



Master Plan 2017

Our blueprint for the future of Gold Coast Airport



GOLD COAST AIRPORT

Acknowledgment of Country

Gold Coast Airport Pty Ltd respectfully acknowledges the Traditional Owners of the cultural landscape on which Gold Coast Airport is situated, and pays respect to their elders past and present.

Notice

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Public Comment

In accordance with the *Airports Act 1996*, GCAPL's 2017 Master Plan was available for public review and comment from 25 October 2016 to 30 January 2017.

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Foreword

We are pleased to present the 2017 Master Plan for Gold Coast Airport. This plan outlines our vision and strategic intent for Gold Coast Airport as the gateway to Australia's premier tourism and leisure destination.

Gold Coast Airport continues to be Australia's fifth busiest international airport and sixth busiest overall, welcoming in excess of 6.4 million passengers annually. Over the life of this Master Plan this figure is forecast to increase to 16.6 million passengers.

The airport facilitated a total economic contribution of \$1.8 billion to the regional economy in 2016. This represented almost 15,000 jobs and accounted for 5.7 per cent of the Gross Regional Product. This is forecast to increase to a total economic contribution of \$5.6 billion, and 38,000 jobs, by the year 2037.

It is pleasing to see that, despite the significant growth expectations, noise management practices and technological advancements in aircraft mean the forecast noise profiles in this Master Plan have remained relatively unchanged.

This Master Plan provides for efficient, safe and convenient access to the airport by various ground transport modes which is crucial to support the airport's forecast growth and connectivity to the region. Over time our plan is to have a highly legible and safe walking environment that encourages interaction between precincts and promotes use of public transport.

We are accredited under the Airports Council International Airport Carbon Accreditation program, demonstrating our strong commitment to preserving and enhancing the environment. We dedicate 25 per cent of our lease area to conservation, undertake recycling and rainwater harvesting programs, and will be delivering more sustainability initiatives over the life of this plan.

This plan is a guide to the development of airport facilities, infrastructure and land uses including land use controls to meet the future requirements of the aviation industry and our community for the next 20 years. It also identifies commercial opportunities to enhance the viability of the airport and contribute to regional economic growth while protecting core aviation functions.

Collaboration is key to the success of any Master Plan, and in developing this document we have sought input from various stakeholders including all levels of government, airport tenants, airlines and service providers, airport employees and community groups.

I wish to thank all the contributors to our 2017 Master Plan and we look forward to delivering our shared vision for Gold Coast Airport.

Yours Sincerely,



Chris Mills
Chief Executive Officer



Executive Summary

Gold Coast Airport

Gold Coast Airport is operated by Gold Coast Airport Pty Ltd (GCAPL), a company wholly owned by Queensland Airports Limited (QAL), a 100 per cent Australian-owned, Queensland-based company. Since GCAPL acquired the long term lease on the Airport, annual passenger numbers have increased from 1.8 million in 1998 to over six million passengers in 2016.

Gold Coast Airport continues to be one of Australia's fastest growing airports and is the fifth busiest international airport in Australia. Forecast passenger growth is expected to continue to exceed average growth rates for major Australian airports.

The region served by Gold Coast Airport is also experiencing rapid growth and change. The Gold Coast is the host city for the 2018 Commonwealth Games. This has initiated significant investment in a range of new sporting facilities, the athletes village and leveraged additional private sector investment. The event is expected to attract over 6,600 athletes and officials from 71 Commonwealth nations and territories, and over 100,000 visitors.

To respond to the needs of the region's community, tourism and business, this Master Plan has a strong vision and is focused on growth in new quality aviation infrastructure and commercial facilities over the next twenty years.

The 2017 Master Plan

A Master Plan is a statutory document under the *Airports Act 1996*. As part of the planning framework, GCAPL is required to prepare an Airport Master Plan every five years detailing the twenty-year strategic direction for the Gold Coast Airport.

While a regulatory driver for the Master Plan is important, GCAPL sees the Master Plan as a key document for the community, business stakeholders and local and state governments. It provides a clear direction for the future planning of airport facilities and acts as an important link to other planning strategies for the region.

The 2017 Master Plan builds on preceding Master Plans, which are successively updated to respond to changes in economic opportunities and community and stakeholder expectations. It provides a response to likely demands for the first five years and strategic planning for the next twenty years.

This Master Plan intends to provide a strong strategic vision for Gold Coast Airport, consistent with regional economic conditions and major infrastructure delivery programs while being flexible to adapt to changing conditions.

Airport Forecasted Growth

Gold Coast Airport has experienced significant historical growth, driven by low-cost carriers and investment in new services and infrastructure. Investment has focused on increasing airport capacity to anticipate and meet aircraft demand, such as the 2007 runway extension and terminal development, which have sustained direct long-haul international flights.

By 2037 it is forecast that Gold Coast Airport will service 16.6 million passengers, comprised of 13.5 million domestic passengers and 3.1 million international passengers. This represents an average growth rate of five per cent per annum.

Managing Aircraft Noise

GCAPL and its aviation partners are committed to ensuring the community and other stakeholders are provided with the most relevant and contemporary information on aircraft noise issues and management. GCAPL continues to work closely with Airservices Australia, the entity responsible for monitoring aircraft noise and responding to noise complaints.

GCAPL will continue to take a proactive approach to communicating with the local community, business groups and local, state and Federal government representatives. It will continue to use the Community Aviation Consultation Group (CACG) as the primary community consultation forum on these issues. The Airport Noise Abatement Consultative Committee (ANACC) will continue to act as a technical support group to the CACG.

Aviation and Land Use Development

Gold Coast Airport has efficient and cost effective passenger processing and aircraft turn-around times that is underpinned by a strong focus on safety. This makes the Airport a very attractive proposition to Australian and international carriers. It is important that aviation infrastructure investment reflects the anticipated growth in passengers, aircraft movements and demand placed on the Airport. To ensure Gold Coast Airport remains competitive, it is essential that the Airport remains safe, efficient and reliable.

A focus of the 2017 Master Plan is the continued expansion of the terminal to include enhanced passenger facilities, introduction of aerobridges and additional aircraft parking stands. This is combined with extensions to existing taxiways and apron areas to maintain efficient aircraft movements and expansion of support services in response to market conditions and demands.

It is recognised that Gold Coast Airport has become a significant gateway to the region. For many visitors Gold Coast Airport is the first and last experience of a trip to the region. It is essential it appropriately reflects the high standard tourism experience available on the Gold Coast, Tweed Shire and beyond.

Property development is an important component of an airport's operations. It assists economic feasibility and enhances the multi-purpose focus of an airport. It supports the role and function of Gold Coast Airport by providing a complementary range of land uses. These uses may directly or indirectly support the intended outcome of the Airport as a regional economic and transport hub.

To respond to the needs of the region's community, tourism and business, this Master Plan focuses on growth in new quality aviation infrastructure and commercial facilities over the next twenty years.

Ground Transport

The Ground Transport Plan considers the broader vision of the surrounding state and local governments and planning up to and beyond 2037. Efficient, reliable, safe and convenient access to the Airport by various ground transport modes are crucial to support the Airport's forecast growth and strategies.

The nature of visitors to the Airport has influence over the type of onward journey visitors make. Approximately two-thirds of passengers are visitors

and three-quarters of passengers being on leisure trips. Passengers access the Airport through a variety of transport modes including a large proportion of passengers that are dropped off by family or friends in private vehicles.

During the period of this Master Plan, GCAPL will continue to monitor the demands created by traffic patterns. This includes monitoring the efficiency and capacity of key intersections into Gold Coast Airport and the construction of a second access point onto the Gold Coast Highway in the future.

Within the Gold Coast Airport boundary there will be a redevelopment of the existing internal road network to support a more efficient arrangement of passenger kerbside setdown / pick up areas, public transport access and taxi and limousine lay-over areas. This will provide improved internal circulation and reduce the occasional peak hour congestion that can be experienced.

In addition, planning has been undertaken for the provision of a new multi-storey car park. This would replace the existing surface car parking present within the Airport and offer secure and undercover parking facilities for passengers.

Planning for the Airport has also taken into account the future introduction of heavy and light rail facilities. Whilst this is a medium to long term prospect, alignment corridors have been preserved for both modes and planning has occurred to ensure that future stations are highly accessible within the Terminal Precinct.

Environment and Sustainability

The Airport is located on a coastal plain situated less than one kilometre from the Pacific Ocean, bordered by Cobaki Broadwater to the south and west and Currumbin Hill to the north. Surrounding the Airport are the suburbs of Tugun, Bilinga, Kirra, Coolangatta and Tweed Heads.

The biogeographic region in which the Airport resides is considered one of Australia's most diverse for its natural terrain and biodiversity. Ecological values contained on Gold Coast Airport land have been recognised at all levels of governments with approximately 25 per cent of the 371 hectare Commonwealth lease area being dedicated to conservation through the Cobaki Environment Precinct.

Gold Coast Airport also sits within a broader cultural heritage landscape of significance to the Indigenous people of the region. Acknowledgment and management of these cultural values in consultation with Indigenous stakeholders forms a key consideration in managing airport activities.

This 2017 Master Plan details the potential environmental impacts associated with development and operation of Gold Coast Airport and outlines GCAPL's framework for the management of these impacts.

Environmental aspects addressed include:

- » Resource Use;
- » Land;
- » Surface Water and Groundwater;
- » Biodiversity;
- » Cultural Heritage;
- » Air Quality;
- » Ground-Based Noise;
- » Hazardous Materials.

Environmental requirements set out in the 2017 Master Plan apply to all relevant operators and activities on the airport including those undertaken by tenants and contractors.

Conclusion

The 2017 Master Plan has been prepared to support the continued growth of Gold Coast Airport as an economic and aviation hub in the region.

The 2017 Master Plan will also ensure that Gold Coast Airport can meet the changing demand for aviation and airport related services over the next five years and plan strategically for the next 20 years. This means ensuring that the implementation of the Master Plan is a dynamic process that enables the Airport to remain competitive in the context of new markets, economic conditions and passenger requirements.





1.0

Introduction



Gold Coast Airport, the gateway to Australia's premier tourism destination.

1.1 WELCOME TO THE GOLD COAST AIRPORT 2017 MASTER PLAN

The Gold Coast Airport 2017 Master Plan sets a bold future for the Airport that will see it expand in its role as an economic and aviation hub in the south east Queensland and northern New South Wales regions.

As the gateway to Australia's premier tourism and lifestyle destination, Gold Coast Airport has come a long way from its humble beginnings in 1936. Since then Gold Coast Airport has continued to provide south east Queensland and northern New South Wales with infrastructure and services that support and grow tourism and business activities.

Gold Coast Airport is operated by Gold Coast Airport Pty Ltd (GCAPL), a company wholly owned by Queensland Airports Limited (QAL), a 100 per cent Australian-owned, Queensland-based company. Since GCAPL acquired the long term lease on the Airport, annual passenger numbers have increased from 1.8 million in 1998 to over six million passengers in 2016.

Gold Coast Airport continues to be one of Australia's fastest growing airports and is the fifth busiest international airport in Australia. Forecast passenger growth is expected to continue to exceed average growth rates for other Australian airports.

The Gold Coast is the host city for the 2018 Commonwealth Games. This has initiated significant investment in a range of new sporting facilities and the Commonwealth Games Village. The event is expected to attract over 6,600 athletes and officials from 71 Commonwealth nations and territories, and over 117,000 visitors.

To respond to the needs of the region's community, tourism and business, this Master Plan focuses on growth in new quality aviation infrastructure and commercial facilities over the next 20 years.

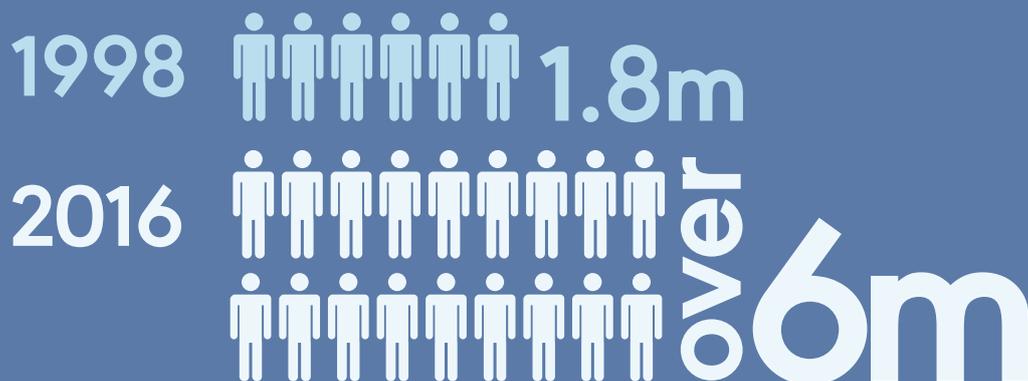
This Master Plan presents design concepts for the period covering the next 20 years to the year 2037, including the forecast growth, and facilities required to accommodate this growth. The 2017 Master Plan focuses on the development requirements over the



next five years. It is a key document used as a guide for the:

- » Development of airport facilities for both aviation and non-aviation uses
- » Assessment of the economic effects of airport development in terms of airport related employment and influence on the local and regional economy
- » Assessment of the environmental effects of airport activities, including construction and operation of airport facilities
- » Development of land use controls for areas surrounding the Airport
- » Review of airport access requirements.

Passenger Growth





Vision: Engaging customers, connecting communities, exceptional experiences.

1.2 VISION AND DEVELOPMENT OBJECTIVES

Our vision of “Engaging customers, connecting communities, exceptional experiences” is supported by a set of development objectives organised into four strategic pillars — Economic growth, Environmental sustainability, Aviation operations and People. These pillars represent key themes in the Master Plan and are organising elements for the development of the Airport for the next 20 years. The objectives are directly linked to the strategic

planning outcomes outlined in later chapters including land use, aviation, ground transport and environment.

Gold Coast Airport has made great progress in achieving this vision. Testament to this, Gold Coast Airport won the award as the best regional airport in the Australia-Pacific region at the Skytrax World Airport Awards in 2017. This marks the third Skytrax award win for Gold Coast Airport, having also won the coveted award in 2011 and 2015.



As required under the *Airports Act 1996* (Airports Act), Gold Coast Airport's development objectives are:



Economic growth

- » Provide aviation infrastructure to drive growth in the regional tourism sector;
- » Manage the business responsibly to develop the Airport site for future growth;
- » Grow non-aero revenue through the property business.



Environmental sustainability

- » Achieve an acceptable balance between the development of the Airport and mitigation of environmental impacts;
- » Encourage responsible management of energy, water, waste and environment;
- » Encourage environmentally responsible development.



Aviation operations

- » Ensure the safe, secure, reliable and efficient movement of passengers and aircraft;
- » Protect the airspace of the Airport from incompatible land use, development and potential obstacles;
- » Ensure the timely delivery of new and improved airport capacity.



People

- » Actively and honestly engage with the community and key stakeholders;
- » Provide high quality guest facilities that are hassle free;
- » Maintain commitment to quality of service monitoring.



2.0

The Master Plan



A Master Plan is one of the most important documents that can be prepared by an Airport.

A Master Plan is a visionary and a strategic document detailing planning initiatives for the Airport site. The Master Plan also contains an environment strategy that describes how environmental issues associated with airport activities will be managed.

A Master Plan is a statutory document under the *Airports Act 1996*. As part of the planning framework, GCAPL is required to prepare an Airport Master Plan every five years detailing the twenty-year strategic direction for the Airport.

While the regulatory driver for the Master Plan is important, GCAPL sees the 2017 Master Plan as a key document for the community and local and state governments. It provides a clear direction for the future planning of airport facilities and acts as an important link to other planning strategies for the locality of the Airport and the region. The Master Plan describes future land uses, types of permitted development, environmental impacts and noise, including the Australian Noise Exposure Forecast (ANEF).

2.1 REGULATORY FRAMEWORK

Gold Coast Airport, being a federally-leased, core-regulated airport, is subject to the planning framework prescribed in the Airports Act.

The Airports Act and associated Regulations are the statutory controls for ongoing regulation of development activities on airport land, for both aeronautical and non-aeronautical purposes. The Federal Department of Infrastructure and

Regional Development (DIRD) is responsible for administering the Airports Act.

Section 70 of the Airports Act requires there be a final Master Plan for the Airport that has been approved by the Federal Minister for Infrastructure and Transport (the Minister). The purpose of a Master Plan is:

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



The Master Planning process is controlled by a range of Commonwealth legislation regarding:

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

In addition to the Airports Act and associated Regulations, applicable environmental and cultural heritage provisions that can affect the Airport's operation include the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth).

Airspace administration and regulation is undertaken by the Civil Aviation Safety Authority (CASA) and Airservices Australia in accordance with the *Airspace Act 2007* (Cth) and the *Civil Aviation Act 1988* (Cth). Airport safety considerations are administered by CASA through the *Civil Aviation Act 1988*, the Civil Aviation Safety Regulations 1998 (Cth) and the Civil Aviation Regulations 1988.

Gold Coast Airport has a curfew in operation from 11:00 pm to 6:00 am daily (Queensland time) under the Air Navigation (Coolangatta Airport Curfew) Regulations 1999. While most aircraft operations are prohibited during this period, there is provision to operate emergency aircraft, some small jets, propeller-driven aircraft, freight aircraft and a limited number of domestic jets.

Appendix A outlines the requirements for an Airport Master Plan under s. 71 of the Airports Act and provides a reference guide to how each legislative requirement has been addressed in the Master Plan.

While the Airports Act only requires a Master Plan for the federally-leased component of the Airport land, this Master Plan also includes proposed development on the land leased in New South Wales and freehold owned Mallaraba Car Park in order to provide a more holistic description of future airport developments. The Mallaraba Car Park and New South Wales lease area is shown in Figure 3.4.

Development and land management within these areas falls outside the jurisdiction of the Airports Act.

Master Plan Drafting and Approvals Process

Prepare Preliminary Draft Gold Coast Airport 2017 Master Plan



Public Consultation



Prepare Draft Master Plan



Minister Decision



Final Gold Coast Airport 2017 Master Plan

Figure 2.1 Master Plan Drafting and Approvals Process

2.2 MASTER PLAN PROCESS

In developing a Master Plan, GCAPL is required to publish a preliminary draft Master Plan and provide the opportunity for public comment. Consultation is to occur with state and local governments, airport stakeholders and the community.

Prior to the public comment period of the Master Plan, state and local governments were notified of the intention to submit a draft Master Plan to the Minister, a requirement under s. 79 of the Airports Act.

GCAPL made available copies of the preliminary draft Master Plan and invited members of the public and local stakeholders to provide comment. Following consultation, comments received during the public comment period will be collated, reviewed and given due regard in preparing the draft Master Plan.

GCAPL submitted a draft Master Plan, along with a certificate of public comment, to the Minister for a decision. The Minister is required to reach a decision within 50 business days with the option to extend the statutory period by a further 10 business days if required. Where the Minister neither approves nor refuses to approve the draft Master Plan within 50 business days of receiving necessary documents and information, the Minister is taken to have approved the draft Master Plan.

GCAPL will continue to engage with the community and industry stakeholders after the formal master planning period.

The final Master Plan was published following Ministerial approval. The process for preparation of the Master Plan is shown in Figure 2.1.

2.3 2017 MASTER PLAN CONSULTATION

During preparation of the preliminary draft Master Plan, GCAPL established a formal consultation program with a wide range of government, industry and community representatives. This consultation was crucial in developing the various Master Plan components.

During the statutory 60 business day public comment period of the preliminary draft Master Plan, a much wider group of stakeholders and the public was engaged through a range of forums, publications and public notices. To satisfy the requirements under s. 80 of the Airports Act, GCAPL consulted with the following stakeholders:

- » Federal Department of Infrastructure and Regional Development
- » Federal Department of the Environment and Energy
- » Queensland Government
- » Queensland Government Authorities
- » New South Wales Government
- » New South Wales Government authorities
- » City of Gold Coast Council (CGCC)
- » Tweed Shire Council (TSC)
- » Federal members of parliament
- » State members of parliament
- » Local councillors
- » Airservices Australia
- » Civil Aviation Safety Authority
- » Airlines
- » Industry groups
- » Users of the Airport
- » Community
- » CACG
- » ANACC.

After completion of the 60 business day public comment period, GCAPL considered the comments received and revised the draft Master Plan as required. The draft Master Plan is submitted to the Minister, together with a written statement listing the names of the persons consulted and a summary of the views expressed by the persons consulted and all comments.

2.4 COMMUNITY FORUMS

GCAPL has a number of key community forums in place and presents regular updates to local community groups. It maintains extensive public information on the Gold Coast Airport website relating to airport operations, activities and complaint handling processes. GCAPL also works with Airservices Australia to monitor local aircraft noise complaints.

GCAPL is committed to ongoing and proactive communication and engagement with the local community about airport development and growth activity and how this impacts on and supports the local community. Any major development foreshadowed by the Master Plan will be subject to separate Commonwealth approval including industry consultation and a further opportunity for public comment.

2.5 MASTER PLAN ENGAGEMENT

GCAPL established the following objectives for a major community engagement program to support the release of the preliminary draft Master Plan:

- » Raise awareness of the Master Plan by proactively engaging with key community, industry and government stakeholders while the preliminary draft Master Plan was being prepared and during the public comment period
- » Ensure the community and stakeholders are well informed of the purpose and process of the Airport Master Plan
- » Key stakeholders and community to be a part of the master planning process through meaningful dialogue in an informative, open, timely and responsive manner
- » Provide opportunities for stakeholders to express their opinions on information in the preliminary draft Master Plan and provide channels for feedback
- » Ensure feedback from the community is captured and considered in the Master Plan.

A range of stakeholder engagement activities occurred during the public comment period which included:

- » Public information sessions held in key locations across the region to inform the community and stakeholders about the Master Plan
- » Public displays
- » Printed copies of the preliminary draft Master Plan were available at Gold Coast Airport reception and at local council libraries
- » GCAPL media releases, fact sheets, information brochures and Frequently Asked Questions providing information on the future planning initiatives for the Airport
- » Information on the Gold Coast Airport website including copies of the Master Plan for download and an online feedback submission form
- » GCAPL's Facebook and Twitter pages to promote the community consultation period and seek feedback
- » Advertisements in local newspapers and community publications outlining the community consultation period and advising relevant forums and sessions that the community can attend to learn more
- » Stakeholder presentations and face-to-face briefings.

The Master Plan consultation stages required to fulfill the requirements of the Airports Act are outlined in Figure 2.2.

Master Plan Public Comment and Review Process

Stage 1: Prior to Public Comment

- » During the preparation of the exposure draft Master Plan, Gold Coast Airport has consulted with a range of key stakeholders at all levels of government, local industry and statutory bodies.
- » The purpose of consultation at this stage was to gather background and supporting information that is required to prepare the preliminary draft master plan.



Stage 2: Exposure Draft Consultation with the Federal Government

- » In June 2016, the exposure draft Master Plan was presented to the Federal Government, Department of Infrastructure and Regional Development (DIRD) prior to formal consultation.
- » The preliminary draft Master Plan was updated prior to public consultation.



Stage 3: Public Comment and Consultation Period

- » Gold Coast Airport carried out extensive consultation with the community, key stakeholders, business community and airport operators during the 60 day statutory consultation period.
- » This included formal presentations to CACG, ANACC and representatives of local and state governments. In addition public information sessions were held at key locations across the region. The Master Plan was provided online and in hard copy at accessible locations.



Stage 4: Ministerial Review

- » Gold Coast Airport is providing a draft Master Plan to DIRD for Ministerial approval.



Stage 5: Implementation of the Master Plan

- » Subject to approval of the 2017 Master Plan, Gold Coast Airport will continue to liaise with community and industry stakeholders.

2.6 PREVIOUS MASTER PLANS

A draft Airport Master Plan was first produced for the then Coolangatta Airport in 1994 by the Federal Airports Corporation (FAC). The introduction of the Airports Act in 1996 provided a regulatory framework for Federal-lease airport operators. The Airports Act includes the requirement for leased Federal airports to produce a new Master Plan every five years. GCAPL acquired the lease of Gold Coast Airport in 1998 and was required to submit a draft Master Plan to the Federal Minister, which received approval in 2001. Master Plans for Gold Coast Airport also received approval in 2006 and 2011 (Figure 2.3).

1994 Draft Master Plan (Federal Airports Corporation)

Prior to 1998 the FAC was not required to produce an Airport Master Plan. Despite this, the FAC still produced a draft Master Plan. The draft 1994 Master Plan for the Coolangatta Airport (as it was then known) outlined a vision to continue to grow the Airport space and to improve access to and from the Airport.

The Master Plan had a broad focus including land acquisition, continued expansion of airport facilities and improved vehicle access. Key opportunities identified in the 1994 Master Plan were extending the main runway south in two stages to 2,550 metres and 2,858 metres and a parallel taxiway system to support long-haul domestic and/or short to medium haul international operations.

2001 Airport Master Plan

The 2001 Airport Master Plan was the first to comply with the Airports Act for Gold Coast Airport. This Master Plan was focused on Transit Oriented Development and a phased, flexible approach for terminal development, with the aim of further increasing the Airport's land and growing the Airport's functionality. A notable opportunity identified in the 2001 Airport Master Plan was the provision of a possible rail terminus adjacent to the main domestic terminal, which could eventually be incorporated into a Multi-Modal Transit Centre.

2006 Airport Master Plan

The 2006 Airport Master Plan was centred on a vision for the Airport to develop a facility that met the growing needs of family, business and tourist travellers and made a major contribution to the economic and social health of the community it served. The key objectives were consistent with those identified in the 2001 Master Plan with a strong focus on providing precincts for non-aviation commercial and industrial development.

2011 Airport Master Plan

The vision of the 2011 Master Plan was to position the airport as a major economic generator, specifically for tourism, in the south east Queensland and northern New South Wales regions. Some of the key priorities identified for achieving this vision included:

- » A change of use within the Terminal Precinct in the area nominated as a Business Park in the 2006 Master Plan. The change was to include aviation related facilities to accommodate the forecast demand
- » Development of improved vehicular access from the Gold Coast Highway and a future provision for a possible rail terminus.



Figure 2.3 Master Plan Cycle

2.7 2017 MASTER PLAN

This Master Plan intends to provide a strong strategic vision for Gold Coast Airport consistent with regional economic conditions and major infrastructure delivery programs while being flexible to adapt to changing conditions. The Twenty Year Airport Development Plan is depicted in Figure 2.4.

The Master Plan accommodates a new access road from the Gold Coast Highway and a range of future transport linkages including the Gold Coast light rail network and Gold Coast heavy rail extension. Timing of these potential projects is subject to further detailed investigation and funding commitments, however, protecting these transport corridors is critical to preserve the future economic growth advantages of enhanced connectivity. These significant passenger transit opportunities will continue to be considered during future master planning cycles with appropriate responses incorporated based on further project feasibility assessments and funding commitments.

The 2017 Master Plan builds on preceding Master Plans which are successively updated to respond to changes in economic opportunities and community and stakeholder expectations. A number of Major Development Plans (MDPs) have been approved since the 2011 Master Plan including:

- » Southern Cross University (SCU) Building C and at Grade Car Park MDP – July 2015
- » Instrument Landing System (ILS) MDP – January 2016
- » Project LIFT (Let's Invest For Tomorrow) MDP – February 2016

These plans have been carefully considered as they provide a detailed overview of future facilities and infrastructure outlay over the short–medium term. They give a strong indication of future internal employment and visitor attractors and provide strategic direction for the whole Master Plan.



Figure 2.4 Illustrative Twenty-Year Airport Development Plan



PACIFIC MOTORWAY (M1)

Heavy Rail

COMMONWEALTH AIRPORT BOUNDARY

Future development area

General Aviation Expansion

Taxiway

Light Rail

Central Plaza

Surfers Paradise

PACIFIC OCEAN

Illustrative Twenty-Year Airport Development Plan



virgin australia

3.0

The Airport



Gold Coast Airport offers an important link to south east Queensland and northern New South Wales.

3.1 AIRPORT LOCATION

Gold Coast Airport occupies a strategic position in Australia's premier tourist region and offers an important link to south east Queensland and northern New South Wales. The Airport is located approximately three kilometres from the centre of Tweed Heads, 19 kilometres from Surfers Paradise and 100 kilometres from the Brisbane CBD. Figure 3.1 shows the Airport locality plan and Figure 3.2 shows the location of the Airport site in the context of the region.

The Airport is on a coastal plain and includes the Cobaki Broadwater to the south and west, part of which falls within the Airport boundary. The Pacific Ocean lies to the east and Currumbin Hill to the north. The Airport lease occupies 371 hectares. It straddles the border between New South Wales and Queensland, encompassing the local government areas of Tweed Shire Council and the City of Gold Coast, respectively. Gold Coast Airport has dedicated approximately 94 hectares (25 per cent) of the Airport lease area to conservation through the Cobaki Environment Precinct.

KEY

- 1 Betty Diamond Park and Sports Ground
- 2 Gold Coast Dealination Plant
- 3 Tugun Landfill
- 4 Regional Re-pump Station
- 5 Cobaki Lake Development
- 6 GCA NSW Leased Area
- 7 Tweed Heads West Sewer Works



Figure 3.1 Airport Locality



Figure 3.2 Airport Location



Photo: G A Black, courtesy of City Libraries Local Studies Collection

Gold Coast Airport has expanded to be an award winning international airport.

3.2 HISTORY OF GOLD COAST AIRPORT

Gold Coast Airport has experienced significant changes over the past 80 years. Since its inception as an emergency landing strip in 1936, Gold Coast Airport has expanded to be an award-winning international airport servicing over six million passengers per year.

The Airport was initially used as an emergency landing strip for airmail services aircraft flying between Brisbane and Sydney. Regular passenger services commenced in 1939, with the Airport consisting of three grass landing strips. Regular air services increased through the 1940s and 1950s with services provided by Queensland Airlines, Butler Air Transport and later Ansett/ANA. In 1954 Trans Australia Airlines TAA introduced DC3 flights, followed by Skymasters and Convairs.

The construction of the northern extent of the original terminal was completed in the early 1950s. At this stage passenger movements were approximately 12,000 per year. The runway and taxiways were sealed by 1958. A light aircraft apron, access road and carpark were provided during this time.

The current passenger terminal complex commenced construction in 1980. An upgrade to the primary runway in 1982 allowed for wide-bodied aircraft (B767 and A300) services.

During the first 60 years of operation, the Commonwealth Government owned the Airport. On 1 January 1988 ownership was taken over by the FAC, a Government business enterprise. Government policy changes saw the Airport privatised on 29 May 1998, with QAL being the successful tenderer and taking the role of Airport Leasing Company. In 1999, QAL changed the company name to GCAPL.

During the control of the Airport by QAL and GCAPL there has been a continued program of investment and capital expenditure totalling over \$185 million. This investment has included the 2007 runway extension to 2,492 metres and the \$100 million purpose-built low-cost carrier terminal. A complete airport development timeframe is shown in Figure 3.3.

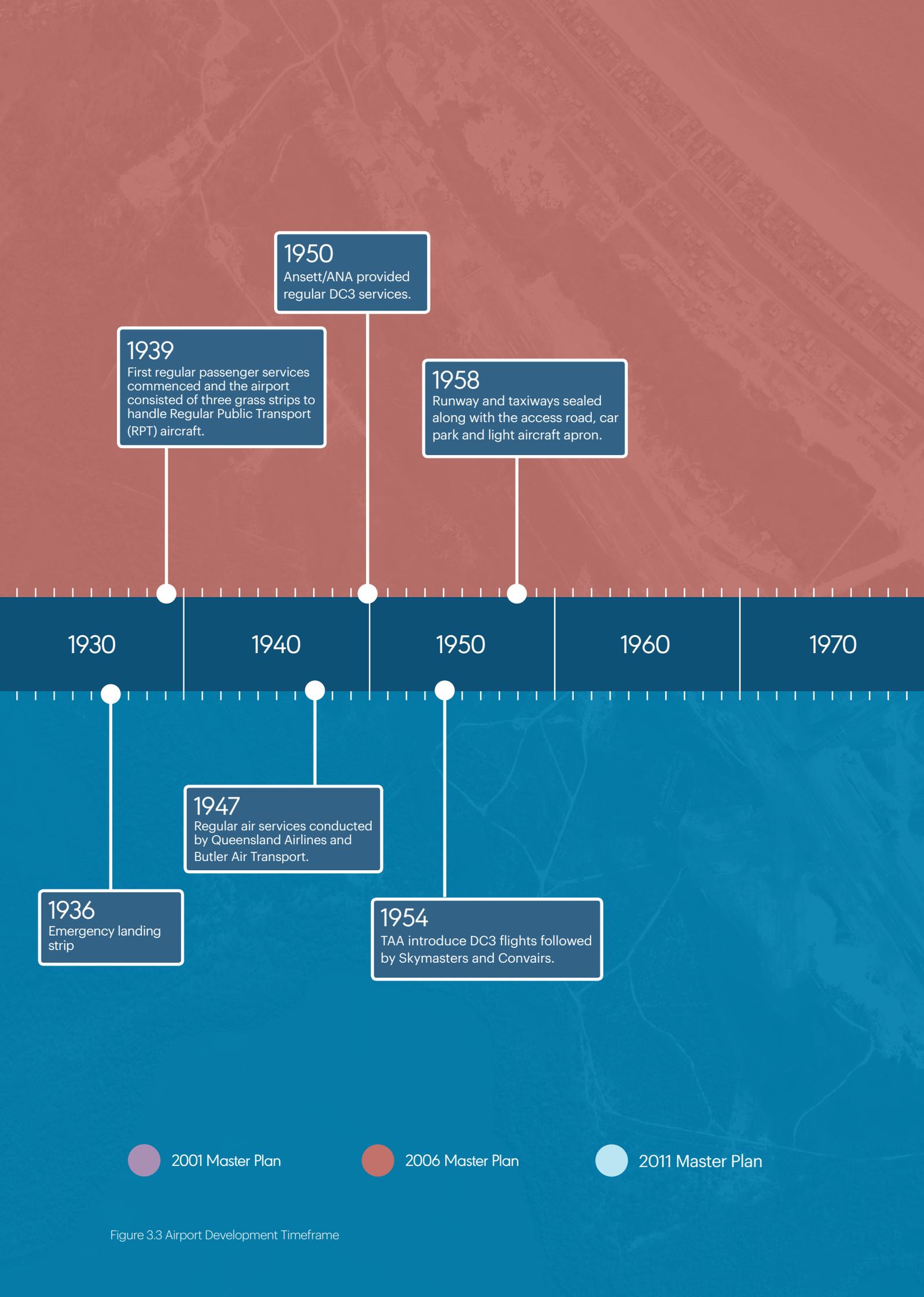
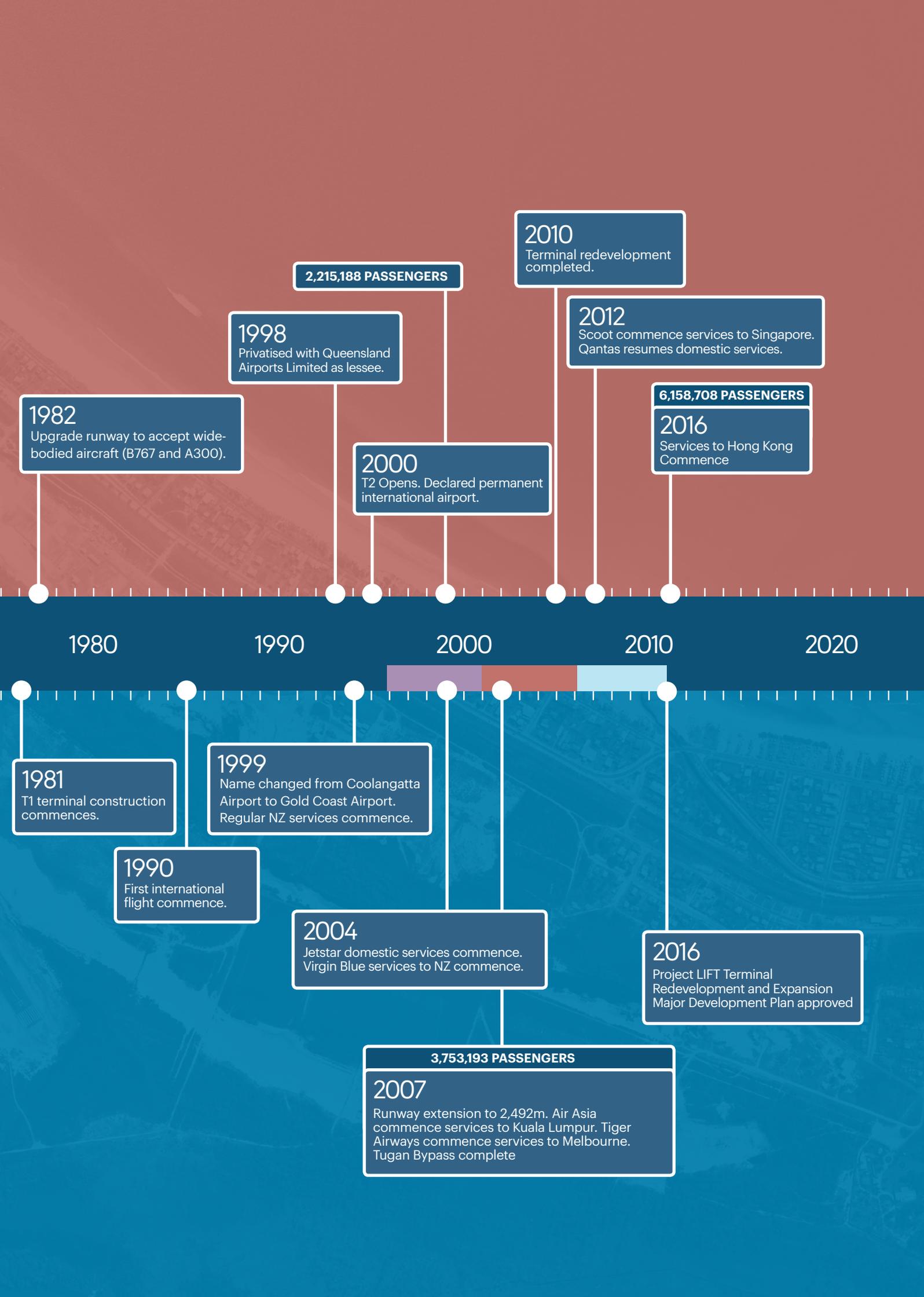


Figure 3.3 Airport Development Timeframe



1982

Upgrade runway to accept wide-bodied aircraft (B767 and A300).

1998

Privatised with Queensland Airports Limited as lessee.

2,215,188 PASSENGERS

2000

T2 Opens. Declared permanent international airport.

2010

Terminal redevelopment completed.

2012

Scout commence services to Singapore. Qantas resumes domestic services.

6,158,708 PASSENGERS

2016

Services to Hong Kong Commence

1980

1990

2000

2010

2020

1981

T1 terminal construction commences.

1999

Name changed from Coolangatta Airport to Gold Coast Airport. Regular NZ services commence.

1990

First international flight commence.

2004

Jetstar domestic services commence. Virgin Blue services to NZ commence.

3,753,193 PASSENGERS

2007

Runway extension to 2,492m. Air Asia commence services to Kuala Lumpur. Tiger Airways commence services to Melbourne. Tugan Bypass complete

2016

Project LIFT Terminal Redevelopment and Expansion Major Development Plan approved

3.3 AIRPORT FACILITIES

Gold Coast Airport has a two runway system comprising the primary 14/32 runway (2,492 metres) and a General Aviation 17/35 runway (582 metres), with associated taxiway and apron areas. Related aviation facilities and infrastructure include a domestic and international terminal complex, public car parks, ground transportation area, air freight facilities, in-flight catering facilities, General Aviation and helicopter facilities, aviation fuel facilities and an air traffic control and fire service complex.

The Airport also houses a new Australian Federal Police Aviation Operations Centre. The facility includes an Emergency Operations Centre, Airport Police Operations Centre, muster rooms and training facilities.

The layout of the major facilities at Gold Coast Airport is shown in Figure 3.4.

3.4 RUNWAYS/TAXIWAYS/APRONS

The primary runway (14/32) handles the majority of aircraft movements. This runway is 2,492 metres long and 45 metres wide with 7.5 metre sealed shoulders. It has a grooved bituminous concrete surface. Runway 14/32 has a partial parallel taxiway with stub taxiway connections to the runway at various locations. Taxiways A, B, C, D, E and K service the primary runway. The secondary (cross) runway (17/35) is used for General Aviation movements. This runway is 582 metres long, 18 metres wide and constructed of bituminous concrete.

A Regular Public Transport (RPT) apron adjoins Terminal 1 (domestic/international services) and Terminal 2 (ancillary support services). These apron areas are made of bituminous concrete and cover an area of approximately 10.8 hectares. The airport also has 3.7 hectares of sealed aprons that service the General Aviation facilities located north of Terminal 2.

3.5 TERMINALS

All domestic and international services operate from the purpose-built common user terminal, Terminal 1. The new terminal was officially opened on 25th January 2010.

The terminal complex provides a range of retail, commercial, food and beverages and transport

services. This is in addition to the operational passenger facilities, which include check-in counters, baggage services, outbound/inbound immigration, customs/quarantine, passenger screening, departure lounges and amenities.

Terminal 2 is used for ancillary activities to support Terminal 1.

3.6 FREIGHT

The Airport has the strategic advantage of servicing the northern New South Wales and Gold Coast region.

This strategic advantage includes the ability to accommodate high value and time-sensitive freight.

Freight from all aircraft is unloaded on the applicable apron area and transported by trolleys to the freight handling buildings, which are located to the north of Terminal 1.

3.7 GENERAL AVIATION AND HELICOPTERS

The General Aviation facilities and aprons are located north west of the terminal area and comprise of maintenance facilities, flying schools, hangars and charter operators.

Helicopter operations are conducted from within the General Aviation area.

3.8 SERVICES AND UTILITIES

Water supply services will continue to be obtained from the CGCC system. Internal reticulation will continue to be expanded and maintained by GCAPL as required in accordance with future airport development. GCAPL does not anticipate any upgrading of CGCC water supply systems to accommodate future development within the planning period.

Sewerage services will continue to be obtained from the CGCC system. Internal reticulation will continue to be expanded and maintained by GCAPL as required in accordance with future airport development. GCAPL does not anticipate any upgrading of the CGCC sewerage or associated water supply systems to accommodate future development within the planning period.



For future development proposals, existing and future water supply and sewerage demands will be confirmed to determine whether or not the existing networks can cater for the increased demand or require system upgrades.

Stormwater drainage will continue to be directed into the CCGC and Tweed Shire Council drainage systems via the drainage reserve and other drainage channels in the Airport. The internal drainage network will continue to be expanded and maintained by GCAPL as required in accordance with future airport development.

Pollutant controls are provided and will be augmented consistent with the Environment Strategy as airport development occurs. Due to expanding aviation facilities the drainage reserve will be realigned as part of Project LIFT. It will continue to be the primary drainage path for stormwater drainage from the Airport. This work is being undertaken as part of the approved Project LIFT.

Electricity supply will continue to be obtained from the Energex system. Internal reticulation will continue to be expanded and maintained by GCAPL as required in accordance with future airport development. The Airport's electrical demand within the planning period indicates additional dedicated feeders from an off-airport substation will be required.

Solid waste disposal and trade waste disposal is provided by private contractors.

Future growth of airport telecommunications services, both wired and wireless, will be directed by GCAPL to ensure fair and equitable access to all carriers, tenants and stakeholders.

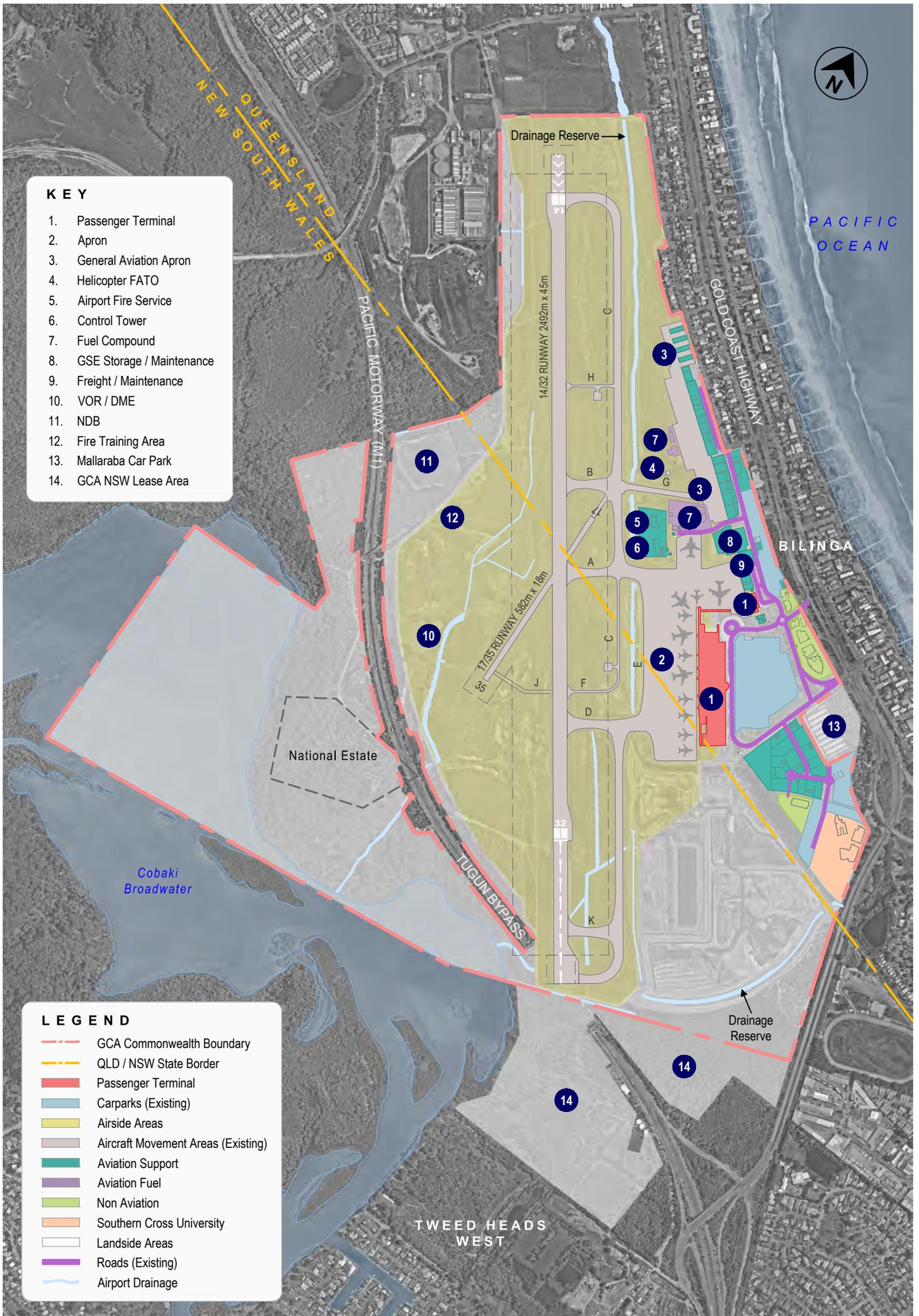


Figure 3.4 Existing Features Plan



3.9 2011 MASTER PLAN DEVELOPMENT

Since QAL acquired Gold Coast Airport in 1998, there has been significant and substantial investment in airport infrastructure and facilities at the Airport. Key developments that have commenced or been completed since the 2011 Master Plan include:

- » Northern apron pavement overlay and installation of additional fuel hydrants and northern apron walkway
- » Taxiway Echo realignment and widening works
- » Airport Lighting Equipment Room relocation and upgrade
- » Electrical Network Intake Substation
- » Installation of an ILS for Runway 14 (in progress)
- » Project LIFT terminal expansion and redevelopment (in progress)
- » SCU Building C and Car Park (in progress)
- » Commissioning of new high-intensity runway edge lighting
- » New A330 remote apron
- » New four million litre Joint User Hydrant Installation (JUHI) facility
- » Completion of the new Ivy Pearce Building, a three-storey commercial building hosting Australian Federal Police
- » Eastern Avenue car park upgrade and long-term car park expansion
- » Completion of the redevelopment of Air Gold Coast facility in the General Aviation area
- » Redevelopment of Chopperline facility in the General Aviation area.
- » SCU Building B

Terminal Expansion (Project LIFT)

Project LIFT is an expansion and redevelopment of the existing terminal building, addition of RPT apron parking stands and realignment of the Airport's main drainage reserve. The redevelopment will increase the Airport's terminal and apron capacity to meet forecast busy-hour demand.

Instrument Landing System (ILS)

The ILS MDP was approved in 2016. The ILS will improve the reliability of landings in adverse weather and improve regularity of service.

The ILS is a precision, radio navigation, ground-based aid adopted by airports and airlines worldwide. It allows aircraft to approach and land in weather that would otherwise result in a missed approach and possible diversion to another airport.

Southern Cross University (SCU)

Building C and an at-grade car park within the SCU campus completed construction in 2017. The campus currently consists of two buildings, Building A and Building B. Building C is a six-storey building designed to accommodate a lecture theatre, Learning Centre/Personalised Learning Environment space, general purpose learning rooms, offices and presentation areas.

3.10 ROLE OF GOLD COAST AIRPORT

Gold Coast Airport has a strategic position as the only airport between Brisbane Airport to the north and Sydney Airport to the south with international flights. As a regionally located airport it provides an important hub for regional domestic-only airports. It offers cost effective and convenient flights that provide connections to international destinations for communities located outside the catchment of a capital city airport.

Gold Coast Airport is one of four airports under the control of QAL. These airports are Townsville, Mount Isa and Longreach and they provide an important network of major city and regional services, which are relied upon by customers. QAL is proud of the role they have supporting air travel services.

As the international popularity of the Gold Coast and northern New South Wales region grows, the importance of the Airport will increase as a strategically significant gateway. It is Gold Coast Airport's aim to ensure that visitors, local residents and business travellers have an exceptional experience whenever they travel to and from south east Queensland or northern New South Wales via the Airport.

3.11 FLIGHT DESTINATIONS

Qantas, Jetstar, Virgin Australia, Tigerair and Jetgo provide domestic services from Gold Coast Airport. Jetstar International, Virgin Australia, AirAsia X, Air New Zealand, Scoot and Hong Kong Airlines provide international services. Gold Coast Airport now has flights to every capital city in Australia outside Queensland. Direct destinations serviced include those listed in Table 3-1 and depicted in Figure 3.5.

Table 3-1 Flight Destinations by Airline

Airline	Destination
Domestic	
Qantas	Sydney, Melbourne
Jetstar	Adelaide, Perth, Cairns, Sydney, Melbourne (Avalon & Tullamarine), Newcastle
Virgin Australia (domestic)	Adelaide, Sydney, Canberra, Melbourne (Tullamarine)
Tigerair	Sydney, Melbourne (Tullamarine)
Jetgo	Rockhampton
International	
Jetstar International	Tokyo and Osaka, Japan China Auckland, Christchurch, Wellington and Queenstown, New Zealand
Virgin Australia (international)	Auckland, New Zealand
AirAsia X	Kuala Lumpur, Malaysia Auckland, New Zealand
Air New Zealand	Auckland and Christchurch, New Zealand
Scoot	Singapore
Hong Kong Airlines	Hong Kong



Figure 3.5 Destinations Serviced by Gold Coast Airport

Gold Coast Airport facilitates tourism, trade and economic activity.



3.12 ECONOMIC AND REGIONAL SIGNIFICANCE

Gold Coast Airport is a hub that facilitates tourism, trade and economic activity. It lies in one of the fastest growing areas in Australia, being the south east Queensland and northern New South Wales coastal strip. The Airport occupies a strategic position in Australia's premier tourist regions. It is 19 kilometres from Surfers Paradise, and within an hour drive from Brisbane in Queensland and 45 minutes from Byron Bay in northern New South Wales.

Gold Coast Airport is a significant infrastructure asset to south east Queensland and northern New South Wales. It acts as a gateway to the region for domestic and international visitors and provides air access to the local community.

GCAPL commissioned an independent report to undertake a Community Economic Impact Assessment to identify the direct and indirect (multiplier) employment and Gross Regional Product of the planning period for the Master Plan. This assessment identified the impacts at the regional level for Gold Coast and Tweed.

Economic Contribution

The Community Economic Impact Assessment identified Gold Coast Airport and its associated aviation and businesses has contributed an estimated \$545 million to the regional economy in 2016, having grown significantly from \$269 million in 2009/2010. In 2016 tourism facilitated by the Airport had contributed an estimated \$1.25 billion, making the total economic impact on the Gross Regional Product to be approximately \$1.8 billion. This represents 5.7 per cent of Gross Regional Product in the region. The combined economic contribution of Gold Coast Airport to the New South Wales and Queensland state economies is \$2.9 billion in Gross State Product.

Contributes
\$1.8 Billion
to the region

Five-year Impact

The five-year impact of the Master Plan sees an increase of the Airport's direct operations contribution to the region of \$818 million (Table 3-2). Gold Coast Airport is expected to contribute \$2.5 billion to the region by 2022 (Table 3-3).

Twenty-year Impact

By 2037, direct Gold Coast Airport operation's contribution to the Gross Regional Product is expected to increase to \$2.3 billion (Table 3-2). Total Economic Contribution of Gold Coast Airport to the region is expected to increase to \$5.6 billion (Table 3-3).

Table 3-2 Direct Economic Contribution of Gold Coast Airport Operations to the Region

	2016	2022	2027	2032	2037
Impact of Gold Coast Airport on Gross Regional Product (\$m)	545	818	1,100	1,600	2,300

Table 3-3 Total Economic Contribution of Gold Coast Airport to the Region (operations, gross tourism and investment)

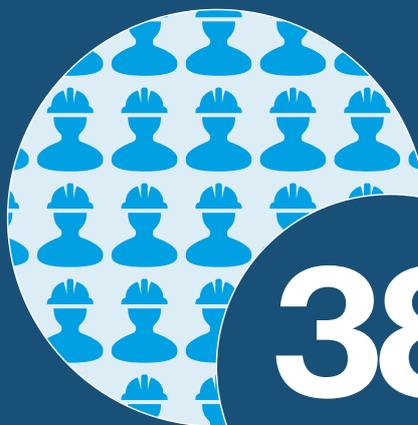
	2016	2022	2027	2032	2037
Impact of Gold Coast Airport on Gross Regional Product (\$m)	1,800	2,500	3,300	4,300	5,600

Employment Levels

Gold Coast Airport is one of the largest employers in the region. It is estimated that Gold Coast Airport and businesses operating directly from it employ 2,252 people, of which 2,037 are in full-time jobs.

Due to the tourism base of the region, Gold Coast Airport services a significantly large proportion of general tourism traffic. Through facilitation of tourism, the Airport supports 14,740 full-time jobs, representing 6.8 per cent of employment in the region.

QUEENSLAND



38,012
Jobs in the region
by **2037**

NEW SOUTH
WALES

Table 3-4 Direct Employment at Gold Coast Airport

	2016	2022	2027	2032	2037
Direct employment at Gold Coast Airport (full-time equivalent)	2,037	3,108	4,401	6,310	8,995

Table 3-5 Contribution to Regional Employment to 2037

Employment (including operations, gross tourism and investment)	2016	2022	2027	2032	2037
Contribution to employment in the Tweed and Gold Coast region (FTE)	14,740	19,914	24,462	30,221	38,012

Five-year Impact

The five-year impact of the Master Plan sees an increase of the Airport's direct employment to 3,463 jobs, of which 3,108 are full-time, refer Table 3-4. Through facilitation of tourism, the Airport is expected to support 19,914 full-time jobs in the region.

Twenty-year Impact

It is estimated that by 2037 Gold Coast Airport and businesses operating directly from it will provide 8,995 full-time jobs, refer Table 3-4. Through facilitation of tourism, the Airport is expected to support a total of 38,012 full-time jobs in the region.

3.13 COMMUNITY AND STAKEHOLDER ENGAGEMENT

Gold Coast Airport understands the importance of the community they serve. As the second largest airport in both Queensland and New South Wales, Gold Coast Airport is committed to fostering relationships in the community and growing employment in the region.

Gold Coast Airport has demonstrated a strong commitment to community consultation. It will continue to take a proactive approach in communicating with key stakeholders, local community, businesses and industry partners and state and Federal Government representatives.

Recognising the integral role the community plays to ongoing success, Gold Coast Airport continues to be recognised as a responsible employer of choice and prominent community member through ongoing support, employee services, consultation and sponsorship.

Gold Coast Airport interacts with the community through the CACG and ANACC providing regular updates to these groups. The CACG is the primary community consultation forum for the Airport covering all areas of airport development activity. The ANACC focuses on aircraft noise issues in the local community and delivers information on community aviation noise concerns.

Supporting Our Community

Gold Coast Airport is a dedicated supporter of local charity, community, tourism, arts and sporting organisations. Together with QAL, Gold Coast Airport distributes more than \$500,000 in sponsorship donations throughout Queensland and northern New South Wales each year.

Gold Coast Airport engages with local communities and organisations through the Gold Coast Airport Community Benefit Fund and charitable partnerships that include the Royal Flying Doctor Service, Movember Foundation, Lifeflight and Currumbin Wildlife Sanctuary Animal Hospital.

