters mentioned in subregulations(2) to(4); and (b) the means by which it proposes to achieve the cooperation of other operators of undertakings at the airport in carrying out those plans.</td>
<td>Chapter 10 – Environment Strategy Section 10.1.2 Roles and Responsibilities 10.2.7 Training, Communication and Awareness</td>
</tr>
<tr>
<td>(7) An airport-lessee company, in specifying the company’s strategy for environmental management under subregulation 5.02A(3), must address the matters in subregulations (2) to (6).</td>
<td>Chapter 10 – Environmental Strategy (outlined above)</td>
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</table>
APPENDIX B

NASF Guidelines

Guideline A: Measures for Managing Impacts to Aircraft Noise

Guideline A is intended to complement the current Australian Noise Exposure Forecast (ANEF) system in relation to managing the impacts of aircraft noise on surrounding land uses. The ANEF System and Australian Standard AS 2021-2000 Acoustics – Aircraft noise intrusion – Building siting and construction (AS2021) have operated for a number of years, however it has recently been identified that the ANEF zones do not cover all areas affected by high level of aircraft noise as experienced on the ground.

Guideline A should be incorporated into strategic land use planning documents to provide further guidance on rezoning land appropriately and assessing new development within identified noise sensitive areas against noise measured in decibels.

Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports

Windshear and turbulence at airports can be created when a building is located in the path of a cross-wind to an operational runway. Guideline B as developed to assist decision makers assessing new development proposals within the vicinity of airports in relation to whether the building will be located in the path of a cross-wind to an operational runway of an airport. If not properly sited, a building could become, in effect, an obstacle and divert the flow of wind over or around the building. This situation could create a significant safety issue to airport operations, as it could result in variances of speed along a runway through windshear and turbulence.

Accordingly, the Guideline incorporates design techniques to be considered in new building design to mitigate these effects, and also technical assessment criteria in relation to the potential to generate windshear or turbulence, in addition to mitigation options for existing buildings within the vicinity of airports.

Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports

Guideline C discusses the importance of managing and reducing the potential risks of wildlife strikes at airports, which is largely impacted by surrounding land uses. Under Part 139 of the Civil Aviation Safety Regulations 1998, airports must reduce the risk of wildlife strikes to operations, as wildlife, particularly birds, could cross the flight path of planes or migrate onto the airport.

International aviation regulators have identified that land use zoning within a 13km radius of the airport should be monitored and provide the benchmark on actions for mitigating risk. The Guideline incorporates an Attachment that identifies the level of risk associated with a number of land uses, and actions for new and proposed development within a 3, 8 and 13km radius of the airport.

Additionally, certified airports that have a confirmed wildlife hazard must prepare a wildlife hazard management plan under the Civil Aviation Safety Regulations 1998. The Guideline also encourages airport managers and operators to work with local councils and other authorities to identify appropriate land uses and prevent wildlife attraction that could cause hazards to airport operations.

Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation

Wind turbine farms could become physical obstacles to air navigation, and are potentially very hazardous to low-flying aircraft. Additionally, wind turbine farms could also impact upon the performance of Communications, Navigation and Surveillance equipment.

Guideline D provides guidance on where new wind turbine farms should be located, and encourage notification to CASA and Airservices Australia when new farms are proposed within 30km of an airport or aerodrome.

New development that could potentially be hazardous to airport operations, such as through the proposed height and lighting, should be subject to a risk assessment. As with the previous Guidelines, coordination between airport operators and managers, developers and local authorities is recommended to mitigate the potential risk of wind turbine farms on airport operations.
Guideline E: Managing the Distractions to Pilots from Lighting in the Vicinity of Airports

Guideline E provides guidance on how to manage the risk of pilot distraction that could result from lighting on new structures within the vicinity of an airport. Lighting has the potential to create a distraction where it could be mistaken for airport navigational lighting, particularly within 6km of an airport.

The Guideline incorporates a diagram of maximum light intensity for uses surrounding airports, and recommends that new development and structures, such as freeway lighting, should be reviewed in association with airport operators and CASA.

Guideline F: Managing the Risk of Intrusions into the Protected Airspace of Airports

New tall structures have the potential to protrude into the protected airspace of airports. Guideline F encourages the appropriate management of the height of new development within the vicinity of airports to maintain the safety and ongoing operations of an airport.

If risk associated with new tall structures in the vicinity of airports is not appropriately mitigated prior to construction, this could result in CASA implementing restrictions over the operations of an airport such as reducing the runway distance that can be used by an airport, which has flow-on effects such as operational penalties relating to number of passengers and weight of cargo as an example.

The Guideline recognises that operating restrictions are not an efficient way to mitigate risk associated with inappropriate structures, and encourage greater planning upfront. New development that could penetrate the OLS or PANS-OPS must be referred to the Commonwealth Department of Infrastructure and Regional Development for approval.

Other Draft Guidelines

It is noted that the NASAG are in the process of preparing two new draft Guidelines in relation to Public Safety Zones and air navigational aids.

There is currently no further information available at this time.