Gold Coast Airport also provides sponsorship support to the arts, culture, tourism and professional sporting leagues in the region's communities; a selection of which include:

- » Gold Coast Airport Marathon
- » Bleach Festival
- » Tweed Cooly Rocks On
- » SWELL Sculpture Festival
- » Community Helicopter Rescue Service
- » TASTE of Kingscliff
- » Opera on the Beach.

Sponsorship and community programs are aimed at forming active and mutually beneficial relationships with organisations and communities, not merely through financial support but also through contributing and transferring skills, expertise, and knowledge.

Gold Coast Airport seeks to give back to the community that it services and will continue to support the rich and diverse community and cultural events in the region.

Community Aviation Consultation Group

A local CACG was established in 2011 to help facilitate greater community consultation, particularly on planning and development activities on the Airport. The CACG membership spans a diverse cross-section of the south east Queensland and northern New South Wales communities. These include aviation and government officials, tourism and business leaders and local community representatives. The CACG is used to exchange information on issues relating to Gold Coast Airport operations and their impacts.

The CACG is for consultation purposes only and is not a decision-making body. It provides updates to community members and industry representatives and seeks feedback on:

- » Airport development activities (including the Airport Master Plan)
- » Airport environment initiatives (including the Airport Environment Strategy)
- » New airport activity (such as new services) or changes to aviation services
- » Planning, regulatory and policy changes affecting the Airport
- » Changes to airport facilities
- » Access issues including for people with special needs
- » Economic contributions of the Airport (including the Airport Community Economic Impact Assessment).

Reports are also provided to the CACG from government departments including the DIRD, Airservices Australia and CASA when required.

Airport Noise Abatement Consultative Committee

Gold Coast Airport established the ANACC to communicate with the local community, focusing particularly on noise abatement strategies and aircraft noise issues in the local community. The ANACC consists of representatives endorsed by local community groups, aviation representatives and government representatives. GCAPL is committed to working with Airservices Australia (the entity responsible for monitoring aircraft noise) to provide ongoing and timely engagement with the local community on aircraft noise issues.

The purpose of the ANACC is to support the CACG with technical input and expertise. The ANACC considers matters generated from operations associated with Gold Coast Airport. Where appropriate, it makes recommendations to the appropriate authority and/or the CACG. The matters may include:

- » Aircraft noise complaints and handling
- » Revision, implementation and adherence to Aircraft Noise Abatement Procedures
- » Revision, implementation and adherence to flight paths
- » Aircraft noise and flight path monitoring system (NFPMS) information
- » Airport master planning including ANEF
- » Public information and education programs about noise related aspects of aircraft operations.



4.0

Airport Forecasts



Airport forecasting is used in master planning to guide future development of the Airport.



4.1 INTRODUCTION

Airport forecasting ensures development is appropriate for passengers, ground transport and aircraft and is staged for the volume of air traffic movements anticipated over time. Forecasting takes account of historical trends in growth, future developments anticipated in aviation and external factors that contribute to growth in aviation.

Gold Coast Airport has experienced significant historical growth, driven by low-cost carriers and infrastructure investment. This investment focused on increasing capacity to meet demand, such as the 2007 runway extension and terminal development, which have sustained direct long-haul international flights.

From strong success in the low-cost and international arena, Gold Coast Airport is developing and maturing as a gateway that enables and facilitates inbound visitation to the south east Queensland and northern New South Wales regions, outbound travel for the local community, general aviation and freight activities.

4.2 METHODOLOGY

Forecasting for the Master Plan has considered a range of macro and micro factors:

- » The strength of current and potential future markets
- » The broader aviation environment, trends and predicted aircraft fleet developments
- » The local and international drivers of demand in terms of economics, population growth and propensity to travel
- » The Airport's infrastructure capacity and capability to expand.

Following a review of the factors contributing to the Airport's future passenger and aircraft movements, a mixed methodology for forecasting was adopted covering the various components of air traffic at Gold Coast Airport.

Based on the available industry information, the following assumptions have been made to forecast future airport activity:

- » An average annual rate of growth over the period of five per cent in regular public transport passenger movements
- » Aircraft movements grow at a rate slightly below passenger growth, reflecting increasing use of larger gauge aircraft
- » No anticipated growth in non-RPT aircraft movements due to a combination of general aviation industry factors and the land bank available for non-RPT aviation development at Gold Coast Airport.

The assumptions adopted by GCAPL reflect the confidence and potential in the region to continue to:

- » Attract new residents and increasing volumes of visitors from its key domestic and international markets
- » Invest commercial and residential development, infrastructure and public transport in the region.



4.3 HISTORICAL OVERVIEW AND INDUSTRY OUTLOOK

4.3.1 Passenger Movement Historical Overview

Australian passenger movements have grown at an annual rate of just under four per cent in the past ten years, from 104 million movements to 147 million movements in June 2015 as provided by the Bureau of Infrastructure, Transport and Regional Economics (BITRE). By comparison Gold Coast Airport passenger movements grew at just under six per cent from 3.5 million movements to 5.9 million movements. For the calendar year of 2016, Gold Coast Airport's passenger movements broke the six million passenger point for the first time.

The 2011 Master Plan forecast that six million passengers would pass through Gold Coast Airport in the financial year 2011/12. This volume was not achieved until 2016. This was due to an unforeseen decrease in passenger numbers in 2011, which occurred for the first time since 2001 (Figure 4.1). Passenger growth corrected in 2012. The 2011 Master Plan forecast 7.8 million passengers for the financial year of 2017/18 and 16.3 million passenger movements by 2031/32.

The 2017 Master Plan twenty-year forecast is not dissimilar, despite the time frame having moved forward five years. Achievement of 16.6 million annual passenger movements is forecast for the end of 2037, indicating that the profile of the forecast is more conservative than the previous Master Plans.

Gold Coast Airport passenger movements in 2014/15 accounted for four per cent of Australian passenger movements. That market share is almost double the 2.3 per cent market share recorded 15 years ago in 2000/01, demonstrating the accelerated rate of growth experienced by Gold Coast Airport compared to the national average. Historical Gold Coast Airport passenger movements have been shown against passenger movements for Australia in Figure 4.1. It shows that Gold Coast Airport has largely followed passenger growth for Australia, but since 2005/06 has performed better than general passenger growth trends.

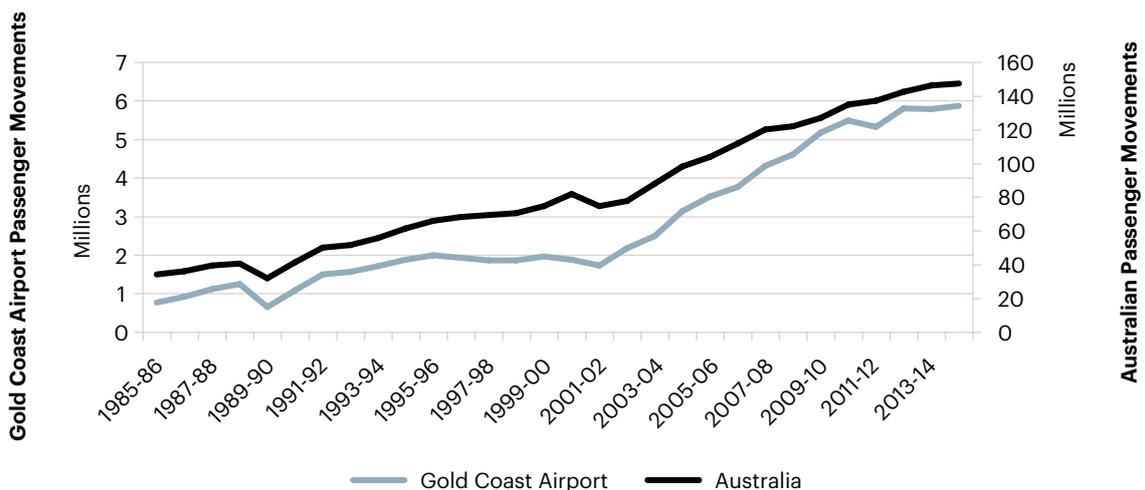
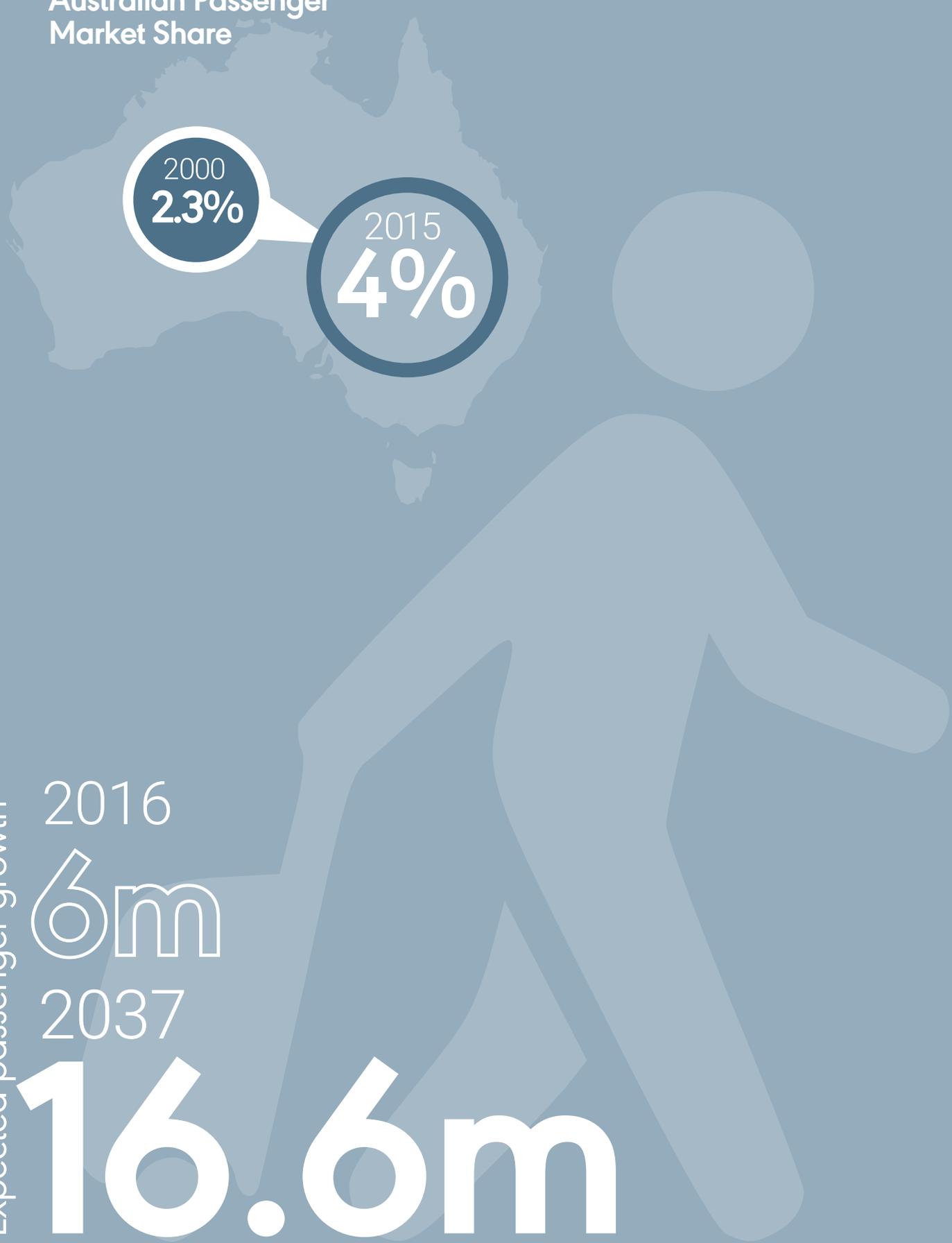


Figure 4.1 Historical Passenger Movements

Australian Passenger Market Share



2000
2.3%

2015
4%

Expected passenger growth
2016
6m
2037
16.6m

4.3.2 Aircraft Movements Historical Overview

Australian Domestic Market

The majority of passenger traffic is recorded in the domestic market (84 per cent of RPT aircraft movements in 2014/15). Domestic city destinations comprise Adelaide, Canberra, Cairns, Melbourne, Newcastle, Perth and Sydney. Services to Mackay and Mount Isa/Darwin ceased since the publication of the 2011 Master Plan. Since July 2015, additional services have been added to Melbourne Avalon and Rockhampton, which continues to Townsville.

Seventy per cent of flights departing Gold Coast Airport are movements on trunk routes to Sydney and Melbourne, which are both recorded in the top ten domestic routes for passenger movements in Australia.

In the ten-year period from 2005/06, the aviation environment has continued to evolve, reflecting phases of:

- » Stabilisation, following the collapse of Ansett
- » Growth, through Jetstar and then Tigerair commencing operations
- » Industry change, with airlines evolving their business models and ownership groups
- » Economic development, with the resources industry construction phase driving a short-term shift in capacity away from traditional markets such as leisure. This had reversed by the end of the period.

Short-Haul International Market

Gold Coast Airport's first international services were on the trans-Tasman, prior to the runway extension enabling direct international long-haul services. Services today continue to the long-term markets of Auckland and Christchurch, with the relatively recent addition of direct services to Queenstown and Wellington.

Key airline partners in the south west Pacific include Jetstar, Virgin Australia and Air New Zealand. Gold Coast Airport welcomed AirAsia X as a new partner serving the New Zealand market in 2016.

Medium and Long-Haul International Market

Gold Coast Airport now serves five medium and long-haul destinations across South East Asia and north Asia. These destinations have been added in the past ten years, since the investment in the runway extension.

The inaugural service for AirAsia X as an airline, on the Kuala Lumpur–Gold Coast route, was in November 2007. In 2016, the long-term partnership with AirAsia X evolved. AirAsia X now serves the trans-Tasman market to Auckland, with the aircraft arriving daily from Kuala Lumpur, departing for Auckland, and returning to Kuala Lumpur later in the day via Gold Coast Airport.

Gold Coast Airport also maintains Jetstar and Scoot as long-haul partners. Jetstar operates flights from Japan (initially Osaka and now Tokyo). Scoot serves the direct Singapore route.

Hong Kong and Chinese charters have taken place over recent years, culminating in the recent announcement that a seasonal service from Hong Kong with Hong Kong Airlines will convert to a year-round scheduled service in 2016. This service triangulates with Cairns on the departing flight.

Destinations and Frequencies

In 2016, on average 56 commercial flights a day depart Gold Coast Airport, providing over 3.66 million one-way seats for sale in the year. An analysis of city pair frequency and carriers is presented in Table 4-1, with comments on recent route announcements.



Table 4-1 Destinations and Frequency of Services

City Pair	Commencement Date If Recent	Average Number of Departures	Carriers Operating
Sydney		25 / day	Qantas, Jetstar, Virgin Australia, Tigerair
Melbourne	Qantas, October 2015	15 / day	Qantas, Jetstar, Virgin Australia, Tigerair
Adelaide		2 / day	Jetstar, Virgin Australia
Canberra		1 / day	Virgin Australia
Cairns		1 – 2 / day	Jetstar
Newcastle		1 – 2 / day	Jetstar
Perth		1 / day	Jetstar
Rockhampton/ Townsville	September 2015	2 – 3 / week	Jetgo
Melbourne Avalon	October 2015	1 / day	Jetstar
Auckland	AirAsia X, March 2016	3 / day	Jetstar, Virgin Australia, Air New Zealand, AirAsia X
Christchurch		1 / day	Jetstar
Wellington	December 2014	3 / week	Jetstar
Queenstown	December 2014	3 – 4 / week	Jetstar
Tokyo		5 – 6 / week	Jetstar
Singapore		6 – 7 / week	Scoot
Kuala Lumpur		6 – 7 / week	AirAsia X
Hong Kong	Seasonal service, January 2016	3 / week scheduled by July 2016	Hong Kong Airlines

4.3.3 Industry Outlook

Gold Coast Airport anticipates that the aviation industry is likely to maintain a focus on efficiency and maximising the use of aircraft assets, while continuing to up-gauge the size of the aircraft operating on key routes.

The domestic market will continue to evolve as the carriers compete for customer demand in tight market conditions. Drivers such as relative business and consumer confidence, the cost of fuel, and airline profitability (driving investment in fleet) will impact the overall seat capacity market and decisions by carriers on where to deploy their fleet.

For GCAPL’s purpose, the focus on efficiency and maximising yield means continuing high-load factors on aircraft, frequent movements on trunk routes to Sydney and Melbourne, and continued activity in the three core markets:

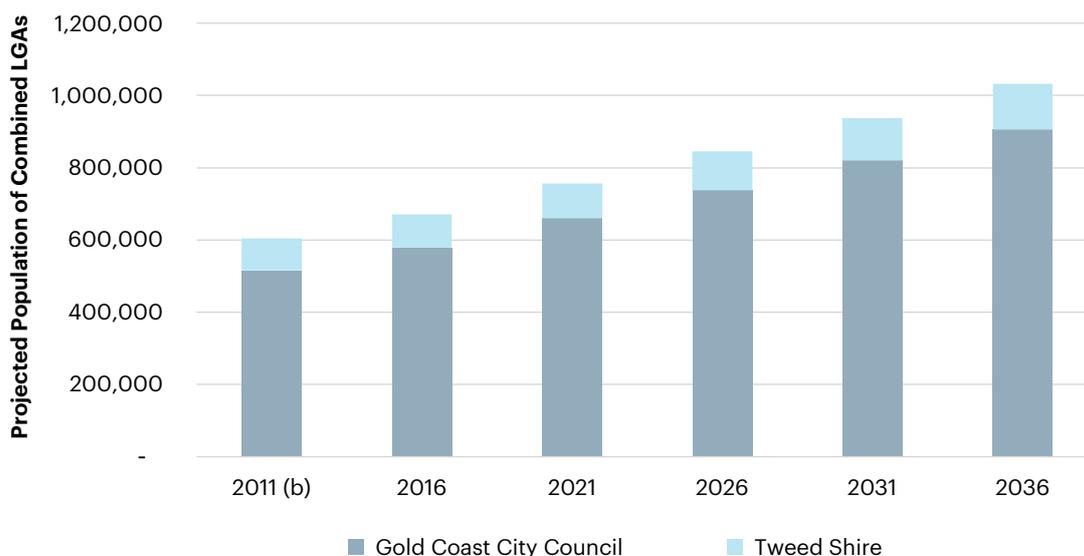
- » Australian domestic services
- » Short-haul international services to the south west Pacific region
- » Long-haul international services to South East Asia and north Asia.

GCAPL expects its business to continue to mature and reflect the industry trends demonstrated through recent changes such as:

- » High competition between four carriers operating to Sydney and Melbourne, offering a range of service levels and timings to meet the demands of consumers, whether locals or visitors, travelling for leisure or business
- » New services offered to Rockhampton and on to Townsville, demonstrating the level of demand that exists in the regional market that can be successfully operated when matched with a right-sized aircraft
- » New year-round services offered to previously seasonal markets such as Hong Kong, which capitalise on the strength of demand for the Gold Coast destination in the greater China market
- » New services offered to short-haul destinations, such as Melbourne Avalon, Wellington, Queenstown, which can sustain year-round services with strong promotion and support.

4.3.4 Regional Population Growth

Within the period of this Master Plan, the population of City of Gold Coast and Tweed Shire Council in the immediate catchment of Gold Coast Airport will be over one million people. In 2016 this area was estimated to be home to 670,000 people. An additional 360,000 people will reside in the region within the twenty-year period of this Master Plan, representing an average annual growth rate of 2.3 per cent (Figure 4.2).



Source: Forecast ID, for Tweed Shire, Queensland Statistician’s Office, The City of Gold Coast

Figure 4.2 Gold Coast City Council and Tweed Shire Council Population Projection 2011-2036



Supporting a regional
population
GROWTH
exceeding
ONE
million
by **2037**

International passengers
forecast to grow to
3 million by 2037.



4.4 AIRPORT FORECASTS

GCAPL has prepared a forecast based on an annual average passenger growth rate of five per cent for the period of the Master Plan, derived from historical growth of Gold Coast Airport and the national average.

Beyond the direct impacts provided by the aviation industry, growth in the region will be driven by socio-economic factors, demand for travel and attractiveness of the region, relative to other competing destinations. GCAPL recognises it is crucial to work closely with tourism, business and government partners to market the destination and lead the promotion of the destination to airline partners.

4.4.1 Passenger Movements

Over the past ten years, annual passenger growth at Gold Coast Airport has been six per cent, compared to a national average of four per cent. The adopted five per cent future annual growth rate is realistic as an average over the twenty-year planning horizon of the Master Plan for Gold Coast Airport. This allows for expected fluctuations to annual growth rates, dependent on market demand conditions and aircraft availability.

Based on this assumption, passenger movements are forecast to grow to 8.2 million in 2022 and 16.6 million in 2037, at an average annual growth rate of five per cent. Of this, 13.6 million domestic passengers will travel through Gold Coast Airport, accompanied by 1.36 million short-haul international passengers and 1.7 million long-haul international passengers. The historical and forecast passenger movements from 2003 to 2037 are shown in Figure 4.3.

It is anticipated that the domestic and international markets will grow at different rates reflecting the comparative maturity of the two market sectors. Currently 85 per cent of passenger traffic is domestic, this is forecast to decline to 82 per cent by 2037. Greater growth potential has been identified in long-haul markets to South East Asia and north Asia.

Domestic and short-haul international passengers are expected to grow at a rate of 4.7 per cent compared to 6.2 per cent for long-haul international passengers.

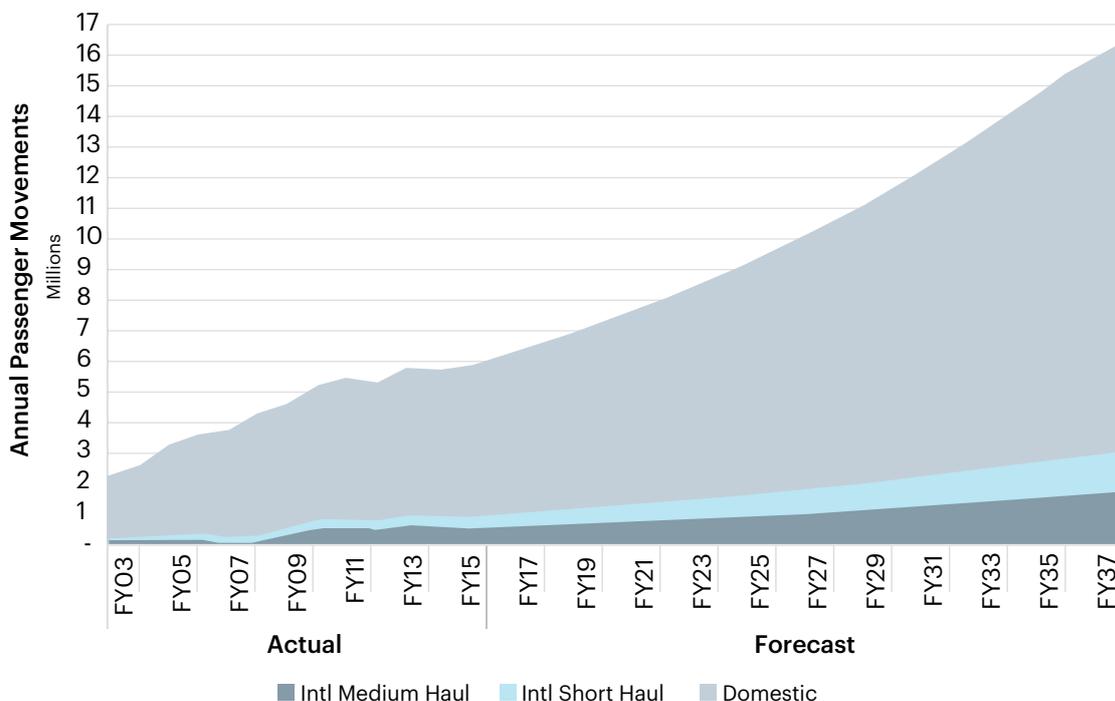


Figure 4.3 Passenger Movement Forecast to June 2037

4.4.2 Passenger Aircraft Movements

Annual

Gold Coast Airport forecasts 103,000 annual RPT aircraft movements by 2037, reflecting an average annual growth rate of 4.7 per cent over twenty years. The majority of movements will remain domestic with 86,000 movements resulting from a forecast growth rate of 4.3 per cent. Internationally, 16,500 annual aircraft movements are forecast for 2037 (Figure 4.4). International will account for 16 per cent of aircraft movements with a growth rate of 5.3 per cent. As that market becomes more mature, the rate of growth will slow compared to historical trends.

RPT aircraft movements will continue to be a mix of Code C and Code E aircraft. Across the international markets Code E aircraft will continue to serve the medium-haul Asian market, predominantly Boeing 787 and Airbus A330 aircraft with 300 – 350 seats.

The short-haul domestic and South Pacific international markets will be mainly served by Code C aircraft with 170 – 220 seats, comprising Airbus A320, Airbus A321 and Boeing 737 aircraft. Over time, particularly on high demand routes to Sydney, Melbourne and Auckland, the airlines will increase aircraft gauge by introducing Code E aircraft in response to growing demand. The most likely Code E aircraft type will be the Boeing 787 with 300 seats on the Sydney to Gold Coast and Melbourne to Gold Coast routes in the busy hours.

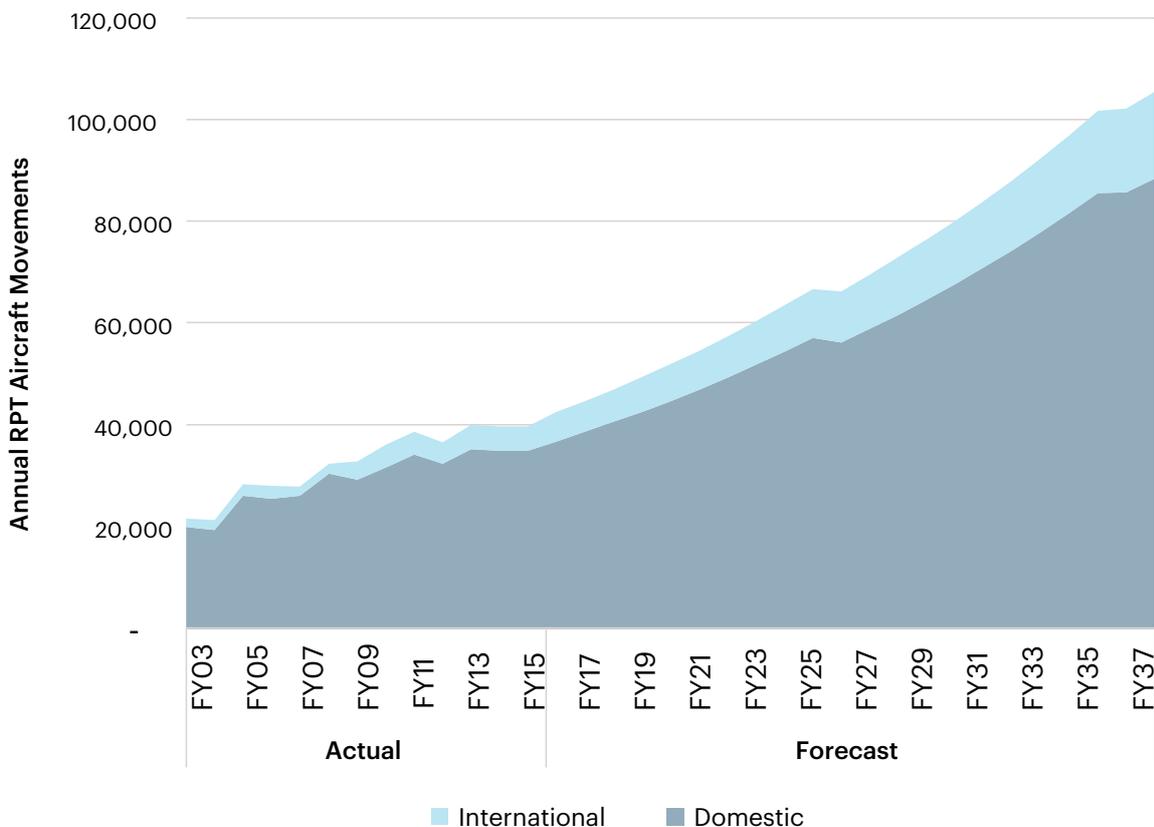


Figure 4.4 RPT Aircraft Movement Forecast to June 2037

2037 **103,000**
aircraft movements

CODE

E

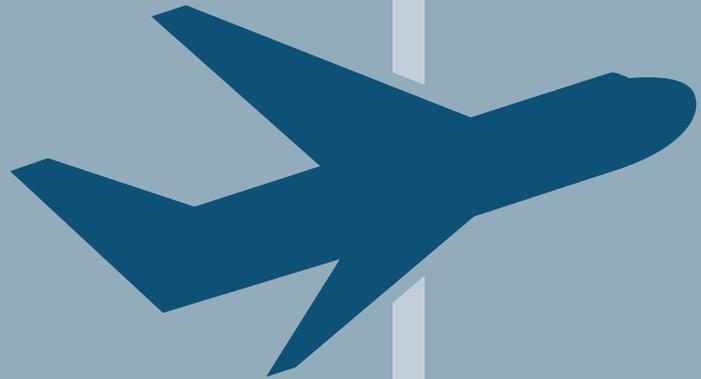
Boeing 787
Airbus A330



CODE

C

Airbus A320
Airbus A321
Boeing 737



Busy Hour

In addition to annual aircraft movements a forecast was prepared for busy hour aircraft movements. This illustrates required stand demand on the busiest day, which is typically a Saturday at Gold Coast Airport.

Forecast results for busy hour are that the combined domestic and international apron parking stand demand will be 17 stands by 2022 and 28 stands by 2037 (Figure 4.5). Currently 33 per cent of stands are for wide-body aircraft. By 2037 that ratio will have increased to 39 per cent or nearly two in five stands.

4.4.3 General Aviation

The General Aviation industry has not experienced the same rate of growth as the commercial RPT industry. At Gold Coast Airport resident General Aviation is primarily comprised of helicopters, flying schools and charter jet services. By comparison relatively little itinerant General Aviation flying is recorded. The helicopters and flying schools represent high frequency usage of the airfield with multiple daily movements and have healthy businesses in a highly competitive environment.

The forecast is for flat growth in General Aviation over the Master Plan period.

4.4.4 Freight

Gold Coast Airport is served by two freight forwarders on-airport, for both domestic and international markets.

The Bureau of Infrastructure, Transport and Regional Economics freight statistics inform that Gold Coast Airport’s international freight amounted to 3,764 tonnes in 2015, or 0.4 per cent of international freight movements in Australia.

By the year 2037 it is expected that freight at the Airport will continue to grow in line with the forecast aircraft movements.

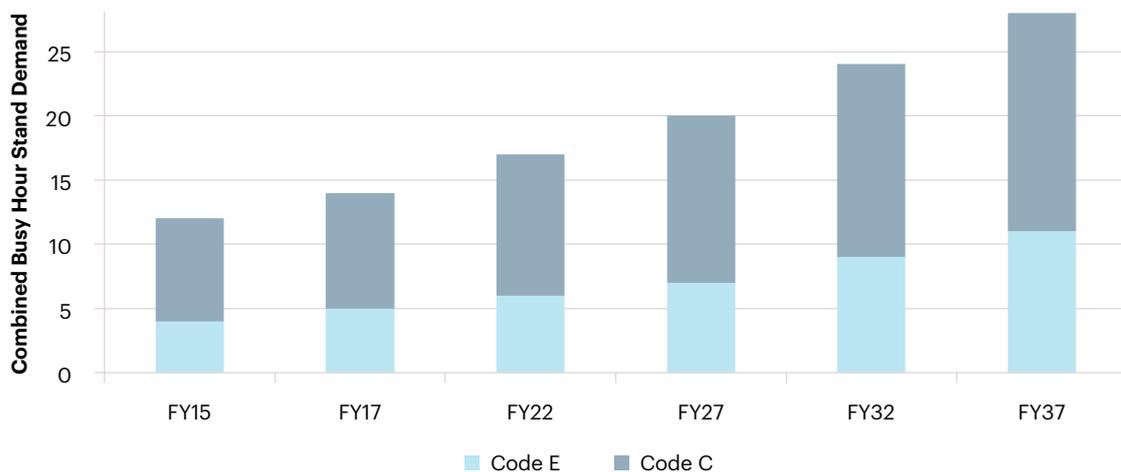


Figure 4.5 Busy Hour Demand





5.0

Aircraft Noise



Gold Coast Airport works collectively with government agencies and community representatives.

5.1 INTRODUCTION

GCAPL works collectively with government agencies and community representatives on a range of initiatives to manage the noise impacts from aircraft and operations.

GCAPL works to address and respond to aircraft noise concerns through the Airport Noise Abatement Consultative Committee (ANACC). This forum has been in place for more than 20 years and examines both technical and community concerns. GCAPL also has a well-established Community Aviation Consultation Group (CACG), which acts as the primary community forum to discuss airport activities. The ANACC is a technical subcommittee of the CACG. Local, State and Federal government representatives and airline representatives are invited to both the CACG and ANACC to meet with the community to understand their concerns and to provide information and an ongoing dialogue. CASA is also notified of the community forums. The role and structure of the ANACC and CACG are further described in Chapter 3.0.

The ANACC has proposed several noise management initiatives designed to reduce noise exposure to built-up areas:

- » A trial of amended flight paths for southern departures to maximise flights over Banora Point Golf Course
- » Departures to the north turn and head over water as soon as practical in compliance with Airservices Australia procedures
- » Investigated climb procedures to the south provide relief for the most densely populated area surrounding the Airport

- » Arrivals on Runway 14 from the north track east of the coastline over water for as long as possible
- » A “Fly Neighbourly” policy developed by the General Aviation Consultative Committee and supported by the ANACC has been in place since 2006. The policy aims to have the industry self-regulate to reduce the impact of General Aviation aircraft noise on surrounding areas.

Gold Coast Airport Noise Management

A cornerstone of the Gold Coast Airport noise management is providing relevant information to the community. Comprehensive information is available on the Gold Coast Airport website (www.goldcoastairport.com.au) and the ANACC website (<http://anacc.goldcoastairport.com.au>) including:

- » Key flight tracks used by aircraft arriving at and departing from the Airport
- » ANEF contours
- » ANACC members, the areas they represent and their contact details
- » Information on aircraft noise complaints procedures
- » Links to the Airservices Australia online WebTrak system and other useful links.

GCAPL and its aviation partners are committed to ensuring the community and other stakeholders are provided with the most relevant and contemporary information on aircraft noise issues and management. GCAPL continues to work closely with Airservices Australia, the entity responsible for monitoring aircraft noise and responding to noise complaints. GCAPL will continue to take a proactive approach to communicating



with the local community and business groups and local, state and Federal government representatives. It will continue to use the CACG as the primary community consultation forum on these issues. The ANACC will continue to act as a technical support group to the CACG.

The Aircraft Noise Ombudsman was established on 11 September 2010 as an independent administrative office to:

- » Review the handling of complaints or enquiries made to Airservices Australia or Defence about aircraft noise and in particular the operation of the Noise Enquiry Unit
- » Monitor and report on the effectiveness of community consultation processes relating to aircraft noise undertaken by Airservices Australia
- » Monitor and report on the effectiveness of the presentation and distribution of aircraft noise-related information.

The Aircraft Noise Ombudsman may also make recommendations to the Airservices Australia Board for improvements relating to these matters where necessary.

The full Aircraft Noise Ombudsman Charter is available from the website: <http://ano.gov.au/>

5.2 AIRCRAFT NOISE

Aircraft noise is complex and varies according to a range of factors. These include the size and type of aircraft, number of engines, thrust settings

and speed, altitude, airline standard operating procedures, pilot performance and weight and load factor, which will be influenced by destination/origin.

Aircraft noise is produced during all phases of flight but aircraft noise is generally closest to the ground during take-off because weight and thrust settings are high and during landing because thrust settings are varied and the landing gear and other control surfaces are extended. The dominant sources of aircraft noise are depicted in Figure 5.1

1 Engine noise



2 Airframe noise



Figure 5.1 Aircraft Noise Sources

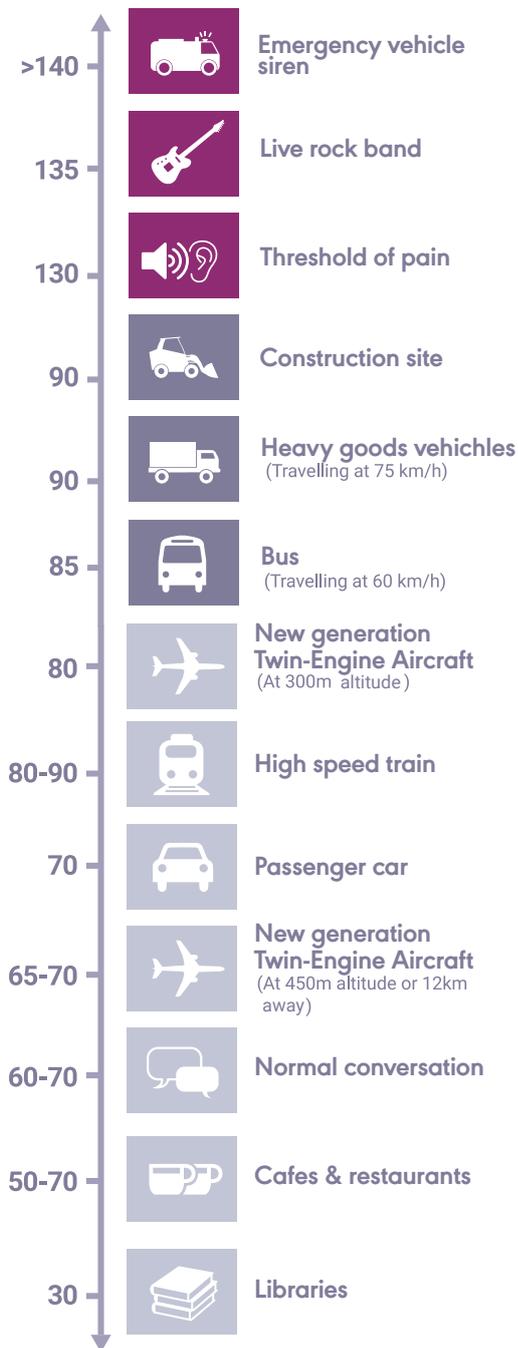


Figure 5.2 Typical Sound Level Thresholds

The sound of an aircraft taking off is dominated by engine noise which is generated by the mixing of high velocity exhaust gases with ambient air, combustion of fuel and compressor fans. Airframe noise is attributed to deploying landing gear and control surfaces, such as slats and flaps. For communities around airports, aircraft noise can be a source of great annoyance which is exacerbated during night-time hours. At Gold Coast Airport this annoyance is limited during the hours of 11:00pm to 6:00am due to the night-time curfew.

The propagation of aircraft noise and resulting sound waves will travel equally in all directions. As sound waves travel away from a source, the sound intensity decreases as the energy is dispersed over a greater area reducing the power of the sound wave. This depends on several factors, such as wave divergence, atmospheric absorption and ground attenuation.

Sound is measured in units called decibels (dB). The A-weighted sound level, expressed in dB(A) indicates the relative loudness of sound in the air as perceived by the human ear. In a normal environment with background and ambient noise, a three decibel change represents the threshold of detectability. Noise level changes less than three decibels are not likely to be noticeable.

A selection of typical sound levels that most people would experience regularly are illustrated in Figure 5.2.

For safety and efficiency reasons aircraft land and take-off into the wind, or with a minimal tailwind. The prevailing wind direction determines the mode of runway operation in use and flight path designation. At Gold Coast Airport, Airservices Australia assigns the runway direction and flight routings depending on the wind direction and speed, runway conditions and visibility as well as the preferred runway noise abatement procedures.

Atmospheric conditions heavily influence the spread of aircraft noise and intensity of sound levels on an hourly, daily and seasonal basis. The principal influences are attributed to temperature, atmospheric pressure, humidity, average headwind, elevation and terrain.

The absorption of aircraft noise by the atmosphere varies according to the frequency of the sound, humidity and temperature of the air. For example, atmospheric absorption is lowest (i.e. sound travels furthest) at high humidity and high temperatures. Wind direction and speed also affect noise propagation pathways due to refraction and turbulence.

The schematic in Figure 5.3 illustrates the influence of atmospheric conditions on the propagation of noise.

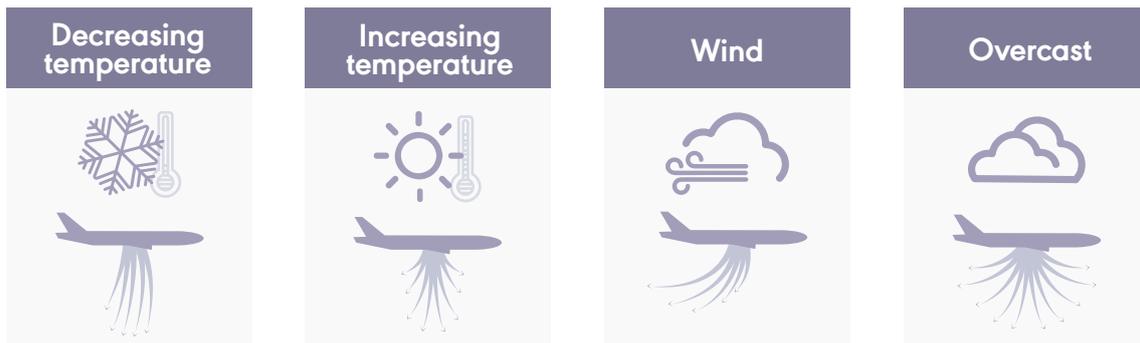


Figure 5.3 Influence of Atmospheric Conditions on the Propagation of Noise

5.3 AIRCRAFT NOISE EXPOSURE

5.3.1 International Civil Aviation Organization Balanced Approach

In 2001, the International Civil Aviation Organization (ICAO) endorsed the concept of a 'balanced approach to aircraft noise management'. This consists of identifying the noise problem at an airport and analysing the various measures available to reduce the noise in the most cost effective manner through exploring four principal elements:

- » Reduction of noise at source (e.g. quieter aircraft)
- » Land-use planning and management
- » Noise abatement operational procedures
- » Operating restrictions.

Australia is a member of ICAO and supports implementing the balanced approach to aircraft noise management. As one of 24 members of ICAO's Committee on Aviation Environmental Protection, Australia actively participates in 'think-tanks' to shape future policy direction and new approaches to manage aircraft noise. Managing aircraft noise involves a range of parties, including the relevant regulators and agencies (including Airservices Australia), local government authorities, aircraft operators (principally the airlines), and GCAPL.

Gold Coast Airport has adopted the balanced approach principles set out by ICAO.

Reduction of Noise at Source

Much of ICAO's effort to address aircraft noise over the past 45 years has been aimed at reducing noise at source. Aircraft and helicopters built today are required to meet the noise certification standards adopted by ICAO. The ICAO has set progressively tighter certification standards for noise emissions from civilian aircraft. DIRD is responsible under the Air Navigation (Aircraft Noise) Regulations 1984 for ensuring compliance with aircraft noise regulations in Australia.

New aircraft types applying for certification (from 1 January 2006 onwards) must be "Chapter 4 compliant". Chapter 4 compliant aircraft are at least 10 decibels quieter than Chapter 3 compliant aircraft. This is based on a cumulative measurement over the three phases

of flight (approach, take-off under full power, and overflight), which is tested at certification. Accepted acoustic standards assert that a 10 decibel reduction is perceived as an approximately 50 per cent decrease in the noise volume. Many certified Chapter 3 aircraft already comply with the Chapter 4 aircraft noise standard. The entry into service of new aircraft, such as the Airbus A320neo, Boeing B737 MAX and Boeing B787 Dreamliner, will continue to further reduce the footprints of aircraft noise at airports.

Over time, airframe and engine manufacturers have achieved significant progress in the reduction at source of aircraft noise levels. Improvements in aircraft and engine technology have resulted in quieter, more efficient aircraft engines and airframes, dramatically reducing aircraft noise. According to Boeing, the noise footprint of the new Boeing B787 Dreamliner is 60 per cent smaller than those of similar sized aircraft (Figure 5.4). This trend is expected to continue. Two airlines fly Boeing B787 Dreamliner to Gold Coast Airport: Scoot from Singapore and Jetstar from China.

Please note, although technological advancements have resulted in quieter aircraft, the noise exposure received by these new quieter aircraft is offset by increase in aircraft movements.



The Boeing 787 Dreamliner produces 60% less noise than aircraft of comparable size such as the Boeing 767.

Figure 5.4 Boeing B787 Dreamliner Noise Performance



5.3.2 Land Use Planning and Management

The most effective way of managing aircraft noise impacts on properties near the Airport is through adopting and implementing appropriate land use policies, development controls and acoustic standards. To achieve this accurate identification and mapping of localities potentially affected by aircraft noise is important. Proposals for development in the affected localities should be assessed for potential annoyance and disturbance from aircraft movements.

The traditional system of aircraft noise assessment has been based around the ANEF metric, which is a modification of the United States Noise Exposure Forecast system.

The ANEF is the only metric approved and promoted by the Federal Government for assessing the suitability of land use against aircraft noise. The ANEF is provided for a minimum twenty-year time-frame and is updated regularly. There can be only one approved set of ANEF contours at a time.

As required under the Airports Act, a 2047 ANEF has been produced for the Master Plan. The Gold Coast Airport 2047 ANEF has been assessed for technical accuracy and has been endorsed by Airservices Australia in the manner approved by the Minister.

A 2015 Australian Noise Exposure Index (ANEI) has been produced that shows the actual noise exposure experienced in that year. The long-range 2047 ANEF and 2015 ANEI are shown and described in this chapter.

The ANEF system is described in the Australian Standard AS2021:2015 (Acoustics—Aircraft noise intrusion—Building siting and construction) and is the only approved method of controlling land use planning. It is not used to regulate aircraft operations, but rather to capture, assess and quantify the effects of those activities. This system takes into account the frequency, intensity, time and duration of aircraft activities and calculates the total sound energy generated at any location. While ANEF contour charts are often misunderstood by the public, expert committees considering the regulation of aircraft noise around Australia conclude they are the most appropriate measure available. In the last few years there have been supplementary indices developed to help better describe aircraft noise in terms that are more readily understood by the public. These indices include N70 contours, which have been prepared and described in the Appendix of AS2021:2015.

The usual method of calculating ANEF contours is using the Integrated Noise Model (INM) developed by the US Federal Aviation Administration. It cannot be directly measured. The INM calculates the aircraft noise exposure for an average day (averaged over a year) activity at an airport.

For regional and local authorities and others associated with urban and regional planning and building construction, the AS2021:2015 provides guidance on the acceptable location of new buildings in relation to aircraft noise. Zones that are described as “conditionally acceptable” may be approved as building sites provided that new construction incorporates sound-proofing measures. Section 2 of the standard gives guidelines for determining the acoustic acceptability of a particular site.

AS2021:2015 provides recommended land use compatibility as reproduced in Table 5-2. For land designated conditionally acceptable land use authorities might consider that the incorporation of noise control features in the construction of residences or schools is appropriate.

Individual land uses shown in Table 5-1 are defined as:

Acceptable

There is usually no need for building construction to provide protection specifically against aircraft noise. Aircraft noise may still be noticeable and some people may find it undesirable.

Conditional

The maximum aircraft noise levels for the relevant aircraft and the required noise reduction should be determined from the procedures set out in

AS2021:2015. Expected aircraft noise attenuation in the proposed construction should be determined in accordance with the outcomes set out in AS2021:2015.

Unacceptable

Construction of the proposed building should not normally be considered. In the event that development for a particular purpose was to take place despite classification as unacceptable, the AS2021:2015 indoor design sound levels should be achieved.

Table 5-1 AS2021: 2015 Building Site Acceptability Based on ANEF Zones

Building Type	ANEF Zone of Site		
	Acceptable	Conditionally Acceptable	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS2021)	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF (Note 2 of AS2021)	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF (Note 1 of AS2021)	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF (Note 1 of AS2021)	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

Source: AS2021:2015 (To be read in conjunction with guidance notes)

Table 5-2 Indoor Design Sound Levels for Determination of Aircraft Noise Reduction

Building Type and Activity	Indoor Design Sound Level (dB(A))
Houses, home units, flats, caravan parks	
Sleeping areas, dedicated lounges	50
Other habitable spaces	55
Bathrooms, toilets, laundries	60
Hotels, motels, hostels	
Relaxing, sleeping	50
Social activities	55
Service activities	75
Schools, universities	
Libraries, study areas	50
Teaching areas, assembly areas (Note 5 of AS2021:2015)	55
Workshop, gymnasia	75
Hospitals, nursing homes	
Wards, theatres, treatment and consulting rooms	50
Laboratories	65
Service areas	75
Public buildings	
Churches, religious activities	50
Theatres, cinemas, recording studios (Note 4 of AS2021:2015)	40
Courthouses, libraries, galleries	50
Commercial buildings, offices and shops	
Private offices, conference rooms	55
Drafting, open offices	65
Typing, data processing	70
Shops, supermarkets, showrooms	75
Industrial	
Inspection, analysis, precision work	75
Light machinery, assembly, bench work	80

Source: AS2021:2015

Recreational and commercial developments within the boundaries of an airport provide a transitional land use buffer around the core aviation activities, which helps to safeguard the surrounding areas from the noise impacts of airport operations.

Gold Coast Airport straddles the state border and lies partly in Queensland and partly in New South Wales. Due to its location, land use matters and development control around Gold Coast Airport are regulated by the state and local planning instruments of both jurisdictions.

In Queensland, at the northern end of the Airport, the Gold Coast City Plan 2015 (City Plan) is the planning instrument that regulates land use matters including aircraft noise. The City Plan includes an Airport Environs Overlay Code to deal with issues related to development near Gold Coast Airport and aviation facilities. The code requires that new development within the 20 ANEF contour is acoustically treated against intruding aircraft noise pursuant to AS2021:2015. Existing or planned noise-sensitive uses surrounding the Airport manage aircraft noise through appropriate design and the location of new development. Contours in the code will be upgraded to the new 2047 ANEF shown in Figure 5.6. Relatively low intensity residential development applies near the Airport to avoid significant increases in population of the areas most affected by aircraft noise.

In New South Wales, at the southern end of the Airport, the relevant planning instrument is the Tweed Local Environmental Plan (LEP) 2014, which reflects the state government objectives prescribed under the *Environmental Planning and Assessment Act 1979*. The Tweed LEP provisions relating to aircraft noise are set out under Part 7. They require the council to consider AS2021:2015 when dealing with applications for residential and other aircraft noise-sensitive developments. The provisions include a requirement for compliance with AS2021:2015 for dwelling houses in a 20 or higher ANEF.

The local authority must be satisfied that the noise reduction requirements of AS2021:2015 will be met for affected proposals for residential and other noise-sensitive developments.

5.3.3 Aircraft Noise Abatement Operational Procedures

The number one and overriding priority at Gold Coast Airport is the safe, reliable and efficient operation of aircraft. Managing aircraft noise impacts on surrounding communities from arriving and departing aircraft is fundamentally important to operating the Airport.

Under Ministerial Direction M37/99 issued pursuant to subsection 16(1) of the *Air Services Act 1995*, Item (V) Airservices Australia are directed, *“To develop and implement effective aircraft noise abatement procedures and monitor and report to the Secretary on compliance with those procedures at Australian airports.”*

Airservices Australia implements several noise abatement procedures (NAPs) to provide noise respite for adjoining local communities. At Gold Coast Airport the NAPs in use are:

- » Gold Coast Airport is subject to the Air Navigation (Coolangatta Airport Curfew) Regulations 1999 that restrict aircraft movements at the Airport between 2300 - 0600 hours
- » Runway 14 is preferred for both landing and take-off (all hours), weather permitting
- » Restrictions apply to intersection departures
- » For arriving aircraft, maximum use of over-water tracking is used until aircraft are established on their final approach course to minimise the overflying of noise sensitive areas
- » Aircraft fly above 5,000 feet above mean sea level (AMSL) until east of the coastline for Runway 14 approaches
- » For departing aircraft, jet noise abatement climb procedures apply to Runway 14 and Runway 32. The procedures seek to make use of power and flap settings to satisfy the noise abatement objectives
- » On final approach pilots of jet aircraft are encouraged to delay deploying flaps until as late as possible
- » Circuit training is not permitted between 2200–0600 hours
- » Where possible, circuits are distributed equally left and right of the runway in use
- » Outside of control tower operating hours, pilots are requested to use the same runway for take-off and landing, if operationally acceptable
- » Helicopter circuits from the western grassed area are conducted with upwind legs inside the Airport boundary fence and base turns made within the Runway 14/32 threshold markers
- » Noise abatement procedures will also be employed for operations using the proposed instrument landing system when it commences.

5.3.4 Gold Coast Airport Noise Abatement Procedures Review

In 2012 Airservices Australia reviewed the effectiveness of current NAPs at Gold Coast Airport. This review evaluated the level of compliance with NAPs. It also explored options to reduce the impact of aircraft noise and where possible to move aircraft noise away from residential areas around Gold Coast Airport. The main findings of the review concluded:

- » There is a high level of compliance with curfew restrictions
- » The preferred runway system has high levels of compliance for all aircraft types and is effective in reducing the impact of aircraft operations on nearby residential areas
- » Overall, adherence to flight paths that are specified in the NAPs is high, with over 90 per cent of flight tracks (which show where an aircraft has flown) aligned with the flight paths.

5.3.5 Operating Restrictions

Gold Coast Airport is subject to the Air Navigation (Coolangatta Airport Curfew) Regulations 1999, as administered by DIRD. The regulations restrict aircraft movements at the Airport between 2300–0600 hours (Queensland local time). Aircraft that can operate during the curfew period are:

- » Propeller-driven aircraft with a maximum take-off weight of 34,000 kilograms
- » Jet aircraft with a maximum take-off weight of 34,000 kilograms, which meet special low noise standards specified in the regulations
- » Passenger and freight jet aircraft that have been permitted to operate under specific quota provisions in the regulations. Twenty-four movements per annum for jet passenger operations are permitted between 2300 and 2345 hours depending on the time in use in New South Wales. Four jet freight movements per week are also permitted. Aircraft types are restricted to the BAe 146, or aircraft of a similar weight and noise levels to the BAe 146.

The regulations also contain provisions for air service diversions (both international and domestic), dispensations and emergencies.

5.4 RESPONSIBILITIES

5.4.1 Commonwealth Government

Aircraft noise policy and mitigation is present at the different levels of government responsible for control of aircraft use, air navigation, airspace operations and land use planning in Australia. In each case the Federal Government is directly or indirectly involved through devolution of regulatory powers to other levels of government or by driving a coordinated national approach.

However, the varying and dispersed powers and responsibilities of different levels of government mean that various noise mitigation measures require input from multiple agencies, in a coordinated fashion. For example, DIRD administers the curfew at Gold Coast Airport and individual airports cannot determine licensing standards for noise-compliant aircraft.

5.4.2 Airservices Australia

Airservices Australia has a significant regulatory and decision-making role in efforts to reduce impacts of aircraft noise in Australian airspace. This is aligned to a wider focus on environmentally responsible air traffic management and related services to the aviation industry.

Airservices Australia is responsible for assessing aircraft and issuing Noise Certificates (discussed above) unless already certificated in the country of origin to the same standards.

Airservices Australia publicises flight paths and procedures once they have been determined by all stakeholders. They also carry out air traffic control. Both these functions are major determinants of timing, frequency, scale and locations of aircraft noise effects.

The Noise and Flight Path Monitoring System (NFPMs), consisting of permanent equipment in strategic positions near Gold Coast Airport, monitors flight tracks and aircraft noise events. The data is published monthly on the Airservices Australia website (www.airservicesaustralia.com). The collected data shows levels and duration of noise events, elevation and speed of individual aircraft movements. This allows for analysis of adherence to allocated flight tracks and is a base developing the ANEF.



GCAPL prepares ANEF mapping which is used for land use planning within the airport's vicinity. The review and endorsement of the mapping for technical accuracy, in the manner approved by the Minister, has been delegated to Airservices Australia.

As an operating restriction the night-time curfew at Gold Coast Airport has a beneficial limiting effect on the extent of aircraft noise on surrounding communities.

Airservices Australia has published its Airservices Environment Strategy 2014–2019. This strategy sets out the Airservices Australia vision and commitment to reducing the environmental impact of aircraft operations in Australia while removing, as much as reasonably possible, constraints on air navigation. In pursuit of this vision, while maintaining the primacy of safety, Airservices Australia aims to look beyond the obligations of compliance and to work collaboratively with government, industry and the community to reduce the impact of aircraft noise.

The long-term goal for Airservices Australia is to achieve world best practice in aircraft noise management. To help achieve this, five key areas have been identified:

- » Proactive stakeholder engagement, consultation and information
- » Collaborative stakeholder engagement with the aviation industry on aircraft noise
- » Alignment of actions and processes to the ICAO balanced approach to aircraft noise management
- » Innovation and technology development within Airservices Australia and across the industry to reduce the impact of noise
- » Independent validation and international benchmarking of processes and actions.

The 2014 – 2015 Environment Action Plan highlights the major environmental initiatives undertaken by Airservices Australia to deliver the key outcomes set out in the Airservices Environment Strategy 2014 – 2019, including aircraft noise. These initiatives, as they relate to aircraft noise, include:

- » Deliver commitments to aircraft noise management
- » Develop a suite of information and data tools that meet the needs of stakeholders
- » Identify, investigate and, where feasible, implement changes to aircraft flight procedures that reduce the impact of aircraft noise.

Airservices Australia handles airborne aircraft noise enquiries and complaints through a national noise complaint service. Complaints can be lodged online, by phone or by mail:

Hotline: Noise Complaints and Information Service on 1800 802 584 (free call) or 1300 302 240 (local call)

Online: Noise Complaint, Enquiry and Feedback

Form at: <http://www.airservicesaustralia.com/aircraftnoise/about-making-a-complaint/how-to-make-a-complaint/>

Mail: Noise Complaints and Information Service
PO Box 211

Mascot, New South Wales, 1460

WebTrak: <http://www.airservicesaustralia.com/aircraftnoise/webtrak/>

Airservices Australia publishes monthly Noise Information Reports (NIRs) for Gold Coast Airport, which are available on its website at: <http://www.airservicesaustralia.com>.

An interpreter service is also available on 131 450.

WebTrak

WebTrak is an innovative system providing the community with information on where and how high aircraft fly and the noise levels of these operations. It allows members of the public access to detailed information on actual aircraft operations around major airports and is generated from the NFPMS.

WebTrak uses information from air traffic control secondary surveillance radars to monitor aircraft within the wider vicinity of the Airport and up to a height of 10,000 metres (approximately 32,810 feet) above mean sea level (AMSL).

Aircraft noise data is downloaded daily from noise monitors strategically located about the communities close to the Airport. The information is displayed on a detailed map (road or aerial) that enables the user to zoom down to their street level. In “Current Flights” mode, current operations can be viewed (delayed for aviation security reasons) around the Airport. In “Replay Mode” flight information and noise data for the previous two weeks can be accessed.

The displayed weather information is updated every 30 minutes by the Bureau of Meteorology weather station at the Airport.

Aircraft Noise Monitoring at Gold Coast Airport

The Airservices Australia NFPMS captures and stores radar, flight plan and noise data. The NFPMS covers eight city regions around Australia. For the Gold Coast region, noise data is captured by two permanent noise monitors, also referred to as Environmental Monitoring Units (EMUs). These are at Tugun to the north of the Airport and at Banora Point to the south. Each EMU is positioned in line with Runway 14/32 to record noise from arriving and departing aircraft. A third EMU is to be reinstated at a suitable location in Tweed Heads West.

Data from these monitors is available in near real-time on WebTrak and published in the Airservices Australia monthly NIRs.

5.4.3 Airports

GCAPL has direct control only over the management of ground-based noise complaints including those about aircraft. Complaints or enquiries in relation to these issues should be directed to (07) 5589 1100.

GCAPL consults extensively with the community through the CACG and the ANACC and seeks to work closely with Airservices, airlines, Commonwealth, State and local governments to manage the impacts of aircraft noise on the community.

5.4.4 State and Local Government

The Gold Coast Airport lease area and runway straddle the state border of New South Wales and Queensland. This results in two state and two local governments, with dissimilar systems, having land use and development control of the areas surrounding the Airport.

In each case, the state governments manage adoption and administration of policies applicable on a state-wide basis and have oversight for the standardisation of zoning and land use systems, which are implemented by the respective local governments.

The state and local government planning regimes in relation to land use planning policies and land use compatibility are discussed in greater detail in Chapter 8.0.

In Queensland, State Planning Policy (SPP) contains regulations and guidance as to protect airports' airspace. The SPP also includes aircraft noise attenuation standards based on AS2021:2015 and reproducing its land use compatibility and indoor design sound level tables.

The SPP provides direction and advice to take into account aircraft noise issues in preparing planning instruments and development assessment. Under the *Sustainable Planning Act 2009* (Qld), referral to the state government as a concurrence agency may be required for applications for residential and other noise-sensitive development where ANEF levels exceed AS2021:2015.

In Queensland, the City of Gold Coast Council City Plan addresses aircraft noise in two ways. First, the extent of land where the ANEF contour exceeds 30 is limited. For the parts that are zoned residential, permissible densities are severely curtailed allowing in most instances merely for replacement or infill of single dwellings, or at most duplexes. Incompatible development surrounding the Airport that could impact on the public safety zone or operations will not be permitted.

Second, the City Plan includes a code related to airport matters, including aircraft noise. The code requires acoustic insulation complying with the standards set out in AS2021:2015 for residential development and other noise-sensitive uses inside the 20 ANEF contour.

In New South Wales, enhanced airspace controls, including those concerning the subject of aircraft noise, are in place.

The Tweed Shire Council LEP 2014 sets out requirements for noise-sensitive development to meet the standards set out in AS2021:2015 (discussed further in Chapter 8.0). This provision

has been accompanied by amendments to the State Environmental Planning Policy (Exempt and Complying Development Codes) (SEPP). This SEPP requires that any proposed dwelling house in the 20 and 25 ANEF contours must be constructed in accordance with AS2021:2015.

The SEPP also provides for expedited approval processes for new dwelling houses as complying development; however, land in the 25 or higher ANEF contour is excluded from the category of complying development. Therefore, development requires approval from the local authority, requiring assessment of the proposal against the standard aircraft noise clause in each new LEP, potentially including aircraft noise assessment.

5.5 FLIGHT PATHS

The existing and proposed flight paths used in producing the 2015 ANEI and 2047 ANEF have been included in Figures 5.10 - 5.16.

The positioning and spread of the existing flight paths used in preparing the 2015 ANEI were derived from NFPMS data supplied by Airservices Australia and represent the tracks generally used during the year.

The flight paths used for preparing the 2047 ANEF had several significant assumptions:

- » Provision of an ILS for Runway 14. This will result in flight tracks aligned with the runway centreline and extending about 12 nautical miles north of the Airport (subject to the specific arrival route the aircraft is transitioning from). This would allow aircraft to intercept the ILS between approximately 2,500–3,000 feet (762–915 metres) AMSL to establish on the three-degree glideslope on approach to Runway 14. To the north this is a new track, partly over land and partly over water, from the northern runway end to the northern extent of the ILS approach. It has been assumed that on fine weather days around ten per cent of arrivals on Runway 14 will use the ILS, with the majority of these originating from northern international airports
- » The Required Navigation Performance (RNP) flight tracks that were permanently introduced in 2014 would be retained and expanded to include an increased number of arrivals from the south, north and east (New Zealand)

- » By 2047 most RPT jet aircraft would be RNP equipped and approved, ensuring that those tracks would be extensively used
- » Recent changes to the Runway 14 RNAV-Z, NDB/VOR and the Runway 32 NDB/VOR approaches consist of the final approach paths being straightened to align with the runway rather than being off-set
- » The minimum descent altitude of the existing approach for the Runway 32 RNAV-Z approach has been reduced by 80 feet
- » Use of the NDB/VOR is expected to decrease significantly due to increased use of RNP procedures and the ILS. It is assumed that approximately five per cent of jet arrivals will use the NDB/VOR, a reduction of 12 per cent from the 2015 ANEI.

The RPT flight paths have been arranged according to destination and direction of the active runway (Figures 5.10 - 5.16). The arrival paths included in the figures are:

Existing flight paths:

- » Visual — Visual approach
- » Instrument — Runway 14 NDB/VOR and RNAV-Z, and Runway 32 NDB/VOR
- » Smart Tracking — RNP approaches to Runways 14 and 32 (from south, north and east).

Proposed flight paths:

- » Instrument — ILS approach for Runway 14 (from north), MDP approved in 2016.

The departure paths position and spread (Figures 5.10 - 5.16) consists of:

- » Turning off the centreline close to runway
- » Turning off the centreline further away from runway.

The prepared flight paths have been confirmed against Airservices Australia's NFPMS data and in consultation with local air traffic control. They represent the tracks generally flown during 2015.

The flight paths for the local area movements (General Aviation, fixed-wing and helicopter) have been arranged according to type and direction of the active runway (Figure 5.11). The position and spread of the local area tracks were generally determined from NFPMS data provided by Airservices Australia and in consultation with local air traffic control.

5.5.1 Smart Tracking

Smart Tracking, also known as RNP procedures, are being progressively introduced at several Australian airports by Airservices Australia. RNP is based on RNAV, which combines on-board and global navigation satellite system technology rather than the traditional ground-based radio navigation aids. This allows aircraft to operate on the optimal flight path, curved or straight-in, with a greater level of track accuracy (i.e. +/- 0.3 nautical miles). RNP approaches enable aircraft to follow precise three-dimensional curved flight paths through congested airspace, around noise sensitive areas, or through difficult terrain.

The result is greater predictability and operational capability in the terminal airspace from more flexible, direct and shorter routing. Some of the other potential benefits of RNP include:

- » Cost effective, avoiding the need to install expensive ground based equipment
- » RNP procedures are already in place and being used by certain airlines
- » RNP procedures are runway aligned at a much shorter distance than an ILS procedure and potentially impact fewer people
 - Fewer track miles
 - Fuel burn savings and lower CO² emissions

Some limitations include:

- » Some aircraft are not equipped to fly RNP procedures
- » Pilots require training to fly the procedures, which requires investment by the airline
- » Concentration of aircraft flight movements on more precise tracks
- » Less geographic spread of aircraft noise reducing the opportunity for noise sharing and respite.

5.5.2 RNP at Gold Coast Airport

RNP procedures have been trialled at Gold Coast Airport since 2008. Since November 2014, RNP procedures for CASA approved RPT operators have been permanently in use. In 2015, approximately 45 per cent of RPT movements used RNP procedures, in 2016, this is up to 65 per cent. Over time, it is expected this technology will be more widely used as it offers significant benefits in several areas. This includes noise mitigation, as it achieves much higher navigation accuracy in relation to flight paths and potential avoidance of sensitive areas. The 2047 ANEF shown in Figure 5.6 is based on the most recently available information on RNP operations at Gold Coast Airport.

In 2047, it is assumed that all jet aircraft (RPT and General Aviation) would implement RNP procedures on the basis that the technology will be more readily available.

RNP-Authorisation Required (RNP-AR) approach procedures were incorporated into the 2047 ANEF 20 contours. RNP-AR procedures are based on RNP using RNAV avionics systems, where authorisation is required. RNP-AR extends beyond the procedure design for aircraft operations to ensure that other dependencies, related airworthiness and operational procedure approvals are complete for implementation.

The Gold Coast Airport RNP-AR approaches are depicted in Figures 5.10 - 5.16.

5.5.3 Runway 14 Instrument Landing System (ILS)

Airservices Australia will install an ILS on Runway 14 to improve the reliability of landings in adverse weather. The ILS Major Development Plan (MDP) was approved by the Minister in January 2016. The ILS is scheduled to be operational in 2018.

An ILS is a ground based equipment system that provides high precision lateral and vertical guidance to aircraft conducting an approach to land on a specific runway. It is particularly useful in non-visual flight conditions or periods of reduced visibility such as night-time or inclement weather. The installation of the ILS on Runway 14 will reduce the need to divert aircraft from Gold Coast Airport to other airports, such as Brisbane, during adverse weather. Installation of the ILS requires the design and implementation of new flight paths and air traffic control procedures to enable aircraft to access the ILS. These are included in the long-range ANEF.

The south east Queensland/northern New South Wales region experiences adverse weather, such as tropical storms and intense rainfall, during the summer months. This period coincides with the region's peak travel season. This can mean that aircraft cannot land at Gold Coast Airport in adverse weather and must divert to another airport. It has been estimated that this results in an average of 50 diversions per year or around ten days per year based on data collected since October 2010. An ILS would provide increased certainty to pilots regarding the ability to land safely in adverse weather, while reducing the likelihood and number of diversions.

It has been assumed that on fine weather days around ten per cent of arrivals on Runway 14 will use the ILS, with the majority of these originating from northern international airports.

Aircraft departing Gold Coast Airport would not use the ILS.

5.5.4 More Information on Aircraft Noise

Additional information on aircraft noise can be found at the sources listed in Table 5-3.

Table 5-3 Additional Information Sources on Aircraft Noise

Source	Internet Address
Gold Coast Airport	www.goldcoastairport.com.au
International Civil Aviation Organization	www.icao.int
Airservices Australia	www.airservicesaustralia.com
WebTrak	www.webtrak.bksv.com
Noise Information Reports	www.airservicesaustralia.com
Federal Department of Infrastructure and Regional Development	www.infrastructure.gov.au
National Airport Safeguarding Framework	www.infrastructure.gov.au
Aircraft Noise Ombudsman	www.ano.gov.au
Federal Aircraft Noise Regulations	www.infrastructure.gov.au

An ANEF will assist for land use planning and future development decisions.

5.6 AUSTRALIAN NOISE EXPOSURE FORECAST (ANEF) CATEGORIES

Over the past three decades the ANEF system has been the primary measure of aircraft noise exposure near Australian aerodromes. An ANEF is a mandatory requirement of the Airport Master Plan process as prescribed under the Airports Act. It is based on average daily sound pressure levels, which are measured in decibels. Noise exposure levels are calculated in ANEF units, which take into account the following factors of aircraft noise:

- » The intensity, duration, tonal content and spectrum of audible frequencies of the noise of aircraft take-offs, approaches to landing, and reverse thrust after landing
- » The forecast frequency of aircraft types and movements on the various flight paths, including flight paths used for circuit training
- » The average daily distribution of aircraft arrivals and departures in both daytime and night time (daytime defined as 0700–1900 hours and night time defined as 1900–0700 hours). Night-time movements are represented with a six decibel adjustment in the ANEF calculation.

There are three categories of ANEF that can be used in an Airport Master Plan under the Airports Act:

Standard ANEF (up to 20 years)

This is a forecast of expected aviation noise exposure levels during a specified period of five to 20 years. A standard ANEF includes a forecast of aircraft movement numbers and operating times, aircraft types, flight paths and anticipated use of runways at the aerodrome.

Long-range ANEF (20-plus years)

This is a forecast of expected aviation noise exposure levels for a specified period greater than 20 years. Forecasts account for present and anticipated trends, predicted future aircraft types, movement numbers, flight paths and changes to runway configurations expected to occur within the projected period.

Ultimate Practical Capacity ANEF

This is a forecast of aviation noise exposure levels expected to exist when the Airport is developed to its ultimate practical capacity. An estimated date of when the Airport is expected to reach its ultimate practical capacity must be stated. Forecasts account for present and anticipated trends, predicted future



aircraft types, movement numbers, flight paths and runway configurations expected to occur at the point of the Airport's ultimate practical capacity.

A long range ANEF has been included in this Master Plan, as per the preference stated in the National Airports Safeguarding Framework issued by the National Airports Safeguarding Advisory Group (NASAG). The long-range ANEF takes into account:

- » Current and future aircraft types and mixes
- » Forecast numbers of aircraft movements
- » Runway layout and operational modes
- » Current and future concept flight paths, including Smart Tracking
- » Aircraft destinations or origins, which determine the weight of an aircraft and its noise profile
- » Split of daytime and night-time operations
- » Terrain elevation
- » Weather, particularly wind and air temperature information.

An ANEF for Gold Coast Airport will primarily assist the City of Gold Coast Council in Queensland, Tweed Shire Council in New South Wales and the state planning agencies in land use planning and future development decisions that could be impacted by noise from current or forecast aircraft operations at Gold Coast Airport.

5.7 AUSTRALIAN NOISE EXPOSURE FORECAST (ANEF)

The ANEF system, as described in Section 5.6, is based on forecasts of aircraft traffic movements on an average day. Allocations of the forecast movements to runways and flight paths are on an average basis and take into account the existing and anticipated air traffic control procedures at the Airport.

At the time of preparing the ANEI, GCAPL used the most recent whole year data available, the 2015 financial year aircraft statistics provided by Airservices Australia. In 2015 there was an increase in passenger RPT movements with no discernible change in General Aviation or helicopter movements. The 2015 ANEI and 2047 ANEF contours indicate areas of City of Gold Coast Council and Tweed Shire affected by aircraft noise. The AS2021:2015 states that within the 20 contour, land is marginally acceptable for residential purposes. Building authorities may specify that sound insulation measures are required for new construction. Within the 25 contour residential land use is not acceptable although other uses (mainly commercial and industrial) are. These provisions can apply to new development applications but they do not affect existing land uses.

5.7.1 2015 ANEI

The 2015 ANEI 20 contour (Figure 5.5) is modelled on 2015 data. The ANEI 20 contour extends approximately 3.5 kilometres to the north and 3.4 kilometres to the south from the respective runway ends. Aircraft departing to the north turned to the east by Currumbin. Flight procedures were amended during 2010 to require nearly all aircraft to undertake instrument approaches at night, increasing the aircraft over flights to the north. To the south, the ANEI 20 contour extends further. Nearly all arriving aircraft undertake 'straight-in' approaches whether instrument or visual. Departing aircraft to the south remain on the runway centreline alignment until south of Tweed Heads.

Gold Coast Airport averaged 258 flights per day during 2015. These flights were a mixture of RPT, General Aviation (both travel flights and training) and helicopters. During 2015, each day there were approximately 106 RPT (arrivals and departures) jet aircraft movements, approximately 113 General Aviation aircraft movements, by a wide range of aircraft types, and 39 helicopter flight movements.

5.7.2 2047 ANEF

By 2047 there is forecast to be an average of 372 RPT flights per day and approximately the same number of General Aviation flights and helicopter movements. Many of the RPT flights will be by new generation aircraft, such as the Boeing B787 Dreamliner. While the new generation RPT aircraft are expected to be significantly quieter than those operating, this reduction in operating noise will be off-set by the increase in the number of flights.

By 2047 the ANEF 20 contour will be consistent with the shape and extent of the 2031 ANEF 20 contour presented in the 2011 Master Plan. The 2047 ANEF 20 contour is shown in Figure 5.6.

In line with the growth forecast for RPT flights at Gold Coast Airport over the next 30 years, the 2047 ANEF 20 contour is calculated to straighten to the north and marginally contract to both the north and south to be closer to the Runway 32 end. The reshaping of the 2047 ANEF 20 contour is largely attributed to:

- » The forecast RPT jet aircraft movements increasing by approximately 96,000 movements from 2015
- » More aircraft undertaking instrument approaches on realigned tracks

- » Changes to decision height altitudes for pilots and timings on NDB/VOR (non-directional beacon / VHF omni directional radio range) procedures
- » Increased usage of Required Navigation Performance (RNP) procedures for Runway 14 arrivals
- » Reduction in the use of offset NDB/VOR procedures.

5.7.3 Relocation of Runway 32 Landing Threshold

Within the first five-years of this Master Plan the Runway 32 landing threshold is proposed to be relocated by 300 metres to the south. The threshold relocation is within the existing runway length and is required to improve reliability and safety during adverse weather for wide-body aircraft. This will cause a displaced landing threshold of 150 metres. This is further described in Chapter 6.0.

A 300 metre relocation of the Runway 32 landing threshold will cause the 2047 ANEF 20 contour to extend a similar distance to the south, along the existing runway length (when compared to the same 2031 ANEF 20 contour that included a relocated threshold).

Arrivals and departures from Runway 14/32 will be the only aircraft flights that affect the southern extent of the 2047 ANEF 20 contour.

An aircraft on a standard approach at any position along the flight path will be approximately 50 feet (15 metres) lower because of the proposed threshold relocation. At the southern extent of the 20 ANEF contour, arriving aircraft could be expected to overfly at an altitude of approximately 930 feet (280 metres) on descent.

To provide an indication of the likely changes to aircraft noise exposure resulting from this proposed landing threshold relocation, L_{Amax} values were determined from three points along the straight-in approach flight track from the south inserted into the INM. This metric indicates the difference in maximum sound level created by an aircraft overflight though it provides no indication of either the duration or frequency of those flights. Table 5-4 shows the differences in L_{Amax} values at a nominated location. The changes in sound pressure at specific locations, due to aircraft altitude, are relatively small (between 0.3 dB(A) and 0.6 dB(A)) and are generally not noticeable.

Table 5-4 Difference in LAmx Sound Levels Created by an Aircraft (generic)

Location	Distance	Existing Height	Relocated Threshold Height	Difference in dB(A) with a Relocated Threshold
Tweed Heads (Wyuna Road)	1.9 km	486 feet	433 feet	0.4 dB(A)
Banora Point	5 km	1168 feet	1115 feet	0.6 dB(A)
Chinderah	8 km	1962 feet	1909 feet	0.3 dB(A)

5.7.4 Comparison of 2031 ANEF with the 2047 ANEF

A comparison of the 2031 ANEF with the 2047 ANEF (Figure 5.7) indicates little change to the extent and shape of the ANEF 20 contours. To the north of the Airport, the ANEF 20 contour contracts marginally over water to the east of the coastline, while to the south this contour also contracts slightly. Both to the north and south, the lateral extent of the 2047 ANEF contour is slightly narrower than the 2031 ANEF, due to realigned approach flight paths (Figure 5.6).

The reasons for minor change between the two sets of contours are:

- » The new version of the INM (7.0d) has changes to the algorithms used to calculate aircraft noise contours, in particular the modelling of helicopter noise. INM (7.0d) includes new aircraft types that were not previously available, such as the Boeing B787 Dreamliner. It also contains noise data updates for several existing Airbus aircraft types
- » A greater proportion of new generation aircraft types operating in the fleet mix due to airline fleet renewal and modernisation programs and long-term aircraft technological advancements. Notably, the Boeing B787 Dreamliner is significantly quieter than some of the wide-body aircraft included in the 2031 ANEF, such as the Boeing B747
- » For the 2031 ANEF, the bulk of the wide-body movements comprised quiet, modern Boeing B787 Dreamliner and Airbus A350 aircraft. However, due to no INM data being available, they were modelled as the significantly noisier Boeing B777-300 and Airbus A330-343 aircraft, respectively. For the 2047 ANEF, all wide-body movements are forecast to be Boeing B787 Dreamliners, for which data is now available in INM. Therefore, all wide-body movements in the 2047 ANEF were modelled as significantly quieter aircraft than in the 2031 ANEF. However, higher forecast number of wide-body movements in 2047 means that the impact of wide-body aircraft on the contours is similar for both the 2031 and 2047 ANEF
- » For the 2031 ANEF, it was assumed that there would be an ILS. For the 2047 ANEF it has been assumed that there will be an ILS
- » Increased usage of RNP procedures and realigning other instrument approaches has resulted in the 2047 ANEF contours straightening up to the north
- » Continued strong growth in RPT aircraft activity at Gold Coast Airport. This includes a growth in international flights. The gradual increase in RPT aircraft flights will be off-set by replacing older, noisier aircraft with newer, quieter aircraft and implementing quieter operating procedures
- » The 2031 ANEF has assumed a similar number of General Aviation aircraft undertaking repetitive circuit training as in 2015. The 2047 ANEF forecasts that repetitive circuit training and helicopter circuits will not significantly change from 2015 levels.

5.7.5 Areas above Significant ANEF Levels

The Airports Act requires airport lessees, such as GCAPL, consult with operators and local government bodies in vicinity of the Airport and develop plans for managing aircraft noise intrusion in areas above 30 ANEF.

GCAPL works closely with the airline industry, community, business groups and Airservices Australia in this regard.

This chapter outlines the noise management arrangements in place with the local planning authorities and airlines servicing the Airport for managing the impact of aircraft noise.

5.8 OTHER NOISE DESCRIPTORS

GCAPL is committed to providing the public and other stakeholders with the most relevant, accurate and easily understood information on aircraft noise impacts. Therefore, although it is not a statutory requirement, N70 contours have been prepared for this Master Plan.

5.8.1 N70 Contours

Contours that indicate the number of aircraft overflight events (average per day) for the areas surrounding the Airport that are louder than 70 dB(A), known as N70 contours. An external single noise event will be attenuated by approximately 15 dB(A) by the fabric of a house with the doors and windows closed. The resulting internal noise level of 55 dB(A) is the sound pressure level of a noise event likely to interfere with conversation or listening to radio or television. The 70 dB(A) level is chosen as it is equivalent to the single event level of 55 dB(A) as the indoor sound level for normal domestic areas in a dwelling, as specified in AS2021:2015.

5.8.2 2015 ANEI N70

The 2015 N70 (Figure 5.8) closely follows the outline of the 2015 ANEI in both extent and shape. The outer contours reflect the flight patterns of arriving aircraft more than departing aircraft as:

- » Arriving aircraft generally descend at 300 feet (approximately 92 metres) per nautical mile, departing aircraft climb much more steeply
- » Arriving aircraft extend undercarriage and control surfaces (flaps/slats) at an appropriate distance from touchdown (usually once the aircraft is on

final approach), which generates airflow noises.

Departing aircraft retract those devices as soon as practical

- » Modern jet aircraft engines, even at high take-off power, have significantly reduced noise footprints compared to older generation engines and will start to reduce power once positive rates of climb are achieved.

5.8.3 2047 ANEF N70

The 2047 N70 contours (Figure 5.9) have been developed using the same assumptions used in the 2047 ANEF including the INM dataset, flight paths and forecast aircraft movements. Key factors influencing the extent and shape of the 2047 N70 contours are:

- » The forecast indicates an increase in the numbers of aircraft operating to the east (New Zealand), and north (Japan and South East Asia). These latter aircraft are generally wide-body types. These aircraft on departure off Runway 14 will turn to the east
- » The increase in the number of instrument approaches can be seen to the north of the Airport where the contours extend slightly further out from the Airport. The straightening of the Runway 14 RNAV-Z (area navigation) and the NDB/VOR approaches, the increased use of the RNP procedures, and the commissioning of the ILS on Runway 14 in 2018 will result in the shift of the northern extent of the contours slightly to the west, more in line with the runway centreline. This effect is less to the south, as the Airport operates predominantly in the Runway 14 direction and the visual approach from the south is on a similar alignment as the proposed ILS system. The current assumption is that ten per cent of arriving aircraft on Runway 14 would undertake ILS approaches infrequently and not usually on consecutive days
- » The western extent of the contours are similar to the 2031 ANEI N70 indicating the limited side-line noise generated by modern aircraft; however, close in to the west the contours are a little more extensive due to the changes to the helicopter noise algorithms.

The RNP flight tracks described in Section 5.5 and used for preparing the 2047 ANEF are similar to the existing flight tracks, determined from NFPMS data and consultations with local air traffic control. The changes in contours are more attributable to the increases in flights and the concentration of those flights to specific routes.

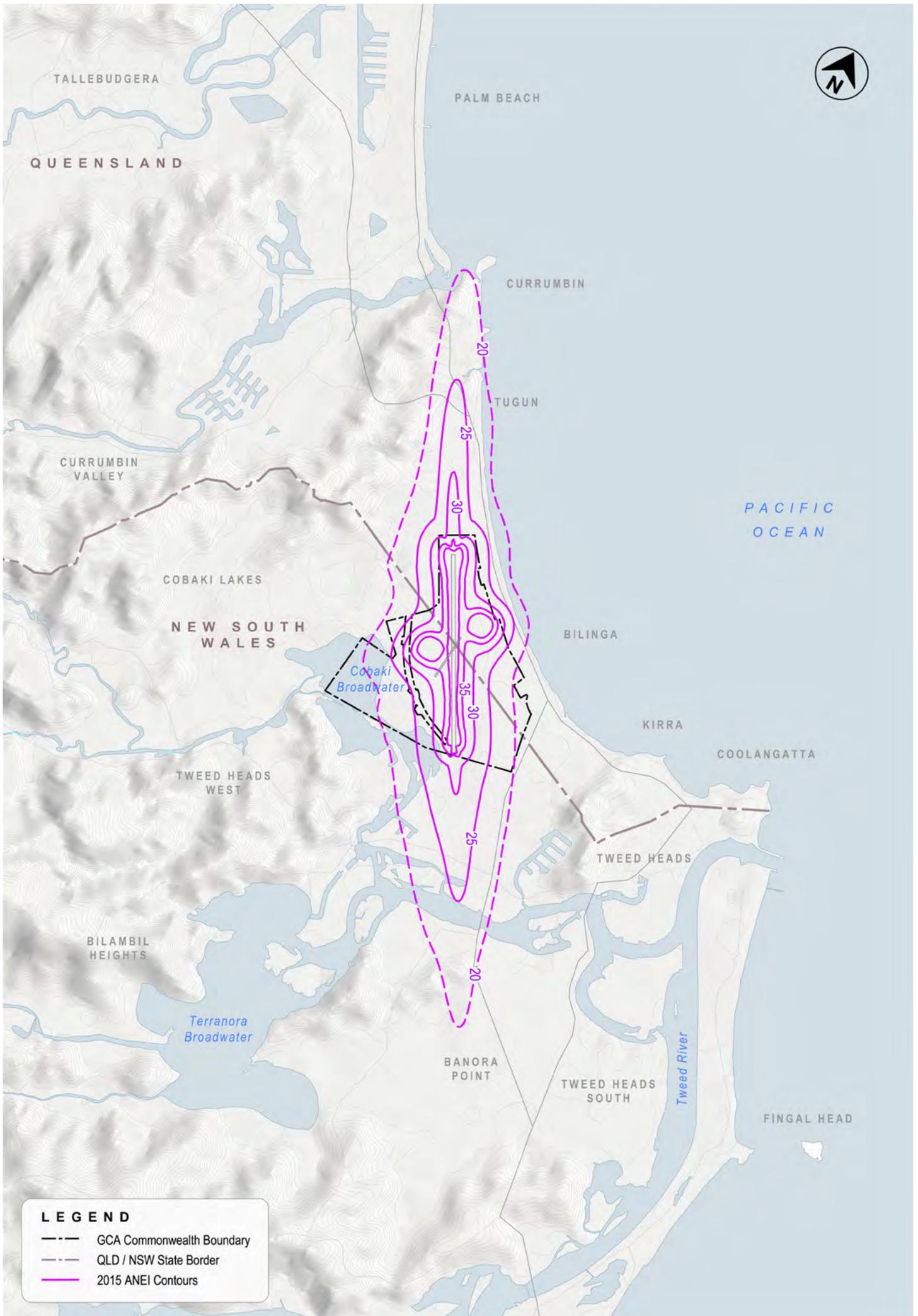


Figure 5.5 2015 Australian Noise Exposure Index (ANEI)

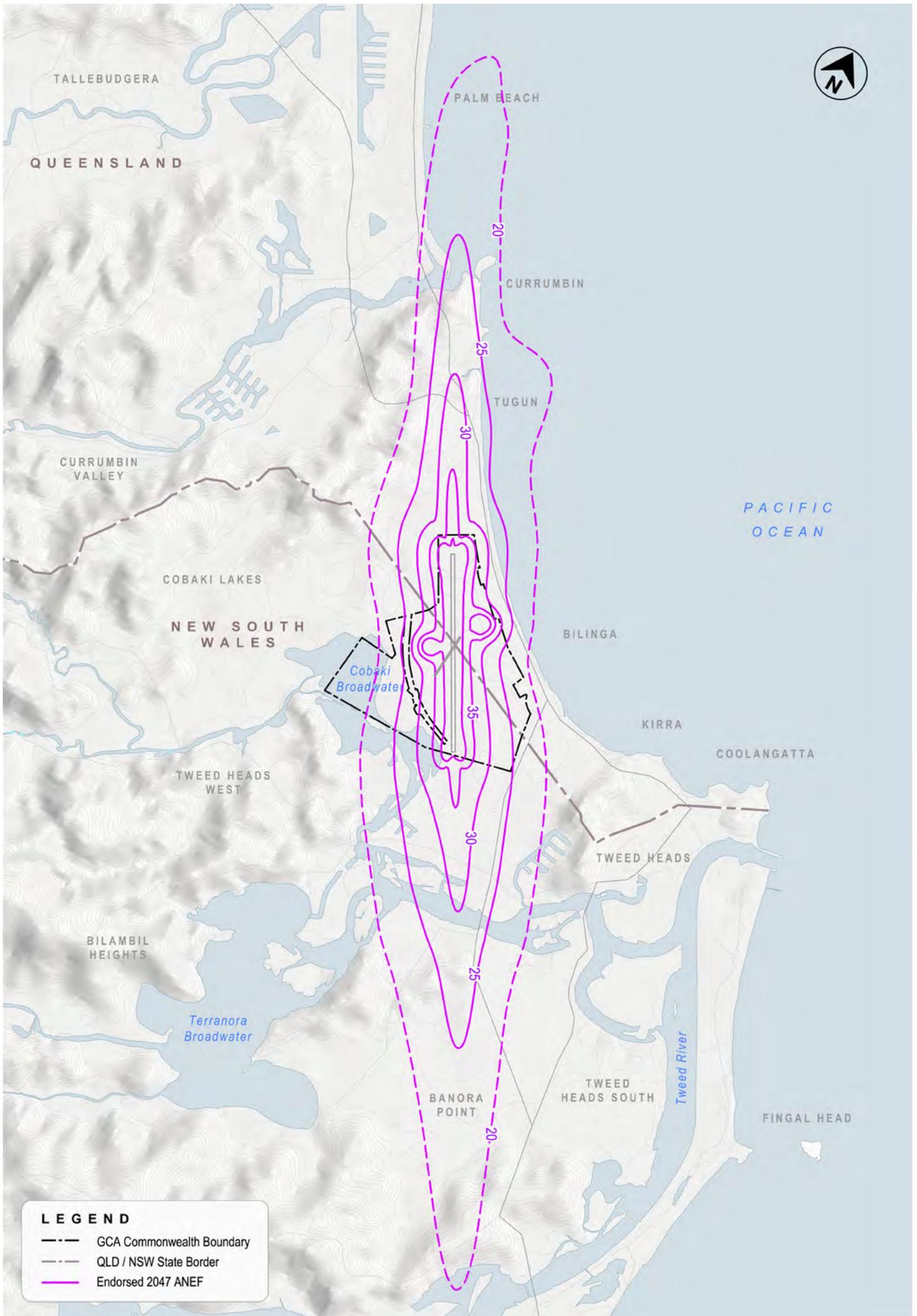


Figure 5.6 2047 Australian Noise Exposure Forecast (ANEF)

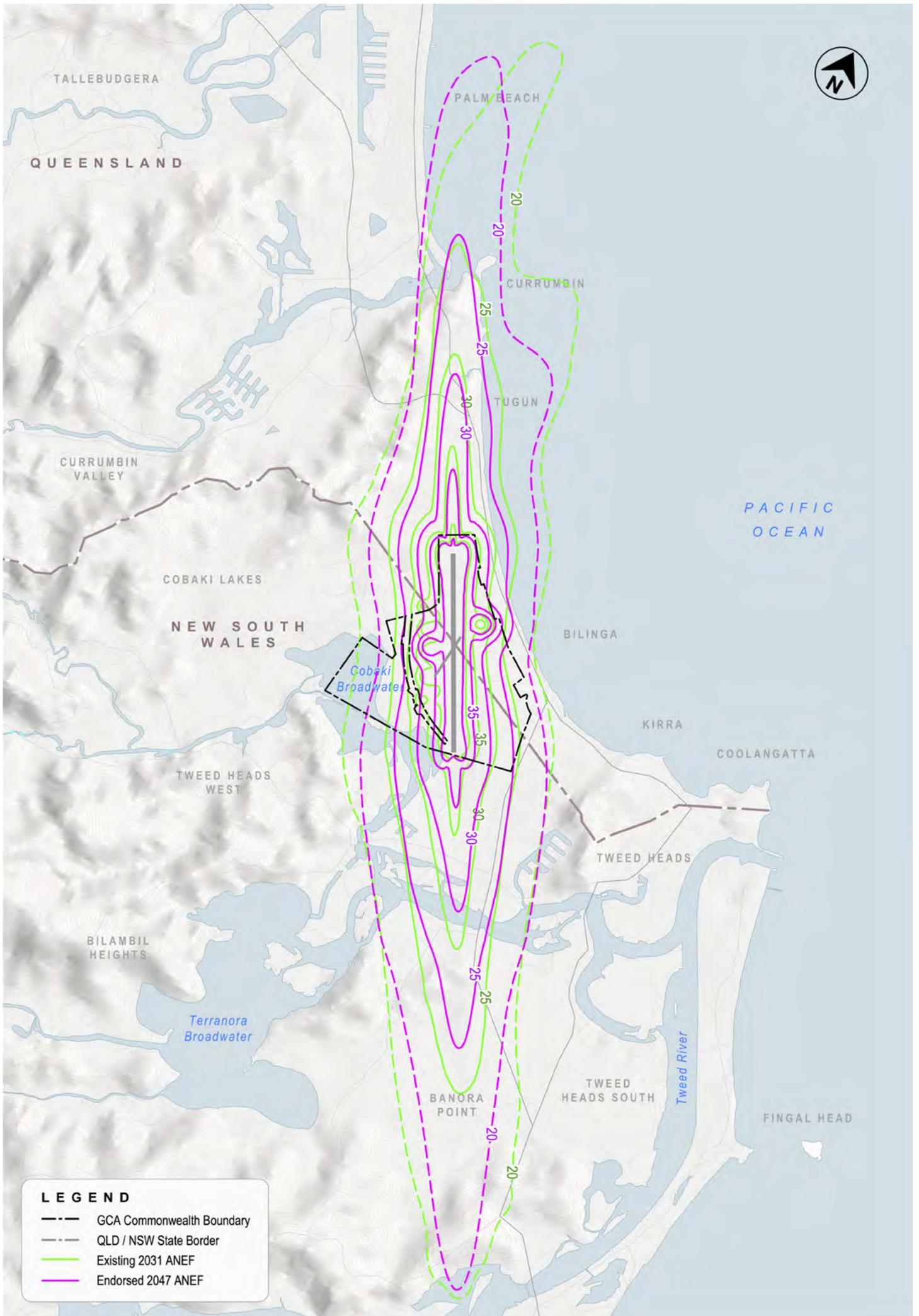


Figure 5.7 Comparison between 2011 Master Plan 2031 ANEF and 2047 ANEF

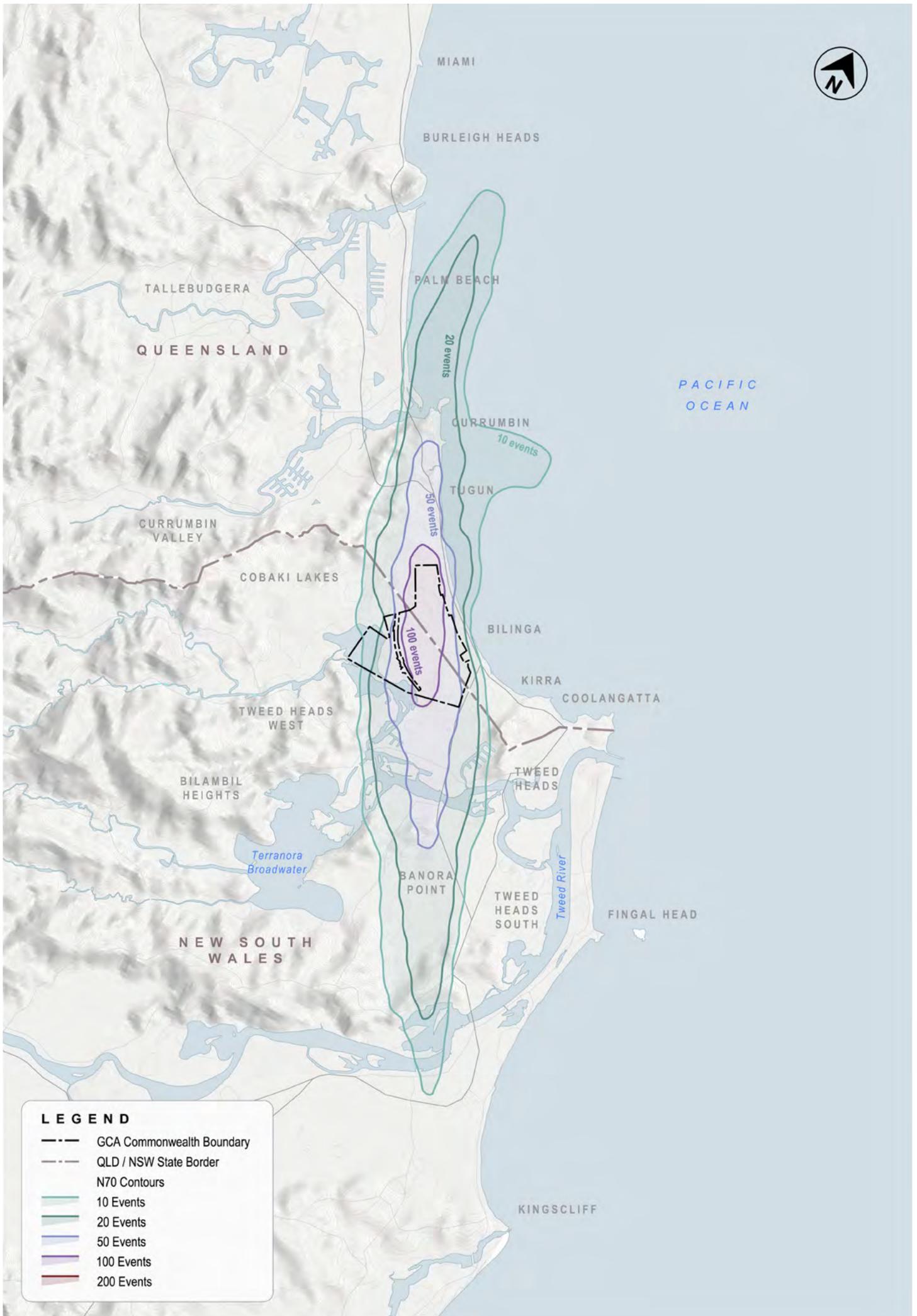


Figure 5.8 2015 N70 Contours

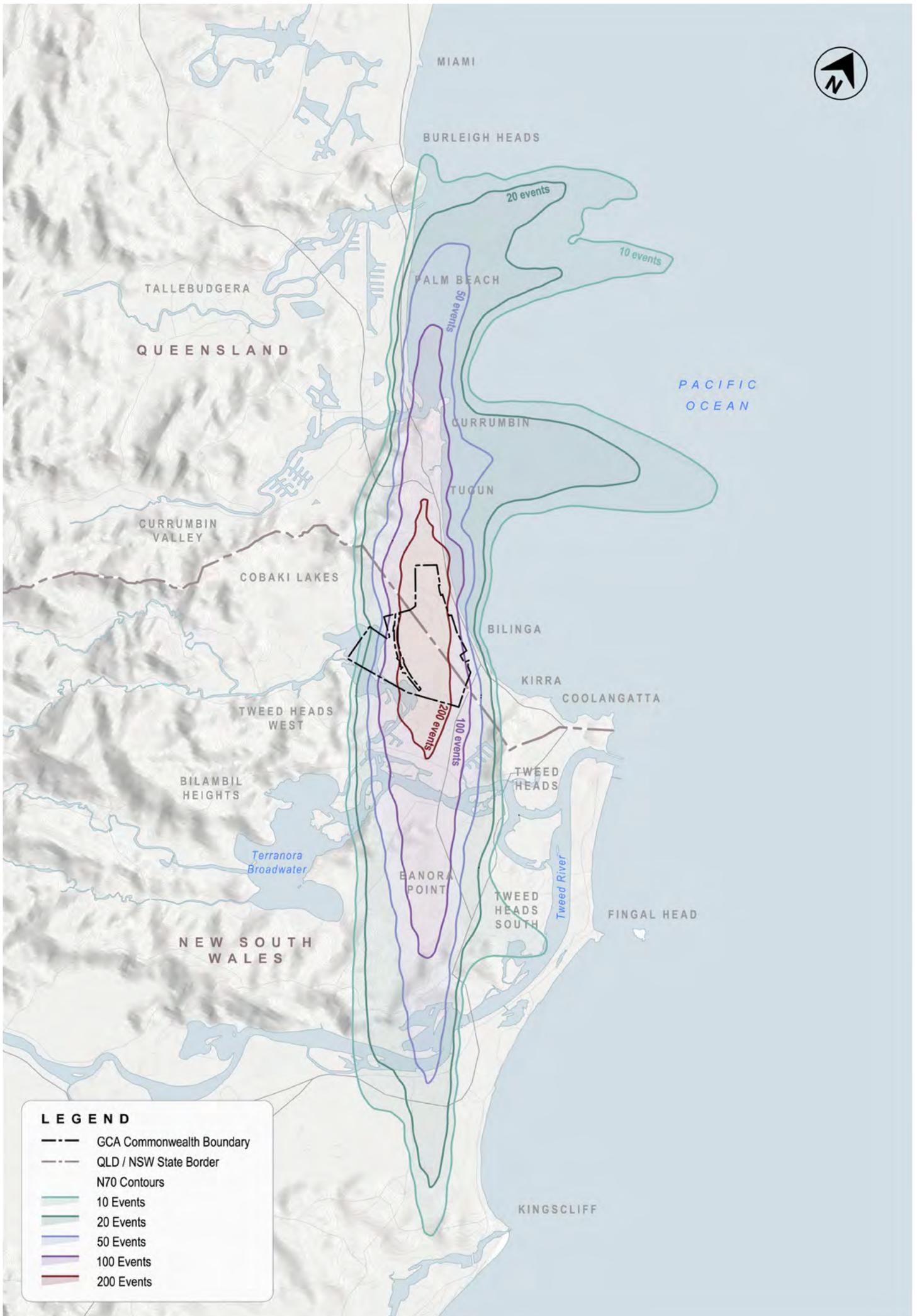


Figure 5.9 2047 N70 Contours

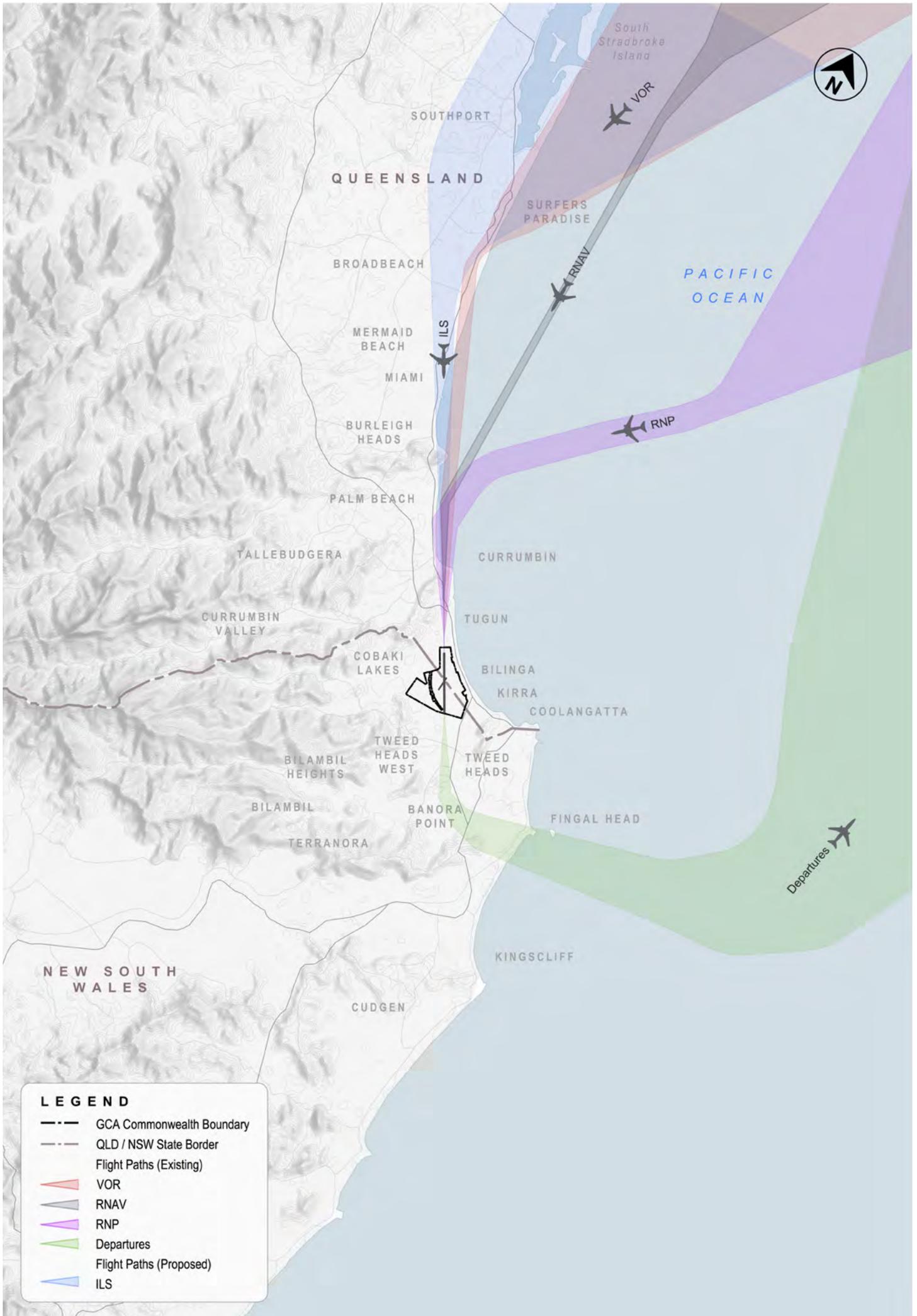


Figure 5.10 Runway 14 - (North) Departures and Arrivals

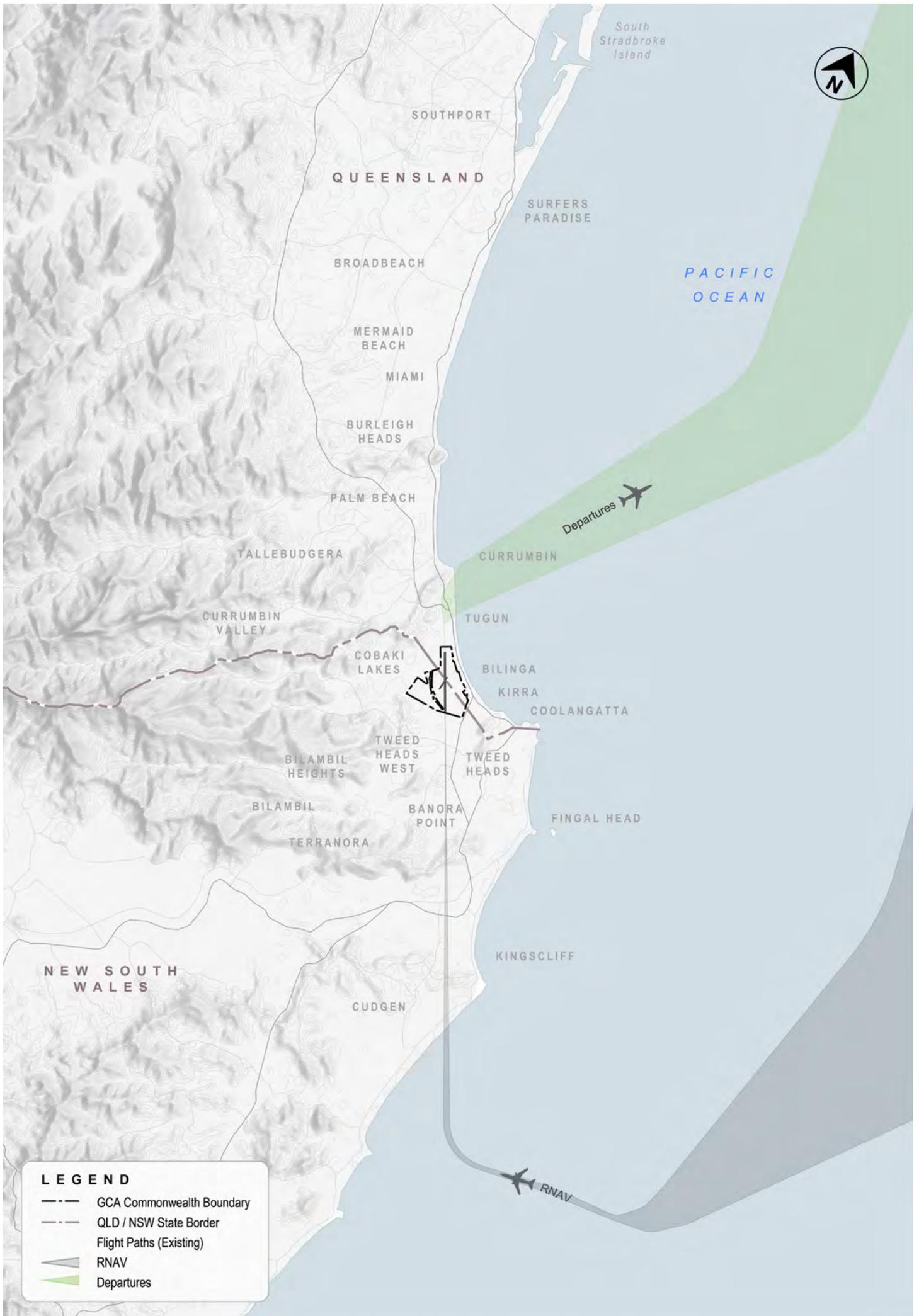


Figure 5.11 Runway 32 - (North) Departures and Arrivals

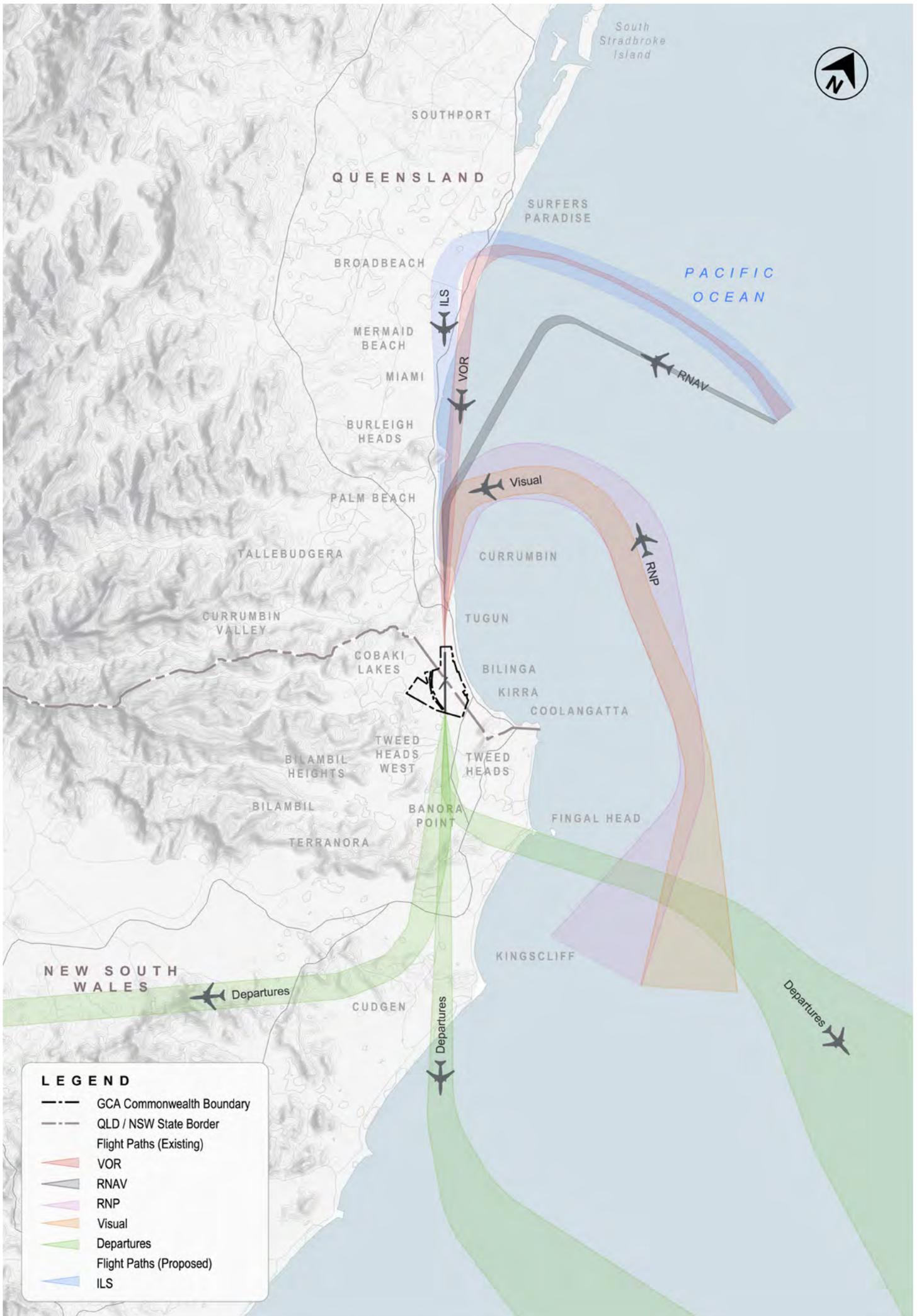


Figure 5.12 Runway 14 - (South) Departures and Arrivals



Figure 5.13 Runway 32 - (South) Departures and Arrivals



Figure 5.14 Runway 14 - Fixed Wing Circuit Training - General Aviation



Figure 5.15 Runway 32 - Fixed Wing Circuit Training - General Aviation

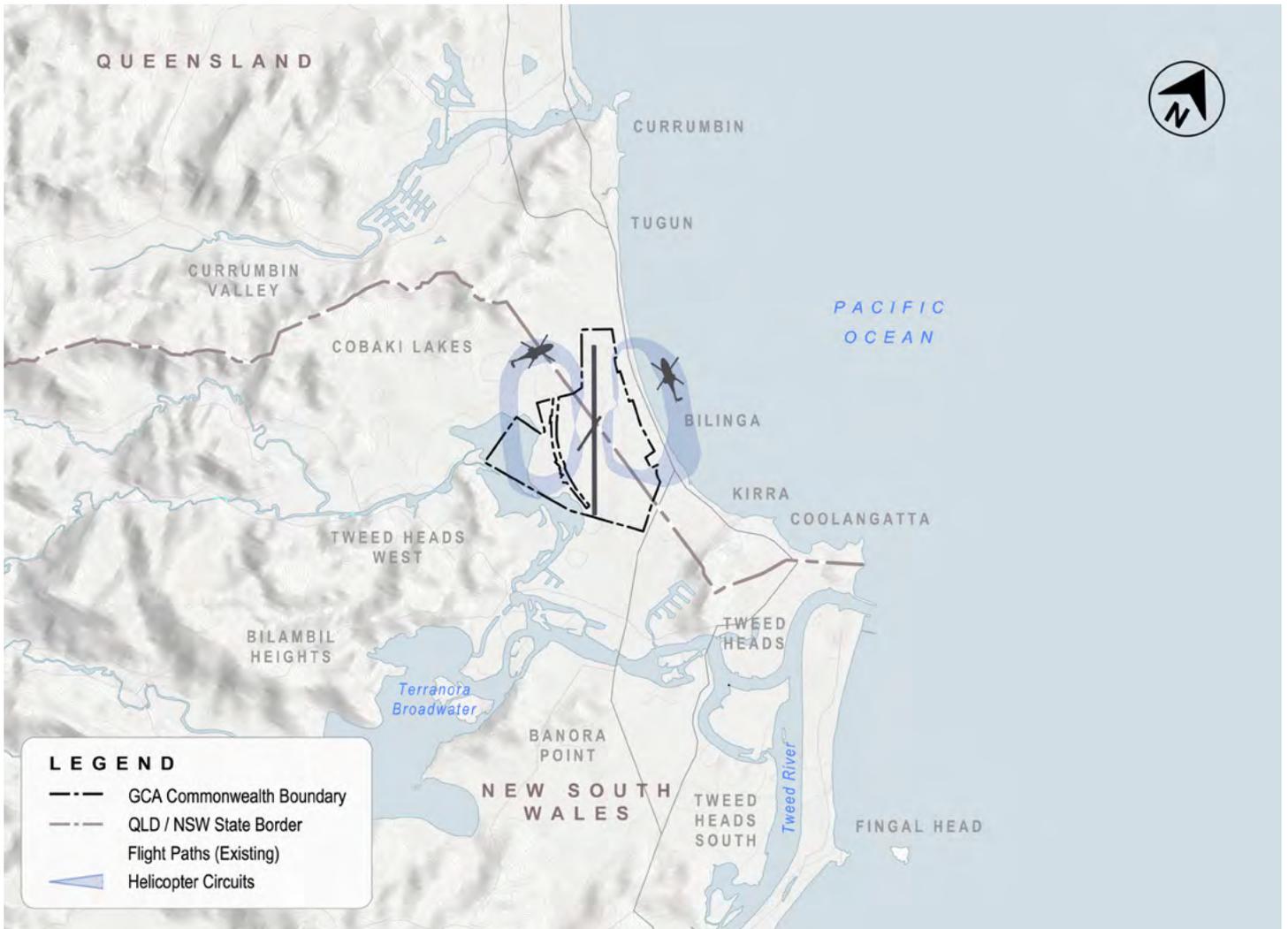


Figure 5.16 Helicopter Circuit Training





6.0

Aviation Development





Gold Coast Airport has efficient and cost effective passenger processing and aircraft turn-around times that is underpinned by a strong focus on safety.

6.1 INTRODUCTION

This focus on safety and customer experience makes the Airport a very attractive proposition to Australian and international carriers. It is important that aviation infrastructure investment reflects the anticipated growth in passengers, aircraft movements and demand placed on the Airport. To ensure Gold Coast Airport remains competitive, it is essential that the Airport remains safe, efficient and reliable.

The typical airport master planning process is to first identify and prioritise solutions based on the airside component – identify gate requirements and locate aircraft parking positions and their supporting taxi lanes to optimise the overall efficiency of the airfield. Then the internal layout of the terminal building(s), landside curb and terminal roadway systems are developed.

The aviation development plan in this Master Plan improves safety, efficiency and capacity of the Airport to 2037. It also facilitates flexibility and adaptability of the airfield to respond to the constantly evolving aviation industry. The planned infrastructure is vital to support future passenger and aircraft movements through the Airport.

Figure 6.1 shows the Five-Year Airport Development Plan; Figure 6.2 shows the Twenty-Year Airport Development Plan. Sections 6.2 – 6.5 outline the key elements shown on the development plans.

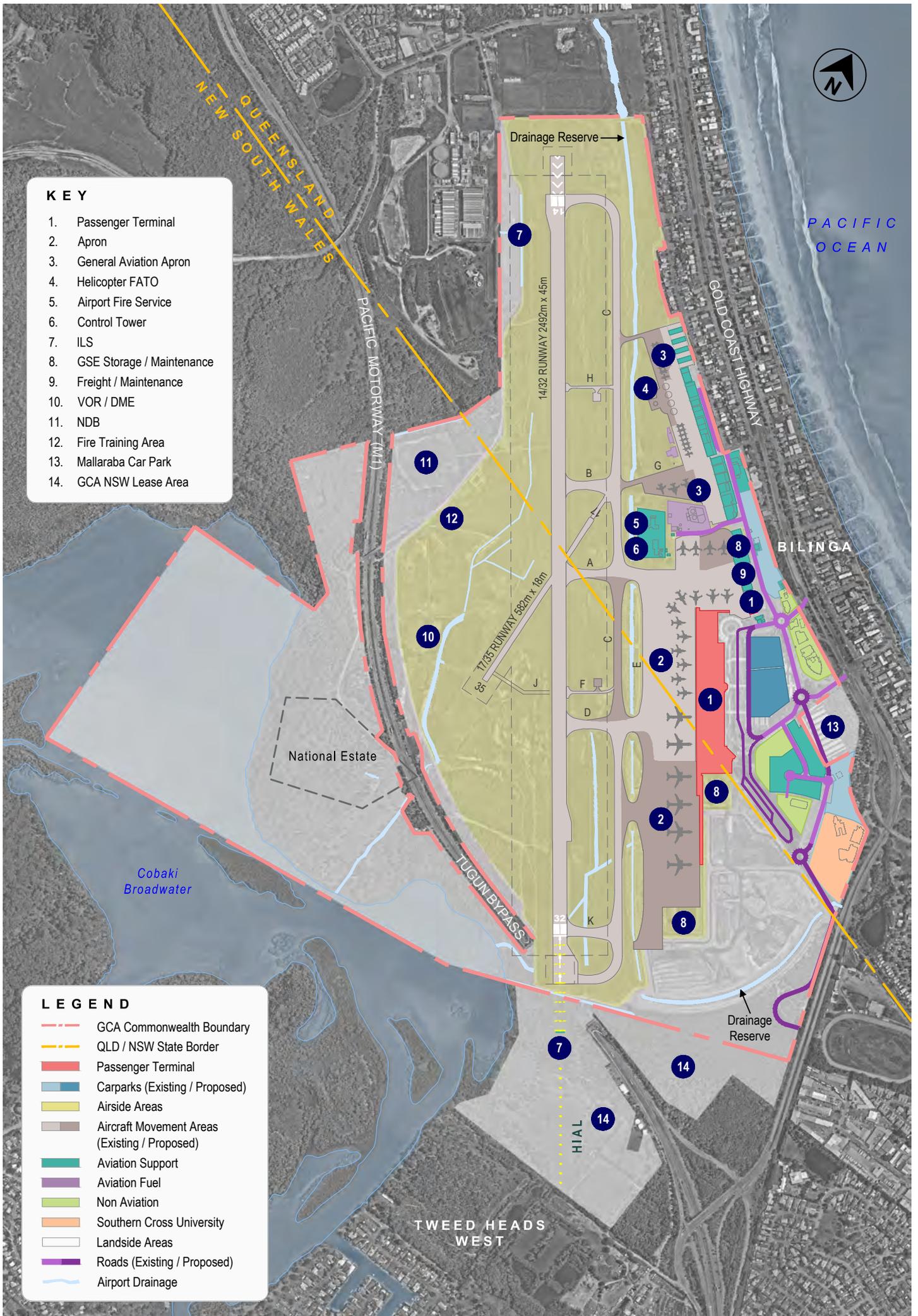


Figure 6.1 Five-Year Airport Development Plan

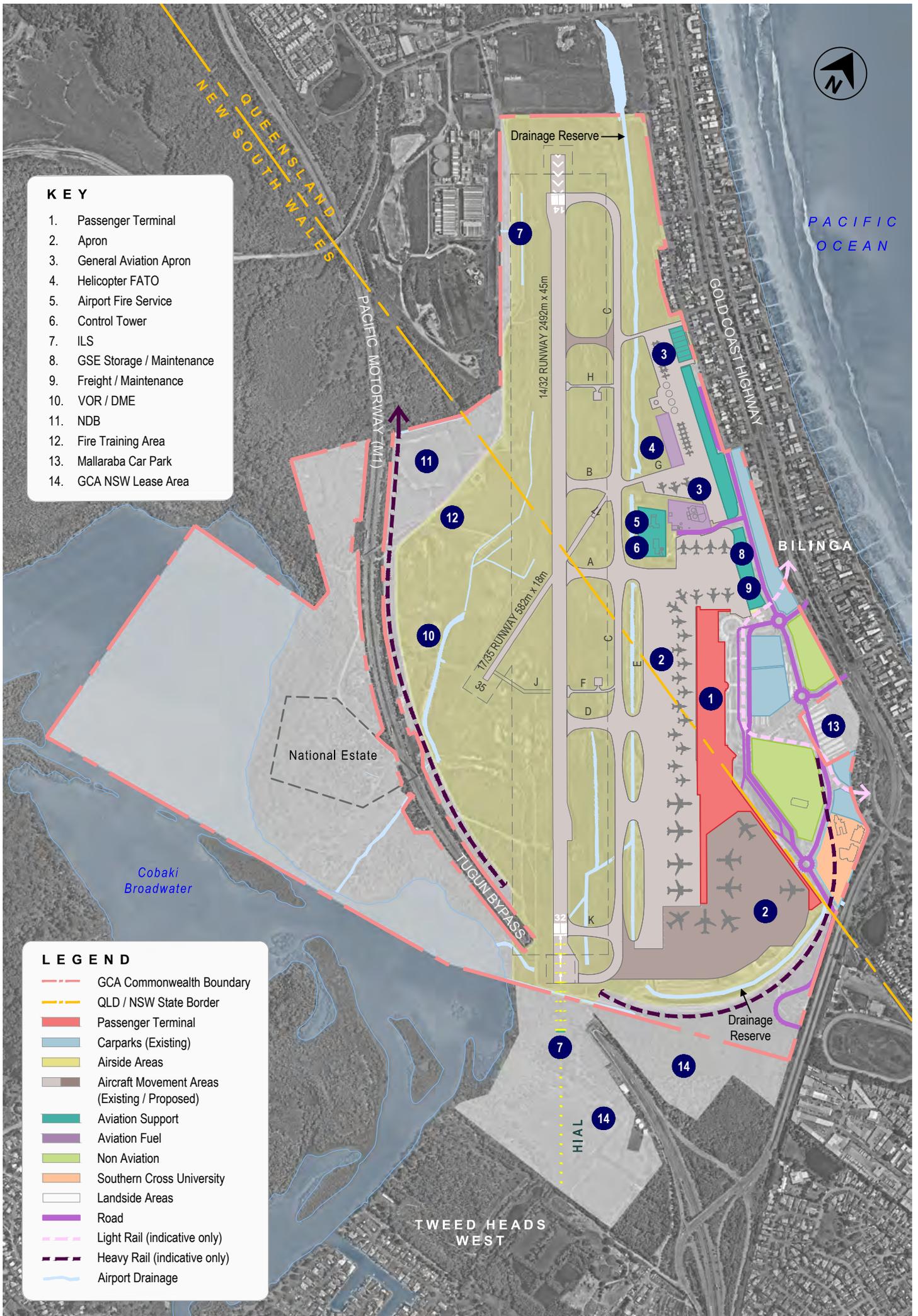


Figure 6.2 Twenty-Year Airport Development Plan

6.2 AIRFIELD DEVELOPMENT

The fundamental capacity constraint of an airport is its runway system. Careful consideration needs to be given to the airfield configuration to achieve maximum capacity. When considering future airfield developments, Australian and international legislative standards must be complied with.

Airport design standards and operating procedures are in accordance with Australia's new Civil Aviation Safety Regulations Manual of Standards Part 139 as prescribed by CASA. These standards generally follow the ICAO standards and recommended practices for the safe and orderly development of international civil aviation.

The adopted design principles ensure safety, efficiency and regulatory conformance of the airfield and airspace is maintained.

Airfield development planning needs to take into consideration environmental and physical constraints that might impact on future development of the Airport. Broadly these types of constraints can be classified as:

- » Physical infrastructure or facilities and land
- » Access
- » Planning, operational and environmental.

In developing the Master Plan, a constraints assessment was undertaken to identify features that may present a physical limitation to the future expansion of the Airport. This included features external to site to ensure that the safety of airport airspace is not compromised.

6.2.1 Runways

Gold Coast Airport has two runways. The primary runway (Runway 14/32), used by RPT aircraft, is 45 metres wide. The cross runway (Runway 17/35) is 18 metres wide and used by General Aviation aircraft.

6.2.2 Runway 14/32

Runway 14/32 has an available take-off length of 2,342 metres in the 14 direction and 2,492 metres in the 32 direction. Runway 32 has a 450 metre displaced landing threshold.

The runway lengths are adequate for current operations and target destinations in Australia, the Pacific and South East Asia.

Current improved aircraft performance means the runway length will be adequate for the life of this Master Plan. Consistent with master plans since 1994 and surrounding land use planning, protection is to be maintained for an ultimate runway length of 2,858 metres. This length may be required due to international demand for extended destinations.

Relocation of Runway 32 Landing Threshold

Consistent with the 2011 Master Plan, to improve safety and reliability for wide-body aircraft during adverse weather, it is intended to relocate the Runway 32 landing threshold approximately 300 metres to the south, see Figure 6.3. This is within the existing runway length and will result in a 150 metre displaced landing threshold. This is planned to occur during the first five-year period of the Master Plan.

In preparing the Master Plan, a technical investigation was undertaken to assess the impacts of moving the threshold by approximately 300 metres. The investigation has found that in the immediate vicinity of the Airport aircraft will be approximately 15 metres lower in altitude on approach from the south. As described in Chapter 5.0, the investigation has found that the changes in sound pressure at specific locations, due to aircraft altitude, are relatively small (between 0.3 dB(A) and 0.6 dB(A)). It is considered that changes in sound pressure of 3 dB(A) or lower are generally not noticeable. Therefore a minor change in sound pressure of between 0.3 dB(A) and 0.6 dB(A) is highly unlikely to be noticeable.

The proposed relocation of the threshold will not significantly change flight paths or levels of aircraft noise and does not significantly impact the community adjacent to the airport. It is considered that the proposed relocation of the threshold does not constitute a major airport development.

The 2047 ANEF in this Master Plan incorporates the revised Runway 32 landing to ensure potential impacts are included for planning consideration. This is described in more detail in Chapter 5.0. GCAPL will work closely with Airservices Australia and consult extensively with the community through the CACG and the ANACC.

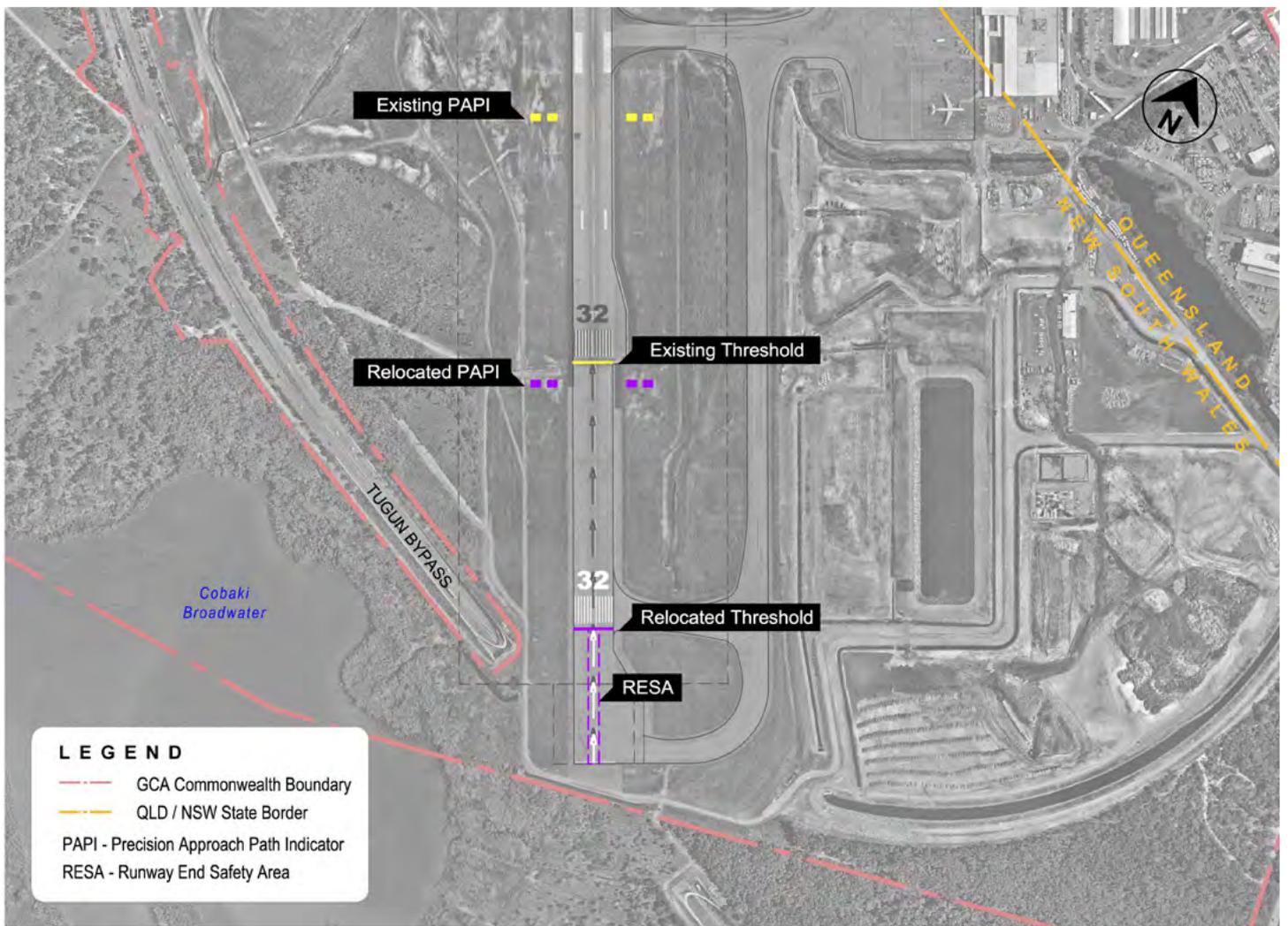


Figure 6.3 Relocation of Runway 32 Landing Threshold

6.2.3 Runway 17/35

Runway 17/35 has an available take-off and landing distance of 582 metres in both the 17 and 35 directions. Due to surrounding obstacle restrictions there is no ability to lengthen the existing runway length.

6.2.4 Taxiways

The primary runway is served by a partial length parallel taxiway connecting the main RPT apron. Various stub taxiways connect to the runway providing additional efficiency to reduce redundancy for the taxiway system.

An extension to the partial-length parallel taxiway, between Taxiway A and D, is planned during the first five-year period of the Master Plan. This will provide a full-length parallel taxiway, which will provide additional connections to the proposed expanded RPT apron to the south to accommodate demand.

An additional General Aviation taxiway link is proposed between Runway 14/32 and the northern end of the existing General Aviation apron. This will improve efficiency, provide redundancy to the existing single taxiway and connect with a planned run-up bay.

6.2.5 Regular Public Transport Apron

The existing RPT apron accommodates international and domestic aircraft operations.

As part of the Project LIFT terminal expansion, an additional five stands will be added along with the associated terminal development.

The busy-hour stand demand developed in Chapter 4.0 and shown in Table 6-1, provides the required number of parking positions through to the twenty-year horizon.

Table 6-1 Forecast Busy Hour Apron Parking Stand Demand

	Existing		2022		2037	
	Code E	Code C	Code E	Code C	Code E	Code C
International	3	2	5	2	10	3
Domestic	2	7	2	11	5	17
Combined	4	8	6	11	11	17

Please note, in Table 6-1, the combined number of aircraft apron parking stands is not the sum of the numbers of international and domestic stands.

Figure 6.1 shows the development of the apron and expansion of the terminal to the south. This forms part of the Project LIFT terminal redevelopment and incorporates the first five years of the Master Plan. Figure 6.2 shows the 2037 aircraft parking layout.

It is also planned to expand a remote parking apron at the northern end to provide an additional multiple aircraft ramp stand. This would be available for freight, itinerant and overnighing aircraft.

General Aviation Apron

Works proposed in the General Aviation Precinct include providing additional aircraft apron and taxiways. The works proposed within the first five years of this Master Plan include:

- » A new taxiway link to Runway 14/32 at the northern end of the General Aviation precinct
- » Realignment of the existing Code C Taxiway to Runway 14/32 and new apron areas for aircraft parking. The development will also provide a helicopter final approach and take-off area and wash down facility.

This arrangement is shown in the Five-Year Airport Development Plan (Figure 6.1).

6.3 WESTERN ENTERPRISE PRECINCT

The Western Enterprise Precinct is identified as an area available for long-term aviation and airport related development. This precinct could supply additional building area and apron capacity to meet future aviation demand, such as General Aviation expansion and freight and maintenance facilities.

Future development of this precinct is reliant on the ability to decommission or relocate existing Airservices Australia navigational aids and communication installations. Further assessment will be required to identify suitable and viable land uses. Airservices Australia has advised that there are no short-term (five-year) plans to decommission or relocate these installations. Facilities such as the VOR/DME (distance measuring equipment) and NDB are a component of the Australian Backup Navigation Network and are required for operational purposes. The retention or removal of the VOR/DME and NDB would be based on navigation requirements, aircraft avionics fit, and national industry-agreed ground-based navigational aid requirements.

Any potential for development in the Western Enterprise Precinct can only be assessed if the NDB and VOR are removed within the twenty-year planning horizon. GCAPL will continue to liaise with Airservices Australia on the future requirements for these installations. In the event that the navigational aids are decommissioned in this precinct, any development will require coordination with Airservices Australia to assess impacts on remaining communications facilities and navigational aids.

Long-term development plans may include a new apron area. This would be a remote stand capable of accommodating a mixture of Code E and Code C aircraft stands and potentially General Aviation. This is in addition to options to include appropriate industrial and aviation-related businesses to support the intended economic enterprise intent for the precinct.

Development of the Western Enterprise Precinct would require a new taxiway system connecting the primary runway to a new western apron and building area.



6.4 TERMINAL

6.4.1 Design Principles

It is recognised that Gold Coast Airport has become a significant gateway to the region, facilitating over six million passengers per annum. For many visitors Gold Coast Airport is the first and last experience of a trip to the region. It is essential it appropriately reflects the tourism experience available on the Gold Coast, Tweed Shire and beyond.

The existing terminal building expansion, approved as part of Project LIFT, will improve customer experience for the Airport and will include:

- » Expanded terminal building
- » Expansion of the existing terminal building to accommodate aerobridges
- » Five additional aircraft parking stands up to Code E aircraft.

Future terminal planning will be in accordance with International Air Transport Association's Optimum Level of Service, which sets the standard for service and comfort. Design principles are to be in accordance with International Air Transport Association standards, Airports (Building Control) Regulations 1996, customs, immigration and quarantine processing requirements, DIRD aviation security requirements, disability access requirements and other regulatory requirements.



6.4.2 Development Concept — Short Term (2017–2022)

The existing integrated international and domestic common use terminal (Terminal 1) has capacity for six million arriving and departing passengers per annum. The terminal expansion is required to accommodate the continual growth experienced by Gold Coast Airport.

Gold Coast Airport is undertaking new building works to extend the southern end of the terminal and will support the airside expansion of the RPT apron and additional aircraft stands.

6.4.3 Development Concept — Long Term (up to 2037)

The long-term development of the terminal will focus on improved pedestrian connectivity between landside developments and the terminal to both activate the proposed plaza and promote good links across the Terminal Precinct.

Future planning for the Airport will need to evolve and respond to passenger and airline requirements and to advancements in construction technology and aviation standards. Any expansion to the terminal will be staged to ensure that the Airport remains operational at all times.

The ultimate terminal layout will be achieved in a multi-staged and progressive development responding to forecast growth in passenger numbers.



6.5 AVIATION SUPPORT FACILITIES

6.5.1 Fuel Storage

All jet and turboprop aircraft types use aviation turbine fuel. The fuel is dispensed to domestic and international aircraft at the stands via an under-pavement hydrant system. Tanker trucks are primarily used to refuel regional and General Aviation turboprop and jet types.

The existing JUHI has a storage capacity of 4.0 million litres. The fuel facility site has sufficient area to double the storage requirements to 7.76 million litres to meet the seven days' supply for 2037 fuel demand requirements.

6.5.2 Freight

Freight facilities for freight transported in the belly-holds of the passenger aircraft are located in the Terminal Precinct adjoining Terminal 2.

Freight capacity at Gold Coast Airport is expected to increase as international air traffic movement increases, particularly with carriers seeking to enhance their commercial returns by using spare hold capacity for freight. An area in the Terminal Precinct has been identified to expand the current freight facilities, this would provide a multiple use facility to respond to market requirements.



6.5.3 Ground Servicing Equipment

Ground servicing is provided by third-party operators contracted to the airlines. Operators are licensed by the Airport and are provided with adequate area to store, park and stage equipment for all of the aircraft parking positions.

GCAPL meet regularly with these operators at the Aerodrome Safety Committee to discuss safety, security and operational requirements.

6.5.4 Aircraft Maintenance

Aircraft maintenance facilities are limited to General Aviation maintenance and the requirements of some small corporate jets.

Demand for aviation maintenance facilities is highly dependent on several factors:

- » Requirements of operating airlines to service or maintain aircraft at an airport;
- » Establishment of maintenance facilities by third-party operators;
- » Government incentives for establishment of aircraft maintenance facilities or aircraft manufacturing.

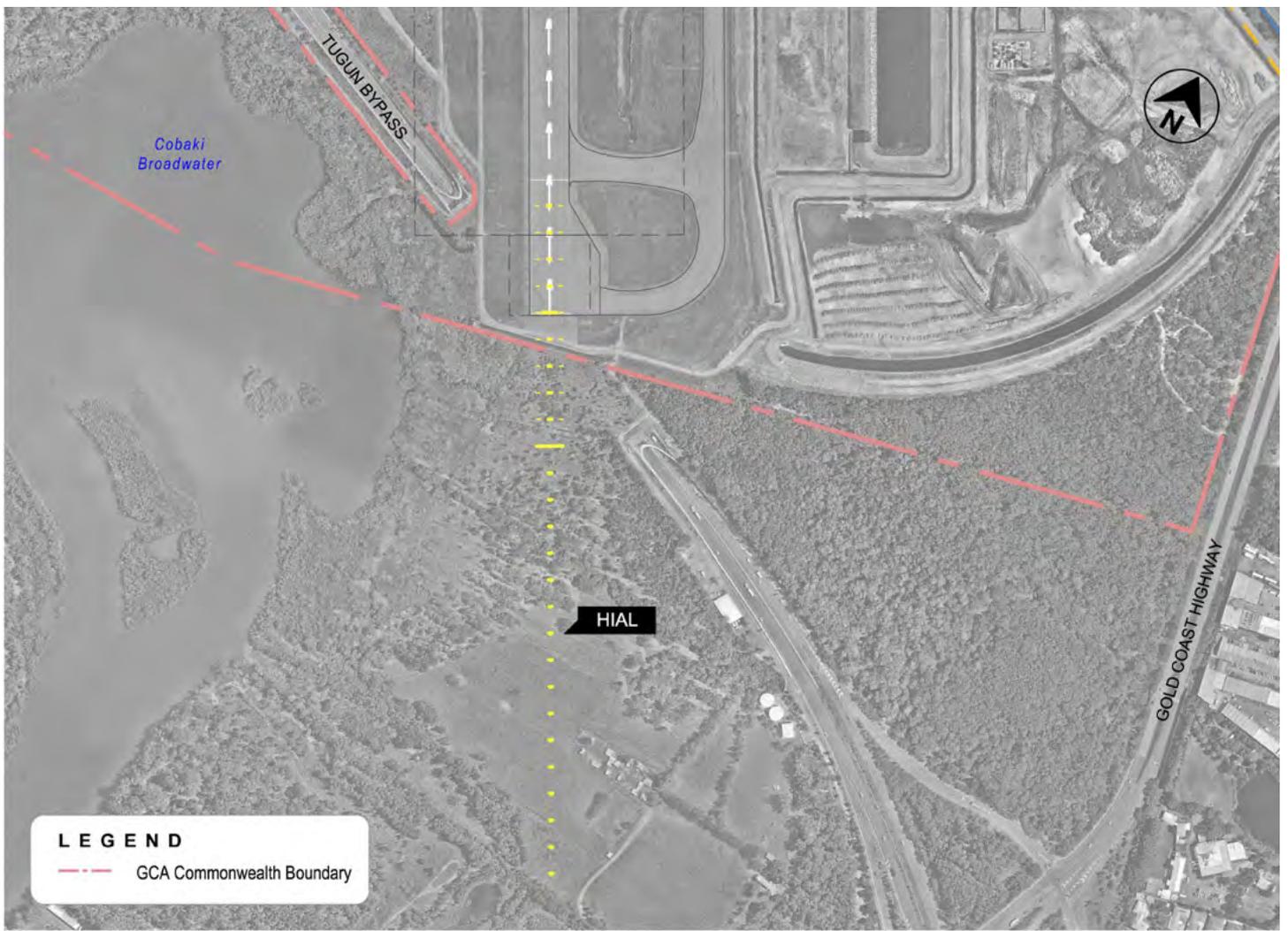


Figure 6.4 High Intensity Approach Lighting (HIAL)

The future demand for aircraft maintenance facilities cannot be made based on air traffic projections.

While it is planned to retain the current General Aviation maintenance facilities, additional sites can be made available as required. General Aviation facilities may become available to new operators if existing operators migrate to smaller General Aviation airports in the region.

6.5.5 Airport Maintenance

An airport maintenance facility is located in the General Aviation Precinct between Oceania Aviation and Complete Avionics. To maintain the Airport to the required high standards, the facility provides a depot from which maintenance activities are undertaken. The facility also accommodates servicing aerodrome vehicles and mobile and fixed equipment and is used to store materials and equipment.

The facility is anticipated to be relocated in the twenty-year horizon of the Master Plan. Planning for growth of the facility will be assessed based on demand.

6.5.6 Navigational Aids

Airservices Australia provides air traffic control, aviation rescue firefighting and navigational services to Gold Coast Airport. To deliver these services Airservices Australia have the following facilities:

- » Air traffic control tower, maintenance and office complex
- » Aviation rescue firefighting station and training ground (on the western side of the airfield)
- » Navigational aids: VOR/DME and NDB.

In January 2016 the Commonwealth Government gave regulatory approval to install an ILS on Runway 14 at Gold Coast Airport. An ILS will supplement RNP, the existing satellite-based landing system and non-precision approach procedures. An ILS will provide the additional benefit allowing aircraft to land in all but the most severe weather.

Within the first five years of the Master Plan, Gold Coast Airport proposes installing a high-intensity approach lighting system at the end of Runway 32 to enable safer aircraft landings in adverse weather, such as fog and heavy rain. As depicted in Figure 6.4, the system will be on the New South Wales state land leased by Gold Coast Airport. The system construction may require approvals under state

laws. Gold Coast Airport will work collaboratively with the Tweed Shire Council and Airservices Australia to locate the system at the end of Runway 32. Gold Coast Airport will also work with the City of Gold Coast Council and Airservices Australia to investigate the possibility of locating a high-intensity approach lighting system at the end of Runway 14.

GCAPL will continue to work collaboratively with Airservices on the implementation of the ILS as well as the introduction of complementary approach systems and new technology such as Ground Based Augmentation System (GBAS) capable of supporting lower minima to further improve the reliability of operations at Gold Coast Airport.

6.6 Summary of Future Airport Developments

The developments proposed in Table 6-2 are based on the requirements as forecast at the time of issue of the Master Plan. Changing economic conditions and uncertainties in the aviation and tourism industries makes it difficult to plan the timing of infrastructure projects accurately. Although the table identifies future strategic proposals, this does not constitute a commitment by GCAPL to the delivery of any specific project.

Table 6-2 Future Airport Developments

Type of Development	Description	Trigger
Airport Development within first five years (2017–2022) of this Master Plan		
Stage 1 terminal and apron redevelopment	<ul style="list-style-type: none"> » Extend the existing southern end of Terminal 1 accommodating aerobridges » Refurbishment of the existing terminal building » Five additional aircraft parking stands up to Code E aircraft. 	Project LIFT
Taxiway extension between taxiway A and D	Extension to existing taxiways to provide a full-length parallel taxiway to Runway 14/32.	Subject to airside capacity requirements
General Aviation taxiway link	New taxiway link at the north end of the General Aviation apron to Runway 14/32.	Subject to airside capacity requirements
General Aviation aircraft parking and Helicopter final approach and take-off area	Re-alignment of the existing Code C taxiway and new apron for aircraft parking	Subject to airside capacity requirements
Multiple aircraft ramp stand	Expansion of existing apron areas at northern end of Terminal 1 to provide capacity for freight or overnight aircraft.	Subject to airside capacity requirements
Freight facility and combined aviation support	Conversion of existing buildings to provide multiple use facility responding to market requirements.	Subject to airside capacity requirements
Runway lighting	Installation of approach lighting at the end of Runway 32	Subject to airport safety requirements
Relocation of the Runway 32 Landing Threshold	Relocation of the Runway 32 Landing Threshold by approximately 300 metres	Subject to airport safety requirements



7.0

Airspace Protection



It is essential that planning take full account of air safety and efficiency of operations.

7.1 INTRODUCTION

Obstacles near an airport, whether they are natural or constructed, may seriously limit aviation operations into and out of the Airport. It is essential that off-airport land use planning take full account of obstacle protection implications and avoid planning decisions that may adversely affect air safety or efficiency of operations. While the Airport can control obstacles from on-airport activities, off-airport development involves external agencies and authorities and needs to be managed cooperatively.

Statutory provisions for protection of an airport's airspace are primarily in the local authority planning instruments. For Gold Coast Airport the local authorities are City of Gold Coast and Tweed Shire Council. There may also be some requirements for development in the Airports (Protection of Airspace) Regulations 1996. There are established protocols with the two authorities that inform GCAPL of any development applications that may have airspace implications. In Queensland, this is supplemented by a similar cooperative relationship between GCAPL and the Department of Transport and Main Roads, which also has a regulatory role in airspace protection.

International and Australian standards are used to define airspace reference surfaces, which delineate airspace obstacle protection areas.

7.2 OBSTACLE LIMITATION SURFACE (OLS)

An airport's Obstacle Limitation Surface (OLS) is determined in accordance with Standards and Recommended Practices (Annex 14 – Aerodromes) (ICAO 1990). These standards are published in the CASA Civil Aviation Safety Regulations Manual of Standards Part 139.

The OLS are conceptual surfaces associated with a runway. They identify the lower limits of the aerodrome airspace. Above this limit objects become obstacles to aircraft operations and must be reported to CASA.

The OLS protects aircraft conducting visual flying operations and manoeuvring near an airport. An obstacle is defined as an object that infringes the OLS. This can include buildings or structures. It also includes activities such as an exhaust plume with a vertical gust exceeding 4.3 metres/second at or above the OLS reference surface. Ideally, the OLS



should be kept free of obstacles. Since the surface relates only to visual operations, sometimes there is unavoidable penetration of the OLS by obstacles. In this case, it is necessary that the obstacle is clearly visible to pilots. This may require the obstacle to be marked or provided with obstacle lighting.

The OLS for Gold Coast Airport (Figure 7.1) is the same as depicted in the 2011 Master Plan and is a composite set of surfaces that protects:

- » Existing runway infrastructure
- » The relocation of the Runway 32 threshold (Section 6.2.2)
- » An ultimate runway length of 2,858 metres.

Figure 7.1 is based on three approach surfaces for Runway 32 and two take-off surfaces for Runway 14. The Runway 32 approach and Runway 14 take-off surfaces will initially remain in their current positions.

As detailed in Chapter 6.0, it is proposed to move the Runway 32 threshold to the south by approximately 300 metres. This will require the new approach surface to be protected. The 2047 ANEF (Chapter 5.0) adopted the new threshold location.

The threshold relocation does not affect the location of the Runway 14 take-off surface.

The third approach surface and second take-off surface is based on the Runway 32 threshold/runway end at the end of the ultimate 2,858 metre runway (Beyond the twenty-year planning period of this Master Plan). This reflects the long-standing obstacle protection provision imposed through planning instruments for the surrounding local government areas. It is proposed to continue the protection. Any proposal to relocate the threshold would be beyond the twenty-year planning period for the Master Plan.

7.3 PROCEDURES FOR AIRPORT NAVIGATION SERVICES – AIRCRAFT OPERATIONS (PANS-OPS)

Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) sets the rules for designing instrument approach and departure procedures. Such procedures are used to allow aircraft to land and take-off under instrument meteorological conditions or instrument flight rules.

The Procedures for Air Navigation Services, Aircraft Operations (8168-OPS/611) (Volumes 1 and 2) outlines the principles for airspace protection and procedure design that ICAO signatory states must adhere to. The regulatory material surrounding PANS-OPS may vary from country to country.

A PANS-OPS surface is a surface determined in accordance with the procedures in 8168-OPS/611, published by the ICAO on 11 November 1993.

Similar to an OLS, the PANS-OPS surfaces are imaginary surfaces in space that guarantee the aircraft a certain minimum obstacle clearance. These surfaces may be a tool for local governments in assessing building development. Where buildings may be permitted to penetrate the OLS, in some circumstances they cannot be permitted to penetrate any PANS-OPS surface. These surfaces guarantee pilots operating under instrument meteorological conditions an obstacle free descent path for a given approach.

During periods of poor weather, pilots rely solely on flight deck instruments and documented procedures for the safe navigation of their aircraft. Procedures of this nature are referred to as Instrument Approach Procedures. The procedures are developed by an instrument approach designer to internationally agreed criteria known as PANS-OPS. The PANS-OPS criteria defines a series of surfaces, similar to the OLS surfaces, but as a function of the obstacle environment underlying them. The actual dimensions and magnitude of protection afforded to an aircraft varies depending on its phase of flight. All surfaces are positioned at an altitude above the underlying obstacles. Since the PANS-OPS surface definition is a function of underlying obstacles, no penetration is permitted. Diligent monitoring of the environment is required to maintain appropriate safety levels for aircraft conducting instrument approaches.

Figure 7.2 and Figure 7.3 illustrate the PANS-OPS surfaces associated with the published instrument flight procedures at Gold Coast Airport. They also show indicative maximum obstacle heights above Australian height datum or mean sea level. Figure 7.4 illustrates the future PANS-OPS surfaces based on the potential and planned changes to aerodrome facilities at Gold Coast Airport. This includes an ultimate runway length of 2,858 metres and RNP and ILS approach procedures.

As worldwide air traffic levels increase and aerodrome operators are pressured to prescribe only the airspace essential for safe and efficient operations, the international aviation community continually refine and amend the criteria for developing instrument procedures. New technologies have enabled highly accurate navigation systems to be developed, including space-based global positioning systems. As testing and confidence increases in these systems, the PANS-OPS criteria has been refined. The Master Plan embraces the recent changes in space-based navigation criteria. This is reflected in a narrowing of the final approach splay associated with instrument approaches. This allows for less airspace to be prescribed than previously required.

Gold Coast Airport is conversant with the regulatory requirements placed on its operations. It maintains a conscientious and diligent process with local authorities and associated planning bodies to protect the airspace of Gold Coast Airport.

7.4 AIRPORTS (PROTECTION OF AIRSPACE) REGULATIONS 1996

The object of the Airports (Protection of Airspace) Regulations 1996 (Airspace Regulations) is to establish a system to protect airspace at and around airports in the interests of the safety, efficiency or regularity of existing or future air transport operations into and out of airports.

The Airspace Regulations provide that the Secretary of DIRD may declare specified airspace around an airport as “prescribed airspace”. In making that declaration, the Secretary must consider:

- » The OLS and PANS-OPS surfaces proposed for the Airport in the approved Master Plan
- » Advice from CASA, Airservices Australia and GCAPL
- » Other matters the Secretary considers relevant.



The Airspace Regulations define prescribed airspace for an airport, which includes the airspace above any part of either an OLS or a PANS-OPS surface. These Airspace Regulations apply to both on-airport and off-airport developments. The Airspace Regulations stipulate that for “controlled activities”, specific approval is required from the DIRD. Controlled activities include constructing or altering a building, or any other activity that causes a structure attached to or in physical contact with the ground to intrude into the prescribed airspace. This includes cranes and other temporary structures. It also includes air turbulence considerations arising from stacks and vents where the efflux velocities exceed 4.3 metres per second at the particular reference surface.

On 23 March 2001, the prescribed airspace of Gold Coast Airport was declared by the Secretary, the area affected being determined according to the OLS. In line with the Master Plan, GCAPL will seek a new declaration of prescribed airspace based on the components of the OLS and PANS-OPS surfaces shown in Figure 7.2 and Figure 7.3.

In order for GCAPL to ensure that the airspace is protected and on completion of the runway extension in 2007, GCAPL obtained an area of License and Development Approval in New South Wales Crown Land adjacent to the Runway 32 end for OLS vegetation management. Figure 3.1 shows the location of the area.

7.5 NAVIGATION AID SITING RESTRICTIONS

Airservices Australia owns and operates the VOR/ DME and NDB at the Airport. The Master Plan makes provision for installation of the ILS serving Runway 14, which would also be owned and operated by Airservices Australia. These radio navigation aids have specific siting restrictions that impose both lateral and vertical constraints to preserve the performance integrity of the equipment. This needs to be taken into account when considering on-airport development and some off-airport development, depending on its nature and location relative to the specific aid. GCAPL works cooperatively with Airservices Australia to ensure its interests are taken into account when assessing development proposals likely to impact on radio navigation aids.

7.6 RESTRICTIONS TO EXTERNAL LIGHTING

Pilots are reliant on the specific patterns of aeronautical ground lights during inclement weather and outside daylight hours. These aeronautical ground lights include runway lights and approach lights. It is important that lighting in the vicinity of airports is not configured or is of a pattern that pilots could either be distracted or mistake such lighting as being ground lighting from the airport.

Under the Civil Aviation Regulations 1988, CASA has the power to control ground lights where they have the potential to cause confusion or distraction to pilots. To assist lighting designers and installation contractors CASA has established guidelines on the location and permitted intensities of ground lights within a six kilometre radius of airports. Figure 7.5 shows the lighting intensity guidelines in relation to Runway 14/32. Runway 17/35 is not lit; therefore, it is not covered by the guidelines.

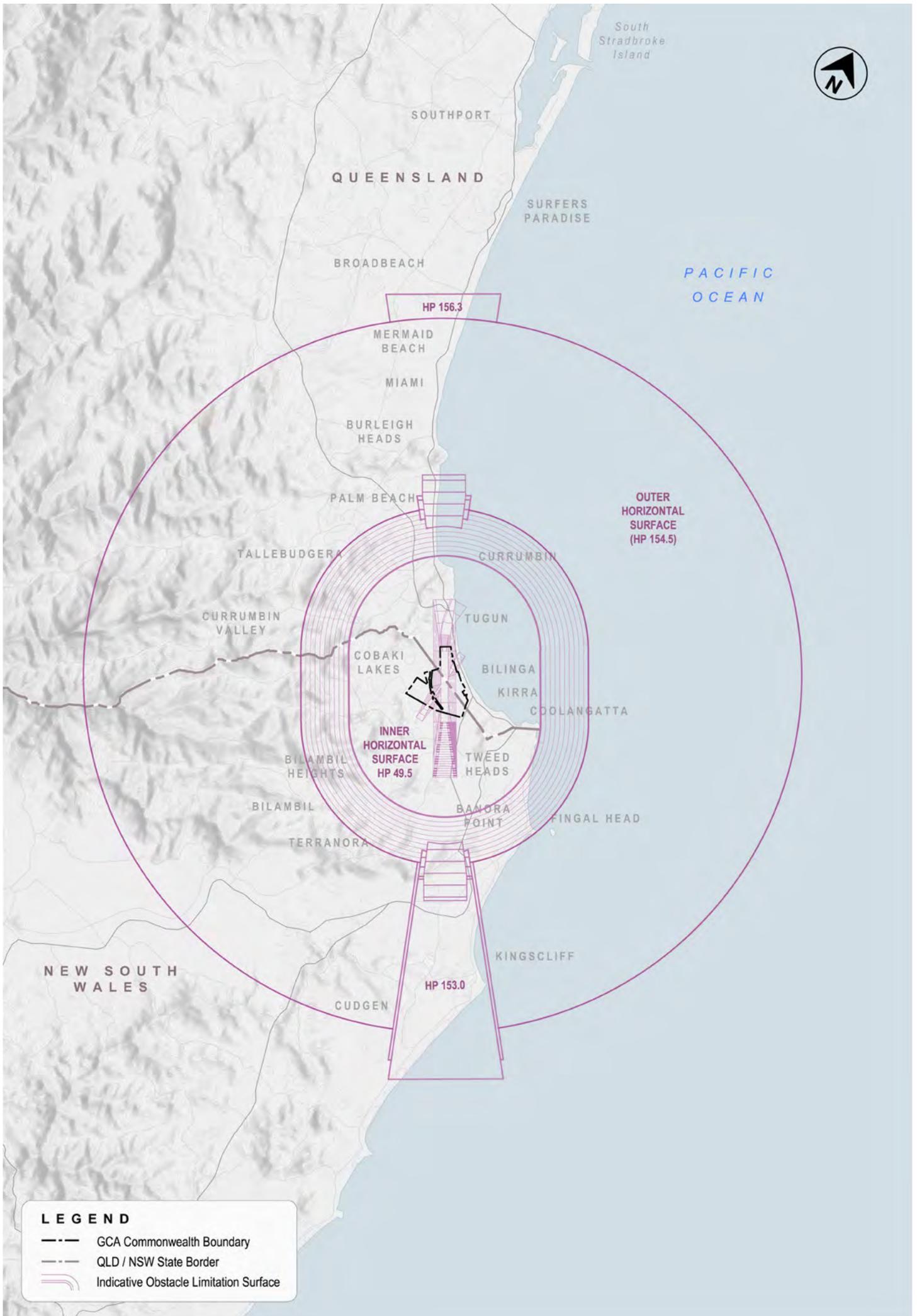


Figure 71. Obstacle Limitation Surface (OLS)

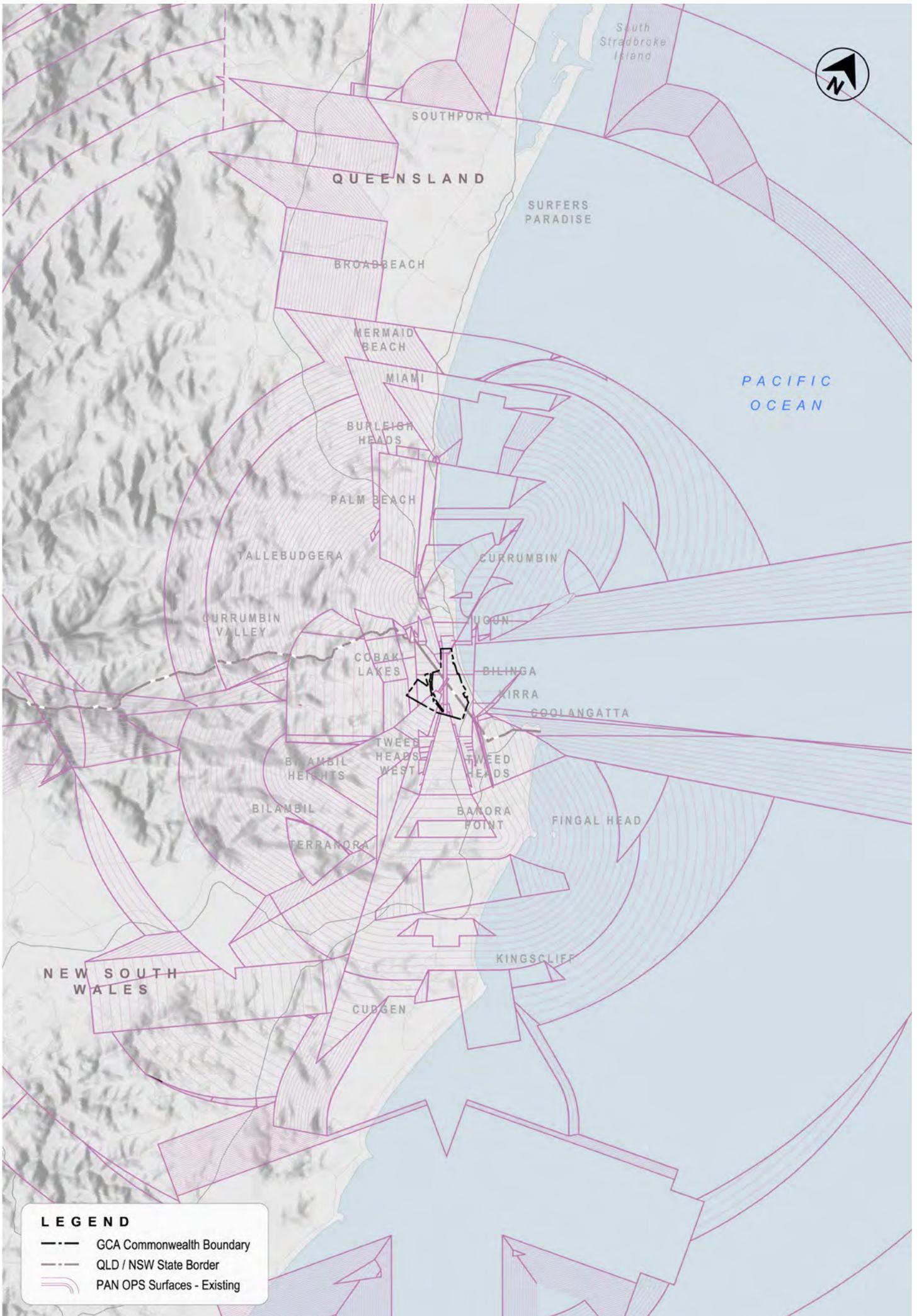


Figure 7.2 Procedures for Air Navigation Services - Aircraft Operations Surface (PANS-OPS) (10 km Radius)

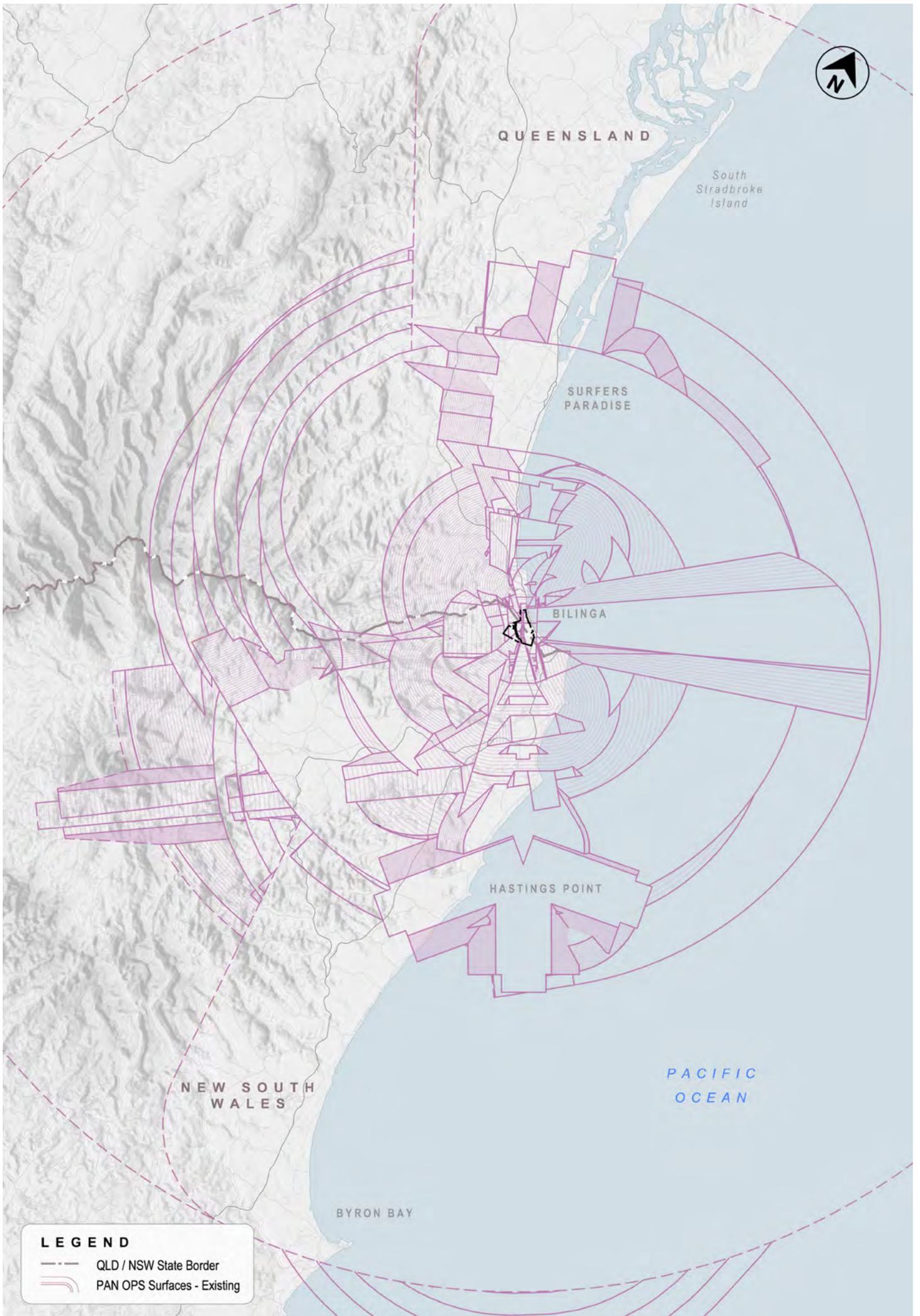


Figure 7.3 Procedures for Air Navigation Services - Aircraft Operations Surface (PANS-OPS) (30km Radius)

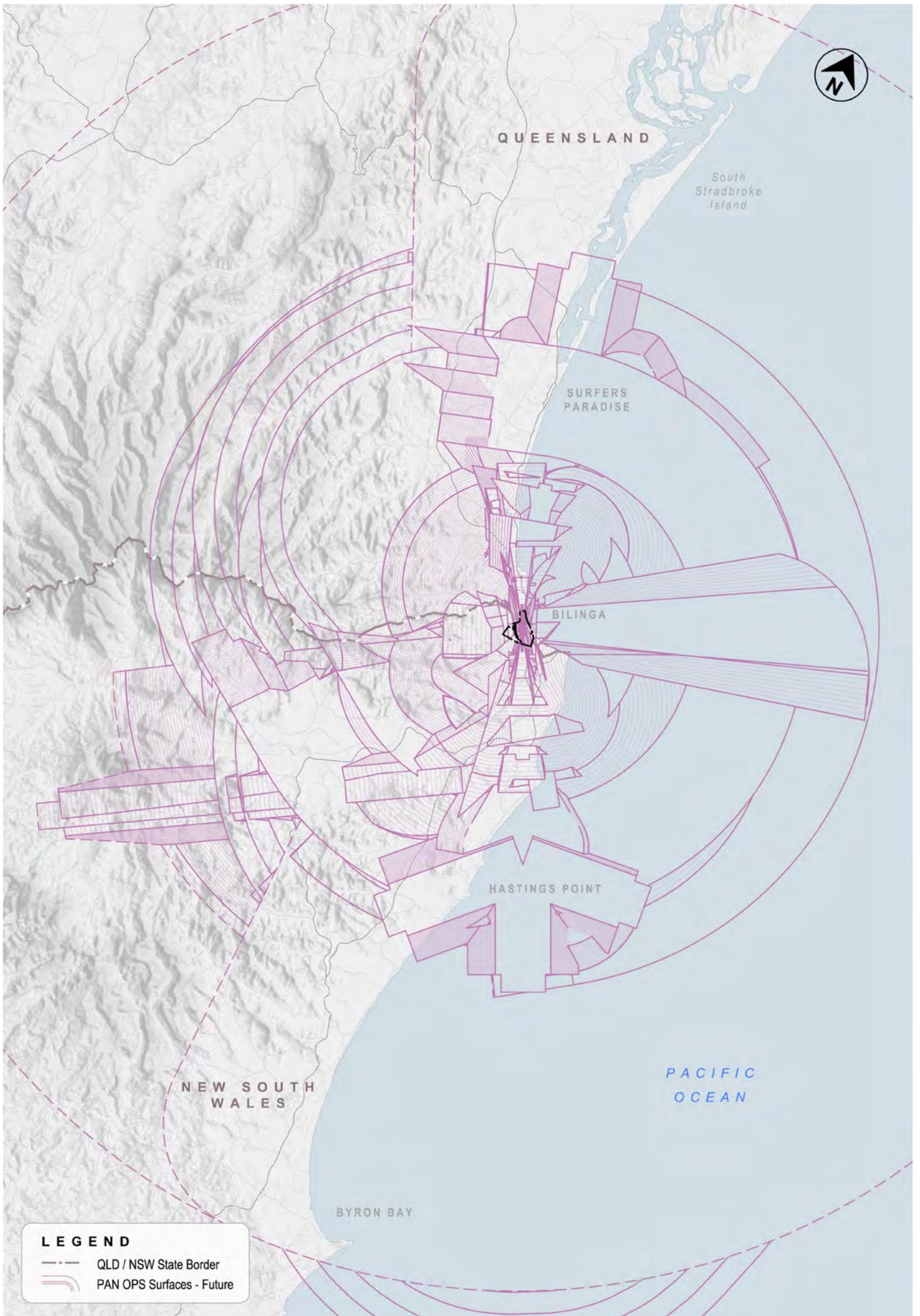


Figure 7.4 Future PANS-OPS Surfaces

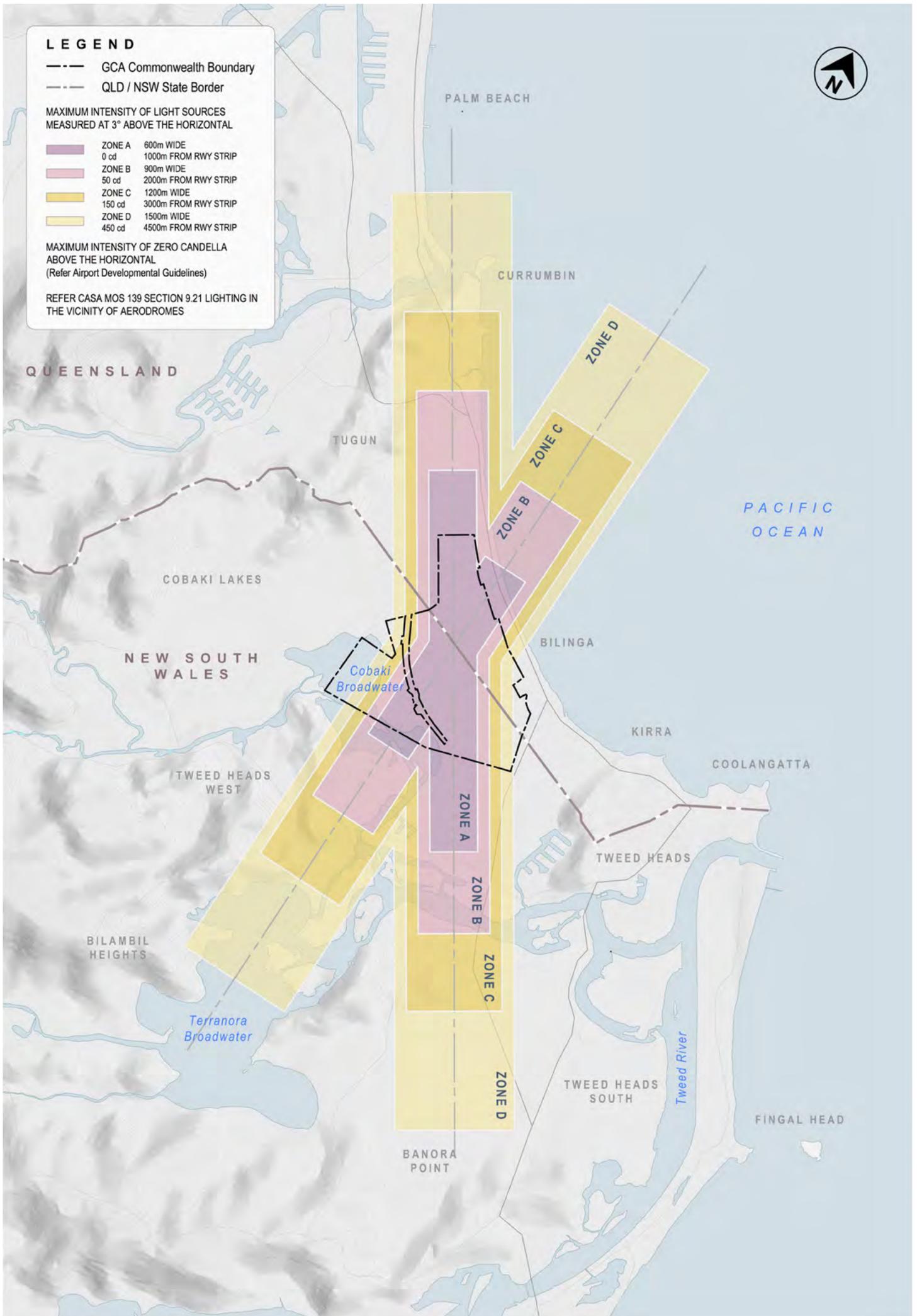


Figure 7.5 Restrictions to External Lighting





8.0

Land Use



The Gold Coast Airport land use plan covers an area of approximately 371 hectares and is divided into five precincts.

8.1 INTRODUCTION

This chapter describes Gold Coast Airport's overall planning intent for the Airport, land use strategies and related objectives and development control principles associated with the precincts. It takes into consideration New South Wales and Queensland state planning policies and local planning schemes in effect around the Airport and describes consistency of the Master Plan with those instruments. This chapter intends to provide the community and government with appropriate visibility of Gold Coast Airport's vision for the growth of the Airport to 2037.

This approach is consistent with the purposes of a final Master Plan for an airport set out in s. 70(2) of the Act, including:

- a) To establish the strategic direction for efficient and economic development at the airport over the planning period of the plan
- b) To provide for the development of additional uses of the airport site
- c) To indicate to the public the intended uses of the airport site
- d) 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.

Table 8-1 Gold Coast Airport Precincts

Precinct	Area (hectare)	Description
Runway Precinct	162	Runways and the lands required for airside operations, including taxiways, airside roads and navigation aids.
Terminal Precinct	68	Terminal buildings and land required for future terminal expansions, airport-compatible commercial development activities, short-term accommodation, university, roads, car parks, commercial transportation and car rental facilities.
General Aviation Precinct	8	Aircraft hangars and maintenance facilities, ancillary aviation support activities, commercial and light industrial and associated land uses.
Western Enterprise Precinct	39	Largely undeveloped land that is being preserved for future aviation and non-aviation related industrial land use, used for navigation and communications equipment associated with aircraft operations and ancillary airport activities such as the fire training area.
Cobaki Environment Precinct	94	Areas of remnant natural vegetation, designated areas of cultural significance, a former sand dredging operation and a large section of the Cobaki Broadwater.

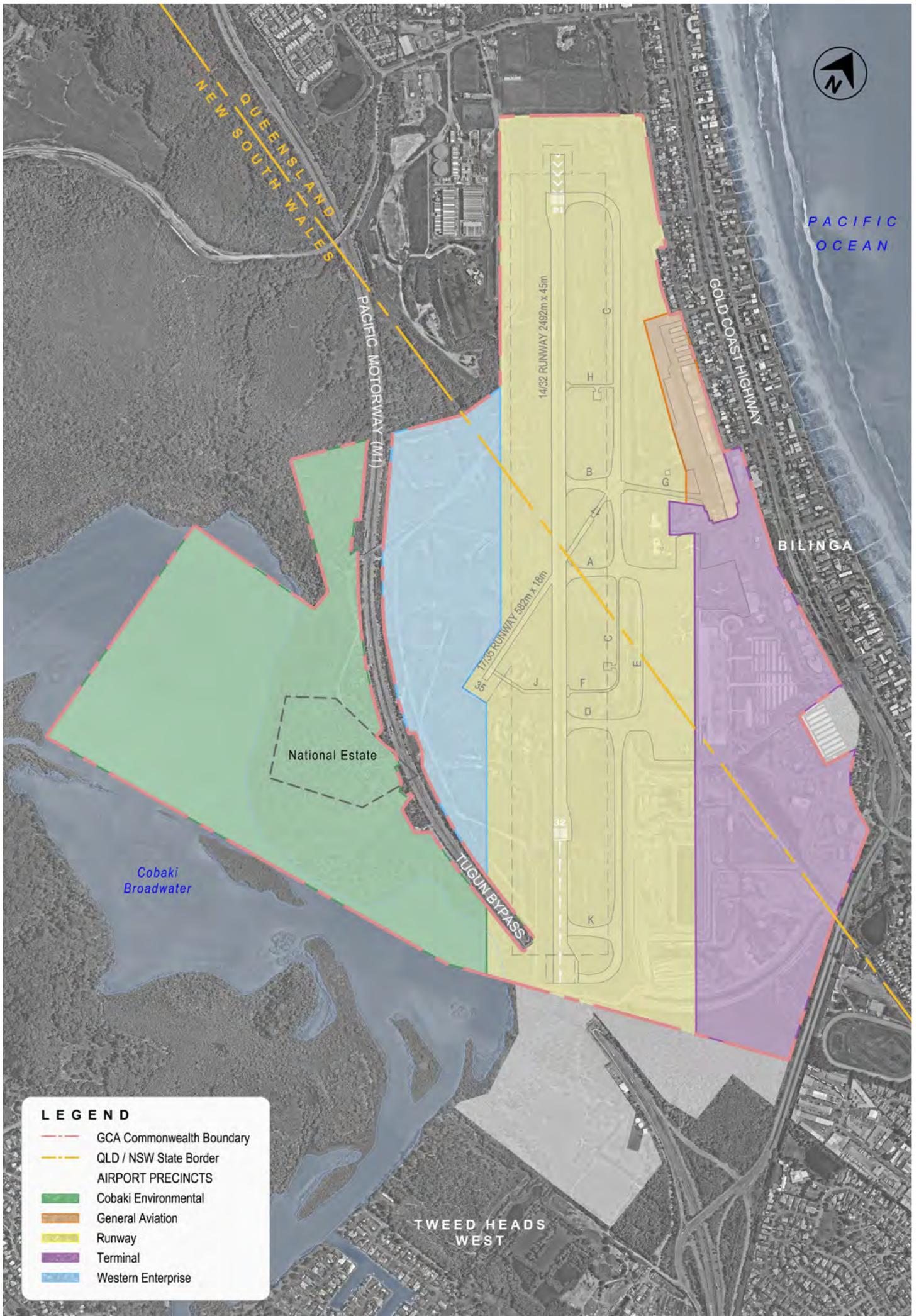


Figure 8.1 2017 Airport Land Use Plan

The Gold Coast Airport land use plan covers an area of approximately 371 hectares and is divided into five precincts according to the predominant existing and intended purposes. The Master Plan identifies the nature of development envisaged for each precinct. Where possible it references terminology consistent with the local authority planning schemes, or with commonly understood generic meanings. The precincts and their respective primary purposes are identified in Table 8-1 and are illustrated in Figure 8.1.

8.2 PLANNING INTENT

Gold Coast Airport caters for the air transport needs of south east Queensland and northern New South Wales. This role is expected to continue long term. There are obvious economic and social benefits for this attractive, fast-growing region in having a major airport located close to major centres of population and servicing domestic and international destinations and the very important tourism industry.

Development in areas around the Airport is affected by, and can affect, the Airport's operations. The Master Plan intends to protect the Airport's existing and future operational requirements from external encroachments or restrictions. It seeks to promote development and land use that is appropriate and compatible to the Airport's operations.

Developing commercial opportunities that need or benefit from location on airport land is important for the long-term viability of the Airport. This includes its ability to take advantage of new market opportunities and to function as an attractive tourist and business gateway to south east Queensland and northern New South Wales.

8.2.1 A Strategic Approach to Future Growth

The success of the Master Plan will be defined by how well it enables the Airport to meet current aircraft and passenger operations, while maintaining flexibility to adapt to changing trends, emerging markets and arising opportunities.

This Master Plan provides a framework for future development of the Airport. It ensures, that through the development objectives, each precinct has the flexibility to manage, balance and respond to future needs of the Airport and emerging market trends. This approach to flexible development has been an ongoing feature of previous Gold Coast Airport Master Plans.

Gold Coast Airport is in a dynamic market. To be a strong economic hub for the region it needs to retain the ability to be innovative regarding the land use mix within the Airport boundaries. Such uses must ensure compatibility with the core function of the Airport.

The ability to be market responsive and be able to welcome new commercial partners or users to the Airport is important to Gold Coast Airport. This is to maximise the economic contribution that the Airport can make by creating opportunities for allied uses to co-locate on airport land. The Airport will form a major regional commercial and transport hub serving south east Queensland and northern New South Wales.

The discretionary uses in each precinct do not provide an exclusive list of the activities that may be permitted for that precinct. Uses that are not specified may be accepted, subject to compliance with the development objectives in a particular precinct and within the constraints of the Act.

8.2.2 Interim Uses

The Airport will be progressively developed over time until the ultimate development is reached as depicted in the Twenty-Year Airport Development Plan (Figure 6.2).

In the interim, the Airport is seeking flexibility in the delivery of the overall development. This will allow additional airport-compatible uses to be considered, if they are seen to be desirable or viable due to emerging market demand and arising opportunities. This includes, in particular, commercial uses that support the regional economic contribution of the Airport. This may include interim uses that may be on land designated for other uses in the long term. As an example, in the interim commercial uses may be carried out on land that may be required for aviation uses in the long term. This Master Plan allows for interim uses in any of the Airport precincts including any undeveloped areas.

Interim uses will be short to medium-term in nature and could include but not limited to discretionary uses listed within Table 8-3, Table 8-4, Table 8-5, and Table 8-6. Where applicable Interim uses will have leases with appropriate break clauses.

As an example, interim uses could include temporarily locating ground transport infrastructure such as car and bus parking, car wash and car rental storage within an area that will ultimately be used for aviation or other purposes.



8.3 COMMONWEALTH PLANNING POLICY

As a Commonwealth leased airport, Gold Coast Airport is regulated under the Airports Act. The Federal Government retains sole responsibility for control over land use planning and development on Commonwealth airport leased land.

Land use, planning and building controls on Commonwealth airport leased land are regulated under Part 5 of the Act and are summarised as:

- » For each airport, there is to be an airport Master Plan
- » Major development plans will be required for major airport developments
- » Building activities on airport sites will require approval
- » Buildings and structures on airport sites must be certified as complying with AEPR.

Although state and local government land use planning systems do not apply to Commonwealth airport leased land, the Act requires that the Master Plan describe consistency with local planning regimes. It is expected that airports should, to the greatest extent possible, not be incompatible with local planning regimes.

8.3.1 Major Development Plans

An MDP is required to be prepared, as specified under s. 89 of the Act, for major airport developments. These developments are defined in the Act and include:

- » Construction of a new runway or a runway extension
- » Some other major aviation construction works (including major terminal extensions)
- » Development with potential for significant environmental impact or effects on the local or regional community
- » Development that affects an area identified as environmentally significant in the environment strategy
- » Any sensitive developments.

An MDP must be considered by the Minister following public comment and consultation as prescribed under the Act. All developments are subject to formal building approval in accordance with the Airports (Building Control) Regulations 1996, taking into account the AEPR.

8.3.2 Building Activity Approvals

Most building activities on Gold Coast Airport Commonwealth leased land require building approval. Building approvals are obtained from the Airport Building Controller (ABC) and Airport

Environment Officer (AEO), who are appointed by DIRD and administer onsite compliance with Parts 5 and 6 of the Act and associated regulations. The ABC functions as the building certifier to ensure compliance with the Building Code of Australia and other relevant legislation and standards. The AEO has several specific statutory functions under the Act and AEPR and assist with administering the AEPR.

GCAPL consent is required for proponents lodging a building application. GCAPL assesses building applications for consistency with the Master Plan and AEPR. Consent for the lodgement may be granted with or without conditions, or consent may be refused. Once GCAPL consent is received for an application, Airports (Building Control) Regulations 1996 requires building approval to be obtained from the ABC. In considering a building application the ABC refers the application to the AEO for assessment of environmental impacts. AEO assists with administering the AEPR. Conditions requested by the AEO can be incorporated into the building consent.

8.3.3 Sensitive Developments

The term “sensitive development” is defined in s. 71A of the Act as development or redevelopment that increases capacity of:

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

“Sensitive development” is prohibited except in exceptional circumstances, which have to be demonstrated as part of the MDP process for any such development. The Act further provides in s. 81[10] that the Minister’s approval of a draft Master Plan that contains a “sensitive development” does not stop the Minister from subsequently refusing to approve an MDP for that development.

The SCU campus at the Airport is now considered a “sensitive development”, although the Act’s restriction on such uses had not been introduced at the time of its initial development.

8.3.4 Pre-Existing Interest

In preparing this Master Plan, GCAPL has considered all interests in the land such as leases, sub-leases, licenses and easements that existed when GCAPL became the Airport-lessee company in 1998. These pre-existing interests are listed in Table 8-2.

Table 8-2 Pre-existing Airport Interests

Pre-Existing Interest	Location, Type or Purpose	Status
Lease No. 2247659	Airservices Australia	Current
Lease No. 702577849	Terminal Precinct	Expired
Lease No. 702839463	General Aviation Precinct	Expired
Lease No. 702784976	General Aviation Precinct	Current
Lease No. 702500558	Airservices Australia	Current
Lease No. 702482286	Airservices Australia airport control tower and fire station	Current
Lease No. 602364682	General Aviation Precinct	Expired
Lease No. 701904902	Airservices Australia	Current
Easement No. 601285565	Right of Way	N/A
Easement No. 601999459	Sewerage – Terminal Precinct	N/A

8.3.5 National Airports Safeguarding Framework

This Master Plan has been informed by the Framework as developed by NASAG and endorsed by Transport and Infrastructure Council.

The Framework was developed to enhance the current and future safety, viability and growth of aviation operations at Australian airports. It supports and enables best practice to be implemented in relation to land use assessment and decision making near airports.

The Framework guidelines provide comprehensive information and recommendations relating to six airport safeguarding matters. These guidelines are:

- » Guideline A: Measures for Managing Impacts of Aircraft Noise
- » Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports
- » Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports
- » Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation
- » Guideline E: Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports
- » Guideline F: Managing the Risk of Intrusions into the Protected Airspace of Airports.

These guidelines are designed to assist land use planners and airport operators in their planning and development processes. As an example, Guideline B is designed to reduce the risk of building generated windshear and turbulence at airports near runways.

The Queensland Government contributed to developing the Framework through NASAG. In Queensland, the Framework is implemented through the SPP and local planning schemes. The City Plan incorporates relevant Framework requirements as part of its suite of development outcomes.

The New South Wales Government contributed to developing the Framework through NASAG. The New South Wales Government and Tweed Shire Council are also committed to the continued protection of the airport from incompatible development.

8.3.6 Consistency with Surrounding Planning Legislation

Under s. 71 of the Act, the Master Plan is required to describe the consistency with state and local government planning regimes in force where the Airport is located.

The property occupied by Gold Coast Airport, uniquely among Australia's major airports, is partly within two local authority areas and two state jurisdictions, being Tweed Shire in New South Wales and City of Gold Coast in Queensland. The Airport's airspace is also within those two cross-border council areas. The need for airport planning to be undertaken in two widely differing legislative frameworks for land use, utilities and the like, involves complexities not present in a single jurisdiction.

This Master Plan does not vary the level of compatibility of airport land uses with adjacent planning schemes or the interface with surrounding areas from the 2011 Master Plan. Likewise, it is understood there are no likely changes to zoning designations outside the Airport that would alter its relationship with those areas. Land use planning over decades has recognised and been adapted to the Airport's presence.

Section 8.3.7 and 8.3.8 outlines how this Master Plan is consistent with the relevant Queensland and New South Wales state planning instruments and planning policies and local government planning schemes.

8.3.7 State Planning Controls

Queensland

The state significance of the Gold Coast Airport is acknowledged by the Queensland Government through the SPP and the South East Queensland Regional Plan 2009–2031.

State Planning Policy

Gold Coast Airport is classified as a Strategic Airport under the SPP, and is protected by, and subject to, the SPP, in terms of local authority planning.

The SPP sets out the state's interest in strategic airports and aviation facilities considered essential for the state's transport infrastructure and which play a key role in facilitating economic growth in Queensland.

The SPP provides direction for local governments preparing planning schemes to appropriately identify strategic airports and to facilitate development surrounding these airports. It includes standard code provisions with which local authority planning schemes are required to be consistent and comprehensive guidance material to assist local government.

The SPP applies to off-airport developments that could:

- » Encroach into the operational airspace of a strategic airport
- » Encroach into the building restricted area of an aviation facility
- » Increase the number of people that could work or live in areas affected by aircraft noise
- » Increase the number of people or lead to dangerous materials being present in the public safety area associated with the runways
- » Involve other potential hazards to aircraft operating in the Airport's airspace.

As required, the City Plan reflects the SPP by inclusion of a comprehensive airport code with the following overlays:

- » ANEF contours
- » Bird and bat strike zone
- » Light intensity
- » OLS
- » PANS-OPS
- » Public safety areas.

South East Queensland Regional Plan 2009–2031

The South East Queensland Regional Plan 2009–2031 recognises that the Airport provides economic and employment diversification on the Gold Coast and facilitates the growth of tourism, manufacturing, logistics, and freight distribution.

The South East Queensland Regional Plan 2009–2031 supports the Airport in terms of economic and employment growth and protecting the Airport from incompatible development.

The Airport is recognised as a key element of the region's transport system, servicing the regional population, business and industry.

The Queensland Government is currently underway in the preparation of a new regional plan, Shaping SEQ: Draft South East Queensland Regional Plan. Public consultation on the ShapingSEQ document was undertaken in early 2017.

The draft regional plan continues to recognise the significance of Gold Coast Airport both for the Gold Coast and Tweed Shire areas but also strategically for the south east Queensland region.

It acknowledges the role of the airport as enabling infrastructure for future prosperity of the Coolangatta - Tugun Economic Cluster. In addition to the contribution of the airport to ensuring that south east Queensland remains a well connected and efficient region.

New South Wales

The New South Wales planning legislative framework consists primarily of the *Environmental Planning and Assessment Act 1979* and the Environmental Planning and Assessment Regulation 2000 and three key instruments that are made under the *Environmental Planning and Assessment Act 1979*:

- » State Environmental Planning Policy (SEPP)
- » Local Environmental Plan (LEP)
- » Local planning directions, issued by the Minister under s. 117 of the *Environmental Planning and Assessment Act 1979*.

A New South Wales Ministerial Section 117 Direction requires an airport's OLS to be given effect in preparing planning schemes and for restrictions to be placed on development in aircraft noise-affected localities. In the regional context, the state government's North Coast Regional Environmental Plan (deemed SEPP) requires inclusion of provisions in LEPs for airport-

related constraints. These include clauses that provide strong protection of OLS and PANS-OPS surfaces, and ensure compliance with the aircraft noise requirements in AS2021:2015.

Far North Coast Regional Strategy

The New South Wales Government's Far North Coast Regional Strategy, which came into effect in 2006, applies to six local government areas: Ballina, Byron, Kyogle, Lismore, Richmond Valley and Tweed. The strategy's purpose is to manage the region's expected high growth rate in a sustainable manner, to protect the unique environmental assets, cultural values and natural resources of the region and ensure future planning maintains the character of the region and provides for economic opportunities. However, the strategy is now out of date.

In March 2016, a draft North Coast Regional Plan was released for consultation by the New South Wales Department of Planning and Environment. This plan covers a wider part of the state: from Taree and Port Macquarie in the south to the Queensland border. If adopted, it is expected to be supplemented by more detailed plans for the three sub-regions of the North Coast (included in the Far North Coast Regional Strategy).

The draft regional plan refers to the importance of Gold Coast Airport as an international gateway to the region that will continue to allow business and industry to access international export and tourism markets.

The Airport's locality is identified in the plan as a growth precinct in the Tweed region. Tweed Heads is now being proposed to be designated as a New South Wales regional city.

In relation to airport growth precincts in the region generally, including Gold Coast Airport, the plan suggests that local authorities should activate precincts to accommodate compatible and complementary aviation-related businesses.

The Master Plan permits new retail facilities in the Terminal Precinct. This has been a consistent feature of previous Master Plans and is an existing and established use on site with Airport Central. As an international airport there is a greater expectation regarding the range of services available to customers. The Airports Act places responsibility on GCAPL for setting the strategic direction for efficient and economic development. The role of GCAPL will be to ensure that any future retail offering within the Airport is

complementary to other retail centres in the region.

The draft North Coast Regional Plan also takes into account the proposed future connection of Gold Coast Airport to the Brisbane heavy rail network. It identifies potential for a future rail corridor south of the Gold Coast along the Tweed coastal strip.

8.3.8 Consistency with Local Planning Instruments

Continual and extensive consultation on the content and implementation of planning schemes takes place between GCAPL and the respective local authorities. The consultation is aimed at ensuring that airport-related constraints will be recognised in land use designations and development assessment policies and that on-airport land uses will be compatible with surrounding activities, utilities systems and transport infrastructure. The statutory planning instruments of both local authorities identify and control actions that could adversely affect safety or operational efficiency in the Airport's airspace. Protocols with both local authorities facilitate bringing potential obstacles or hazards to GCAPL's notice at an early stage of the application process.

City of Gold Coast

The north eastern section of the Airport lease area is in the City of Gold Coast (Queensland).

Regulation of planning and land use in the City of Gold Coast is under the City Plan, which came into effect in February 2016. The Airport is zoned "Special Purpose" under the City Plan, which relates to activities not regulated by the City Plan (in this case, regulated by the Act), or otherwise not subject to planning and development control under the local planning scheme.

The City Plan identifies the Airport as providing key transport infrastructure that will contribute to developing Gold Coast as a world-class city. In addition, the City Plan envisages growth in airport support services and tourist accommodation near the Airport to further advance economic productivity and prosperity.

In the strategic framework of the City Plan, the Airport is identified as a "specialist centre" and a major economic generator for the communities in south east Queensland and northern New South Wales. The City Plan also identifies the SCU as forming part of the city's "Research Triangle".

The City Plan includes a Constraints Code titled

“Airport Environs Overlay Code”, which incorporates detailed controls relating to development in the locality of the Airport. This imposes an end-of-runway public safety area, height limits pursuant to the Airport’s OLS and PANS-OPS surfaces and restrictions owing to lighting zone controls. The code regulates types of development that should or should not take place in surrounding areas due to potential for attraction of birds and bats or because of potentially hazardous emissions.

It imposes requirements for acoustic insulation of buildings affected by aircraft noise, in accordance with AS2021:2015, and in that regard is consistent with the SPP.

Tweed Shire

Regulation of land use and development in the Tweed Shire (New South Wales) is achieved via the Tweed LEP. This reflects the state government planning objectives, as set out in the *Environmental Planning and Assessment Act 1979* and associated statutory instruments, and is consistent with the state-wide standard instrument LEP.

The key aim of the Tweed LEP is to “encourage a sustainable local economy, small business, employment, agriculture, affordable housing, recreational, arts, social, cultural, tourism and sustainable industry opportunities appropriate to Tweed”.

The Airport is zoned “Special Purpose – SP1 Special Activities”. The key objective of the SP1 zone is to “provide for special land uses that are not provided for in other zones”. Although the Airport land use is not regulated by Tweed LEP, the zoning does specifically designate the Airport as the intended use.

The important role of the Airport and the need for its protection have long been features of strategic planning and policy statements of Tweed Shire Council. This is reflected in clauses from Tweed LEP that:

- » Preclude a local authority from approving an application where an OLS or PANS-OPS surface would be exceeded, unless consultation has taken place with the relevant Federal body and concurrence has been given
- » Require that consideration be given by the consent authority as to whether an increased population would be involved and how any

proposed development may be affected by the Airport’s ANEF contours. The council must be satisfied that specified noise-sensitive development will meet the respective AS2021:2015 aircraft noise reduction standards.

Next to the Airport to the south and west significant areas are classified as “Deferred Matter,” in which there is no specified zoning. For these areas the previous zones in the superseded LEP 2000 will continue to apply for most of the affected land. This is due to deferral by the state government of formerly proposed Environmental Protection Zones. In the case of the Crown land leased by GCAPL immediately south of the Airport, it is so as to not preclude development of aeronautical facilities.

8.4 AIRPORT PRECINCTS

The Master Plan identifies five airport precincts: Runway Precinct, Terminal Precinct, General Aviation Precinct, Western Enterprise Precinct and Cobaki Environment Precinct (Figure 8.1). For each precinct there are development objectives, discretionary uses and development standards.

Given the position of Gold Coast Airport, being partly within not only two local authority areas, but also two state jurisdictions, the discretionary uses largely adopt the definitions from the Tweed LEP (for the Western Enterprise Precinct and Cobaki Environment Precinct) and the SPP (for the Runway Precinct, General Aviation Precinct and Terminal Precinct).

The discretionary uses in each precinct do not provide an exclusive list of the activities that may be permitted for that precinct. Uses which are not specified may be accepted subject to compliance with the development objectives in a particular precinct and within the constraints of the Act.

The term “discretionary use” is used to describe those uses that can occur on Gold Coast Airport land, but only with the permission of GCAPL. In addition to the discretionary uses, any existing use on the Airport is permissible.

8.4.1 Runway Precinct

The Runway Precinct embraces all infrastructure required for the current and future safe and efficient aircraft landing, take off and taxiing operations, navigation aids and other aviation-related facilities including aviation fuel supply. The Runway Precinct is approximately 162 hectares in area and is partly in the City of Gold Coast and partly in Tweed Shire. The state border between Queensland and New South Wales diagonally bisects the runway at approximately its midpoint. The precinct provides sufficient land to accommodate all required aircraft movement infrastructure for the long term operation of the Airport.

The Runway Precinct is largely cleared with small pockets of Environmentally Significant Areas located along its western and south eastern boundaries. In the eastern section of the precinct there is a drainage network approximately 2.9 kilometres long, consisting of grass and concrete-lined channels with pipe and box culverts under pavement crossings.

Key Development Objectives

The current and intended key development objectives for the Runway Precinct are:

- » Contribute to the commercial viability of the Airport as an enterprise
- » Provide for safe and efficient aircraft landing, take-off and taxiing operations
- » Accommodate aircraft navigation aids, radar and communications equipment, air traffic control, aviation rescue and firefighting, and meteorological services
- » Accommodate other facilities to ensure safe operation of aircraft

- » Provide facilities for assembly and dispersal of passengers and goods on to or from aircraft
- » Enable future development of the heavy rail line between Varsity and Coolangatta, for which a corridor has been identified
- » Enable future expansion of airport operations including taxiways and associated aviation facilities.

Land Use and Development Control

Land uses that currently or might in the future occur in the Runway Precinct are listed in Table 8-3. Where possible, land uses are as defined in the SPP.

Development will comply with relevant national and international aviation standards and in particular with the International Standards and Recommended Practices for Aerodromes Annex 1 (ICAO 1987), *Air Navigation Act 1920*, *Civil Aviation Act 1988* and associated regulations.

As shown in this Master Plan, the terminal, apron and taxiways are to be extended in a southerly direction in this precinct, corresponding with the approved extension of the adjacent passenger terminal.

Runway strips and aircraft movement areas will be constructed to maximise capacity of existing infrastructure. Facilities will be developed to ensure safe and efficient aircraft operations and configured to minimise aircraft noise, fuel use and other environmental impacts.

Development will be undertaken in accordance with the Airport's OLS, PANS-OPS surfaces and environmental requirements in this Master Plan. Access to the Runway Precinct will be strictly controlled, with unregulated access not allowed from unsecured, adjacent parts of the Airport or land outside the Airport boundary.

Table 8-3 Runway Precinct Discretionary Airport Uses

Discretionary Uses	
Air services (including the Airport and associated facilities)	Emergency services
Advertising device	Office
Utility installation	

The Terminal Precinct is the aviation gateway to south east Queensland and northern New South Wales regions.

8.4.2 Terminal Precinct

The Terminal Precinct is the aviation gateway to south east Queensland and northern New South Wales regions. The precinct is approximately 68 hectares in area, located in the eastern section of the Airport with frontage to the Gold Coast Highway. It is partly in both the City of Gold Coast and Tweed Shire. The precinct incorporates all of the Airport's landside operations and associated facilities. It is also the location of airport-related commercial and retail activities and the SCU campus.

The precinct is anchored by the terminal building. It is supported by an extensive internal vehicular and pedestrian network with linkages to the existing airport uses, SCU, car parks, commercial offices and retail.

The terminal precinct is dominated by expansive surface car parks. While this is a necessary and important land use in the Terminal Precinct, it is not an efficient use of the available land. Replacing existing surface parking with a multi-storey car park will unlock a significant quantity of land for future re-development. This would also improve the experience of visitors and passengers at the Airport.

The precinct will be capable of accommodating future development, enhancement and expansion of the terminal and associated facilities to ensure long-term safe, efficient and economic handling of aircraft, passengers, freight and related services

and support activities such as car rental operations. Future development will also include airport-related short-term accommodation and commercial and retail facilities arranged to enhance key development interrelationships.

Key Development Objectives

The precinct's key development objectives are to:

- » Accommodate facilities for the safe, efficient and economic handling of aircraft, passengers, freight and related services and support activities
- » Provide sufficient capacity for terminal facilities and related infrastructure development for international and domestic services
- » Cater for the Airport's role as a significant economic hub and key tourist and business gateway to the region
- » Provide for appropriate commercial and retail development
- » Develop in a way that recognises existing infrastructure and operating conditions and is sufficiently flexible to cater for future changes brought about by the dynamic and evolving nature and growth of the Airport's operations
- » Establish a strong range and depth of supporting commercial, food and beverage facilities in the terminal to cater for the needs of travellers, which will contribute to the viability of the Airport as an enterprise
- » Provide a "gateway opportunity" to the region.



- » Provide efficient, diverse and responsive ground transportation facilities and ensure that adequate provision is made for parking of airport users' vehicles
- » Enable appropriate interim uses, prior to land in the precinct being needed for development
- » Develop infrastructure at a height, bulk, scale and form tailored to the precinct's specific location and the site characteristics.

Land Use and Development Control

Principal aviation land uses to be accommodated in the Terminal Precinct include:

- » Terminals and related infrastructure and freight handling facilities
- » Aviation facilities and services
- » Aircraft maintenance buildings including hangars and workshops
- » Future light and heavy rail connections
- » Ground transportation facilities including car parks, rental car storage and bus and taxi operations.

Discretionary land uses in the precinct include non-aviation activities of a commercial or service nature in the Airport's highway frontage or other available sections of the precinct. An indication of non-aviation development sites has been included in the Five-Year Airport Development Plan (Figure 6.1) and Twenty-Year Airport Development Plan (Figure 6.2).

These concepts were developed through a balance of market assessment, design and land use planning, traffic and transport modelling and testing, including consideration of best practice airport design principles. In terms of design, the Terminal Precinct is intended to deliver improved legibility and respond to the locational attributes of the site and facilitate operational efficiencies.

The Terminal Precinct is supported by the adjoining Mallaraba car park. This is owned by GCAPL but not included in the Commonwealth airport lease. It is subject to the statutory provisions of the *Sustainable Planning Act 2009* and the City Plan. Given its location as a major arrival gateway for the Airport, it is anticipated that within this planning period of the Master Plan the Mallaraba car park will be redeveloped as a mixed use precinct consisting of short-term accommodation, retail and commercial offices. Development on this land will be subject to approval by the City of Gold Coast.

Mainly using the land use definitions in the current Queensland Planning Provisions, which is the basis for the equivalent terminology in the Gold Coast City Plan, the land uses which currently occur in the Terminal Precinct and might be considered to be appropriate there in the future, are categorised in Table 8-4.

Table 8-4 Terminal Precinct Discretionary Airport Uses

Discretionary Uses	
Air services (including the Airport and associated facilities)	Food and drink outlet
Advertising device	Function facility
Bar	Health care services
Car wash	Hotel (tavern)
Child care centre	Indoor sport and recreation
Environment facility	Market
Educational establishment (SCU campus)	Office
Emergency services	Parking station
Shop	Service industry (minor retail-related services)
Showroom	Service station
Short-term accommodation	Substation
Telecommunications tower	Tourist attraction
Tourist shop	Utility installation

None of the facilities affect the balance of zones in the surrounding planning schemes or duplicate or unduly compete with facilities in those local authority areas.

The geographical and land use configuration of the surrounding area is such that potential external adverse effects of activities in the Terminal Precinct, including aviation and vehicle noise, are avoided. The northern and western boundaries of the precinct are internal to the Airport, adjoining the Runway Precinct.

The eastern precinct boundary is formed by the Gold Coast Highway and a parallel local road (eight to ten lanes in total). Beyond these roadways, land close to Bilinga Beach (City of Gold Coast Council), is mainly used for residential purposes. There is a height limit of 23 metres under the City Plan.

At the southern extremity of the precinct, the boundary is the Gold Coast Highway (four lanes). Precinct activities are separated from nearby residential premises by major roadways. In the part of the land south of the Airport, which is in City of Gold Coast, there is a residential area with frontage to Coolangatta Road, separated by a substantial distance from the Airport. Buildings up to three-storeys (15 metres) are permitted in this area. Land uses to the south in Tweed Shire, facing the Terminal Precinct beyond the Gold Coast Highway, consist of a greyhound racing track (intended to be redeveloped for other purposes in the future, most likely commercial) and a major industrial estate.

The Act s. 71(2)(gc)(ii) requires an explanation of likely effects of proposed developments in the master plan on planning schemes for commercial and retail development in the area adjacent to the Airport. Within the first five years of this Master Plan the potential developments at the Terminal Precinct could include:

- » A multi-storey car park
- » Airport-related short-term accommodation (hotel)
- » Commercial offices

There is also potential to redevelop the Airport's existing commercial and retail complex fronting the Gold Coast Highway (further detail on these proposed developments see Section 9.5 Five Year Property Plan). These anticipated developments are not of a type, size or scale to compete with or supplant the roles of designated commercial or retail facilities in surrounding areas.

Any development not consistent with achieving the key development objectives will be unacceptable in the Terminal Precinct.

Development Standards

All buildings should be of a high architectural standard and highly functional. They should be designed to allow for future expansion, adoption of new technologies, changes in operations and redevelopment. The design of new buildings should promote the status of Gold Coast Airport as a key

gateway to the region. They should exemplify high standards in climate responsiveness and sub-tropical design and character.

The key development standards, in addition to the Gold Coast Airport Development Guidelines, include:

- » New development should promote good quality pedestrian connectivity throughout the precinct
- » New development should be user-oriented, sensitive and adaptive to needs of airline operators, airport customers and other transport operators
- » Design of buildings in the precinct should take into consideration the height limitation imposed by the OLS
- » Chapter 11.0 is to be used to manage environmental impacts associated with operations and will act as a guide for development of the precinct
- » Development will also take into account AS2021:2015, to ensure that the terminal and other user facilities in the precinct will not be adversely affected by aircraft noise
- » Landscaping will be undertaken in accordance with an overall design theme, emphasising the area's climate, scenic character and relaxed, tourist-oriented lifestyle
- » Plant species with potential to attract birds and bats, which can be a hazard to aircraft operations will be avoided.

8.4.3 General Aviation Precinct

The General Aviation Precinct includes aircraft hangars and maintenance facilities, ancillary aviation support activities, commercial and light industrial and associated land uses. The precinct is approximately eight hectares and is situated entirely in the City of Gold Coast.

The precinct's principal external access route is via Kirribin Street from its signalised intersection with the Gold Coast Highway. Within the Airport property, access is available from the internal road, Eastern Avenue and circulation in the precinct is along Lores Bonney Circuit.

This precinct mainly caters for General Aviation and largely consists of:

- » Corporate flying
- » Light freight operations
- » Aero medical operations
- » Commercial flying
- » Fixed Based Operations
- » Recreational flying
- » Instructional flying.

Fixed Base Operation facilities generally cater for VIP operations and closed charter operations.

Key Development Objectives

The precinct's key development objectives are:

- » Accommodate General Aviation and related service and support activities
- » Maintain and promote General Aviation uses at the Airport
- » Provide for tourist related aviation
- » Provide for flight training schools
- » Provide for Fixed Base Operation facilities
- » Provide for aviation related administrative and commercial facilities
- » Provide facilities for the safe, efficient and economic handling of aircraft, passengers, freight and related services and support facilities
- » Contribute to the commercial viability of the Airport as an enterprise.

Land Use and Development Control

Mainly using the phraseology for definitions in the current Queensland Planning Provisions, the land uses which currently occur in the General Aviation Precinct and might be considered to be appropriate there in the future, are categorised in Table 8-5.

Table 8-5 General Aviation Discretionary Airport Uses

Discretionary Uses	
Air services (including the Airport and associated facilities)	Food and drink outlet
Advertising device	Office
Car wash	Parking station
Emergency services	Service industry (minor retail-related services)
Utility installation	Community services

Being entirely aviation-related, the facilities will not have any effect on the balance of zones in the surrounding planning schemes or duplicate or unduly compete with facilities in those local authority areas.

Activities carried out in the precinct, being entirely aviation related, fall within the land use category of "air services" as defined in the City Plan.

Any development not related to achieving the key development objectives and not consistent with principles adopted for development control will not be acceptable in the General Aviation Precinct.

The extent of the precinct and its development potential are highly constrained, owing to its proximity to aircraft movement areas, which imposes clearance requirements and height limits.

Land in the precinct is almost fully developed however, opportunities will arise from time to time to redevelop or upgrade existing facilities. This will result in expanded, more modern multi-use facilities consistent with demand.



Development Standards

Key development standards include:

- » Buildings should be of low profile, with a generally horizontal orientation and visually attractive design elements, emphasising main entrances and pedestrian connection points to buildings
- » Design of buildings should take into consideration the height limitation imposed by the OLS
- » Development is required to take place in accordance with Chapter 11.0
- » Lighting associated with land uses in the precinct, including street lighting, does not create a hazard to aircraft operations
- » Landscaping and stormwater management must avoid attraction of birds or bats
- » Car parks for staff and users of facilities in the precinct is within the Airport property
- » Strict security fencing and access limitation measures must be incorporated in the precinct to control public access to airside sections of the Airport.

As with other sections of the Airport property, it is important that any adverse impacts on surrounding areas are minimised. The higher activity part of the precinct is separated from the nearest dwellings, in the low density residential area on the eastern side of Adina Avenue, by two road widths (Adina Avenue and Lores Bonney Circuit) and a wide vegetated median. Occupiers of premises in the precinct are required to minimise impacts on surrounding areas, including noise.

8.4.4 Western Enterprise Precinct

The Western Enterprise Precinct is approximately 39 hectares in area and is almost entirely in Tweed Shire, but with a very small segment in the City of Gold Coast. The precinct is at the western extremity of the Airport site, with only the Cobaki Environment Precinct further west, beyond the Pacific Motorway.

Except for navigation and communications equipment associated with aircraft operations, and some ancillary airport activities such as the fire training area, the precinct is essentially undeveloped. It is seen as a supply of available land for future airport development (directly or indirectly airport-related) and possibly for private sector activities with an aviation focus.

Aviation land uses that could potentially be accommodated in the precinct include aircraft maintenance, Fixed Based Operator, air freight terminals and ancillary support activities such as flight catering, avionics and equipment maintenance. There may be scope for non-aviation land uses subject to detailed planning to develop an appropriate range or mix of light or general industry and bulky goods, preferably with an airport focus.

The precinct sits adjacent to the Tugun Bypass (Pacific Motorway), but without access to that road. Vehicular access is not available to the precinct from the external road system other than indirectly through airport operational areas. When future development takes place requiring public access, a road linkage connecting with Boyd Street, Tugun will be necessary.

At present, there is no interchange where Boyd Street crosses the Pacific Motorway, although tentative plans exist for such a connection. The adequacy and suitability of Boyd Street for any development generating significant volumes of traffic and/or industrial traffic will need to be assessed at the time of detailed planning studies for the precinct.

The corridor for the future heavy rail connection from Robina to Coolangatta traverses the western boundary of this precinct, adjacent and parallel to the Tugun Bypass.

Future development in the Western Enterprise Precinct will give due regard to environmental impacts on Environmentally Significant Areas and the adjacent Cobaki Environmental Precinct.

Development Objectives

The key development objectives for the precinct are:

- » Provide building area and apron capacity to meet future aviation demand
- » Provide additional areas for aviation uses such as aircraft maintenance, Fixed Based Operator, air freight terminals, ancillary support activities such as flight catering, avionics and equipment maintenance if required and feasible
- » Provide additional area for General Aviation if required and feasible, as the existing General Aviation Precinct is almost fully developed
- » Possibly allocate parcels to accommodate commercial development that take advantage of the location adjacent to the Airport, but subject to improved access to the major road network
- » Ensure the commercial viability of the Airport as an enterprise
- » Ensure the safety and efficiency of aircraft operations.

Land Use and Development Control

Since the intention is for the precinct to be predominantly used for airport related facilities, the principal land use classification as far as the Tweed LEP is concerned is "airport".

Mainly using the dictionary definitions in the Tweed Local Environmental Plan 2014, the land uses that might be considered to be permitted there in the future would generally be categorised in Table 8-6.

Structure planning for the Western Enterprise Precinct will need to ensure that any proposed development will not interfere with the balance of land use zones in the locality or compete with nearby facilities outside the Airport. Over the years, Tweed Shire Council, in whose area the site is located, has supported expanding industrial areas associated with the Airport. The City of Gold Coast, whose road system will access the site, is supportive of development of private sector airport-related activities in the locality.

Table 8-6

Western Enterprise Precinct Discretionary Airport Uses

Discretionary Uses	
Airport	Industrial retail outlet
Bulky goods premises	Light industry
Car park	Office premises
Depot	Signage
Freight transport facility	Storage premises
General industry	Telecommunications facility
Hardware and building supplies	Transport depot
High technology industry	Truck depot
Highway service centre	Warehouse or distribution centre

Owing to environmental factors, including the impact of the OLS, the scope for other potential sites being developed for industrial purposes near, but outside, the Airport has been materially reduced.

There are particular height and buffer zone constraints on future development in this precinct owing to it being directly adjacent to aircraft movement areas and near airport navigational and communications installations. These installations would need to be removed or relocated in the event of large-scale development of the precinct.

It is intended that land uses directly associated with the Airport or requiring an airport location for efficient operation will be preferred under any future structure planning scenarios.

Allocation of land uses for the precinct will also depend, to an extent, on whether and when direct

access becomes available to the Pacific Motorway from Boyd Street.

From an amenity viewpoint, including noise, the precinct is relatively unconstrained by land uses in adjacent localities and hence appropriate for suitable industrial land uses. The precinct is remote from residential and local community facilities. It is surrounded by major non-residential land uses and infrastructure or vacant land, including the Airport runway, the Pacific Motorway, heavy rail corridor, Tugun desalination plant and Tugun landfill site.

Given the site's high visibility to the adjacent arterial road and future rail corridor, design of buildings should conform to strict architectural standards resulting in an attractive appearance of the Airport from beyond the site.

Development Guidelines

Although it would not be appropriate or realistic to establish precise parameters or standards for development in the precinct in the absence of advanced decision-making about forms of development and the mix of land uses to be accommodated, as a general principle the following should apply:

- » New developments will be designed to a good quality architectural standard to acknowledge views of the site from the adjoining highway and publicly accessible vantage points
- » Buildings or structures should not exceed ten metres in height, except where greater height may be essential owing to the specific requirements of the land use involved, such as aircraft hangars or maintenance facilities
- » Heights of buildings are not to exceed the Airport's OLS
- » Strict security fencing and access control measures must be incorporated in the precinct to control public access to airside sections of the Airport
- » Landscaping throughout the precinct, including for car park areas, should be of a high standard and is required to comply with a precinct-wide landscaping code and overall layout plan
- » Heavily fruiting or flowering species will be avoided to limit attraction of birds and bats.



8.4.5 Cobaki Environment Precinct

The Cobaki Environment Precinct is approximately 94 hectares in area and is situated entirely in Tweed Shire, being the western most section of the Airport property, beyond the Pacific Motorway.

The precinct consists of areas of remnant natural vegetation, designated areas of cultural significance and a former sand dredging operation (GCAPL suspended all Federally-issued sand dredging leases in 2000.) It also includes a large section of the adjacent Cobaki Broadwater, which forms part of the Airport property. GCAPL specified this as an environmental conservation zone in the 2001 Airport Master Plan.

Development Objectives

The precinct's key development objectives are to:

- » Retain an area free from urban development of any type
- » Protect the area's ecology and cultural heritage
- » Provide for airport navigational facilities in the existing cleared, grassed areas.

Land Use and Development Controls

There is no anticipated development expected in the Cobaki Environment Precinct for the period of the Master Plan. The only potential development may be very small-scale development necessary for the ongoing maintenance or management of the precinct and wetlands. This might involve environment monitoring equipment, equipment shed or similar lightweight and portable structures, (Table 8-7).



Table 8-7 Cobaki Precinct Discretionary Airport Uses

Discretionary Uses
Works to protect and enhance the area's significant ecological and cultural values
Establishment of facilities to maintain and promote the environmental and cultural values of the Cobaki Environment Precinct
Siting of airport navigational facilities in the existing cleared, grassed areas.



9.0

Property Strategy



The property strategy delivers improved legibility, responds to the locational attributes of the site, and facilitates essential operational efficiencies.

9.1 INTRODUCTION

Non-aviation property development is an important component of an airport's operations. It assists economic feasibility and enhances the multi-purpose focus of an airport. It supports the role and function of Gold Coast Airport by providing a complementary range of land uses. These uses may directly or indirectly support the intended outcome of the Airport as a regional economic and transport hub.

For Gold Coast Airport, opportunities for commercial development are limited compared with many other airports. There is restricted land area devoted to them and GCAPL has a constrained range of functions considered to be appropriate for an on-airport location. This is to limit the scope for conflict between on-airport commercial activities and other facilities in surrounding localities.

Non-aviation land uses are limited to the Terminal Precinct, which is the gateway to the Airport. Although the activities that occur in this precinct generally support the Airport's aviation activities, several are non-aviation developments.

There will also be possible use of the Western Enterprise Precinct for non-aviation purposes. This is unlikely to take place in the initial five-year period of this Master Plan.

Property development detailed in this chapter is subject to the planning and approvals framework detailed in Chapter 8.0.

9.2 EXISTING DEVELOPMENT

Commercial development exists in the Terminal and the General Aviation Precincts. In the Terminal Precinct existing commercial development comprises SCU, Airport Central and the Ivy Pearce Building.

Southern Cross University

SCU holds a commercial tenancy at Gold Coast Airport in a lease area of 5.1 hectares, which is contemporaneous with the Airport Lease. The SCU campus consists of three buildings: Building A, Building B and Building C. The campus includes a student services hub, a library, innovative learning spaces, health science laboratories, lecture theatres with live video broadcasting, computer labs and student lounges.

Building A was constructed in 2009 and began operations in 2010. It has four levels and a gross floor area (GFA) of approximately 4,000 m². Building B was constructed in 2011-13 and began operations in early 2014. It is a ten level building with a GFA of 15,417 m². Building C was constructed in 2017 and is a six level building with an approximate GFA of 10,500m².

The SCU campus is a "sensitive development" under s. 71A (2) of the Airports Act. At this stage there are no plans to increase capacity of the university.



Airport Central

Airport Central is approximately 1.7 hectares with a self-contained car park, separate from those for the Airport. The complex is low-scale in height and intensity, comprising a mixture of one and two-storey buildings. Airport Central has a mix of uses including:

- » Service station
- » Office
- » Shop
- » Showroom
- » Hotel
- » Food and drink outlet
- » Health care services
- » Car wash.

Airport Central also houses GCAPL's corporate offices.

Land available in Airport Central on the Airport's Gold Coast Highway frontage is effectively fully developed, though redevelopment of facilities within this site may occur within the first five-year period of this Master Plan.

Commercial Offices (Ivy Pearce Building)

The Ivy Pearce Building is a free-standing three-storey commercial office building with a self-contained car park, the building has a total GFA of approximately 3,549 m². The building was constructed in 2015 and achieves a 4.5 star National Australian Built Environment Rating System. The Ivy Pearce Building is home to the Australian Federal Police office.

General Aviation

The General Aviation Precinct accommodates a range of commercial development, primarily hangar and office activities supporting General Aviation operations.

9.3 STRATEGIC INTENT

The overall strategic intent for commercial development on Airport is to:

- » Enhance the commercial viability of Gold Coast Airport
- » Encourage development that achieves the most effective and highest use of sites available for commercial development
- » Ensure that commercial development does not adversely impact on the Airport's core activities.

The Twenty-Year Property Plan is shown in Figure 9.1. The plan identifies five 'superlots' and an indicative layout of key roads and rail infrastructure. The strategy has been developed through a balance of market assessment, design and land use planning along with traffic and transport modelling and testing. It includes consideration of leading practice airport design principles. At a design level, the overall property strategy delivers improved legibility, responds to the locational attributes of the site and facilitates essential operational efficiencies.

The superlot boundaries have been derived through a constraints analysis, traffic modelling and design testing. Key roads and transport infrastructure requirements were tested against forecast airport demand and potential land use development up to 2037. Spatial arrangements and broader location of land uses corresponding to the market demand were tested for feasibility and best practice design outcomes.

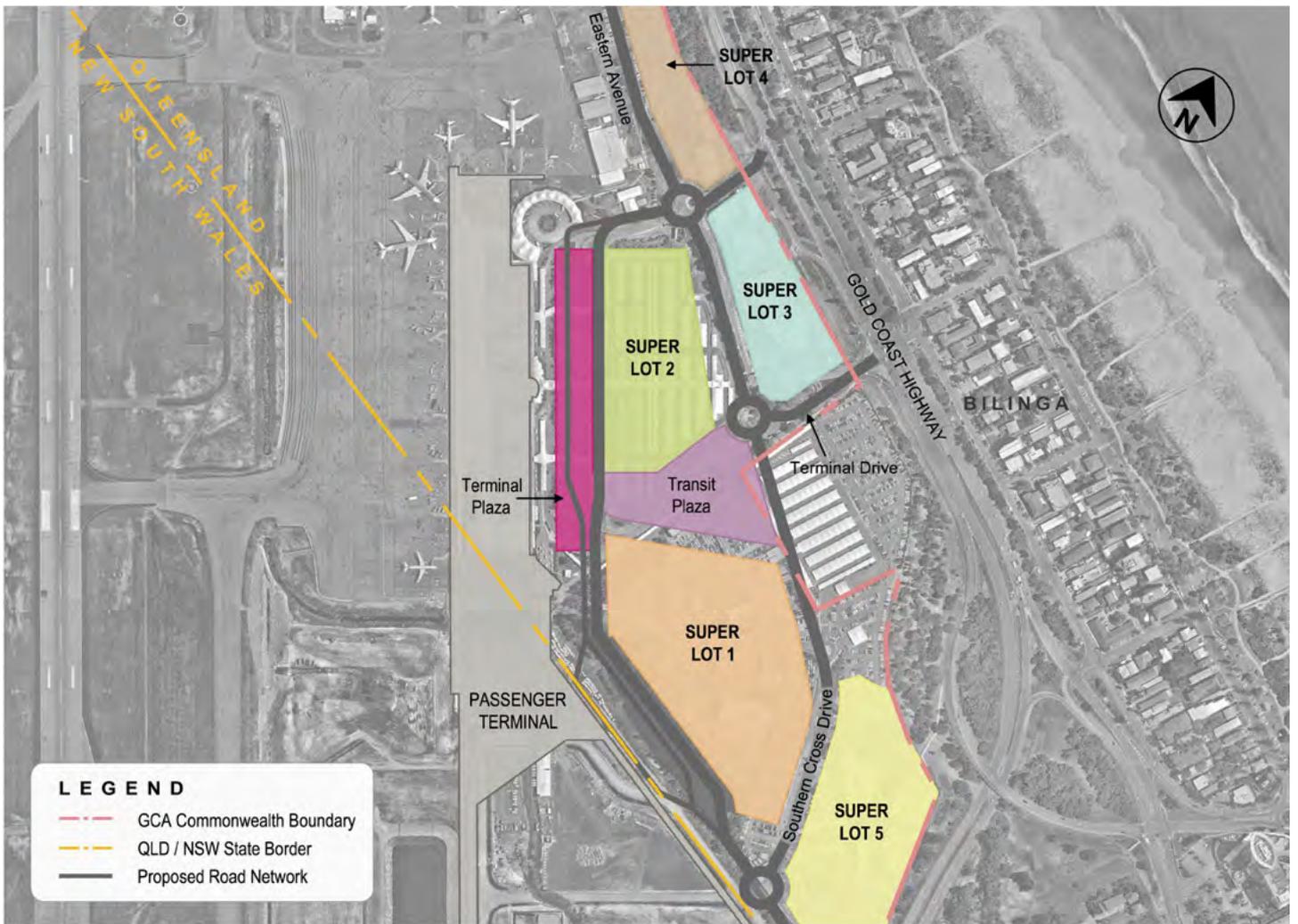


Figure 9.1 Twenty-Year Property Plan

9.4 TWENTY-YEAR PROPERTY PLAN

Key elements of the Twenty-Year Property Plan are shown in Figure 9.1 and described below.

Traffic and Transport

1. Road upgrades, including a new Gold Coast Highway southern access and a terminal loop road to meet demands of additional airport traffic and trips generated due to projected increases in land use
2. Ground transport reconfiguration to simplify and streamline movements of coaches, taxis and minibuses
3. A security zone extending from the front of the terminal to public vehicle movement zones
4. Light rail through the site with a centrally located station within easy walking distance of the terminal, SCU and surrounding hotel and accommodation precincts
5. In the first five years of this Master Plan, delivery of a centrally located multi-storey car park with capacity to accommodate long stay, short stay and rental collections.

Pedestrian Movement

6. A highly legible and safe walking and cycling environment that encourages interaction between precincts, maximising potential user markets to support retail and promoting the use of public transport.
7. Safe pedestrian movement via a series of regular signalised crossings and an overhead link between the multi-storey car park, Transit Plaza and terminal
8. The delivery of a central Transit Plaza to create a new heart for the site, highly activated by the light rail, ground floor retail, potential short term accommodation and commercial uses.



Transit Plaza and Terminal Precinct

The property strategy envisages a highly legible and walkable environment established primarily through the delivery of two major public spaces, the Transit Plaza and Terminal Plaza and supported by a network of streets with dedicated pedestrian and cycle lanes.

The Transit Plaza sits at the heart of Gold Coast Airport providing a lively public plaza operating at all times. The plaza's architecturally iconic development provides a grand gateway arrival to the Airport from both the terminal and the Gold Coast Highway, ensuring local and international visitors experience a memorable journey. It is centrally located and surrounded by uses that provide passive surveillance for security. The Airport multi-storey parking is sleeved by dining outlets that complement the surrounding development and terminal.

Light rail platforms are located centrally in the plaza, making moving between the key sites in the Terminal Precinct easily achievable.

9.5 FIVE-YEAR PROPERTY PLAN

Over the first five years of this Master Plan property development is likely to be an incremental and evolving proposition, primarily influenced by matters such as commercial feasibility and market conditions. There may also be developments that occur not driven directly by market demand.

The proposed development within the first five years of this Master Plan is summarised below.

- » Short-term accommodation in the form of a high quality hotel of approximately 150 to 300 rooms could be developed in the Terminal Precinct. The hotel will have a focus on passengers travelling through the Airport. The design and location of the hotel will maximise the advantages of ocean views and proximity to the Airport
- » Subject to commercial feasibility and market conditions, it is expected that commercial office developments of approximately 10,000 m² GFA may be developed in the Terminal Precinct
- » Facilities in the existing Airport Central site to be redeveloped, which may include building works, refurbishment and remixing of current Airport Central precinct tenancies.



10.0

Ground Transport Plan



Efficient, reliable, safe and convenient access to the Airport by various ground transport modes are crucial to support the Airport's growth.

10.1 INTRODUCTION

The Ground Transport Plan of the Airport plays an important role fulfilling Gold Coast Airport's vision of '*Engaging customers, connecting communities, exceptional experiences*'. Efficient, reliable, safe and convenient access to the Airport by various ground transport modes are crucial to support the Airport's forecast growth and strategies.

The Ground Transport Plan considers the broader vision of the surrounding state and local governments and planning up to and beyond 2037. The Ground Transport Plan was developed through engagement with key stakeholders and local and state governments, including the Department of Transport and Main Roads (Queensland), Roads and Maritime Services (New South Wales), City of Gold Coast Council and Tweed Shire Council.

10.1.1 Ground Transport Plan Content

As per the requirements of the Act, this Ground Transport Plan includes the following information for the first five years of the Master Plan:

- » A road network plan
- » The facilities for moving people (employees, passengers and other airport users) and freight at the Airport
- » The linkages between these facilities, the road network and public transport system at the Airport, and the road network and public transport system outside the Airport
- » The arrangements for working with the state and local authorities or other bodies responsible for the road network and the public transport system;

- » The capacity of the ground transport system at the Airport to support operations and other activities at the Airport
- » The likely effect of the proposed developments in the Master Plan on the ground transport system and traffic flows at and surrounding the Airport.

The Ground Transport Plan details the existing situation and a twenty-year vision for the ground transport systems of the Airport.

10.2 EXISTING GROUND TRANSPORTATION

Gold Coast Airport is predominantly a passenger airport servicing south east Queensland and northern New South Wales. In 2016, over six million passengers accessed the Airport with over two-thirds of passengers being visitors and three-quarters of passengers being on leisure trips. Passengers access the Airport through a variety of transport modes. The largest proportion of passengers are dropped off by family or friends in private vehicles (Figure 10.1).

There are no major freight movements to or from the Airport.

10.2.1 Road Network

Gold Coast Airport is well connected to the external road network, especially via the state-controlled roads, Gold Coast Highway and Pacific Motorway.

The Gold Coast Highway is one of the key north-south spines of the City of Gold Coast and runs parallel to the ocean. Direct access from the Airport to the Gold Coast Highway provides connectivity to



the coastal areas of the Gold Coast, including Tweed Heads and Coolangatta to the south and Burleigh, Broadbeach, Surfers Paradise and Southport to the north.

The Pacific Motorway is a key highway in Australia, connecting Sydney to Brisbane and Cairns. It is located to the west of the Airport and provides access north to Brisbane and south to northern New South Wales, including Byron Bay, Ballina and Grafton. It also connects the Airport to the western areas of the Gold Coast, such as Nerang and Helensvale.

The wider road network, including the Gold Coast Highway, Pacific Motorway and other state-controlled roads are shown in Figure 10.2.

The internal road network (Figure 10.3) connects to the Gold Coast Highway via a signalised intersection. The main internal road is Terminal Drive, which is a two-lane single carriageway road running in a one-way loop. Terminal Drive provides access to the parking areas, terminal pick-up and drop-off zones, a taxi feeder and the coach terminal.

Tom Norris Drive intersects with Terminal Drive and provides access to Southern Cross University and the car rental storage areas.

As a part of the Ground Transport Plan development, a performance assessment of the existing and future internal and external road network was undertaken through AIMSUN micro-simulation modelling. The origin-destination traffic matrix was calculated through the known traffic survey data. The adopted definition of reaching capacity is Degree of

Saturation (DOS) comprising of a range of zero to one, with one indicating that the road network has reached 100 per cent of its capacity.

The ground transport modelling has found that the existing internal and external intersections and roundabouts operate well within capacity (DOS averaging 0.5) in the morning and afternoon peak periods with the exception of Terminal Drive/ Tom Norris Drive intersection. Tom Norris Drive gives way to Terminal Drive and congestion occurs on Tom Norris Drive in the afternoon as the traffic from Southern Cross University departs. In the afternoon peak DOS on Tom Norris Drive /Terminal Drive intersection is over one.

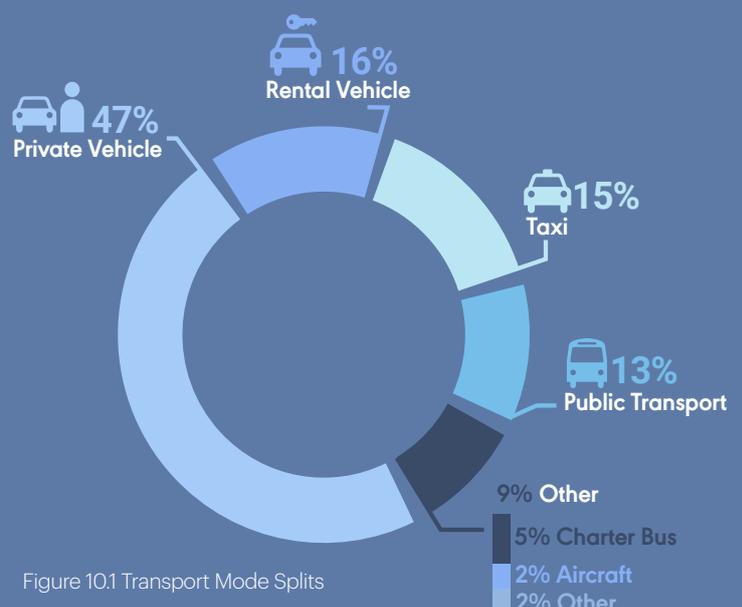


Figure 10.1 Transport Mode Splits



Figure 10.2 External Road Network

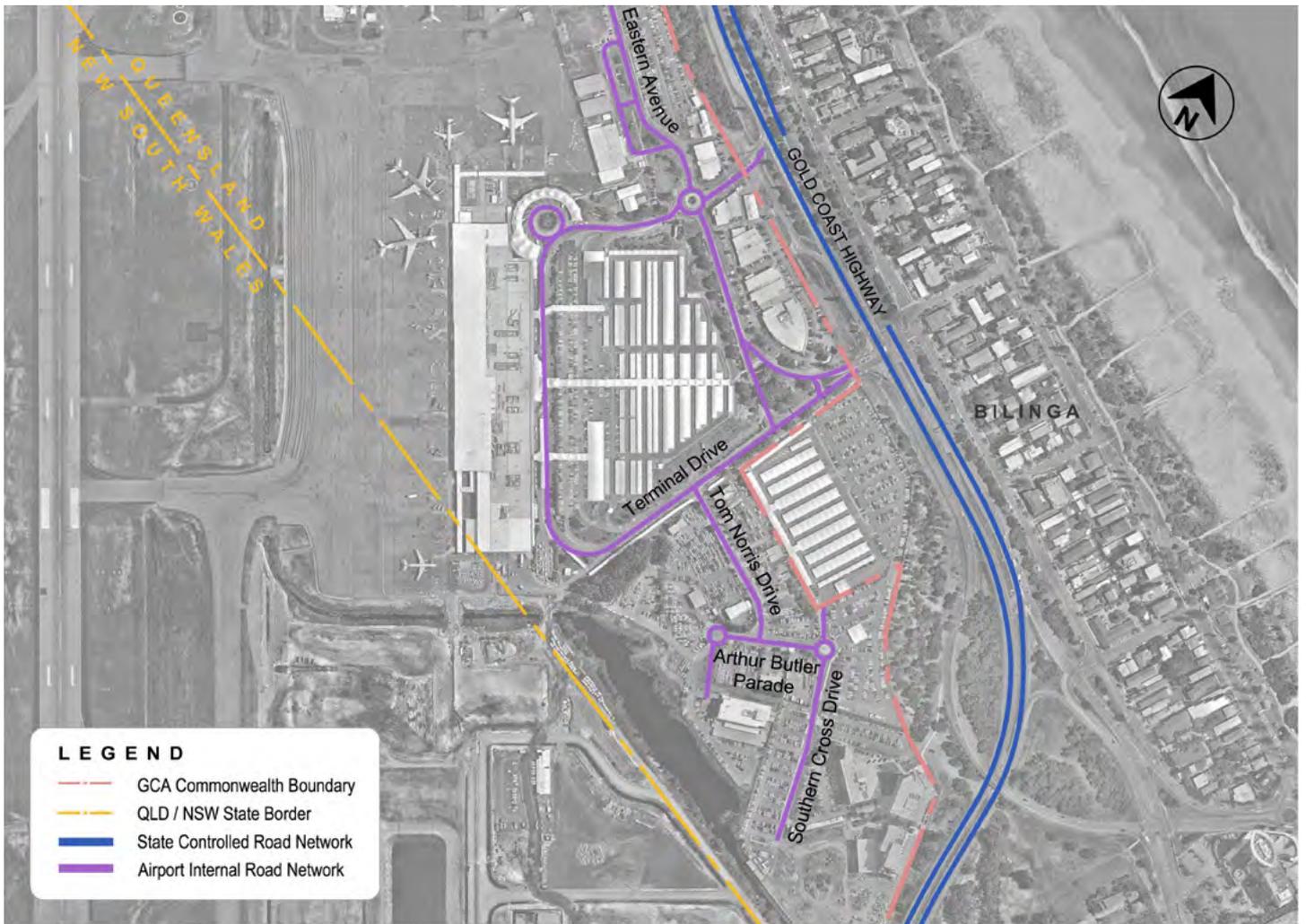


Figure 10.3 Internal Road Network

10.2.2 Parking

Gold Coast Airport has around 3,000 public car parking spaces, of which 1,185 spaces are in the Mallaraba car park, which is not on Commonwealth airport land.

In the car park in front of the terminal face roads there are approximately 1,250 spaces for short-term, long-term (covered) and long-term premium parking purposes. Additional covered and uncovered long-term parking spaces are approximately 350 metres from the terminal building at the Mallaraba car park and walking is encouraged as the mode of access.

The staff car park, containing around 500 parking bays, is at Eastern Avenue, approximately 350 metres north of the terminal. Some of these spaces are overflow for public use when required.

Rental car services for passengers are provided in two locations, with the majority in the main car park next to the terminal. Second tier car rentals are near the staff and overflow car park at Eastern Avenue. The two rental locations contain approximately 250 bays. Additional rental car facilities are on Tom Norris Drive and Arthur Butler Parade. This area is not for passenger

access and is used to provide supplementary storage and servicing for rental vehicles. There are also several rental operators that are located off-site from the Airport and offer shuttle connections.

General Aviation along Eastern Avenue, Adina Avenue and Loes Bonney Circuit provide car parking in or in front of their facilities.

The Southern Cross University, on Southern Cross Drive, also provides car parking within its lease boundary.

The car parking locations are shown in Figure 10.4.

10.2.3 Kerbside

Gold Coast Airport has a two-lane terminal face road in front of the terminal building with additional indents to accommodate a taxi rank and a drop-off area. The public pick-up and drop-off kerbside in front of the terminal is approximately 116 meters long. The public bus stops and ground transport drop-off bays are also kerbside along the face road.

10.2.4 Public Transport

The public transport network supporting the Airport mainly consists of public bus services including coaches, shuttles and taxis. Public transport access is provided indirectly via heavy and light rail services. Access to the terminating points of these modes is required by bus.

Taxis

Taxis licensed in Queensland and New South Wales serve the Airport. A taxi pick-up zone is located outside the domestic arrivals area. The taxi holding area is at the southern end of the terminal.

Public Bus Services and Facilities

The public bus services are provided to the Airport by TransLink. Surfside Buslines operate routes 777 and 760 that service the Airport. There are two public bus bays kerbside of the terminal face road.

Routes 700 and 768 do not connect directly with the terminal, but serve the Gold Coast Highway near the Airport. These services run from Tweed Heads to Broadbeach and Elanora. The nearest bus stop is approximately 500 metres from the terminal on Golden Four Drive.

Passengers travelling by heavy rail services interchange between bus (Route 760) and rail at Varsity Lakes Station. The journey from the Airport to Varsity Lakes takes approximately 30 minutes. Bus and rail timetables are well coordinated.

The light rail can be accessed via bus routes 777 or 700 in Broadbeach at Broadbeach South Station.

Public bus connections into northern New South Wales are available from Tweed Heads via Transport for NSW bus routes, operated by Surfside Buslines. Tweed Heads can be accessed directly from the Airport via TransLink routes 700, 760 or 768.

Shuttle, Coach and Limousine Facilities

Pick-up and drop-off for shuttles, coaches and limousines occurs in the terminal car park. The Gold Coast Tourist Shuttle and other larger bus services operate from the coach facility at the northern end of the terminal. A variety of limousine and bus shuttle services operate between the Airport and Brisbane, Tweed Heads, Byron Bay and other areas of northern New South Wales, including Lismore and the Northern Rivers.

10.2.5 Pedestrian and Cycling

Pedestrian facilities are along Terminal Drive, connecting the terminal building with the Gold Coast Highway. Pedestrian crossings are provided on the western and northern side of the signalised Gold Coast Highway / Terminal Drive intersection.

Internal pedestrian facilities include footpaths that connect parking areas with terminal building. Covered walkways also connect the terminal with the short-term and rental car parks.

On-road bicycle lanes are provided along the Gold Coast Highway. There is a shared pedestrian and bicycle facility along the western side of the Gold Coast Highway. Within the Airport, there are no separated cycling facilities. All internal roads are shared for cyclists' use. Figure 10.5 shows the existing pedestrian and cycling network at the Airport.

10.3 DESIGN PRINCIPLES

The key design principles considered for the Five-Year and Twenty-Year Ground Transport Plans include:

- » Providing easy, seamless and convenient access for passengers to and from the different transport facilities via all modes
- » Providing a clear definition of northern and southern access points for traffic arriving from or departing to either the Gold Coast Highway or the Tugun Bypass / Pacific Highway
- » Maintaining a 30 to 50 metre terminal safety zone, to be developed as a pedestrian plaza, separating traffic from the terminal frontage
- » Minimising pedestrian-vehicle conflict points, particularly for the major traffic movements associated with rental cars and parking
- » Providing the shortest duration of stay traffic types closest to the terminal face (e.g. taxi drop-off and pick-up, coaches, ready bay rentals, short term parking and the like)
- » Providing centrally located public transport facilities
- » Maximising the number of sustainable transport trips with particular focus on pedestrian and cycle movements in the Terminal Precinct by efficiently connecting the internal pedestrian and cycling network with the external active transport infrastructure.

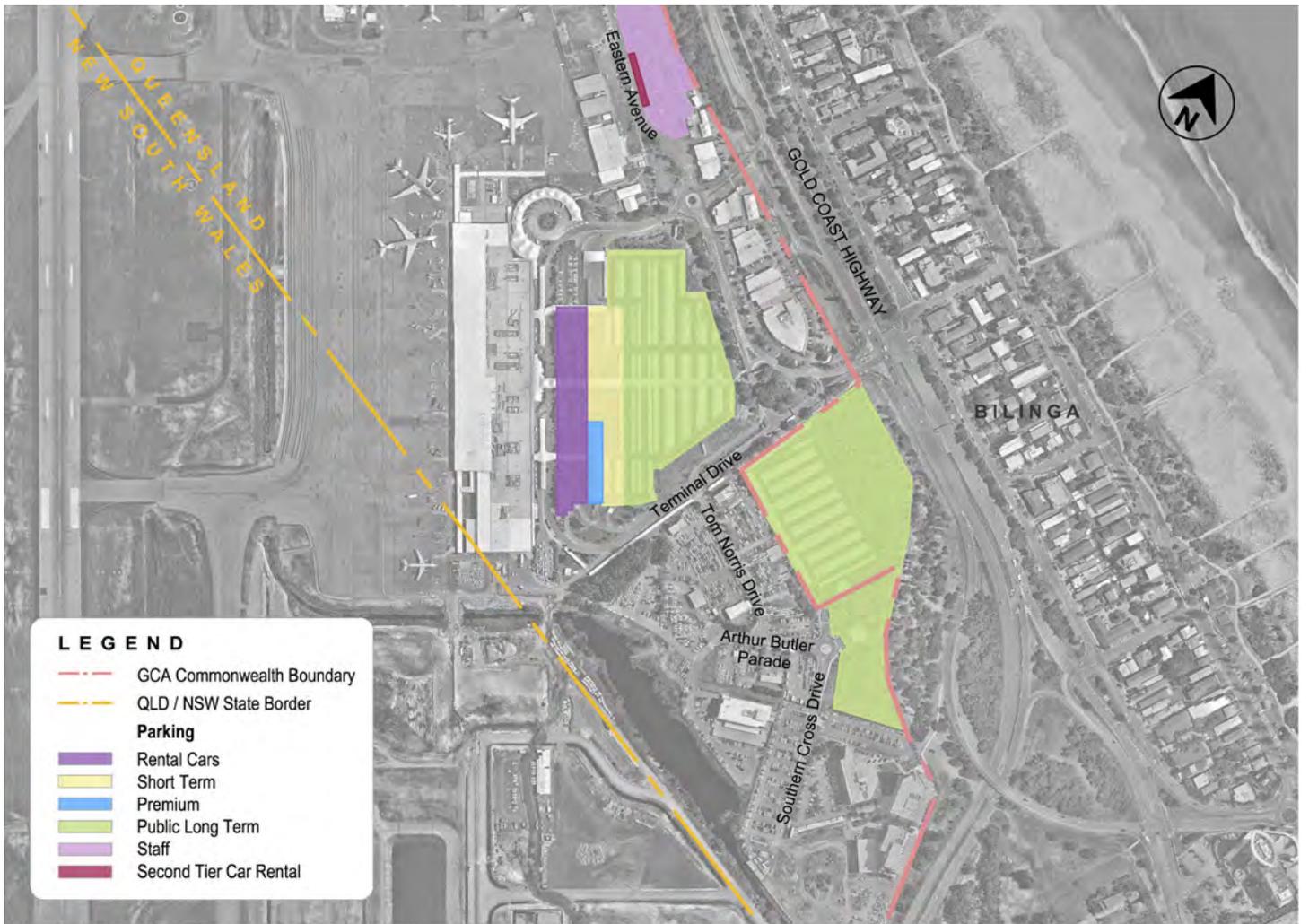


Figure 10.4 Parking Locations

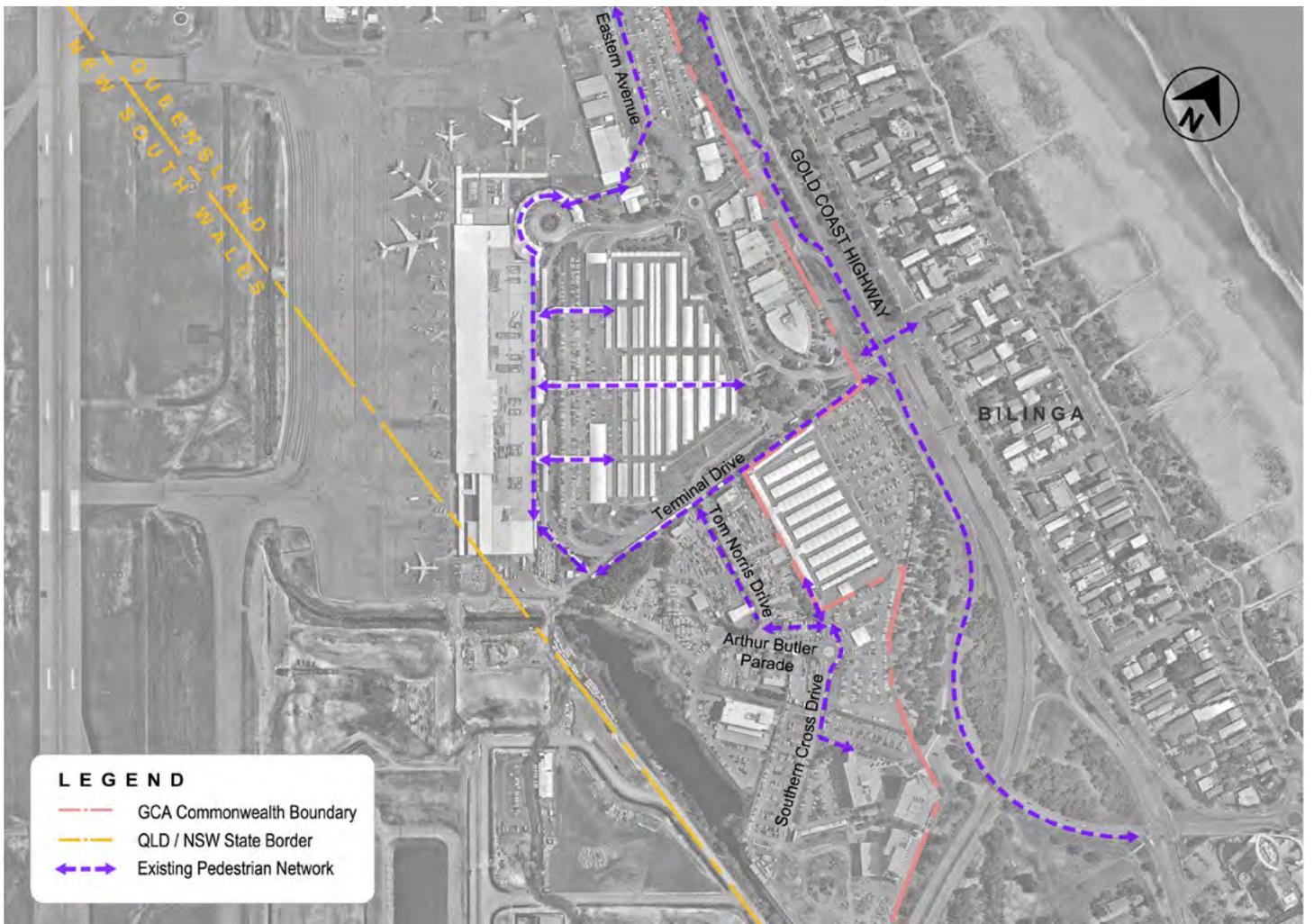


Figure 10.5 Existing Pedestrian and Cycling Networks



10.3.1 Innovations in Transport

In the short to medium term, the Airport will give further consideration to innovative transport technology and how this can enhance the passenger experience. Technologies to be investigated include, but are not limited to:

- » Automated vehicles;
- » Electric vehicles;
- » Remote public pick-up;
- » Mobile phone waiting area;
- » Automated parking;
- » Parking apps.

10.4 FIVE-YEAR GROUND TRANSPORT CONCEPT

The Ground Transport Plan outlines the forecast demand and planned transport measures to support growth. In the first five years of this Master Plan the Five-Year Ground Transport Plan (Figure 10.6) has three objectives:

- » Address existing and forecast short-term transport capacity issues;
- » Enable development through consolidation of transport infrastructure;
- » Facilitate the staged development of the Twenty-Year Ground Transport Plan.

An important component of the five-year plan is the Airport's terminal expansion and redevelopment (Project LIFT). To enable the expansion, a range of transport projects are proposed, which are included in the Five-Year Ground Transport Plan.



10.4.1 Forecast Demand

Forecast peak hour trips and parking demand rates include future aviation and non-aviation developments. The anticipated growth of the Airport's passenger numbers reflects in the increasing ground transport demand in the short to medium term.

There are no fundamental changes anticipated in the public transport network to the Airport in the first five years of this Master Plan.

Parking Demand

The passenger related parking demand is anticipated to increase by an average of about 25 per cent in the first five years of this Master Plan. Public parking demand is forecast to grow to around 3,900 spaces, requiring an additional 688 spaces.

Kerbside Demand

The forecast kerbside demand within the first five years of this Master Plan for public pick-up and drop-off at the front of the terminal is anticipated to increase from the existing 116 meters to 130 meters in length. Taxi drop-off demand is expected to increase from 25 to 30 meters. The existing taxi pick-up area is approximately 66 metres in length, this is sufficient given that the demand within the first five years of this Master Plan for taxi pick-up is 30 metres.

Utilising standard vehicle area requirements (5 metres per private car), the static capacity of the kerbside within the first five years of this Master Plan is:

- » 26 vehicles for public pick-up and drop-off,
- » 19 vehicles for taxi pick-up and drop-off.

Ground Transport Demand

The demand for public and private ground transport vehicles, including mini-buses, coaches and limousines is forecast to increase (Table 10-1).

Table 10-1 2022 Forecast Ground Transport Demand

Mode	Available	2022 Demand (bays)
Mini-buses	10	18
Coaches	16	13
Limousines	17	19
Public bus	2	2

10.4.2 Road Network

The Gold Coast Highway / Terminal Drive intersection will continue as the primary access to the Airport beyond the first five years of the Master Plan.

Within the Airport, a range of improvements are proposed to the road network for continuous overall functionality and to provide access to new transport infrastructure.

A new internal road, to be constructed between the Terminal Drive roundabout and the roundabout at Southern Cross Drive / Arthur Butler Parade, is anticipated to significantly improve access to and from SCU and eliminate existing congestion constraints at the Terminal Drive / Tom Norris Drive intersection. This will also improve the access to the Mallaraba car park site.

The Terminal Drive roundabout will be upgraded to provide access to the new internal road and a new multi-storey car park.

It is proposed to formalise the construction access installed as part of Project LIFT. This links to the Gold Coast Highway south of the Bilinga Interchange. This will allow seamless access for passengers travelling from the Pacific Motorway. This is anticipated to reduce traffic volumes on Terminal

Drive and improve accessibility to the Southern Cross University.

The car park redevelopment in front of the terminal building will include a plaza in front of the terminal to facilitate a 30 to 50 metre (approximate) security zone. There will be no public vehicle access in the security zone, which requires relocating the terminal face road to the east. The face road relocation will provide opportunity to improve the kerbside drop-off and pick-up areas. Parts of these are to be located underneath the western edge of the future multi-storey car park.

All internal road improvements are expected to provide sufficient capacity to cater for forecast demands beyond the first five years of the Master Plan.

10.4.3 Parking

It is proposed to construct a new multi-storey car park within the first five years of this Master Plan. This will increase the Airport's parking capacity and enable the decanting of other car parks to facilitate future development. It is expected that the multi-storey car park will be designed to complement the new terminal building and plaza area. It would also be designed to enable the incremental capacity uplift to continue to cater for demand in the medium to long term.

The multi-storey car park in front of terminal could potentially include spaces for:

- » Limousine pick-up
- » Valet parking
- » Rental pick-up and drop-off
- » Short-term parking
- » Long-term parking
- » Luggage drop-off (subject to further investigation).

The western edge of the ground level of the car park will include the relocated terminal face road including upgraded pick-up and drop-off spaces.

The existing long-term Mallaraba car park is to be maintained in the short term. This site is located off Commonwealth airport land.

Staff parking and second tier rentals are to remain in their current locations. They will be monitored and managed in the short term as appropriate.

In the interim, the car rental storage area is to be relocated from in front of the terminal to the area south of the expanded terminal. This area is cleared and is proposed to be used in the interim. Accessibility to the relocated rental storage will be provided via a link to the new internal road between the Terminal Drive and Southern Cross Drive.

Non-Aviation Development

Depending on the type of development proposed, car parking for non-aviation uses can be contained within each development site or shared with existing parking facilities.

10.4.4 Kerbside

Two parallel, independent face roads are proposed between the terminal building and the new multi-storey car park. The face road closer to the terminal building will be in the 30 to 50 metre security area and will have restricted access. This road will be adjacent to the terminal plaza. It will include a taxi staging area and taxi-pick-up lane for Queensland and New South Wales taxis. The taxi-pick-up lane will continue along the terminal building frontage providing space for taxi and limousine drop-off closer to the departures end of the terminal.

Further away from the terminal building, parallel to its frontage, a public face road will be provided. Kerbside space will include:

- » Drop-off in the northern area (in front of departures)
- » Pick-up in the southern area (in front of the arrivals)
- » Public bus stops (between the drop-off and pick-up, providing access to both parts of the terminal).

The proposed kerbside infrastructure improvements are anticipated to provide capacity beyond the first five years of the Master Plan.

10.4.5 Public Transport

Within the first five years of the Master Plan, a range of infrastructure improvements are proposed for public transport access to the Airport.

Taxis

New taxi staging, pick-up and drop-off areas form part of the new face roads. This will increase the capacity for taxis to access the Airport in the short to medium term.

Public Bus Services and Facilities

Public TransLink (Surfside) bus services will continue to access the Airport. Bus stops for public bus services will be along the public face road between the terminal building and the multi-storey car park. The number of bus bays will be aligned with TransLink's future requirements.

Shuttle, Coach and Limousine Facilities

The current coach, shuttle and limousine facilities at the northern end of the Airport terminal will be combined and relocated to the southern end of the terminal. This will align with the future arrivals plaza of the Airport and provide a central ground transport pick-up area for arriving passengers.

It is proposed to construct the new ground transport facility in the short to medium term. This is a dedicated area for public transport, taxis and group pick ups and it will provide future capacity for:

- » Large coaches
- » Mini-buses
- » People movers
- » Taxi rank and taxi staging including drivers' facility.

Limousine drop-off is proposed near the taxi drop-off within the face road closest to the terminal. The ground level of the multi-storey car park will include parking bays for limousine pick-ups.

10.4.6 Pedestrian and Cycling

The pedestrian facilities at the Airport are anticipated to be considerably upgraded within the first five years of the Master Plan, with the construction of the 30 to 50 metre security area, which includes the pedestrian plaza.

In the short term, the first stage of the plaza, in front of the arrivals section of the terminal, will provide access for arriving passengers to the various ground transport modes and pedestrian pathways to parking facilities.

Walking and cycling infrastructure will be provided along new internal roads and maintained along existing roads, where applicable. Pedestrian and

cycling access to the Airport is particularly relevant for staff members and SCU students. Connections to pedestrian and cycling facilities along the Gold Coast Highway will be important. End-of-trip cycling facilities, like secure bicycle parking areas and lockers, are proposed at the northern and southern end of the new plaza.

10.4.7 Five-Year Ground Transport Upgrades

A summary of the key ground transport upgrades proposed in the short term (up to five years) is provided in Table 10-2 and show in Figure 10.6

Table 10-2 Summary of Five-Year Ground Transport Upgrades

Upgrades	Benefits
» Construct second access point to external road network on the Gold Coast Highway	» Ensure sufficient capacity to provide convenient access to the Airport at all times.
» New internal road between Terminal Drive roundabout and the roundabout at Southern Cross Drive/Arthur Butler Parade.	» Improve access to the southern area of the Airport by removing the Tom Norris Drive intersection » Improved access to the Mallaraba car park site » Increased capacity to SCU.
» Reconfiguration of Terminal Drive roundabout	» Accessibility of new internal road » Increased capacity of internal road network.
» Multi-storey car park in front of terminal	» Increase parking capacity and consolidate parking into one multi-storey facility » Enable development on land currently used for car parking.
» New face road	» Increased kerb space for drop-off and pick-up » Enables installation of plaza » Improvements to front of terminal security.

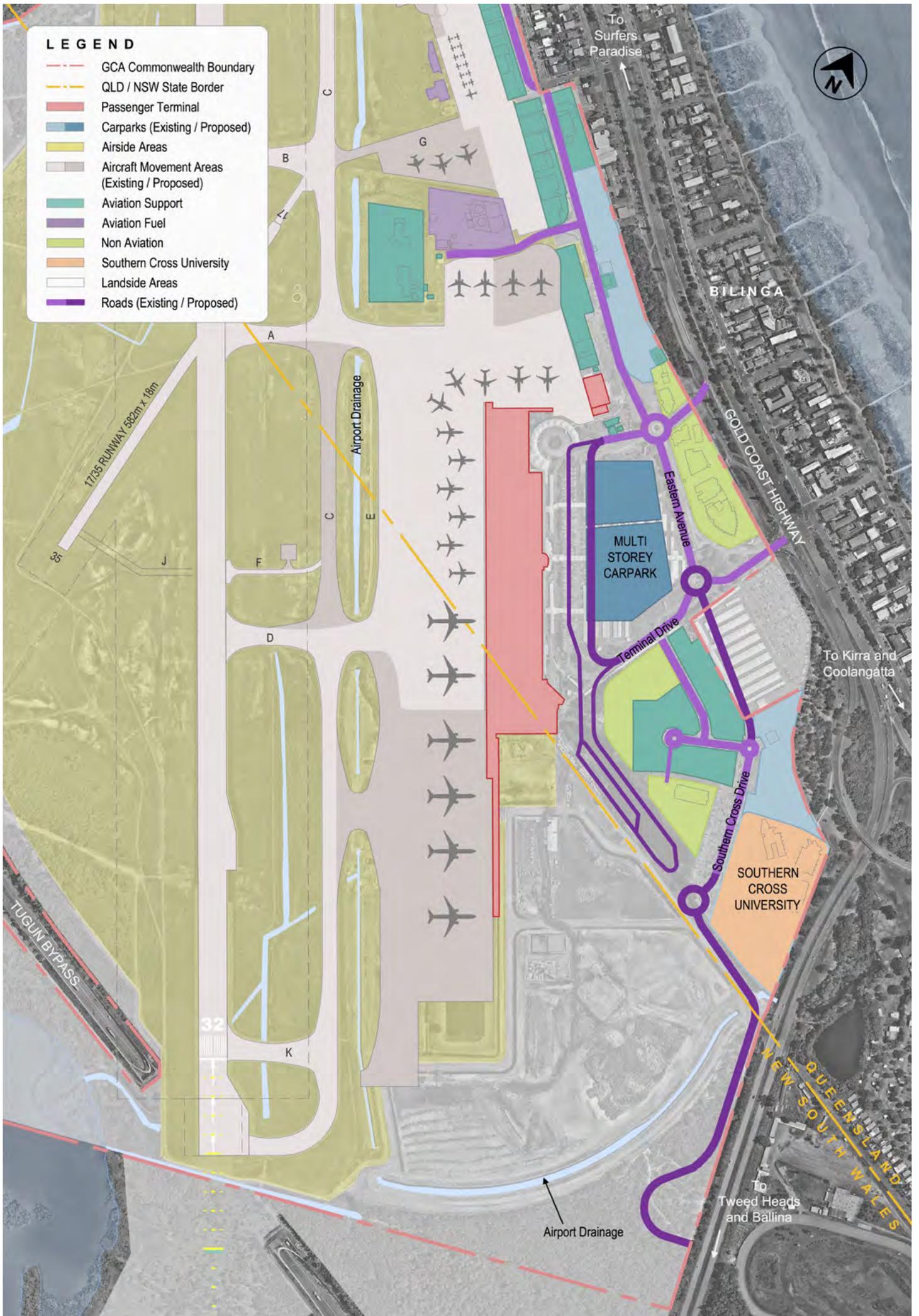


Figure 10.6 Five-Year Ground Transport Plan

10.5 TWENTY-YEAR GROUND TRANSPORT CONCEPT

A multi-modal transport strategy has been developed to support the twenty-year growth plan for the Airport.

10.5.1 Forecast Demand

Forecast peak hour trips and parking demand rates include future aviation and non-aviation developments.

The light rail extension to the Airport is anticipated to occur by around 2031. City of Gold Coast Council's target mode share for public transport of 15 per cent by 2040 has been taken into consideration for the demand calculation to and from the Airport, particularly the car parking demand.

Car Parking Demand

The passenger related car parking demand is anticipated to more than double in the next 20 years, to almost 7,000, refer Table 10-3.

Table 10-3 2037 Forecast Parking Demand

Total	Available (bays)	2037 Demand (bays)
Bays	3,225	6,916

Kerbside Demand Forecast

The required kerbside space is also anticipated to double between now and 2037, refer Table 10-4.

Table 10-4 2037 Forecast Kerbside Demand

Total	Available (meters)	2037 Demand (meters)
Kerbside	116	280

Public Transport Forecast

The need for parking spaces for mini-buses, coaches and limousines is forecast to increase, refer Table 10-5.

Table 10-5 2037 Forecast Public Transport Demand

Mode	2037 Demand (bays)
Mini-buses	36
Coaches	26
Limousines	39
Public bus	2

10.5.2 Road Network

Two major access points from the external road network to the Airport will cater for the forecast demands to 2037. These access points include the existing Terminal Drive intersection and the proposed Gold Coast Highway southern airport access (proposed within the first five years of this Master Plan). These access points will be retained and upgraded including turning lanes and adjusted signal phasing.

The proposed internal road network provides a significantly increased terminal face road and ability to accommodate the forecast demand for kerbside space. The internal road network was developed considering the traffic demand, kerbside demand, flexibility, efficiency, reduced complexity and recirculation.

10.5.3 Car Parking

Car parking at Gold Coast Airport will be predominantly in a multi-storey car park in front of the terminal. It is proposed that the car park constructed, in the short term, be expanded to enable the incremental capacity uplift to continue to cater for demand in the medium to long term.

Due to the large amount of space required for car rental storage, in the long term it is anticipated that this be at the Western Enterprise precinct or off Commonwealth airport land. Efficient and fast access to the rental pick-up and drop-off areas will have to be facilitated.

Alternative car park locations further away from the terminal or off-site will be investigated in the medium to long term, as required.

10.5.4 Kerbside

By including a circular road network, the length of the terminal face road will be increased, enabling the drop-off and pick-up for all modes to be included in front of the terminal.

It is proposed to further upgrade the taxi staging area and pick-up lane from the Five-Year Ground Transport Plan. The taxi pick-up lane will continue along the terminal front, providing space for taxi and limousine drop-off closer to the departures end of the terminal.

Further away from the terminal, parallel to its frontage, the public face road will provide:

- » Drop-off in the northern area (in front of departures)
- » Pick-up in the southern area (in front of the arrivals)
- » Public bus stops (between the drop-off and pick-up, providing access to both parts of the terminal).

10.5.5 Public Transport

Public transport on the Gold Coast is anticipated to increase over the next 20 years with the completion of several proposed large transport infrastructure projects. Access via public transport to the Airport is anticipated to increase.

Taxis

Taxi staging, drop-off, pick-up areas are proposed along the future circular face road in front of the terminal building.

Heavy and Light Rail Facilities

State and local government transport strategies

have identified future transport infrastructure near the Airport, including light rail and heavy rail.

The heavy rail corridor, as proposed by the Department of Transport and Main Roads (Queensland), continues to be included in the Master Plan. Further detailed planning and design, along with ongoing reviews and collaboration with Department of Transport and Main Roads, will confirm future alignments.

GCAPL sees light rail as the preferred public transport mode for the Airport and has adopted one of City of Gold Coast Council's preferred light rail planning options. The light rail travels south along the Gold Coast Highway and enters the Airport just north of the Terminal Drive/ Eastern Avenue roundabout. From there, the light rail track wraps around the front of the terminal building, next to the multi-storey car park, with a station in front of the terminal building. It is proposed that the station be in front of the arrivals section, in the pedestrian plaza providing connectivity to the rest of the precinct.

This station location will achieve the most convenient access to the terminal building for passengers with luggage, while providing a venture point for surrounding non-aviation developments, like the SCU or the beach. It is anticipated the light rail will leave the site to the south east towards Coolangatta and Tweed Heads.

Public Bus Services and Facilities

Public bus access to the Airport is anticipated to continue to be important into the future. Due to the expected inclusion of an additional public transport mode (heavy and light rail), public bus services are not expected to increase significantly. It is anticipated public bus stops will be between the public drop-off and pick-up on the public terminal face road and in front of the SCU. The number of bays at each stop will be determined to align with TransLink's future requirements.

Shuttle and Coach Facilities

Just south of the arrivals area of the terminal, a ground transport facility is being constructed as part of Project LIFT. The Twenty-Year Ground Transport Plan includes the full expansion of the ground transport facility at this location with bays for coaches, mini-buses and people-movers.

10.5.6 Pedestrian and Cycling Active Transport

The accessibility of the Airport for pedestrian and cyclists has formed a key part of the transport planning considerations. Gold Coast Airport is aiming to become pedestrian and cycling friendly. A range of infrastructure and design components proposed within the Twenty-Year Ground Transport Plan will achieve this objective, refer Figure 10.7.

It is anticipated that a large plaza will be fully developed along the front of the terminal building. An additional pedestrian spine will lead eastbound from the arrivals section of the terminal towards the Gold Coast Highway. The plaza will be accessed through the light rail station and active frontages in the surrounding developments, like the multi-storey car park. Pedestrian footpaths and crossings throughout the site and along internal roads will safely connect the different aviation and non-aviation precincts within the Airport.

It is proposed that cycling lanes be included on all internal roads with end-of-trip facilities at either end of the terminal and in the non-aviation development lots.

The twenty-year Ground Transport Plan includes seamless connections between the Airport internal and external pedestrian and cycling network.

10.5.7 Twenty-Year Ground Transport Upgrades

A summary of the key transport upgrades proposed in the medium to long term (6 to 20 years) are provided in Table 10-6.

Table 10-6 Summary of Twenty-Year Ground Transport Upgrades

Upgrades	Benefits
» Upgrade Gold Coast Highway / Terminal Drive intersection	» Ensure sufficient capacity to provide convenient access to the Airport at all times.
» Incrementally upgrade internal road network, including pedestrian and cycling facilities	» Provide sufficient capacity to cater for future demand » Provide road network that enables the second external access point to be included » Continue to provide convenient access to the Airport for pedestrians and cyclists.
» Implementation of light rail (by others)	» Improved public transport access to the Airport contributing to mode shifts and accessibility.
» Upgrade of new ground transport facilities	» Cater for future ground transport demand.
» Upgrade face roads	» Cater for future kerbside demand.

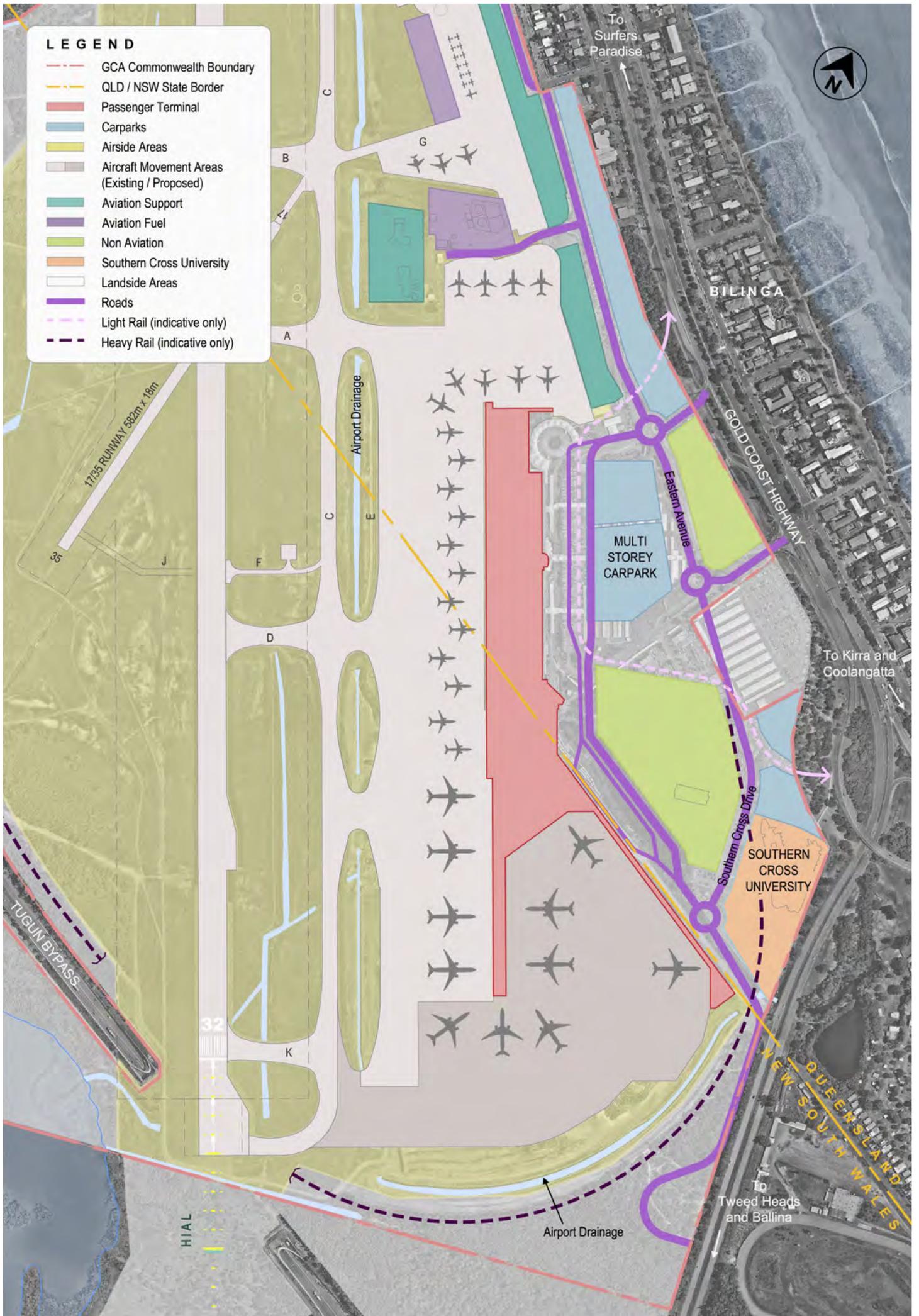


Figure 10.7 Twenty-Year Ground Transport Plan



11.0

Environment and Sustainability





11.1 INTRODUCTION

Gold Coast Airport, along with providing aviation and non-aviation facilities, contains areas of environmental and cultural value. GCAPL, as the Airport-lessee, is responsible for ensuring operation and development of Gold Coast Airport is managed in an environmentally responsible manner.

This chapter addresses environmental considerations and their management associated with Airport activities, including statutory requirements under the Airports Act for an environment strategy (s. 71(2)(h)). It also addresses the assessment and management of potential environmental issues associated with the implementation of the Master Plan (s. 71(2)(f)&(g)).

Environmental aspects addressed are:

- » Sustainable development
- » Soil management
- » Surface and groundwater
- » Biodiversity
- » Cultural heritage
- » Local air quality
- » Ground based noise
- » Hazardous materials.

Potential impacts on these environmental aspects from airport operations and their management is detailed in Sections 11.3 to 11.13.

The assessment of, and plan for dealing with, environmental issues reasonably expected with the implementation of the Master Plan are also addressed within the sections referred to above.

11.2 THE AIRPORT ENVIRONMENT

Land occupied by Gold Coast Airport has important environmental and cultural heritage values, which have been recognised at all levels of government. The land is situated on a coastal plain less than one kilometre from the Pacific Ocean, bordered by Cobaki Broadwater to the south and west and Currumbin Hill to the north. Surrounding the Airport are the suburbs of Tugun, Bilinga, Kirra, Coolangatta and Tweed Heads.



The Airport is in a biogeographic region considered one of Australia's most diverse for its natural terrain and flora species diversity. Approximately 25 per cent of the 371 hectare Commonwealth lease area is dedicated to conservation through the Cobaki Environment Precinct.

11.3 KEY ACHIEVEMENTS OVER THE PAST FIVE YEARS

Since 2011, GCAPL has undertaken a range of environmental management, monitoring and community initiatives. Some of these are:

- » Establishment of the CACG as the key community consultation forum to regularly share information and views about on-airport activities
- » Implementation of the Cobaki Environment Precinct Management Plan
- » Fulfilment of the requirements of the five-year post-construction frog monitoring program for the Gold Coast Airport Runway Extension project
- » Extension to the frog monitoring program methodology to broaden the understanding of population density of protected species and their habitat use
- » Improvements to the fauna monitoring program, which led to new observations of wildlife species at the Airport
- » Successful pest management and coordination with neighbouring landholders, which significantly reduced populations of foxes, rabbits and brown hares
- » Incorporation of rainwater harvesting into the Australian Federal Police and SCU buildings
- » Air-conditioning efficiency projects including building management system programming and Steril-Aire installation
- » Extensive monitoring and review of resource use and waste management practices to improve efficiency, resulting public place recycling bins and tenant co-mingled facilities being installed
- » LED lighting in the office, carparks and the terminal
- » Implementation of Construction Environmental Management Plans (CEMP) for all new developments to reduce potential adverse impacts associated with construction activities
- » Continued certification of Gold Coast Airport's Environmental Management System to the ISO 14001 standard.

11.4 PLANNING FOR THE FUTURE

This Master Plan highlights that Gold Coast Airport will experience continued growth over the next 20 years. This growth includes both aviation and non-aviation development as the Airport transforms into a regional centre to provide customers and community with new services as part of an exceptional airport experience.

Environmental matters considered in this Master Plan include:

- » Reducing the demand for additional resources such as water and energy by improving operational efficiency as new airport, property and transport assets are developed
- » Minimising disturbance to natural and cultural values by implementing environmental management plans
- » Opportunities to transform the open space and public realm by creating a community that encourages connection.

11.5 ENVIRONMENTAL MANAGEMENT FRAMEWORK

11.5.1 Background

The environmental management framework for GCAPL as the Airport-lessee is presented in Figure 11.2. This framework addresses GCAPL's activities and implementation of programs to assess and monitor activities of tenants. Airport operators are also required to have systems in place to manage the environmental aspects and impacts associated with their activities.

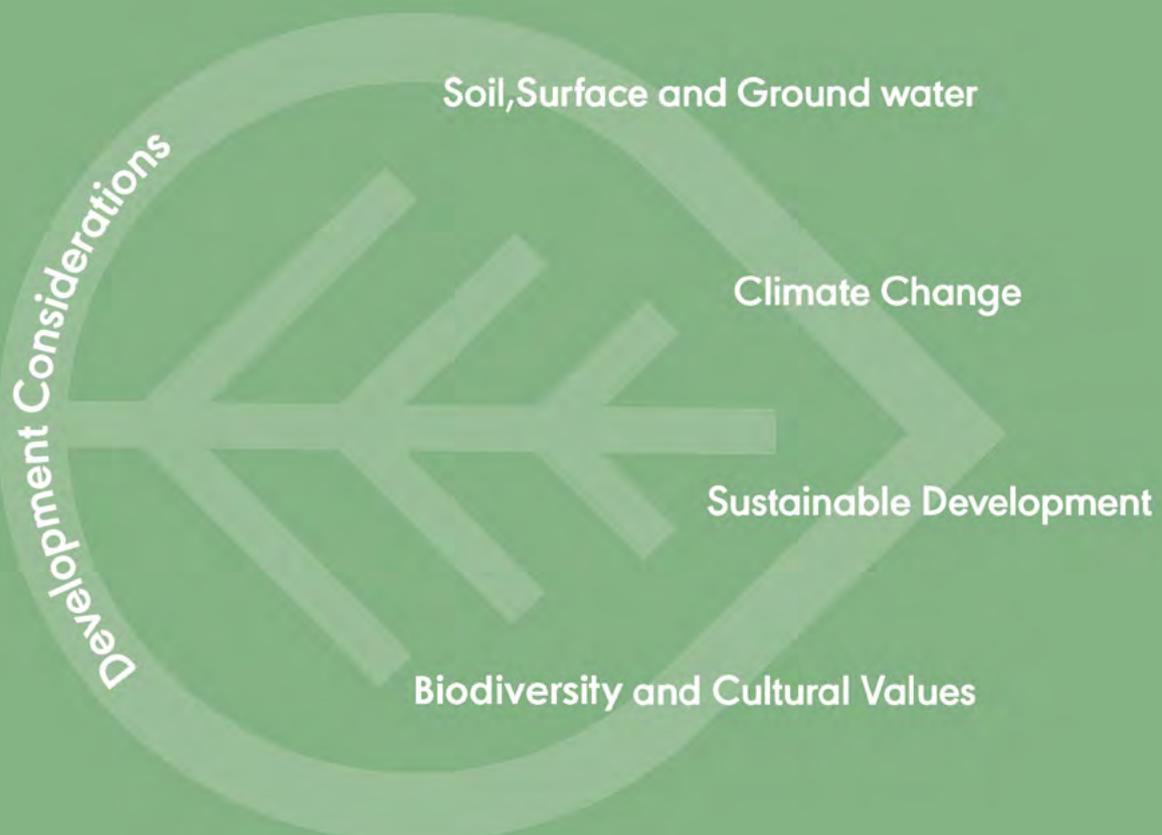


Figure 11.1 Future Development Considerations

GCAPL Environmental Management Framework

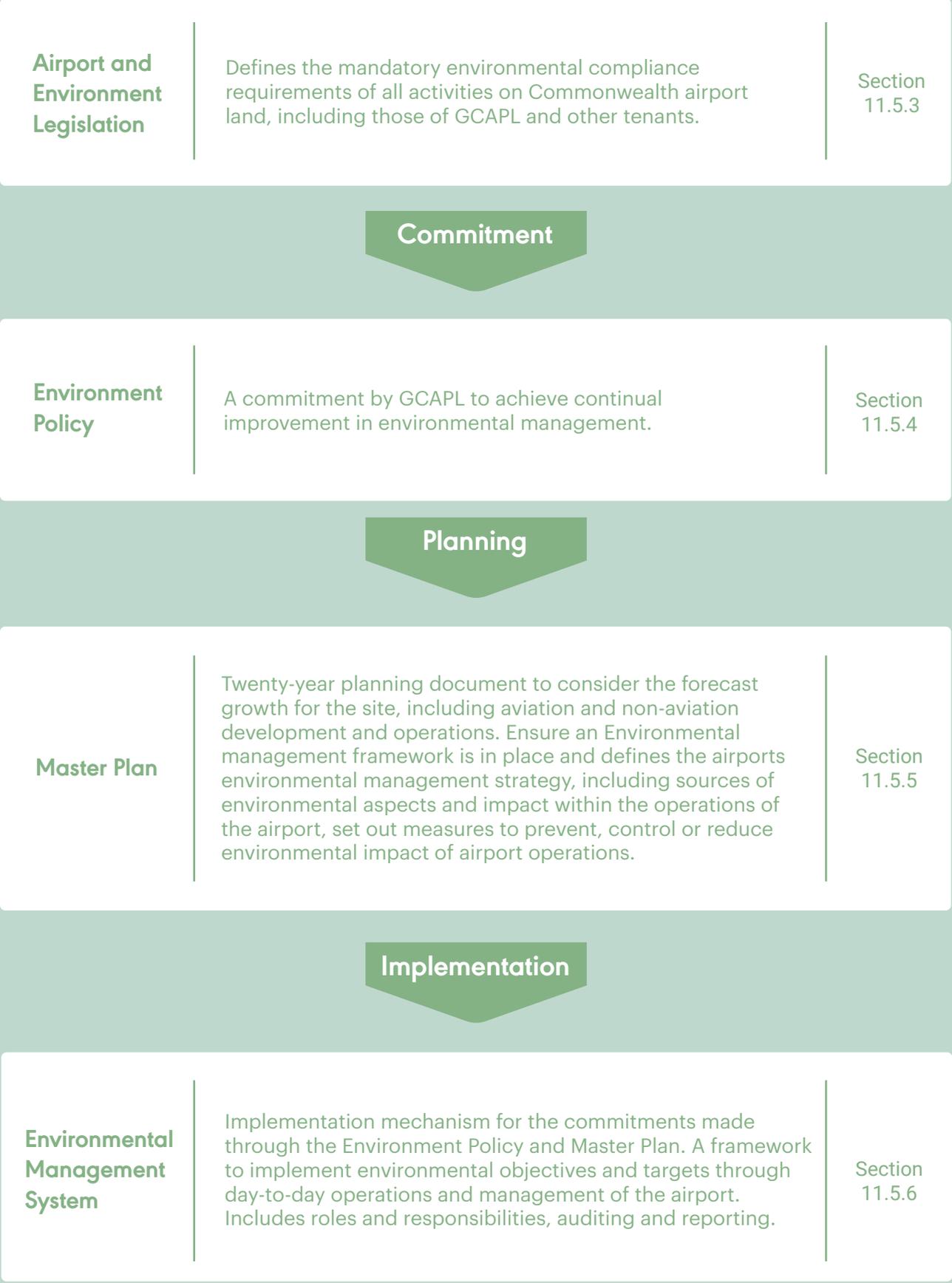


Figure 11.2 GCAPL Environmental Management Framework

11.5.2 Roles and Responsibilities

A number of parties hold responsibility for environmental management at Gold Coast Airport. The main roles and responsibilities for implementing the environmental requirements specified in this Master Plan are listed in Table 11-1.

11.5.3 Airport Legislation

Gold Coast Airport is located on Commonwealth land and is subject to compliance with relevant Commonwealth legislation, which are principally:

- » *Airports Act 1996* (the Airports Act)
- » *Airports (Environment Protection) Regulations 1997* (AEPR)
- » *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This chapter responds to the Airports Act and Regulations as summarised in Appendix A.

The EPBC Act details requirements for managing matters of national environmental significance, such as threatened flora and fauna species, the environment on Commonwealth land and actions by Commonwealth agencies.

Queensland and New South Wales state legislation is considered where Federal legislation is silent.

11.5.4 Environmental Management

Gold Coast Airport Pty Ltd Environment Policy

The Environmental Policy provides high level commitment to guide and continually improve GCAPL's environmental management practices. Development, implementation and review of GCAPL's Environmental Management System and this chapter provide the mechanism by which commitments made in the Environment Policy are fulfilled.

The Environmental Policy is a living document that is periodically reviewed and updated within the life of the Master Plan. The Gold Coast Airport Environmental Policy is presented in Figure 11.3. The current version can be viewed on the GCAPL's website.

Table 11-1 Environmental Management Roles and Responsibilities

Role	Responsibility
GCAPL	<ul style="list-style-type: none"> » Overall responsibility for implementing the environmental requirements specified in this Master Plan » Auditing tenant and other airport operators' compliance with this section of the Master Plan and other relevant environmental obligations. » Reviewing and/or approving tenant and operators' environmental management plans. » Promoting best practice environmental management to tenants, operators and contractors.
Tenants, operators and contractors	<ul style="list-style-type: none"> » Responsible for preventing environmental harm. » Meeting statutory environmental requirements » Ensuring appropriate plans and/or systems are in place to manage environmental risks posed by activities.



Environment Policy

Gold Coast Airport (GCA) is the 6th busiest airport in Australia handling over 6 million passengers annually as well as freight and general aviation activities. GCA covers approximately 425ha spanning Commonwealth, NSW and Queensland land and includes commercial, light industrial and educational facilities and areas of environmental value.

Gold Coast Airport Pty Ltd is committed to maintaining certification to the ISO14001 standard for environmental management systems, and in order to achieve continual improvement we will:

1. Strive to minimise impacts on the environment including pollution of water, air and soil and protect biodiversity.
2. Seek to minimise the generation of waste and greenhouse gas emissions and are committed to reducing the consumption of energy and water.
3. Ensure we comply with applicable environmental legal requirements and other voluntary requirements to which GCAPL subscribes.
4. Set, implement and review environmental objectives and targets established in the Airport Master Plan and Environmental Management System.
5. Measure, monitor and report on our environmental performance.
6. Implement and communicate this Policy throughout our operations.
7. Conduct appropriate training for those whose activities may impact the environment.
8. Make this policy publically available.
9. Review this Policy regularly.

Marion Charlton
Chief Operating Officer
Gold Coast Airport Pty Ltd
November 2016

Environment Management System

In 2004 the GCAPL Environment Management System (EMS) was certified to ISO 14001:2004. GCAPL has continued certification of the EMS to this standard. The EMS provides the detailed framework for implementing the Environmental Policy. It also defines applicable legislative requirements and significant environmental aspects associated with GCAPL's activities, including procedures to reduce environmental impacts. The EMS has informed the understanding of environmental impacts and measures to prevent, control or reduce environmental impacts as presented in this chapter.

To develop the EMS, GCAPL assesses its environmental impacts, sets targets to reduce these impacts, and plans how to achieve these targets. The EMS promotes engagement and partnering with relevant stakeholders, including airport operators and tenants, to ensure the continual improvement of their environmental management practices at the airport.

The EMS includes procedures to address GCAPL's management of environmental aspects, including:

- » The steps required for GCAPL staff to address specific environmental requirements
- » Monitoring and assessment to measure environmental performance
- » Responsibilities and authority
- » Processing and investigating non-compliances, mitigating impacts and implementing corrective and preventative measures.

The EMS is periodically reviewed to ensure adequacy and effectiveness and regularly audited to monitor its implementation and compliance with the ISO 14001 standard.

Tenants and Contractors

A variety of tenants, contractors and operators are based at Gold Coast Airport and the risk each poses to the environment depends on their activities. Airport operators are responsible for preventing environmental harm that may arise from their operations by establishing systems and procedures appropriate to the nature and scale of their operations. Environmental management guidelines for tenants and other airport operators are provided

on the GCAPL website. Statutory environmental requirements form part of tenant leases.

GCAPL promotes environmental awareness and monitors compliance through regular tenant audits, with the frequency of audits determined by the level of risk posed by the operations. High risk tenants are audited annually, medium risk tenants every two to three years and low risk tenants on a case-by-case basis.

11.5.5 Environmentally Significant Areas

In accordance with the *Airports Act 1996* and the *Airports (Environment Protection) Regulations 1997* GCAPL has identified environmentally significant areas (ESAs) at Gold Coast Airport as depicted in Figure 11.4.

The methodology used to identify ESAs at Gold Coast Airport was initially developed in preparing the 2009 Airport Environment Strategy and was modelled on the Common Conservation Classification System (Chenoweth, 2013)ⁱ and the Tweed Vegetation Management Strategy (Kingston et al, 2004)ⁱⁱ.

Review of the methodology was conducted when preparing the 2011 Master Plan and the 2017 Master Plan. Consultation was undertaken with relevant state and federal conservation bodies prior to and/or exhibition process associated with both the 2011 and 2017 Master Plans and the also the 2009 Airport Environment Strategy.

Prior to its initial application in 2009, the methodology was independently peer reviewed. With subsequent revisions resulting in the methodology remaining largely unchanged, the 2009 peer review is still considered relevant.

The methodology divides the Airport into units of homogenous land use and vegetation communities. Each unit is then assessed based on the following:

- » Whether it is known habitat for a legislatively significant species
- » Legislative status of vegetation community
- » Tract size, condition, connectivity and relative size of the vegetation community
- » Species and/or communities deemed to be significant under federal and/or state legislation were considered in the methods application.
- » Key aspects considered during the 2017 review of the methodology and its application included:

(i) Chenoweth Environmental Planning and Landscape Architecture Pty Ltd (2001) Common Conservation Classification System, Report to Western Regional Organisation of Councils, Brisbane.

(ii) Kingston, M. B., Turnbull, J.W. and Hall, P.W. (2004) Tweed Vegetation Management Strategy: Prepared by Ecograph for Tweed Shire Council, August 2004 NB

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- » Legislative status changes of threatened species under the *Nature Conservation Act 1992* (Qld) and the *Threatened Species Conservation Act 1995* (NSW);
 - » New listings of threatened species and communities (i.e. saltmarsh and lowland rainforest) under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
 - » threatened species and communities under the *Nature Conservation Act 1992* (Qld) and the *Threatened Species Conservation Act 1995* (NSW)
 - » New records of threatened species (e.g. koala (*Phascolarctos cinereus*) and grey-headed flying-fox (*Pteropus poliocephalus*) from surveys undertaken at Gold Coast Airport since 2011
 - » Inclusion of all relevant species, including marine and migratory species as listed under the EPBC Act
 - » Matters of State Environmental Significance introduced into Queensland
 - » Clearing of vegetation since 2011

The environmentally significant areas previously mapped east of Runway 14/32 has been cleared as part of the approved Project LIFT. This major airport development was approved by the Minister in 2016.

Environmentally significant areas identified in this Master Plan are current at the date of preparation. These areas may change during the planning period of the Master Plan. For example, when a Major Development Plan for a development affecting an environmentally significant area is approved and the development completed it may result in areas no longer being considered environmentally significant.



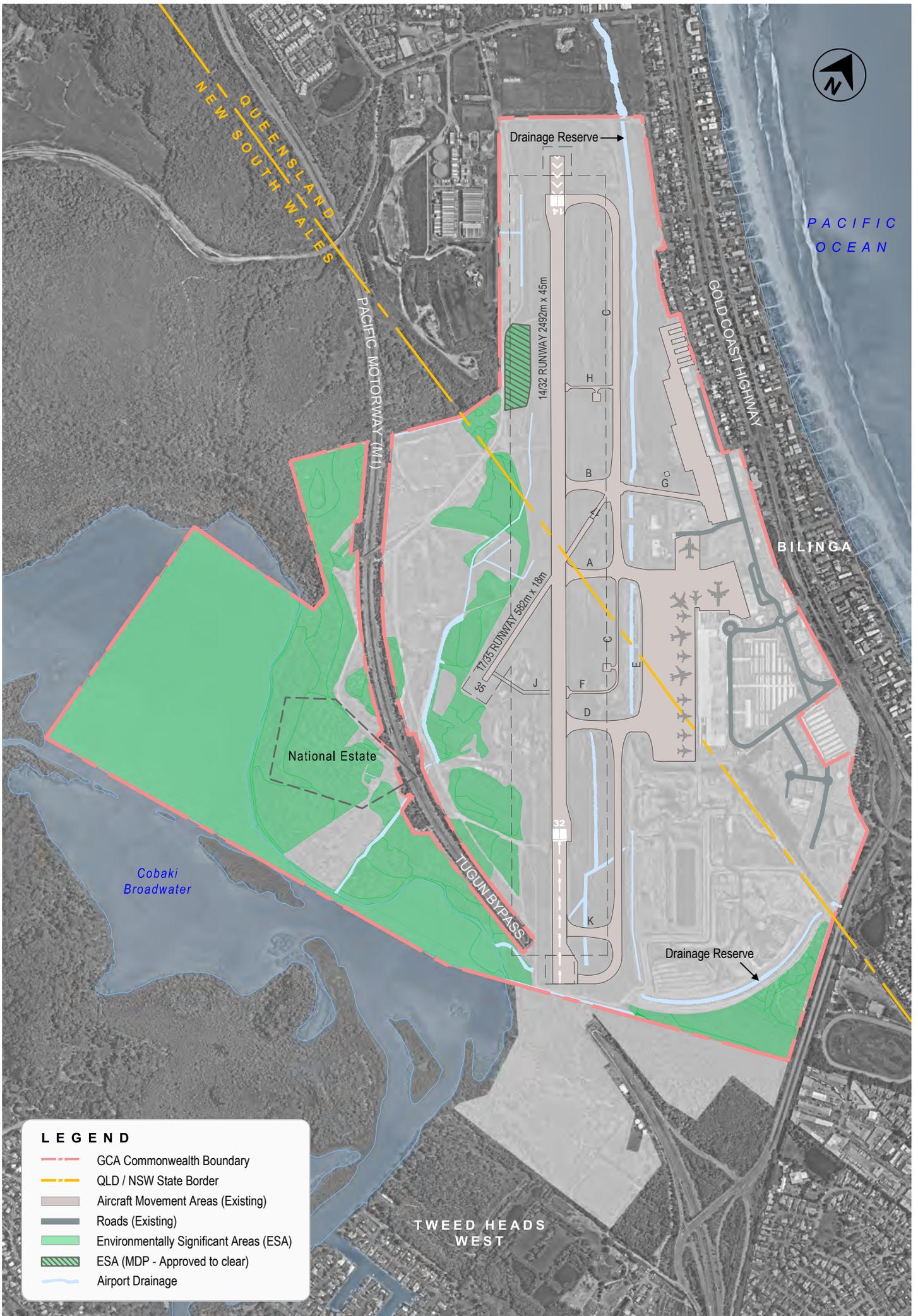


Figure 11.4 Environmentally Significant Areas

11.5.6 Environmental Monitoring and Reporting

GCAPL undertakes environmental monitoring to demonstrate compliance with legislation, identify trends, highlight areas requiring management or improvement and enhance awareness and understanding of the environment.

The general monitoring program for the Airport is shown in Table 11-2. The frequency of monitoring may be occasionally altered in response to specific onsite environmental conditions or a review of the monitoring program.

Table 11-2 Overview of Environmental Monitoring

Environmental Attribute	Frequency (minimum)
Tenant audits	<ul style="list-style-type: none"> » High risk – Annual » Medium risk – Every 2-3 years » Low risk – Case-by-case basis
Waste volumes	Annual
Water use	Monthly
Electricity use	Monthly
Soil contamination	As required
Interceptor traps	Biannual (or as recommended by asset maintenance expert)
Surface water	Three times per year
Groundwater	As required
Significant fauna surveys	As per terrestrial fauna monitoring program. Minimum annually.
Bird surveys	Quarterly
Noise	As required
Air quality	As required
Vertebrate pest surveys	Periodic inspections or management Annual monitoring
Airside wildlife	Daily
Construction	As detailed in relevant Major Development Plans and/or Construction Environment Management Plans'

Note: The monitoring listed above is correct at the time of preparation, but may change over the planning period of the Master Plan in response to advice from appropriately qualified and experienced professionals.



Subject specific monitoring programs are discussed in the following sections. Monitoring is undertaken by suitably qualified persons, and where available, samples requiring laboratory analysis are tested at National Association of Testing Authority accredited laboratories.

GCAPL considers monitoring results following each monitoring round to identify if any actions are necessary and provides relevant monitoring reports along with an overview of monitoring undertaken to DIRD in the Annual Environment Report. If a non-conformance or declining trend is identified, appropriate corrective actions are implemented. GCAPL provides the AEO with copies of relevant monitoring results and reports.

Environmental incidents are reported through the EMS incident reporting system, including notification of the AEO. Incidents are followed up to avoid recurrence.

Corrective actions may include initial investigations, ongoing monitoring and site management.

11.5.7 Training, Communication and Awareness

GCAPL provides training for GCAPL personnel whose work may have an adverse environmental impact. As a minimum, training is conducted to ensure staff are aware of:

- » General environmental attributes of Gold Coast Airport
- » Applicable legislative requirements
- » Roles and responsibilities to comply with the Environmental Policy, Airport Master Plan and the EMS.

GCAPL also employs specialist environmental staff who hold relevant tertiary qualifications in environmental management or environmental science.



Other airport operators and tenants are required to provide appropriate environmental training for their staff. This typically includes general environmental awareness, environmental management, spill response and awareness of legal responsibilities. This training is reviewed as part of tenant audits, which are also used to raise tenant awareness of environmental concerns or changes in environmental policies and systems relevant to their operations.

As part of site inductions, contractors receive basic environmental awareness training and are inducted to relevant procedures for specific activities that could have adverse environmental impacts.

11.5.8 Stakeholder Engagement

Environmental management matters are communicated to internal and external stakeholders through committees, forums and consultation undertaken as part of the Master Plan and Major Development Plans. Specific stakeholder consultation is undertaken for relevant projects.

GCAPL undertook considerable community consultation to support Project LIFT and the ILS project, which involved engaging with an array of stakeholders regarding the proposed developments. The outcomes of this consultation have been used to inform the preparation of this chapter.

GCAPL has a CACG, which includes representatives from a variety of stakeholders including local environmental interest groups. GCAPL also intermittently attends and provides briefings to council and community consultation forums.

GCAPL also hosts the ANACC. This committee is primarily focused on aircraft noise, as detailed in Chapter 5.0.



11.5.9 Achievements in Environmental Management 2011-2016

- » Maintained ISO 14001 certification for the Airport EMSⁱ
- » Regularly audited tenants and new airport operator facilities and activities for environmental performanceⁱ
- » Prepared and approved CEMPs for relevant construction projectsⁱ
- » Implemented GCAPL’s EMS training procedure to ensure staff receive inductions and training in relation to environmental aspects of their activitiesⁱ
- » Conducted regular and ongoing environmental monitoringⁱ.

11.5.10 Objectives and Targets for Environmental Management

Objectives

To limit adverse environmental impacts through the promotion, implementation and continual improvement of environmental management practices, refer Table 11-3.

Table 11-3 Targets for Environmental Management

Target	Timeframe
Continue to undertake tenant environmental audits and assess new airport operators for environmental risk. Audits should consider: <ul style="list-style-type: none"> » Energy consumption » Waste management » Water use » Stormwater or operational discharges » Activities with the potential to cause soil contamination. 	Ongoing
Continue to ensure construction projects have suitable environmental management practices, including preparation of CEMPs for projects with significant environmental risks.	Ongoing
Continue to ensure GCAPL staff and relevant contractors receive inductions and training regarding the environmental aspects of their activities.	Ongoing
Carry out environmental monitoring as outlined in Section 11.5.6.	Ongoing

11.6 SUSTAINABLE DEVELOPMENT

11.6.1 Overview and Objectives

Objectives

- » Reduce reliance on and consumption of natural resources from airport activities
- » Reduce volume of waste requiring disposal to landfill.

Sustainable development encompasses all aspects of airport operations and development related to resource consumption, environmental impacts, climate change and social or community outcomes.

This section aims to promote the development and operation of infrastructure in a manner that minimises or reduces:

- » Water consumption
- » Energy use and carbon footprint
- » Waste generation, particularly waste disposed to landfill
- » General impacts on environmental values.

GCAPL works with tenants and operators to promote the efficient use of water as part of their operations. The implementation of efficiency measures is reviewed during tenant audits. New developments are required to install water efficient fixtures and fittings and are encouraged to include rainwater harvesting systems.

Energy saving measures, such as LED lighting and measures to improve the efficiency of air conditioning systems have been progressively introduced by GCAPL. They also encourage tenants to reduce their electricity use through the development control process and tenant audits. Many airport tenants now proactively reduce their electricity consumption through the use of solar installations, green building design and other measures.

GCAPL has implemented recycling programs in Terminal 1 public spaces and for cardboard, which have diverted over 600 tonnes of waste from landfill over the past 5 years. GCAPL sends waste oil, batteries, printer cartridges and office paper

for recycling and unwanted building materials are stockpiled onsite for re-use where possible. GCAPL also provides commingled recycling for tenants.

11.6.2 Potential Environmental Impacts

Impacts associated with sustainability are typically cumulative across the community. The cumulative effect of relatively small individual contributions can lead to resource scarcity and a decline in natural values. Consumption of renewable and non-renewable resources, including water and energy, expends natural resources and often creates by-products that need to be managed. Reducing raw material consumption reduces the demand on natural resources and also reduces greenhouse gas emissions.

Using electricity and fuel reduces the available non-renewable resources (coal, gas and oil) and produces greenhouse gas emissions. Primary uses of energy and fuel at the Airport include electricity used for lighting, air conditioning, refrigeration and the like; gas used by operators for food preparation; and fuel used in vehicles and plant.

Fresh water is a limited resource, particularly in times of drought when water restrictions are often enacted. As a large commercial facility, the Airport is a major user of water in the local area. Water is used for amenities, aircraft and vehicle washing, firefighting and training, kitchens, cleaning and hygiene and construction and maintenance activities.

Reducing waste disposed to landfill can help to reduce the demand for and consumption of raw materials. The AEPR defines waste, whether or not it has a value or use, as refuse in any form, discarded or disused plant or equipment, or an industrial by-product. The main sources of waste at the Airport include terminal operations (including retail, food and beverage outlets), aircraft waste, construction and demolition activities, tenant operations and maintenance activities.

Some of these activities generate hazardous or regulated wastes, which have specific management requirements addressed in Section 11.13.

In addition, airport infrastructure and operations could be affected by potential impacts of climate change, including increased occurrence of heatwaves, severe storms, flooding and sea level rise. These effects could lead to increased resource use (e.g. increased energy consumption for cooling, increased material consumption for storm repairs).

11.6.3 Measures to Prevent, Control or Reduce Environmental Impact

Airport tenants, contractors and operators are required to ensure appropriate systems and procedures are in place to manage specific environmental risks associated with their activities from resources consumption. Tenants are encouraged to reduce energy consumption through leasing arrangements, Development Guidelines and the Tenant Environmental Management Guidelines. Recommendations are made to tenants during audits on methods to reduce their energy and resource consumption and waste generation.

GCAPL regularly inspects the Airport, tenant, contractor and operator activities. Where excessive resource consumption is observed, airport operators are required to monitor and reduce this consumption.

Measures implemented by GCAPL, tenants and operators at the Airport to reduce resource consumption include:

Energy

- » Energy efficiency measures (LED lighting and the

- like) to reduce power consumption
- » Regular maintenance of vehicles, plant and equipment
- » Use of building management systems to control lighting, air-conditioning and other automated functions
- » Designing buildings to Green Star or National Australian Built Environment Rating System to reduce building resource use and energy consumption
- » Educating staff and tenants of the importance of conserving energy and resources.

Water

- » Rainwater harvesting and other alternative water supplies (spear pumps) to reduce reliance on potable water supplies for non-potable purposes
- » Use of water efficient fixtures and fittings
- » Use of non-potable water where appropriate for construction.

Resources and Waste

- » Management of waste in accordance with the waste management hierarchy (Figure 11.5)
- » Waste segregation to recover recyclable wastes to reduce raw material consumption
- » Sustainability and waste management requirements to be addressed through CEMPs.

In addition, GCAPL seeks to maintain strong community engagement to through:

- » The CACG, which is used to exchange information and provide feedback on aspects relating to airport operations

Table 11-4 Targets for Sustainable Development

Target	Timeframe
Develop a carbon management strategy and associated management plans to reduce GCAPL's carbon footprint.	2018, ongoing
Undertake waste management review and audit to identify opportunities for waste reduction and diversion from landfill.	2019 & 2021
Incorporate resource use efficiency measures for new developments. Where feasible, principles set out by a recognised authority on sustainability, such as the Green Building Council of Australia Green Star rating scheme, should be adopted.	Ongoing
New developments to incorporate water efficient fixtures and fittings where feasible, including rainwater harvesting and re-use.	Ongoing
Continue to ensure CEMPs incorporate measures to minimise draw on natural resources and maximise diversion of waste from landfill during the construction phase of developments.	Ongoing

- » The ANACC, which is a technical committee that focuses specifically on airport noise from airport operations. The committee considers, and where appropriate, makes recommendations on noise related matters to the CACG and relevant authorities. The ANACC comprises representatives endorsed by local community groups, aviation representatives and government representatives
- » Consultation with regulatory, industry and public representative groups on matters associated with preparing the Airport Master Plan and Major Development Plans for relevant projects
- » Attendance at community and other stakeholder meetings, providing presentations and the like
- » Specific stakeholder consultation associated with relevant projects.

11.6.4 Achievements in Sustainable Development 2011–2016

Energy

- » Designed the Ivy Pearce building to achieve a 4.5 star National Australian Built Environment Rating System ratingⁱ
- » Analysed the carbon footprint for GCAPL operated facilitiesⁱ
- » Installed water and energy efficient fixtures and fittings, including LED lighting, to reduce electricity and water consumption across the Airportⁱⁱ
- » Installation of solar power systems by airport tenantsⁱⁱ
- » Installed Steril-Aire UV light emitters on selected terminal air-conditioning units to improve energy efficiency and indoor air qualityⁱⁱ

Water

- » Incorporated rainwater harvesting and re-use into the Ivy Pearce (Australian Federal Police) building, Air Gold Coast Hangar Redevelopment, JUHI, SCU Building B and Control Tower Complex Upgradeⁱ
- » Installed rainwater harvesting in the low cost carrier terminal redevelopment (2010), which continues to yield significant savings in potable water consumption, having provided 93 megalitres as of 2015ⁱ

Resources and Waste

- » Installed new recycling stations as an outcome of the review into recycling in terminal public spacesⁱ
- » Provided commingled recycling bins to tenants, delivering a significant reduction in waste disposed to landfillⁱⁱ
- » Implemented a green product program, which uses natural and sustainable products where feasible for terminal cleaning and consumables in amenitiesⁱⁱ
- » Reviewed resource use across GCAPL activities, including carbon footprint analysis of facilities under GCAPL's operational control to inform preparation of a strategy to reduce resource consumptionⁱ
- » Monitored opportunities to improve resource use as part of tenant auditsⁱ
- » Addressed construction phase sustainability in CEMPsⁱ.

Waste Management Hierarchy

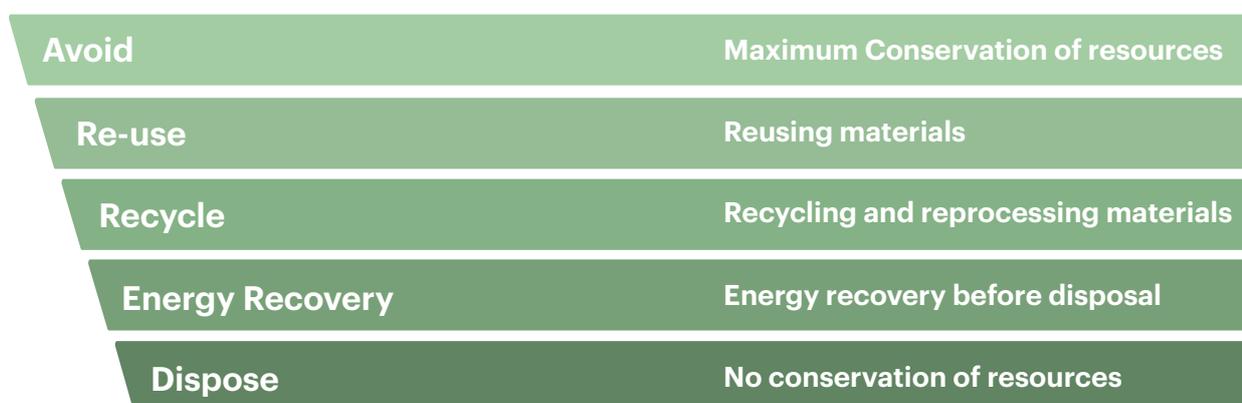


Figure 11.5 Waste Management Hierarchy

(i) Target achieved from 2011 Master Plan (ii) Additional achievement

11.7 SOIL MANAGEMENT

11.7.1 Overview and Objectives

Objective

- » To reduce adverse impacts to soil from airport activities and appropriately manage and/or rehabilitate contaminated sites, refer Table 11-5.

The Airport is in a low-lying area with elevations typically less than ten metres Australian Height Datum between the Pacific Ocean and the Cobaki Broadwater. The site is flat, with shallow grades across the property. The formerly swampy site has been extensively modified to create a suitable platform for development, with considerable reshaping using fill from site. Given the site's low-lying, coastal location, areas of actual and potential acid sulfate soils occur at the Airport.

Soils at the Airport are characterised by silty sands and layers of hardened sand typical of flat coastal sand plains. Mineral sandmining occurred on parts of the Airport site until 2000, when the sandmining leases were terminated.

With the exception of PFASs, most contaminated sites have been remediated or have management plans. The extent of PFASs contamination on site is still being investigated. Given the persistent nature of PFASs, it is expected that associated management will be a long term process in collaboration with airport tenants who's activities have led to PFASs contamination and regulatory agencies.

Contaminated and potentially contaminated sites, which are shown on Figure 11.6. Whilst sites shown in figure 11.6 include areas know to contain elevated PFASs levels, investigations have identified that PFASs are present in low levels in surface and groundwater across the majority of airport site and intermittently in soils.

11.7.2 Potential Environmental Impacts

Activities with the potential to affect soil at Gold Coast 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 wash down
- » Aircraft, vehicle, mechanical plant and electrical equipment maintenance
- » Car parking
- » Historical land uses such as landfill and fire training
- » Importing and placing fill material
- » Waste management infrastructure, storage and disposal
- » Demolishing buildings containing hazardous materials
- » Surrounding land use.

These activities have the potential to cause:

- » Contamination from spillage, leakage, seepage, or residual runoff from hardstand areas
- » Migration of existing contamination from the original source through natural pathways or disturbance during construction
- » Disturbance of actual or potential acid sulfate soils
- » Erosion.

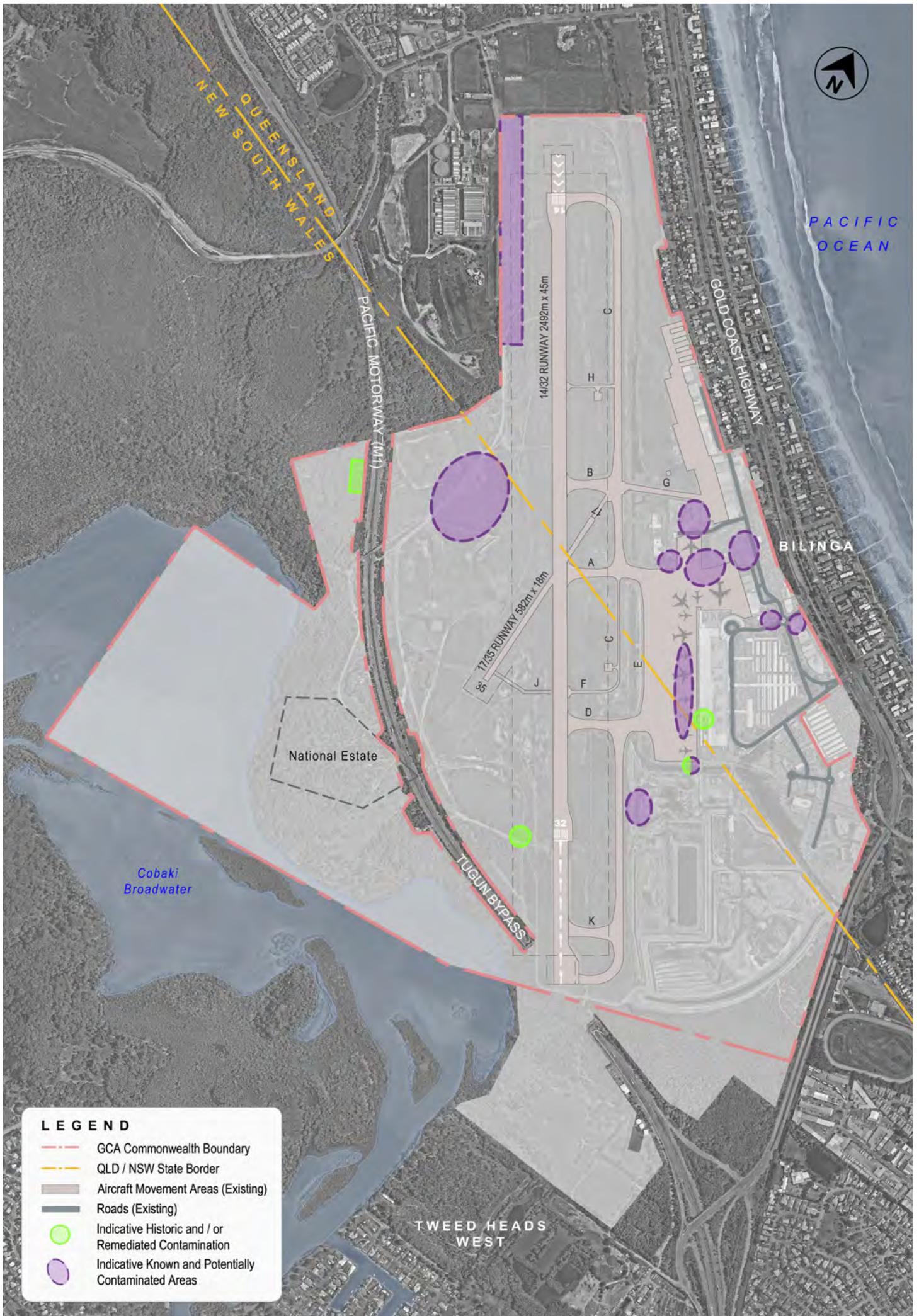


Figure 11.6 Contaminated Land Sites

11.7.3 Measures to Prevent, Control or Reduce Environmental Impact

GCAPL maintain a contaminated land register, which is regularly updated to reflect remediation progress and identification of new areas of contamination. The register is also used to prioritise management and remediation activities by targeting areas of highest risk.

Activities with the potential to contaminate soil or groundwater undergo a risk assessment to inform appropriate management procedures. GCAPL implements a policy of not installing new underground storage tanks, which is a key measure in preventing new contamination.

Measures to manage potential impacts to soils include:

- » Environmental inductions
- » Spill response and reporting procedures
- » Waste handling procedures
- » Installation and maintenance of pollution control devices such as bunds
- » Tenant and construction audits and routine inspections
- » Maintenance of the contaminated land register
- » CEMP's prepared for relevant construction projects addressing potential soil impacts including acid sulfate soil and contaminated land management measures.

Airport tenants, contractors and operators are required to ensure appropriate systems and procedures are in place to manage specific environmental risks associated with their activities.

GCAPL regularly inspects the Airport, tenant, contractor and operator activities. Where there is soil or groundwater contamination caused by their operations, airport operators are required to undertake relevant measures to monitor, manage or remediate the contamination.

11.7.4 Achievements in Soil Management 2011–2016

- » Remediation of a contaminated site associated with historic aviation fuel contaminationⁱⁱ
- » Addressed soil contamination in CEMPsⁱ

Table 11-5 Targets for Soil Management

Target	Timeframe
Finalise Contaminated Site Review. ⁱⁱⁱ	2018
Review and update the contaminated sites register.	2018 & 2020 or following identification of new contaminated sites
Continue to import only certified clean fill for use at the Airport.	Ongoing
Review appropriateness of management plans for contaminated sites.	2018 & 2020 or following identification of new contaminated sites
Continue to ensure CEMPs incorporate measures to minimise potential adverse impacts to soil associated with contraction activities.	Ongoing



11.8 SURFACE WATER AND GROUNDWATER

11.8.1 Overview and Objectives

Objective

- » To reduce adverse impacts to surface water and groundwater from airport activities and appropriately manage or rehabilitate contaminated sites, refer Table 11-6.

Gold Coast Airport is close to several water bodies including the Pacific Ocean to the east, Cobaki Broadwater forming part of the Airport boundary to the west and south, and shallow groundwater across the Airport.

The surface and ground waters at the Airport are typical of coastal heath environments, being clear and tannin-stained with low pH. Being close to the ocean, surface and groundwater levels and quality can be affected by tidal influences.

The existing surface water drainage through the site has been developed progressively during airport development, sand mining and community infrastructure development since the mid-1900s. Significant modifications to the drainage regime have occurred as part of Project LIFT, which included a major drainage diversion around the project footprint.

Due to the development of the site over time the current drainage regime has been substantially altered from its once natural state.

Gold Coast Airport receives runoff from external catchments. These have the potential to affect surface water quality at the Airport. Runoff comes from residential developments, commercial centres, fuel stations, a wastewater treatment plant, landfill, quarry, desalination plant, recreational areas, the Pacific Motorway and Gold Coast Highway. Onsite aspects also have the potential to affect water quality, including acid sulfate soils, current and historic airport operations including former fire training using foams containing PFASs, former sandmining, and imported fill.

Surface Water

The major surface water features at Gold Coast Airport are the Cobaki Broadwater and the drainage reserve, which conveys stormwater through the Airport.

Surface expression of the groundwater in the drainage channels and other low-lying areas also influences surface water at Gold Coast Airport.

Groundwater

Groundwater at Gold Coast Airport comprises a shallow, unconfined aquifer in alluvial sands and gravelly deposits. Groundwater is typically encountered between 0.5 to 6.0 meters below ground level over much of the Airport.

Being a shallow aquifer, groundwater discharges into the Cobaki Broadwater, drainage channels and low-lying areas across the Airport. In some of these areas, associated groundwater dependent ecosystems, including frog habitat, are present.

Stormwater Drainage

Runoff from upstream catchments and the Airport is conveyed through the Airport's drainage network and discharges offsite and ultimately to the Kirra Beach outfall or the Cobaki Broadwater.

Runoff from upstream enters the Airport drainage reserve from Betty Diamond Park to the north and discharges to the south east. It eventually discharges to Kirra Beach from the City of Gold Coast Council drainage network. The drainage reserve has been channelled and piped for much of its length and is significantly modified from its natural condition. The drainage reserve has a catchment of approximately four square kilometres and is tidal near the southern end of the Airport. As part of Project LIFT, the drainage reserve was realigned to accommodate development of the apron in accordance with the master plan. The drainage reserve discharges at Kirra Beach via the City of Gold Coast Council drainage network.

Gold Coast Airport plays an important role in managing runoff from surrounding areas during significant rainfall events. The drainage reserve provides a considerable amount of storage in the overall drainage catchment. This storage reduces the peak flows leaving the site, which reduces the risk of flooding in downstream residential areas or public spaces.

GCAPL and City of Gold Coast Council have an agreement regarding maintenance of a set volume of flood storage in the Airport's drainage reserve. GCAPL acknowledges the importance of this storage volume at the Airport and will maintain this volume as much as possible to limit peak flows.

Cobaki Broadwater

The Cobaki Broadwater, a tributary of the Tweed River tidal system, is situated within and beyond the Airport boundary. It forms part of the flood basin of the Tweed River valley and has a large catchment that extends to the hinterland.

Monitoring undertaken by Tweed Shire Council (IWC, 2009)⁽ⁱ⁾ indicates that the Cobaki Broadwater generally exhibits fair water quality, with riparian vegetation along the Gold Coast Airport portion of the Broadwater being in good to very good condition. The Broadwater is used recreationally and provides estuarine habitat for both terrestrial and aquatic native species, including species listed under Commonwealth and state legislation.

Several ephemeral ponds and shallow channels that convey stormwater towards the Cobaki Broadwater constitute part of the Airport's drainage network. Some of these provide habitat for listed frog species and other fauna

11.8.2 Potential Environmental Impacts

Activities with the potential to affect water quality at Gold Coast Airport include:

- » Changes to the drainage network, leading to increased flow velocities or reduced flood storage capacity
- » Development that creates increased impermeable areas and increased runoff
- » Construction, earthworks and vegetation removal
- » Weed and pest control
- » Aircraft refuelling
- » Plant and equipment refuelling
- » Vehicle and aircraft wash down
- » Aircraft, vehicle, mechanical plant and equipment maintenance
- » Storage, handling, use and disposal of hazardous materials
- » Historical land uses
- » Waste management infrastructure and storage
- » Upstream land use
- » Known and potentially contaminated sites.

These activities have the potential to cause:

- » Contamination from spillage, leakage or seepage into stormwater infrastructure
- » Disturbance of actual or potential acid sulfate soils
- » Disturbance of known and potentially contaminated sites

- » Erosion and sedimentation eutrophication changes to hydrological regimes
- » Introduction or spread of pest animals and weeds
- » Degradation or loss of aquatic ecological values
- » Changes to the upstream or downstream flooding regime
- » Increased runoff generated from impermeable surfaces
- » Creation of mosquito-breeding habitat leading to public health risks.

11.8.3 Measures to Prevent, Control or Reduce Environmental Impact

Stormwater quality is monitored at sites across the Airport, including at the upstream and downstream points of the drainage reserve and drains leading to the Cobaki Broadwater. Parameters include physico-chemicals (e.g. dissolved oxygen), heavy metals, hydrocarbons, nutrients and other parameters that may be influenced by airport activities. Groundwater quality is also monitored at various sites across the Airport for the same parameters.

Measures to manage potential impacts to surface water and groundwater quality include:

- » 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 infrastructure including stormwater quality improvement devices

- » Tenant and construction audits and routine inspections
- » Incorporation of existing surface water and groundwater information in planning for new developments
- » Stormwater management design considered in new development and infrastructure design
- » Drainage infrastructure designed and modelled to prevent potential flood impacts
- » Erosion and sediment control measures implemented through construction and operational environmental management plans
- » CEMP's prepared for relevant construction projects addressing potential surface water and groundwater impacts including acid sulfate soil and contaminated land management measures.

Airport tenants, contractors and operators are required to ensure appropriate systems and procedures are in place to manage specific environmental risks associated with their activities.

GCAPL regularly inspects the Airport, tenant, contractor and operator activities. Where there is stormwater contamination or impacts to the drainage network caused by their operations, airport operators are required to undertake relevant measures to monitor, manage or remediate the impacts.

11.8.4 Achievements in Water Management 2011–2016

- » Installed new and upgraded existing stormwater quality improvement devicesⁱ
- » Implemented revised water quality monitoring programⁱ.

Table 11-6 Targets for Water Management

Target	Timeframe
Investigate feasibility of adopting Water Sensitive Urban Design principles across the Airport for new projects.	2019
Continue to install Stormwater Quality Improvement Devices at new discharge points and implement outcomes of Water Sensitive Urban Design feasibility assessment.	Ongoing
Continue the water quality monitoring program.	Ongoing
Continue to ensure CEMPs incorporate measures to reduce potential adverse impacts to surface water and groundwater associated with construction activities.	Ongoing

(i) Target achieved from 2011 Master Plan

The Cobaki Environment Precinct is dedicated to conservation preserving its important environmental and cultural heritage values.

11.9 BIODIVERSITY

11.9.1 Overview and Objectives

Objectives

- » To appropriately manage biodiversity values with due regard to mitigation of bird and wildlife strike risk
- » To reduce adverse impacts to surface water and groundwater from Airport activities
- » To protect and enhance the ecological values of conservation areas, refer Table 11-7.

Significant areas of Gold Coast Airport have been modified from their natural condition through clearing, development of airport infrastructure, sandmining and timber harvesting. While much of these areas remain cleared, particularly in operational areas, regrowth has occurred in some parts. Some areas of remnant vegetation remain west of the Tugun Bypass and small patches west of the primary runway. The remnant and regrowth vegetation at the Airport represents a subset of the coastal lowland vegetation once found from Coffs Harbour to Gladstone.

The recognised environmentally significant areas at the Airport are shown in Figure 11.4.

Vegetation at the Airport provides habitat for a variety of native species, including species and communities listed under Federal and state environmental legislation. Several introduced pests and weeds are also present in some areas.

Cobaki Environment Precinct

Part of the Cobaki Broadwater and surrounding area within the Airport lease has been designated as the Cobaki Environment Precinct. The Cobaki Environment Precinct facilitates wildlife movement, provides a physical vegetative buffer to the Cobaki Broadwater and assists in maintaining biodiversity in the catchment.

The Cobaki Environment Precinct makes up approximately 25 per cent of the Airport lease area: approximately 46.5 hectares of land and approximately 48 hectares of water. The total land area in the Cobaki Environment Precinct is dedicated to conservation purposes, reflecting its significant environmental and cultural heritage values. The Cobaki Environment Precinct is bordered on the north east by the Tugun Bypass and to the south and west by the Cobaki Broadwater.



The Cobaki Environment Precinct includes part of the Cobaki Broadwater, an important waterway that supports a range of flora and fauna species including migratory birds. The land in the Cobaki Environment Precinct also acts as a wildlife corridor, allowing ground-dwelling fauna and highly mobile fauna such as birds and bats to travel.

Many of the threatened flora and fauna species described below can be found in the Cobaki Environment Precinct.

A number of measures are in place to manage threats to protected flora and fauna species including monitoring programs, management of pest species and implementation of a management plan for the Cobaki Environment Precinct.

Flora

Diverse flora is present at the Airport, including species listed under Commonwealth and state environmental legislation. Species include:

- » Christmas bells (*Blandfordia grandiflora*)
 - » lesser swamp orchid (*Phaius australis*)
 - » pink nodding orchid (*Geodorum densiflorum*)
 - » stinking cryptocarya (*Cryptocarya foetida*)
 - » tiny wattle (*Acacia baueri baueri*)
 - » white lace flower (*Archidendron hendersonii*).
- A number of endangered ecological communities

are present at the Airport, including the following, which are listed under the *Threatened Species Conservation Act 1995* (NSW):

- » Coastal saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner bioregions
- » Freshwater wetlands on coastal floodplains of the New South Wales North Coast, Sydney Basin and South East Corner bioregions
- » Lowland rainforest on floodplain in the New South Wales North Coast bioregion
- » Subtropical coastal floodplain forest of the New South Wales North Coast bioregion
- » Swamp sclerophyll forest on coastal floodplains of the New South Wales North Coast, Sydney Basin and South East Corner bioregions
- » Swamp oak floodplain forest of the New South Wales North Coast, Sydney Basin and South East Corner bioregions.

In addition, an area mapped as Least Concern Regional Ecosystem (RE) 12.2.12/12.2.9 (Closed heath on seasonally waterlogged sand plains/Banksia aemula low open woodland on dunes and sand plains. Usually deeply leached soils.) under the *Vegetation Management Act 1999* (Qld) is present.

The above flora species and communities were a key component in determining environmentally significant areas as detailed in Section 11.5.5

Fauna

A variety of fauna species can be found in the environmentally significant areas, including species listed under Commonwealth and state environmental legislation, such as:

- » Amphibians: Wallum froglet (*Crinia tinnula*), Wallum sedge frog (*Litoria olongburensis*).
- » Birds: Black-necked stork (*Ephippiorhynchus asiaticus*), brolga (*Grus rubicunda*), bush stone curlew (*Burhinus grallarius*), collared kingfisher (*Todiramphus chloris*), eastern osprey (*Pandion haliaetus*), glossy black cockatoo (*Calyptorhynchus lathamii*), Lewin's rail (*Rallus pectoralis*), mangrove honeyeater (*Gavicalis fasciolaris*), powerful owl (*Ninox strenua*), rainbow bee eater (*Merops ornatus*), rose-crowned fruit-dove (*Ptilinopus regina*), superb fruit-dove (*Ptilinopus superbus*), varied sitella (*Daphoenositta chrysoptera*), white-bellied sea-eagle (*Haliaeetus leucogaster*), great egret (*Ardea alba*), white-throated needletail (*Hirundapus caudacutus*), Latham's snipe (*Gallinago hardwickii*), Pacific golden plover (*Pluvialis fulva*) and cattle egret (*Ardea ibis*).
- » Mammals: Beccari's freetail bat (*Mormopterus beccarii*), eastern bentwing bat (*Miniopterus schreibersii oceanensis*), eastern blossom bat (*Syconycteris australis*), eastern long-eared bat (*Nyctophilus bifax*), eastern tube-nosed bat (*Nyctimene robinsoni*), grey-headed flying-fox (*Pteropus poliocephalus*), hoary wattled bat (*Chalinolobus nigrogriseus*), large-footed myotis (*Myotis macropus*), little bentwing bat (*Miniopterus australis*), yellow-bellied sheath-tail bat (*Saccolaimus flaviventris*), common planigale (*Planigale maculata*), and koala (*Phascolarctos cinereus*).
- » Two regionally significant fauna species, the swordgrass brown butterfly (*Tisiphone abeona morrisi*) and the short-limbed snake skink (*Ophioscincus truncatus*), have also been observed in the Cobaki Environment Precinct.

Wildlife Hazard Risk

The presence of certain wildlife (such as large birds, large bats and flying foxes) at airports can pose a significant risk to aircraft safety. GCAPL has established a Bird and Wildlife Management Program to proactively manage bird and wildlife strike risk. Under the program, habitat is managed to limit attracting large or flocking bird and wildlife species. Active dispersal of bird and wildlife hazards occurs.

Lethal reinforcement of dispersal methods is occasionally required. It is completed under relevant licensing from the Office of Environment and Heritage (New South Wales) and the Department of Environment and Heritage Protection (Queensland).

11.9.2 Potential Environmental Impacts

GCAPL manages biodiversity at the Airport and works to reduce the potential impact of its operations on the biodiversity of the surrounding area. GCAPL proactively manages the Cobaki Environment Precinct in a manner that preserves the environmental values of this important area.

Activities with the potential to affect biodiversity at Gold Coast Airport 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.

These activities have the potential to cause:

- » Loss or fragmentation of habitat from clearing associated with new developments
- » Loss or degradation of foraging or breeding habitat
- » Reduced native biodiversity
- » Introduction and spread of weed and animal pest species
- » Direct injury to fauna through vehicle or aircraft collision or wildlife hazard procedures
- » Loss of native species from weed, pest and fire management activities
- » Disturbance of acid sulfate soils.

11.9.3 Measures to Prevent, Control or Reduce Environmental Impact

GCAPL undertakes periodic ecological surveys and project-specific ecological investigations. Proactive weed and pest control activities are undertaken regularly to manage their populations. GCAPL also prepares species abundance reporting associated with wildlife hazard management.



Measures to manage potential impacts to biodiversity values include:

- » Monitoring significant species
- » 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, including specific procedures for maintenance near frog habitat
- » Weed and animal pest control procedures
- » Installation and maintenance of pollution control devices such as bunds
- » Tenant and construction audits and routine inspections
- » Project-specific fauna relocation, flora translocation, in situ protection and provision of off-sites as relevant
- » Vegetation regeneration in suitable areas
- » Bushfire management planning and training
- » Wildlife hazard management procedures and training.
- » CEMP's prepared for relevant construction projects addressing potential biodiversity impacts.

Airport tenants, contractors and operators are required to ensure appropriate systems and procedures are in place to manage specific environmental risks associated with their activities.

GCAPL regularly inspects the Airport, tenant, contractor and operator activities. Where there is harm to biodiversity values caused by their operations, airport operators are required to undertake relevant measures to monitor, manage or remediate the impacts.

11.9.4 Achievements in Biodiversity Management 2011–2016

- » Completed the Cobaki Environment Precinct Management Planⁱ
- » Successfully managed pest species across the Airport and in coordination with neighbouring landholders, significantly reducing populations of fox, rabbit and brown hareⁱ
- » Managed declared and environmental weed species in the Cobaki Environment Precinct and across the Airport generallyⁱ
- » Defined GPS boundaries for environmentally significant areasⁱ
- » Continued and expanded the terrestrial fauna monitoring programⁱⁱ.

(i) Target achieved from 2011 Master Plan (ii) Additional achievement

Table 11-7 Targets for Biodiversity Management

Target	Timeframe
Progressively implement recommendations of the Cobaki Environment Precinct Management Plan.	2017–2022
Continue managing pest and invasive exotic species.	Annually
Continue biodiversity monitoring as set out in Section 11.5.6	Ongoing
Continue to ensure CEMPs incorporate measures to reduce potential adverse impacts to biodiversity associated with construction activities.	Ongoing
Incorporate management of project-specific offset areas into the overall environmental management regime.	As required

11.10 CULTURAL HERITAGE

11.10.1 Overview and Objectives

Objectives

- » To manage Cultural Heritage values in accordance with applicable legislative requirements
- » To proactively engage with cultural heritage stakeholders

The statutory process for identifying, planning and managing objects and matters at the Airport that have natural, Indigenous and heritage value is specified in the Act and AEPR. The EPBC Act also specifies requirements for managing Commonwealth Heritage Places that meet the Commonwealth Heritage criteria for their natural, Indigenous or heritage values.

Gold Coast Airport is in a broader cultural landscape of high significance to the Indigenous people of the region. It was a favoured meeting place and camping ground. This was in part due to the abundant food sources in the area, including fish and shellfish, along with food from swamps and lowland forests.

Extensive ground disturbance over the past 50 years, from sand mining, land reclamation and development, has altered or removed much of the physical heritage that may have been present at the Airport. However, less disturbed areas of the Airport, such as the Cobaki Environment Precinct, still contain relatively undisturbed cultural heritage sites. Several cultural heritage sites are also present

in more disturbed areas of the Airport, including the Western Enterprise Precinct and southern portions of the Terminal and Runway Precincts. Some cultural heritage sites also exist within developed portions of the airport. These sites are where artefacts have been found within the soil profile indicating the potential presence of other artefacts below the developed profile of the site. Indicative locations of known cultural heritage sites are shown in Figure 11.7.

A number of cultural heritage stakeholders have an interest in the protection and management of active cultural heritage values at the Airport. They are consulted on relevant projects and other matters affecting cultural heritage values.

The first major archaeological study at Gold Coast Airport was conducted in 1990 by Dr J. Hall. It revealed Aboriginal artefacts and midden in the area between the primary runway and Cobaki Broadwater. In particular, an extensive camp and midden site complex was found. Results of the survey and liaison with Indigenous stakeholders by Dr Hall indicated the scientific and cultural values of the midden site were significant. Given the scientific and cultural significance of the site, and that the site retains much of its former environmental context, it is included on the Commonwealth Heritage List.

Since Hall's work in 1990, numerous investigations have been carried out in consultation with the local Indigenous communities, including those associated with the Tugun Bypass, Gold Coast Airport Runway Extension, the ILS Project and Project LIFT.

These latter investigations have provided additional knowledge regarding the cultural values of the site and extent that intact culture heritage sites may be present. The most recent of these investigation being associated with the construction phase of Project LIFT where cultural monitoring together with archaeological salvage excavations reveled a number of artefacts from the project footprint.

No European heritage values have been identified at the Airport.

11.10.2 Potential Environmental Impacts

GCAPL manages cultural heritage values in the Airport, which includes proactively managing the Cobaki Environment Precinct in a manner that preserves the cultural heritage values of this area.

Activities with the potential to affect cultural heritage at Gold Coast Airport include any ground disturbing activities that could damage known or unknown heritage value. This would include:

- » Grounds maintenance activities including vegetation clearing and slashing
- » Weed and animal pest control
- » Vehicle movements off formed tracks
- » Construction and demolition works
- » Bushfires
- » Unauthorised activities, particularly illegal camping and motorbike access in the Cobaki Environment Precinct.

11.10.3 Measures to Prevent, Control or Reduce Environmental Impact

Measures to manage potential impacts to cultural heritage include:

- » Cultural heritage awareness training for staff and contractors
- » Preparation and implementation of project-specific CHMPs for relevant projects that affect cultural heritage values
- » Regular inspections of cultural heritage sites
- » Ongoing liaison with Indigenous stakeholders.
- » CEMP's prepared for relevant construction projects addressing potential cultural heritage impacts.

11.10.4 Achievements in Cultural Heritage Management 2011–2016

- » Conducted detailed cultural heritage investigations in consultation with Indigenous stakeholders as part of Project LIFT and ILS Project ⁱ
- » Updated GCAPL's Indigenous stakeholder register ⁱ

Table 11-8 Targets for Cultural Heritage Management

Target	Timeframe
Actively engage and consult with cultural heritage stakeholders regarding activities potentially impacting cultural heritage values at the Airport.	Annually as a minimum
Ensure protection of cultural heritage values is considered in preparing the bushfire management plan for the Cobaki Environment Precinct when addressing targets under Section 11.9.	2018
Continue to provide cultural heritage awareness training to GCAPL staff and relevant airport tenants and contractors.	Ongoing
Continue to ensure CEMPs incorporate measures to reduce potential adverse impacts to cultural heritage associated with construction activities.	Ongoing
Finalise whole-of-airport cultural heritage management plan ⁱⁱ	2018

(i) Additional achievement (ii) Target carried over from 2011 Master Plan

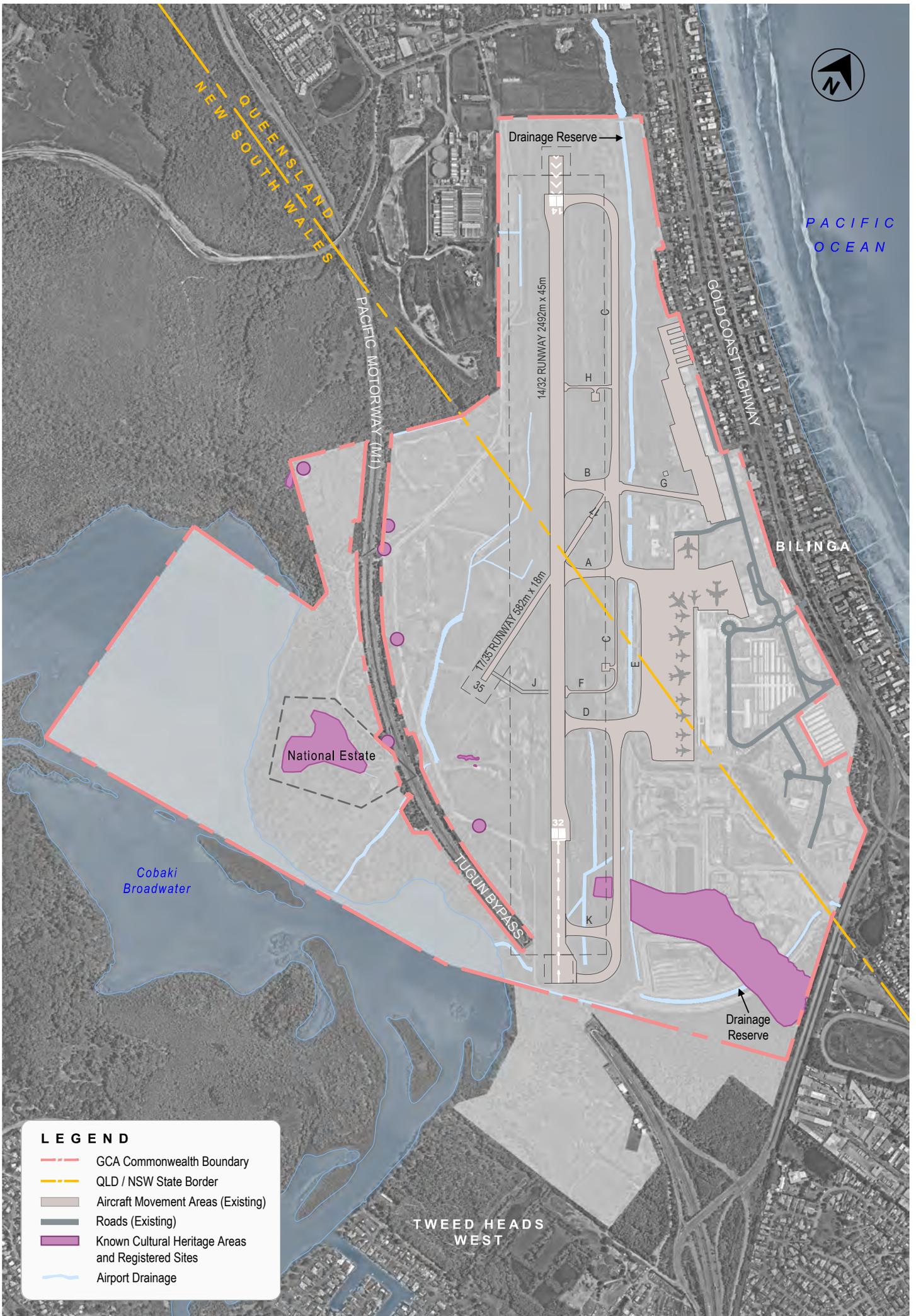


Figure 11.7 Cultural Heritage Areas at Gold Coast Airport

11.11 LOCAL AIR QUALITY

11.11.1 Overview and Objectives

Objective

- » To appropriately manage adverse impacts to local and regional air quality as a result of on airport ground-based activities, refer Table 11-10.

Air quality requirements under the Act and AEPR apply to emissions associated with ground-based airport activities (including aircraft ground running and idling on aprons). Air emissions from flying, taxiing, landing and take-off are governed under separate legislation (*Air Services Act 1995* and *Air Navigation (Aircraft Engine Emissions) Regulations*). They are not covered in this Master Plan.

National air quality standards are defined in the National Environment Protection (Ambient Air Quality) Measure (Air NEPM). The objective of the Air NEPM is to protect human health from poor air quality. The Air NEPM is implemented through the Environmental Protection Regulation 2008 and is administered by the Department of Environment and Heritage Protection in Queensland. In New South Wales, it is implemented through the Protection of the Environment Operations (Clean Air) Regulation 2010 and is administered by the Office of Environment and Heritage.

The Airport is located in a relatively urbanised airshed. Surrounding land uses include significant urban development, the Pacific Motorway and Gold Coast Highway. Emissions from urban development and traffic around the Airport are expected to be significantly greater than the emissions from ground operations at the Airport. The main sources of emissions from the Airport relate to operational vehicles, stand-by generators, airborne dust associated with construction and aircraft emissions from ground running and idling on aprons. Typical pollutants that may be emitted from ground operations include carbon dioxide, carbon monoxide, nitrous oxides, sulphurous oxides, particulates (PM10 and PM2.5), volatile organic compounds and dust from construction.

Regional air quality monitoring is undertaken by the Queensland Government in south east Queensland. The air quality monitoring station closest to the Airport is at Springwood (80 kilometres). The Springwood site has data available from 1999 to 2014. Springwood is a “population average” station, and indicates the air quality experienced by most of the population of south east Queensland. The most recent available air quality results from 2014 are summarised in Table 11-9 and compared to the NEPM and AEPR requirements. The regional air quality is well within the guidelines.

Table 11-9 Regional Air Quality for 2014

Pollutant	Unit	Result at Springwood	NEPM advisory standard	AEPR objective
PM10 (90 percentile)	g/m ³	20.9	50	
PM2.5 (90 percentile)	g/m ³	9.3	25	
Daily peak 1-hour average nitrogen dioxide	g/m ³	0.023	0.12 ppm	0.16 ppm
Daily 1-hour average ozone	g/m ³	0.034	0.12 ppm	—
Daily peak 1-hour average sulfur dioxide	g/m ³	0.004	0.2 ppm	0.2 ppm

11.11.2 Potential Environmental Impacts

GCAPL manages airport operations in a way that prevents air emissions causing a nuisance or harm to neighbouring receptors.

Activities with the potential to generate air emissions at Gold Coast Airport 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
- » Grounds maintenance, including vegetation removal and weed control
- » Bushfire
- » Construction and demolition works.

These activities have the potential to cause:

- » Air emissions, including greenhouse gases and potentially ozone depleting substances
- » Reduced visibility (mainly from dust or smoke)
- » Public nuisance or health issues
- » Offensive or concerning odours (e.g. fuel odours).

11.11.3 Measures to Prevent, Control or Reduce Environmental Impact

Measures to manage potential impacts to air quality include:

- » Environmental awareness and inductions
- » Tenant and construction audits
- » Stabilisation of disturbed areas

- » Appropriate collection and disposal of ozone-depleting substances from air-conditioning units
- » Maintenance of vegetation cover in undeveloped areas
- » Maintenance of vehicles, plant and equipment to prescribed standards.
- » CEMP's prepared for relevant construction projects addressing potential local air quality impacts including dust control measures.

GCAPL is also planning the phased replacement of terminal package air-conditioners that use ozone depleting substances.

Airport tenants, contractors and operators are required to ensure appropriate systems and procedures are in place to manage specific environmental risks associated with their activities.

GCAPL regularly inspects the Airport, tenant, contractor and operator activities. Where there are unacceptable air emissions caused by their operations, airport operators are required to undertake relevant measures to monitor, manage or remediate the impacts.

11.11.4 Achievements in Local Air Quality Management 2011-2016

- » Appropriately serviced and maintained GCAPL plant and equipmentⁱ
- » Investigated the use of ozone depleting substances, which showed the only ozone depleting substances used by GCAPL are the terminal package air-conditioning units. These are aging units, and will be replaced with water-chilled units as they are decommissionedⁱ.

Table 11-10 Targets for Local Air Quality Management

Target	Timeframe
Ensure appropriate servicing and maintenance of plant and equipment. This applies to both GCAPL and other airport operators.	Ongoing
Investigate the use of alternate fuels and electric-powered plant used by GCAPL.	2020
Continue to ensure CEMPs incorporate measures to reduce potential adverse impacts to local and regional air quality associated with construction activities.	Ongoing

11.12 GROUND-BASED NOISE

11.12.1 Overview and Objectives

Objective

- » To reduce nuisance to sensitive receptors from ground-based noise associated with airport activities.

Noise requirements under the Airports Act and AEPR apply to noise associated with ground-based airport activities and excludes aircraft noise except for ground running and idling on aprons. Noise generated by aircraft while flying, landing, taking off or taxiing is governed by the *Air Services Act 1995*, *Air Navigation Act 1920*, Air Navigation (Aircraft Engine Emissions) Regulations and Air Navigation (Coolangatta Airport Curfew) Regulations 1999. Aircraft noise is addressed in Chapter 5.0.

Noise receptors surrounding the Airport that could be affected by ground-based noise are predominantly the urban areas to the north, east and south of the Airport. The ambient noise environment is influenced by airport operations, the Pacific Motorway and Gold Coast Highway and surf noise from the beach.

From time to time it is necessary to conduct construction or maintenance works out of hours, for example runway resurfacing. Such activities are necessary to allow daytime operation of the Airport but can affect residents' amenity. Such activities are carefully managed to reduce off-site impacts.

11.12.2 Potential Environmental Impacts

GCAPL manage ground-based noise to ensure it does not cause nuisance to, or adversely affect, neighbouring receptors. Activities with the potential to generate ground-based noise at Gold Coast Airport include:

- » Aircraft ground running and idling on aprons
- » Aircraft maintenance and testing activities
- » Fixed and mobile plant and equipment
- » General airport and infrastructure maintenance activities
- » Construction and demolition works
- » Internal road network traffic
- » Tenant and operator activities.

These activities have the potential to cause:

- » Nuisance to airport operators and the community
- » Disruption in roosting and breeding behaviour of local fauna.

11.12.3 Measures to Prevent, Control or Reduce Environmental Impact

GCAPL receives ground-based noise enquiries directly. Noise enquiries are then investigated. Corrective actions are implemented as required to help prevent the issue recurring.

Noise monitoring is undertaken in response to noise enquiries and for project-specific requirements. No regular monitoring is undertaken.

Measures to manage potential impacts from ground-based noise emissions include:

- » Environmental awareness and inductions
- » Recording, investigation and follow-up of noise enquiries
- » Implementing operational procedures for noise-generating activities
- » Implementing noise control measures through CEMPs as standard
- » Tenant and construction audits
- » Aircraft ground running policy and review of the policy in response to airport operational matters and tenant feedback
- » Regular servicing and maintenance of vehicles, plant and equipment.

GCAPL regularly inspects the Airport, tenant, contractor and operator activities. Airport tenants, contractors and operators are required to ensure appropriate systems and procedures are in place to manage specific environmental risks associated with their activities.

Table 11-11 Targets for Ground Based Noise management

Target	Timeframe
Continue to implement and review management measures for noise identified in GCAPL's EMS	Ongoing
Timely investigation of any reported inappropriate noise generation	As required
Continue to ensure all CEMP(s) incorporate measures to minimise potential adverse noise impacts and associated with construction activities	As required

11.13 HAZARDOUS MATERIALS

11.13.1 Overview and Objectives

Objectives

- » To ensure the storage, handling and use of hazardous materials is carried out in accordance with applicable legislation and standards
- » Where feasible, substitute, reduce or eliminate the use of hazardous materials, refer Table 11-12.

Hazardous materials are defined in the *Dangerous Goods Safety Management Act 2001* (Qld, repealed) as 'substances with the potential to cause harm to persons, property or the environment'. To prevent this potential harm, hazardous materials are handled and used in an appropriate manner.

Airport operations inevitably require a variety of hazardous materials to be used. As Federal legislation does not address hazardous materials, they are managed in accordance with the *Dangerous Goods Safety Management Act 2001* (Qld, repealed), *Work Health and Safety Act 2011* and relevant Australian Standards.

11.13.2 Potential Environmental Impacts

GCAPL ensures hazardous materials used in airport operations are managed appropriately so they do not affect the Airport or surrounding environment. Airport tenants retain responsibility for hazardous materials held in individual premises.

Activities with the potential to involve hazardous materials at Gold Coast Airport include:

- » Bulk fuel storage and handling including aviation, unleaded and diesel fuels
- » Aircraft refuelling, vehicle and aircraft wash down
- » Vehicle refuelling at the service station
- » 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.

These activities have the potential to cause:

- » Release of hazardous materials, leading to water, land and air contamination
- » Human and ecosystem health impacts.

11.13.3 Measures to Prevent, Control or Reduce Environmental Impact

Hazardous materials in relation to GCAPL's activities are managed under different mechanisms depending on the nature of the activity. These mechanisms include:

- » EMS – includes procedures for spill response, interceptor trap maintenance, environment incident reporting, tenant audits etc.
- » Airport Emergency Plan – details procedures for dealing with major incidents in relation to

hazardous materials, fuel and oil spills.

- » GCAPL's Workplace Health and Safety procedures – details procedures in relation to storage, handling and disposal of asbestos and other hazardous materials, maintenance of asbestos register, maintenance of site chemical manifest and Material Safety Data Sheet register (ChemWatch), Workplace Health and Safety incident reporting, etc.

Gold Coast Airport tenants, contractors and other airport operators are also required to ensure appropriate systems and/or procedures are in place to manage specific environmental risks associated with their activities and abide by the relevant legislative requirements for the management of hazardous materials.

GCAPL regularly inspects the Airport, tenant, contractor and operator activities to check environmental risks associated with their activities in relation to hazardous materials are being managed appropriately.

Management of hazardous materials is also addressed through CEMPs for relevant construction projects.

11.13.4 Achievements in Hazardous Materials Management 2011–2016

- » Tested the single underground storage tank under GCAPL's control in 2012, which showed no soil contamination had occurredⁱ and subsequently decommissioned and removed the underground storage tank in 2013ⁱⁱ
- » Regularly audited chemicals used by GCAPL to ensure that the ChemWatch database and Material Safety Data Sheets are up to dateⁱ
- » Reviewed the use of hazardous materials by tenants during auditsⁱ
- » Reviewed hazardous materials use for substitution, minimisation or elimination possibilities. Eleven products were identified however, these were necessary for operational use and no suitable alternatives were availableⁱ
- » Implemented a green product program, which uses natural and sustainable products where feasible for terminal cleaning and consumables in amenities, which limits the use of hazardous materialsⁱ
- » Regularly audited asbestos-containing materials to update the Asbestos Management Planⁱ.

Table 11-12 Targets for Hazardous Materials Management

Target	Timeframe
Review and update the Asbestos Management Plan and register.	As per NOHSC:2018 (2005) *
Continue to monitor chemical storage and handling practices during internal and tenant audits.	As per internal and tenant audit schedule
Continue to monitor availability of up-to-date Materials Safety Data Sheets at points of use during internal and tenant audits.	As per internal and tenant audit schedule
Continue to ensure CEMPs incorporate measures to reduce potential adverse impacts associated with the storage, handling and use of hazardous materials associated with construction activities.	Ongoing

* National code of practice for the management and control of asbestos in workplaces



12.0

Development Plan



12.1 INTRODUCTION

A summary of future developments forecasted at the time of issue of the 2017 Master Plan are described in Table 12-1 and Table 12-2.

Changes in market conditions and subsequent impacts on the aviation and tourism industries make it difficult to plan the timing of infrastructure accurately. The tables identify potential future strategic developments.

It is appropriate and necessary to ensure that projects undertaken at Gold Coast Airport support GCAPL's vision and development objectives. To ensure the delivery of projects remain aligned with

GCAPL's corporate vision and long-term objectives projects may require alteration to their scope or timing. To retain this agility, flexibility is required in the delivery of projects. Implementation and delivery will be a process that is continuously monitored to ensure that development at the Airport remains aligned with market conditions, user requirements and legislative requirements.

As set out in Chapter 1.0, the Master Plan is based on an overarching vision and set of development objectives. To ensure that there is alignment with Gold Coast Airport's vision 'Engaging customers, connecting communities, exceptional experiences' each project has been cross-referenced with the four strategic pillars:



Economic growth



Environmental sustainability



People



Aviation operations



Five-Year Development Plan

Table 12-1 Five-Year Development Plan

Project	Description	Trigger
Stage 1 Terminal and apron redevelopment	Expansion and redevelopment of T1 Terminal	Passenger capacity requirements
Taxiway extension between taxiway A and D	Extension to existing taxiway to provide a full-length parallel taxiway to Runway 14/32	Subject to airside capacity requirements
General Aviation taxiway link	New taxiway link at the north end of the General Aviation apron to Runway 14/32	Subject to airside capacity requirements
General Aviation aircraft parking and Helicopter final approach and take-off area	Re-alignment of the existing Code C taxiway and new apron for aircraft parking	Subject to airside capacity requirements
Multiple aircraft ramp stand	Expansion of existing apron areas at the northern end of Terminal 1 to provide capacity for freight or overnight aircraft	Subject to airside capacity requirements
Freight facility and combined aviation support	Conversion of existing buildings to provide multiple-use facility responding to market requirements	Subject to airside capacity requirements
Runway lighting	Installation of approach lighting at the end of Runway 32	Subject to airport safety requirements
Short-term accommodation	150 to 300 bed hotel catering for demand for accommodation in proximity to the Airport	Subject to market conditions and identification of appropriate development partner
Relocation of the Runway 32 Landing Threshold	Relocation of the Runway 32 Landing Threshold by approximately 300 metres	Subject to airport safety requirements

 Economic Growth	 Environmental Sustainability	 Aviation Operations	 People
✓	✓	✓	✓
✓	✓	✓	
✓	✓	✓	
✓	✓	✓	✓
	✓	✓	
✓	✓	✓	
	✓	✓	✓
✓		✓	✓
✓		✓	✓

Five-Year Development Plan

Table 12-1 Five-Year Development Plan

Project	Description	Trigger
Refurbishment of Airport Central	Major refurbishment and rebranding of the existing Airport Central building	Subject to market conditions and identification of new tenants
Construct second access point to external road network on the Gold Coast Highway	Ensure sufficient capacity to provide convenient access to the Airport at all times	Subject to trip generation and performance of the local highway network
New internal road between Terminal Drive roundabout and the roundabout at Southern Cross Drive/Arthur Butler Parade	<p>Improve access to the southern area of the Airport by removing the Tom Norris Drive intersection</p> <p>Improved access to the Mallaraba car park site</p> <p>Increased capacity to SCU</p>	Subject to the capacity and performance of internal road
Reconfiguration of Terminal Drive roundabout	<p>Accessibility of new internal road</p> <p>Increased capacity of internal road network</p>	Subject to the capacity and performance of internal road
Multi-storey car park in front of terminal	<p>Increase parking capacity and consolidate parking into one multi-storey facility</p> <p>Enable development on land currently used for car parks</p>	Subject to airport demand
New face road	Increased kerb space for drop-off and pick-up, enabling installation of plaza and improvements to front of terminal security	Subject to airport demand and capacity and performance of the internal road network

 Economic Growth	 Environmental Sustainability	 Aviation Operations	 People
✓		✓	✓
✓	✓	✓	✓
		✓	✓
		✓	✓
✓		✓	✓
		✓	✓

Twenty-Year Development Plan

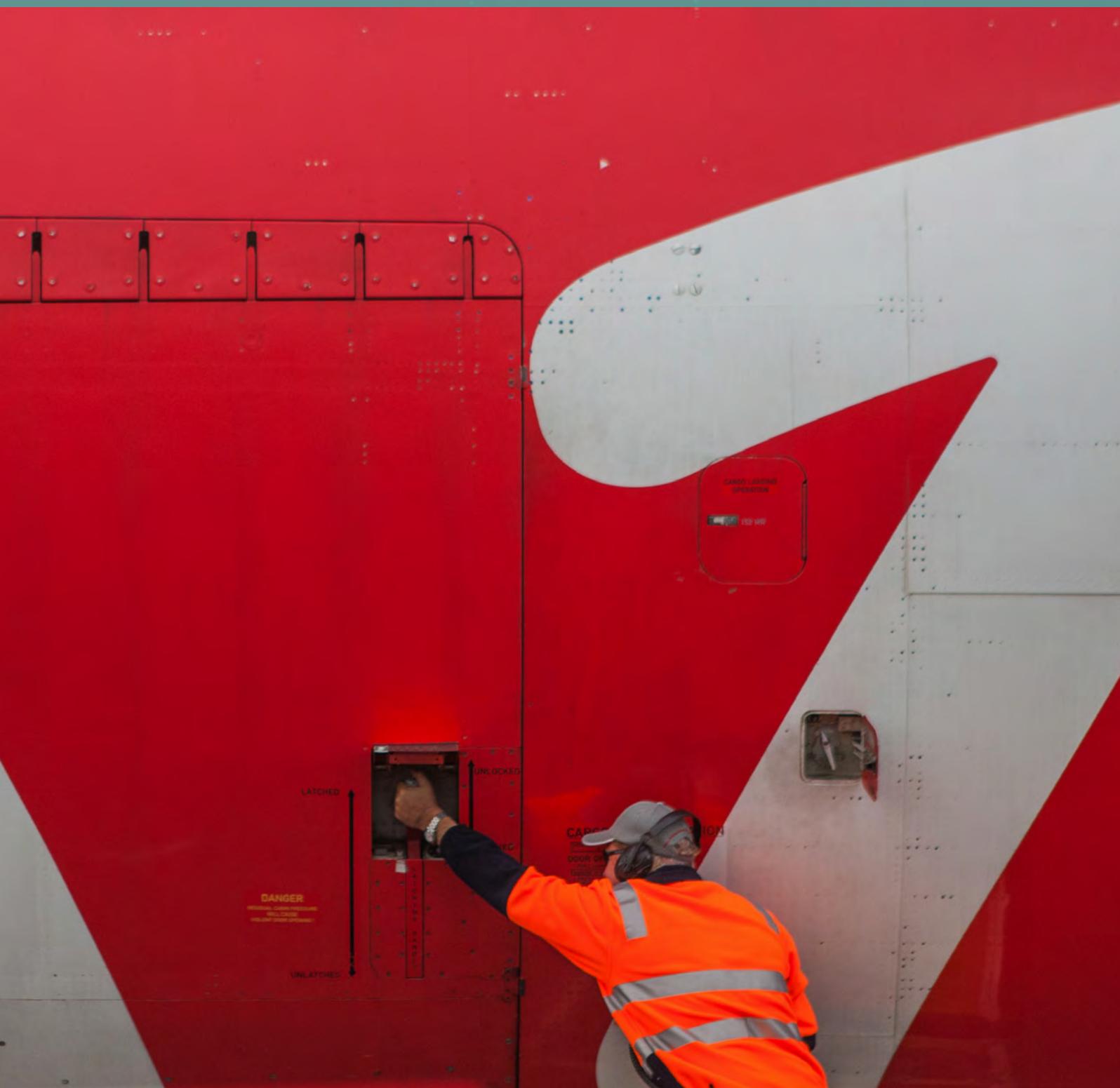
Table 12-2 Twenty-Year Development Plan

Project	Description	Trigger
Fuel storage expansion	Expansion of existing fuel farm to maintain security of supply, based on increased aircraft movements	Subject to aircraft movements and airport demand
Short-term accommodation	Additional hotel/serviced apartments development	Subject to market conditions
Future stage of commercial office development	Additional stages of office development in the Terminal Precinct	Subject to market conditions and achieving the first phases of development within the first five years of this Master Plan
Future stages of multi-storey car parking	Further expansion of the multi-storey car park identified in the first five years	Subject to market conditions, user requirements and passenger numbers
Upgrade Gold Coast Highway / Terminal Drive intersection	Ensure sufficient capacity to provide convenient access to the Airport at all times	Subject to the performance and capacity of the intersection
Incrementally upgrade internal road network, including pedestrian and cycling facilities	Provide on-road cycle lanes and dedicated pedestrian pathways	Incrementally upgrade internal road network, including pedestrian and cycling facilities
Implement light rail (by others)	Improved public transport access to the Airport contributing to mode shifts and accessibility	Subject to Government funding
Upgrade of new ground transport facilities	Cater for future ground transport demand	Subject to airport demand and passenger numbers
Upgrade face roads	Cater for future kerbside demand	Subject to airport demand and passenger numbers

 Economic Growth	 Environmental Sustainability	 Aviation Operations	 People
✓	✓		
✓	✓		✓
✓		✓	
✓		✓	✓
✓	✓	✓	✓
	✓	✓	✓
	✓	✓	✓
	✓	✓	✓
✓	✓		



Appendices



Appendix A

Airport Master Plan Legislative Requirements

This Master Plan has been prepared in accordance with the *Airports Act 1996* and the relevant Airports Regulations.

The legislation specifies elements that are to be addressed within an Airport Master Plan. The table below provides a reference guide to how each legislative requirement has been addressed within this Master Plan.

AIRPORTS ACT 1996	Chapter/Section of Master Plan
Requirements under Part 5, Division 3, Section 70 – Final Master Plans	
2) The purposes of a final master plan for an airport are:	
a) to establish the strategic direction for efficient and economic development at the airport over the planning period of the plan and	
b) to provide for the development of additional uses of the airport site; and	
c) to indicate to the public the intended uses of the airport site; and	
d) 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; and	
e) to ensure that all operations at the airport are undertaken in accordance with relevant environmental legislation and standards; and	
f) to establish a framework for assessing compliance at the airport with relevant environmental legislation and standards; and	
g) to promote the continual improvement of environmental management at the airport.	
Requirements under Part 5, Division 3, Section 71 – Contents of draft or final Master Plan	
2) In the case of an airport other than a joint-user airport, a draft or final master plan must specify:	
a) the airport lessee company's development objectives for the airport; and	1.0, 1.2
b) the airport lessee company's assessment of the future needs of civil aviation users of the airport, and other users of the airport, for services and facilities relating to the airport; and	4.0
c) the airport lessee company's intentions for land use and related development of the airport site, where the uses and developments embrace airside, landside, surface access and land planning/zoning aspects; and	8.0 , 8.4

AIRPORTS ACT 1996	Chapter/Section of Master Plan
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	5.0, 5.3
da) flight paths (in accordance with regulations, if any, made for the purpose of this paragraph) at the airport; and	5.0, 5.5
e) the airport lessee company's plans, developed following consultations with the airlines that use the airport and local government bodies in the vicinity of the airport, for managing aircraft noise intrusion in areas forecast to be subject to exposure above the significant ANEF levels; and	8.0, 8.3, 12.0
f) the airport lessee company's assessment of environmental issues that might reasonably be expected to be associated with the implementation of the plan.	11.0
Requirements under Part 5, Division 3, Section 70 – Final Master Plans	
h) 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	11.0, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11, 11.12, 11.13, 11.14
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: <ul style="list-style-type: none"> 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 iv) the arrangements for working with the State or local authorities or other bodies responsible for the road network and the public transport system; and v) the capacity of the ground transport system at the airport to support operations and other activities at the airport; and vi) 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 	10.0, 10.4, 12.0
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: <ul style="list-style-type: none"> i) commercial, community, office or retail purposes; or ii) for any other purpose that is not related to airport services; and 	8.0, 8.4, 9.0, 12.0

AIRPORTS ACT 1996	Chapter/Section of Master Plan
<p>gc) in relation to the first 5 years of the master plan—the likely effect of the proposed developments in the master plan on:</p> <ul style="list-style-type: none"> 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 	3.0, 3.12, 8.0, 8.3, 12.0
<p>h) an environment strategy that details:</p> <ul style="list-style-type: none"> i) the airport-lessee company's objectives for the environmental management of the airport; and ii) 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 iii) the sources of environmental impact associated with airport operations; and iv) the studies, reviews and monitoring to be carried out by the airport-lessee company in connection with the environmental impact associated with airport operations; and v) the time frames for completion of those studies and reviews and for reporting on that monitoring; and vi) 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 airport operations; and vii) the time frames for completion of those specific measures; and viii) details of the consultations undertaken in preparing the strategy (including the outcome of the consultations); and ix) any other matters that are prescribed in the regulations; and 	11.0, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11, 11.12, 11.13, 11.14
<p>(j) such other matters (if any) as are specified in the regulations.</p>	
Requirements under 71(A) - Draft of final Master Plan must identify proposed sensitive developments	
<p>1) A draft or final master plan must identify any proposed sensitive development in the plan.</p>	No sensitive developments are proposed in the Master Plan
<p>2) A sensitive development is the development of, or a redevelopment that increases the capacity of, any of the following:</p> <ul style="list-style-type: none"> a) a residential dwelling; b) a community care facility; c) a pre school; d) a primary, secondary, tertiary or other educational institution; e) a hospital. 	There is no sensitive development proposed as part of the 2017 Master Plan

AIRPORTS ACT 1996	Chapter/Section of Master Plan
<p>2A) A sensitive development does not include the following:</p> <ul style="list-style-type: none"> a) an aviation educational facility; b) accommodation for students studying at an aviation educational facility at the airport; c) a facility with the primary purpose of providing emergency medical treatment and which does not have in patient facilities; d) a facility with the primary purpose of providing in house training to staff of an organisation conducting operations at the airport. 	
<p>3) In this section:</p> <p>aviation educational facility means any of the following:</p> <ul style="list-style-type: none"> a) a flying training school; b) an aircraft maintenance training school; c) a facility that provides training in relation to air traffic control; d) a facility that provides training for cabin crew e) any other facility with the primary purpose of providing training in relation to aviation related activities. 	
<p>community care facility includes the following:</p> <ul style="list-style-type: none"> a) a facility that provides aged care within the meaning given by the Aged Care Act 1997; c) a retirement village within the meaning given by the Social Security Act 1991; d) a facility that provides respite care within the meaning given by the Aged Care Act 1997. 	

AIRPORTS REGULATIONS 1997	Chapter/Section of Master Plan
Requirements under Regulation 5.02 – Contents of draft or final Master Plan	
1) For paragraphs 71(2)(j) and (3)(j) of the Act, the following matters are specified: <ul style="list-style-type: none"> a) 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; 	7.0, 7.3
<ul style="list-style-type: none"> b) 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: 	9.0, 9.3
<ul style="list-style-type: none"> <ul style="list-style-type: none"> i) the contents of the report of any examination of the area carried out under regulation 6.09 of those Regulations; and 	11.0, 11.8
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ii) the airport lessee company's plans for dealing with any soil pollution referred to in the report 	11.0, 11.8
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.	8.0, 8.4
3) For subsection 71(5) of the Act, a draft or final master plan must: <ul style="list-style-type: none"> 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 	3.0, 3.3.5, 8.0, 8.3.4
<ul style="list-style-type: none"> 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. 	3.0, 3.3.5, 8.0, 8.3.4
Requirements under Regulation 5.02A - Contents of draft or final Master Plan – matters to be specified in Environment Strategy	
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.	11.0
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: <ul style="list-style-type: none"> a) any relevant indigenous communities and organisations; and 	11.0, 11.11
<ul style="list-style-type: none"> b) any relevant Commonwealth or State body. 	11.0, 11.11

AIRPORTS REGULATIONS 1997	Chapter/Section of Master Plan
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.	11.0, 11.6
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	Chapter 11.0, 11.12, 11.14
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).	11.0, 11.12, 11.14
Requirements under Regulation 5.02B – Contents of draft or final master plan – things to be addressed in environment strategy	
1) For subsection 71(5) of the Act, a draft or final master plan must address the things in this regulation.	11.0
2) In specifying its objectives for the airport under subparagraph 71(2)(h) (i) or (3)(h)(i) of the Act, an airport-lessee company must address its policies and targets for:	11.0, 11.14
a) continuous improvement in the environmental consequences of activities at the airport; and	
b) progressive reduction in extant pollution at the airport; and	11.0, 11.6, 11.8, 11.9, 11.10, 11.12, 11.14, 11.7, 11.14
c) development and adoption of a comprehensive environmental management system for the airport that maintains consistency with relevant Australian and international standards; and	11.0, 11.12, 11.14
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	11.0, 11.10, 11.11
e) involvement of the local community and airport users in development of any future strategy; and	11.0, 11.14
f) dissemination of the strategy to sub-lessees, licensees, other airport users and the local community.	11.0, 11.14

AIRPORTS REGULATIONS 1997	Chapter/Section of Master Plan
<p>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:</p> <p>a) any relevant recommendation of the Australian Heritage Council; and</p>	11.0, 11.1
<p>b) any relevant recommendation of the Department of Environment regarding biota, habitat, heritage or similar matters; and</p>	11.0, 11.10, 11.11
<p>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.</p>	11.0, 11.10, 11.11
<p>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:</p> <p>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</p>	11.0, 11.12
<p>b) water quality, including potentially affected groundwater, estuarine waters and marine waters; and</p>	11.0, 11.9
<p>c) soil quality, including that of land known to be already contaminated; and</p>	11.0, 11.8
<p>d) release, into the air, of substances that deplete stratospheric ozone; and</p>	11.0 , 11.7, 11.12
<p>e) generation and handling of hazardous waste and any other kind of waste; and</p>	11.0, 11.13, 11.14
<p>f) usage of natural resources (whether renewable or non-renewable); and</p>	11.0, 11.7
<p>g) usage of energy the production of which generates emissions of gases known as 'greenhouse gases'; and</p>	11.0, 11.7, 11.12
<p>h) generation of noise.</p>	11.0, 11.13
<p>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:</p>	11.0, 11.10, 11.11
<p>a) the matters mentioned in subregulation 5.02A(2) and subregulations 5.02B(3) and (4); and</p>	11.0, 11.6, 11.14
<p>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</p>	11.0, 11.11
<p>c) the approaches and measures identified by the airport-lessee company as its preferred conservation approaches and measures; and</p>	11.0, 11.1, 11.6
<p>d) the professional qualifications that must be held by a person carrying out the monitoring; and</p>	11.0, 11.6, 11.14

AIRPORTS REGULATIONS 1997	Chapter/Section of Master Plan
e) the proposed systems of testing, measuring and sampling to be carried out for possible, or suspected, pollution or excessive noise; and	11.0, 11.13
f) the proposed frequency of routine reporting of monitoring results to the airport environment officer (if any) for the airport, or to the Secretary.	11.0, 11.6, 11.14
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:	11.0, 11.6
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.	11.0, 11.6, 11.14
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).	11.0, 11.6, 11.14

Legislative Requirements for an Environment Strategy

Legislative Section	General Requirements	
Airports Act 1996 Part 5, Division 3, Section 71(2) – Contents of Draft or Final Master Plan	Describe the environmental values associated with the site, the potential environmental impacts associated with airport activities, and management measures to prevent, control or reduce those impacts.	11.3, 11.6, 11.7 - 11.14
Airports Regulation 1997 Part 5, Section 5.02A Contents of draft or final master plan—matters to be specified in environment strategy	Describe consultation undertaken in developing the strategy, identify management for non-airport related activities, and describe training requirements.	11.11, 11.7 - 11.14, 11.6.6
Part 5, Section 5.02B Contents of draft or final master plan—things to be addressed in environment strategy	<ul style="list-style-type: none"> » Develop policies and targets for a variety of matters, including continuous improvement and the development of an environmental management system. » Consider the existing environmental values in identifying potential impacts associated with airport operations. » Identify monitoring requirements. » Measures to prevent, control or reduce environmental impacts. » Identify areas that are environmentally significant. 	11.7 - 11.14, 11.6, 11.3

Appendix B

Key Maps

Figure 6.1 — Five-Year Airport Development Plan

Figure 6.2 — Twenty-Year Airport Development Plan

Figure 5.6 — 2047 Australian Noise Exposure Forecast (Endorsed)

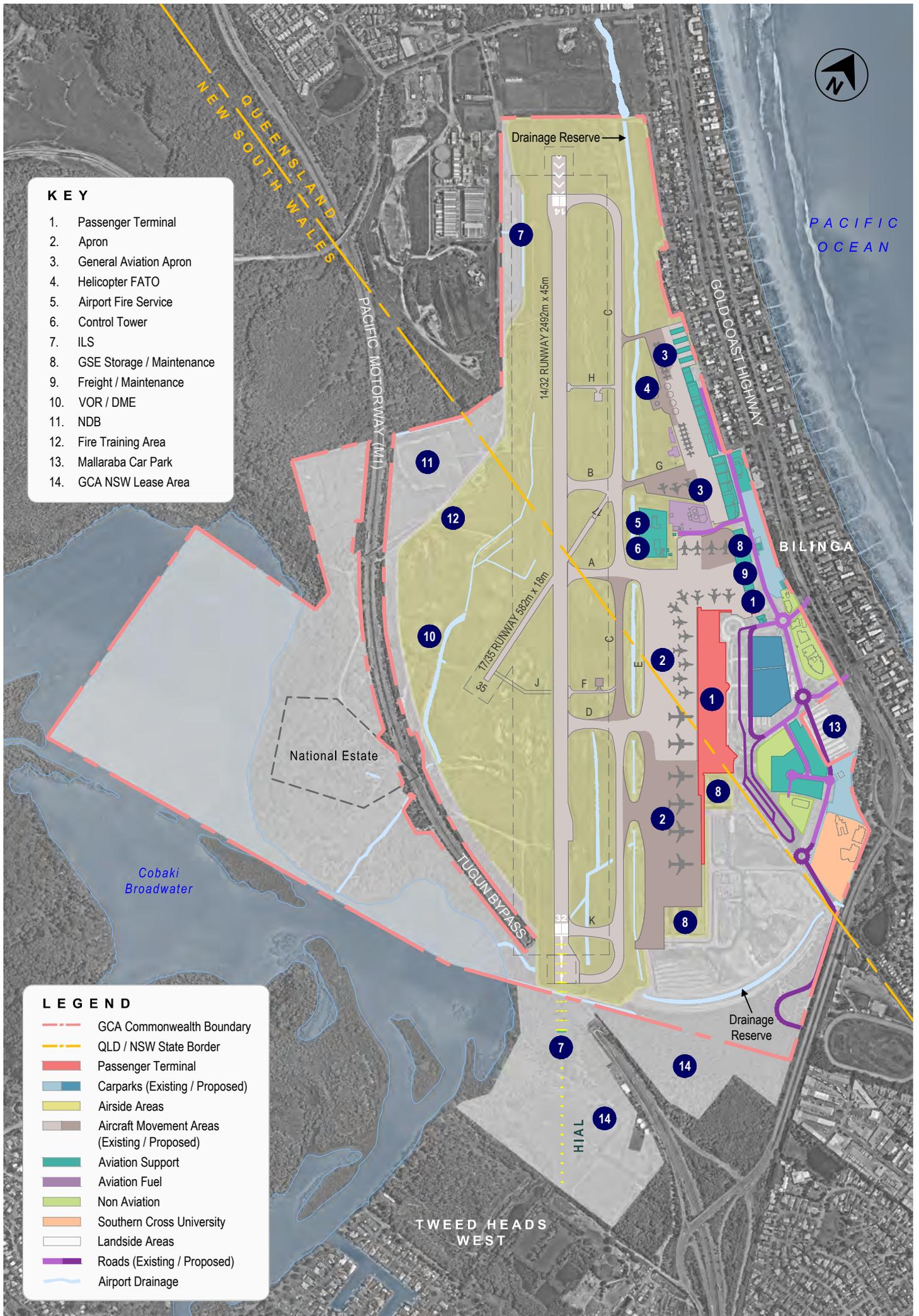


Figure 6.1 Five-Year Airport Development Plan

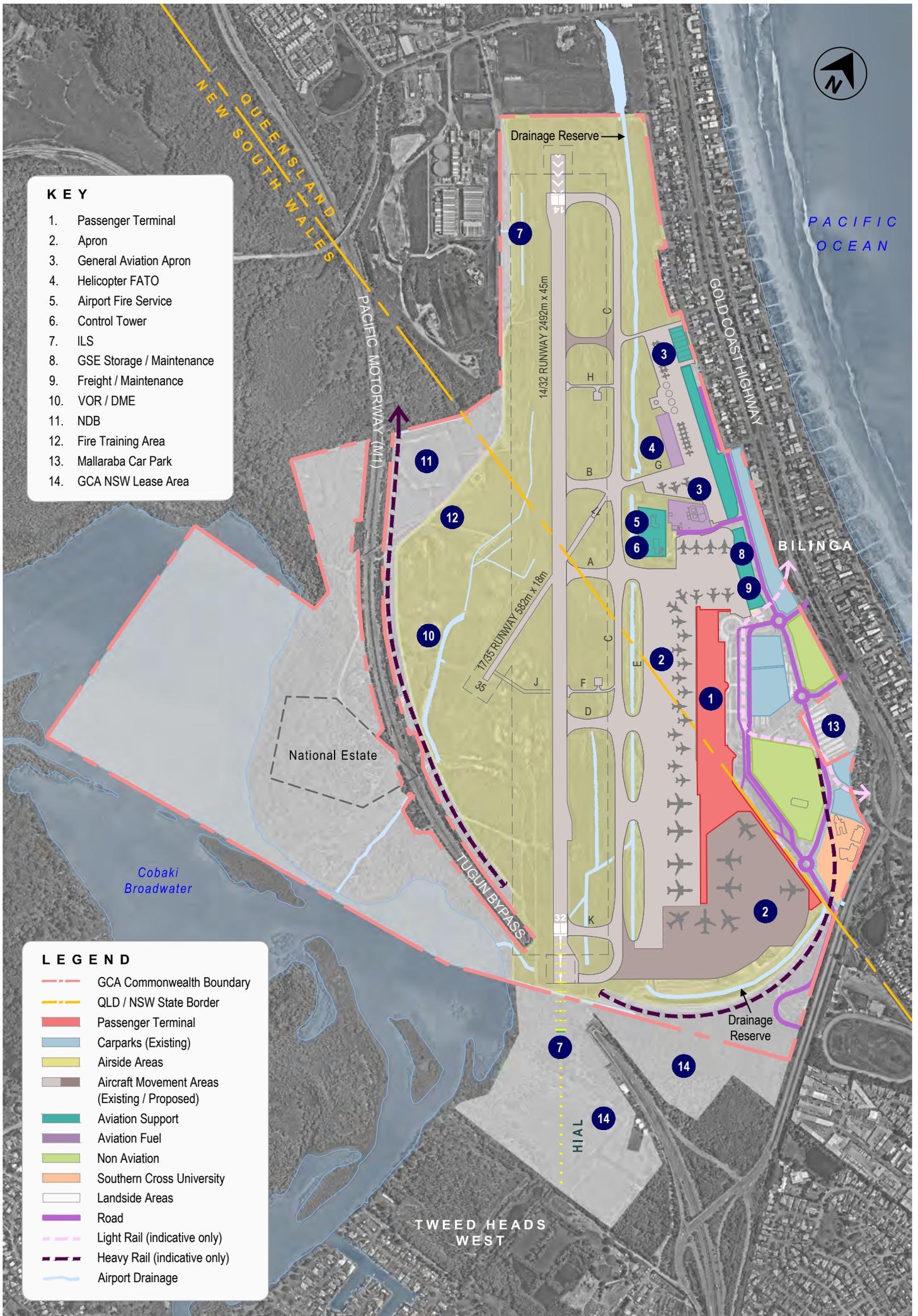


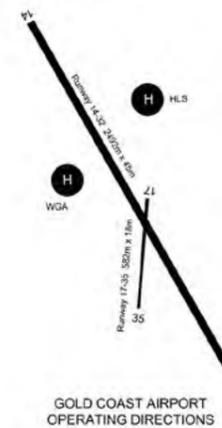
Figure 6.2 Twenty-Year Airport Development Plan

AIRCRAFT DAILY MOVEMENTS BY RUNWAY AND AIRCRAFT TYPE

Runway	Aircraft	Arrivals		Departures		Circuit		Touch and Go		Total Day	Total Night	Total	Annual Movements	
		Day	Night	Day	Night	Day	Night	Day	Night					
54	1900C	0.0568	0.0027	0.0575	0.0002	0.0000	0.0000	0.0000	0.0000	0.1123	0.0130	0.1233	45	
	73700	38.0593	9.9731	39.0549	9.8048	0.0000	0.0000	0.0000	0.0000	77.7126	18.7779	97.4885	35,383	
	73709	18.7178	9.8452	28.7332	4.8860	0.0000	0.0000	0.0000	0.0000	42.4280	13.8312	56.2592	20,538	
	A320-321	38.0057	9.9731	39.0549	9.8048	0.0000	0.0000	0.0000	0.0000	77.1136	19.7779	97.4885	35,383	
	B737SP	1.1197	0.0886	1.0990	0.1704	1.0616	0.1119	8.4090	0.5935	12.3263	0.5404	13.7727	4,815	
	CNA172	4.4830	0.0863	4.5833	0.0822	4.9137	0.1270	24.5596	1.6349	38.5256	2.1304	40.8000	14,848	
	CNA182	1.3962	0.1096	1.3334	0.1590	1.3206	0.3884	6.6820	0.4419	10.6578	0.3338	11.4926	4,195	
	CNA228	1.7514	0.0274	0.5754	1.1520	0.0006	0.0004	0.4020	0.0021	2.3084	1.5882	4.4902	1,640	
	DNCA	1.0548	0.0795	0.9789	0.1732	0.0000	0.0000	0.0000	0.0000	2.0317	0.2504	2.2842	834	
	GV	0.3397	0.1123	0.3713	0.1073	0.0000	0.0000	0.0000	0.0000	0.7110	0.2136	0.9300	340	
	UA135	0.5345	0.1079	0.5427	0.0622	0.0000	0.0000	0.0000	0.0000	1.0962	0.3681	1.3964	493	
	54 Total	286.7454	29.2079	311.3716	26.3320	8.0199	0.5137	40.0577	2.4684	286.2346	30.5479	325.7622	118,911	
	17	B737SP	0.0082	0.0000	0.0028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0110	0.0000	0.0110	4
		CNA172	0.0473	0.0000	0.0630	0.0027	0.0000	0.0000	0.0000	0.0000	0.1194	0.0027	0.1131	41
CNA182		0.0027	0.0000	0.0075	0.0027	0.0000	0.0000	0.0000	0.0000	0.0082	0.0027	0.0129	23	
17 Total		0.0582	0.0000	0.0733	0.0054	0.0000	0.0000	0.0000	0.0000	0.1286	0.0054	0.1378	57	
32	1900C	0.0184	0.0000	0.0055	0.0027	0.0000	0.0000	0.0000	0.0000	0.0229	0.0027	0.0212	9	
	73700	18.6788	4.8181	18.5980	4.6600	0.0000	0.0000	0.0000	0.0000	37.2768	9.4881	46.7649	17,069	
	73709	9.0446	4.5157	11.2908	2.1363	0.0000	0.0000	0.0000	0.0000	20.3354	6.6520	26.9874	9,850	
	A320-321	28.6788	4.8181	18.5980	4.6600	0.0000	0.0000	0.0000	0.0000	37.2768	9.4881	46.7649	17,069	
	B737SP	0.8740	0.0413	0.5056	0.0511	0.8844	0.0562	4.2221	0.2830	6.0421	0.4436	6.4877	2,307	
	CNA172	2.6095	0.0167	2.9753	0.0933	2.4078	0.1562	13.3377	0.8730	10.8895	1.6300	12.4215	7,819	
	CNA182	0.6994	0.0221	0.6993	0.0609	0.6669	0.3444	3.3344	0.2219	5.8029	0.3872	6.2901	2,306	
	CNA228	0.2959	0.0027	0.2251	0.0002	0.0002	0.0022	0.2420	0.0021	0.8320	0.0424	1.3404	453	
	DNCA	0.5240	0.0152	0.4954	0.0469	0.0000	0.0000	0.0000	0.0000	1.0224	0.0662	1.0884	397	
	GV	0.2110	0.0575	0.1800	0.0550	0.0000	0.0000	0.0000	0.0000	0.8980	0.1125	1.0105	186	
	UA135	0.2948	0.0395	0.3123	0.0219	0.0000	0.0000	0.0000	0.0000	0.6072	0.0577	0.6649	243	
	32 Total	67.9583	10.0000	67.9583	10.0000	0.0000	0.0000	0.0000	0.0000	125.5460	28.1365	157.7285	57,168	
	15	B737SP	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030	0.0000	0.0030	1
		CNA172	0.5208	0.0000	0.0029	0.0000	0.0000	0.0000	0.0000	0.0000	0.5427	0.0000	0.5427	138
CNA182		0.1006	0.0000	0.0087	0.0000	0.0000	0.0000	0.0000	0.0000	0.1123	0.0000	0.1123	41	
CNA228		0.0466	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0466	0.0000	0.0466	235	
DNCA		0.0137	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0137	0.0000	0.0137	5	
15 Total	1.3537	0.0000	0.0217	0.0000	0.0000	0.0000	0.0000	0.0000	1.7763	0.0000	1.7763	503		
MS	B206B	0.3522	0.0002	0.3522	0.0002	0.0000	0.0000	0.0000	0.0000	0.7044	0.0004	0.7209	263	
	B407	0.0207	0.0000	0.0207	0.0000	0.0000	0.0000	0.0000	0.0000	0.0414	0.0000	0.0414	15	
	B409	0.0153	0.0000	0.0153	0.0000	0.0000	0.0000	0.0000	0.0000	0.0307	0.0000	0.0307	11	
	B409	0.5884	0.1622	0.5884	0.1622	0.0000	0.0000	0.0000	0.0000	1.1988	0.3244	1.4931	545	
	CL330	0.9793	0.0490	0.9793	0.0490	0.0000	0.0000	0.0000	0.0000	1.9726	0.0980	2.0907	748	
	722	2.2044	0.0221	2.2044	0.0221	0.0000	0.0000	0.0000	0.0000	4.4087	0.0442	4.4529	1,625	
	744	4.4911	0.0225	4.4911	0.0225	0.0000	0.0000	0.0000	0.0000	8.9822	0.0471	9.0293	3,294	
	MS Total	9.6124	0.2613	9.6124	0.2613	0.0000	0.0000	0.0000	0.0000	19.2248	0.5261	19.7509	7,173	
	WGA	0.3400	0.0000	0.3400	0.0000	0.0000	0.0000	0.0000	0.0000	0.6800	0.0000	0.6800	253	
	B409	0.0190	0.0000	0.0190	0.0000	0.0000	0.0000	0.0000	0.0000	0.0380	0.0000	0.0380	14	
B409	0.2407	0.0000	0.2407	0.0000	0.0000	0.0000	0.0000	0.0000	0.4814	0.0000	0.4814	176		
CL330	1.8495	0.0150	1.8495	0.0150	0.0000	0.0000	0.0000	0.0000	3.6990	0.0300	3.7210	1,355		
B22	8.1892	0.0853	8.1892	0.0853	0.0000	0.0000	0.0000	0.0000	16.3784	0.1705	16.5489	6,040		
B44	2.5106	0.0100	2.5106	0.0100	0.0000	0.0000	0.0000	0.0000	5.0212	0.0200	5.0412	1,844		
WGA Total	13.5493	0.1304	13.5493	0.1304	0.0000	0.0000	0.0000	0.0000	27.0986	0.2608	27.3600	9,979		
Grand Total	199.6755	44.2971	199.3688	38.9028	12.0272	0.8017	40.2359	4.0084	419.6304	88.5008	524.1342	191,809		

Note: 1. Where figures have been rounded, discrepancies may occur between totals and the sums of component items.
2. A circuit or touch and go comprises one departure and one arrival (i.e. two circuit or touch and go movements).
Circuit and touch and go values in the table above have already been multiplied by 2.

Source: INM - Gold Coast 2047 Long Range ANEF
CAD Base - xpc-REG.dwg (Provided by GCAPL)

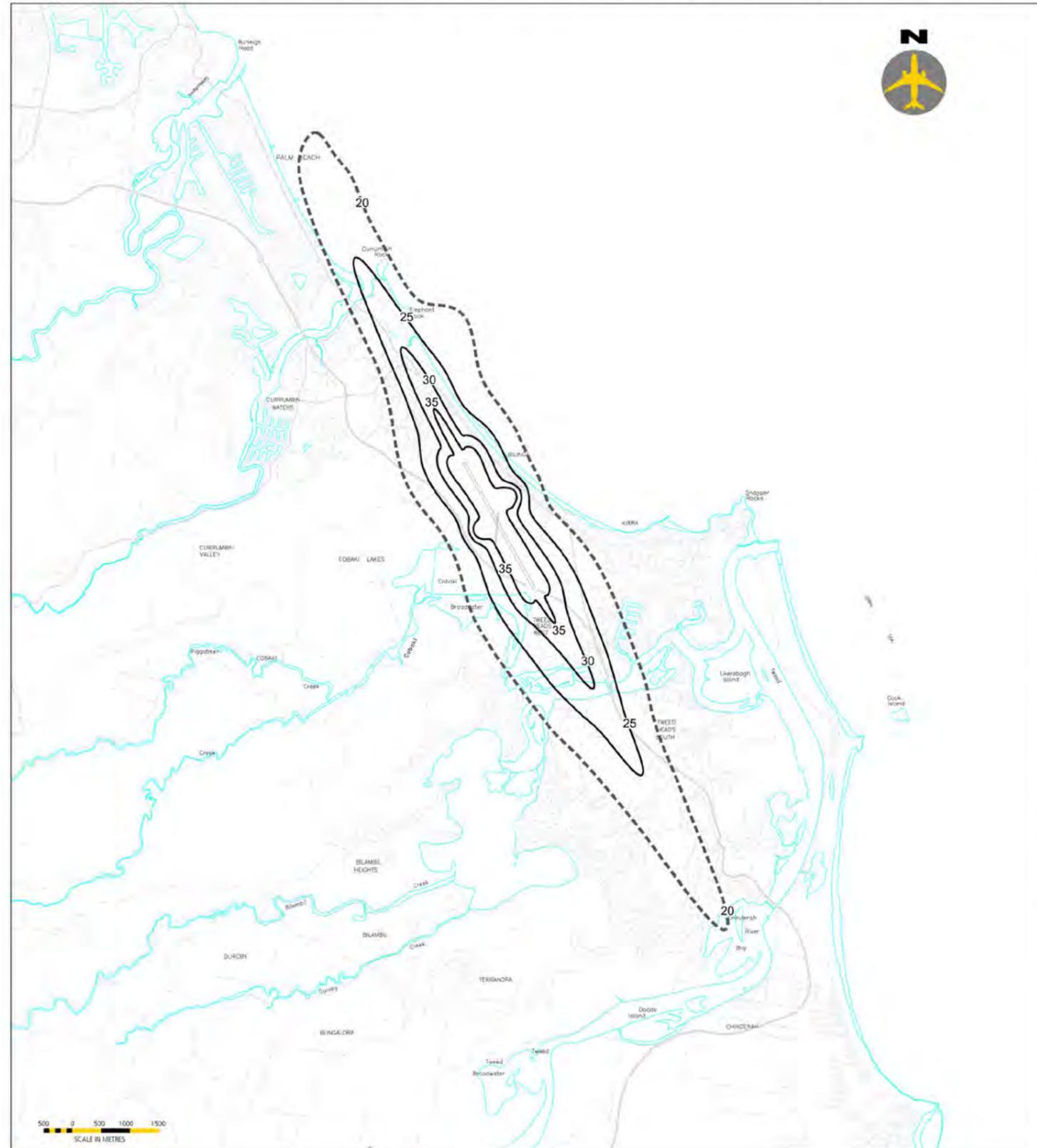


NO.	DATE	REVISIONS
A	29/09/16	ORIGINAL ISSUE

DRAWN	DESIGNED	HF	APPROVED	DNC
FC				



Gold Coast Airport 2047 Long Range ANEF



BUILDING SITE ACCEPTABILITY BASED ON ANEF ZONES

To be used in conjunction with (AS2021-2015) Table 3.3

Building type	ANEF zone of site		
	Acceptable	Conditionally Acceptable	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF (Note 1)	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF (Note 1)	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

- Notes:
- The actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variations in aircraft flight paths. Because of this, the procedure of (AS2021-2015) Clause 2.3.2 may be followed for building sites outside but near to the 20 ANEF contour.
 - 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 (see also (AS2021-2015) Figure A1 of Appendix A).
 - There will be cases where a building of a particular type will contain spaces used for activities which would generally be found in a different type of building (e.g. an office in an industrial building). In these cases the above table should be used to determine site acceptability, but internal design noise levels within the specific spaces should be determined by (AS2021-2015) Table 3.3.
 - This standard does not recommend development in unacceptable areas. However, where the relevant planning authority determines that any development may be necessary within existing built-up areas designated as unacceptable, it is recommended that such development should achieve the required ANR determined according to (AS2021-2015) Clause 3.2. For residences, schools, etc., the effect of aircraft noise on outdoor areas associated with the buildings should be considered.
 - In no case should new development take place in greenfield sites deemed unacceptable because such development may impact airport operations.
- Source: AS2021-2015 Table 2.1

ANEF origin
This ANEF has been prepared using the Integrated Noise Model package (INM 7.03).

Configuration	Annual Aircraft Movements
2047 Long-Range ANEF	191,309

RUNWAY END CO-ORDINATES

LOCATION	LATITUDE (WGS 84)	LONGITUDE (WGS 84)	ELEVATION (AHD) m
Aerodrome Reference Point (ARP)	-28.164445	153.504773	6.0
Runway End 14	-28.156445	153.500736	6.4
Runway End 32	-28.175112	153.513178	3.4
Runway End 17	-28.164305	153.506729	5.2
Runway End 35	-28.166604	153.506308	4.0
Helicopter Landing Site (HLS)	-28.161948	153.508149	6.4
Western Grass Area (WGA)	-28.166923	153.504025	6.4

Qualification
Factors taken into account in the ANEF calculation are the following:

- the numbers and types of aircraft forecast to operate on the average day, their distribution on the various runways and flight paths and their destinations.
- the noise characteristics of each aircraft type at each phase of its operation (landing or take-off).
- whether the operation was in daytime (7am - 7pm) or night-time (7pm - 7am).
- terrain was used in the modeling of this study.

Contours are plotted at steps of 5 ANEF over the range 20 to 35 ANEF - the higher the ANEF value the greater the noise exposure. Aircraft noise does not stop at the 20 ANEF contour, but outside 20 ANEF, noise from sources other than aircraft may predominate over aircraft noise.

Coordinate system used is WGS 84
Gold Coast Airport Pty Ltd neither assumes nor accepts responsibility for the accuracy of the contours or any reliance placed upon them.

ENDORSEMENT FOR TECHNICAL ACCURACY

Long Range ANEF

Date: 13/10/2016

ATM Network Services Manager,
Information Management & Technology
Airservices Australia, Canberra

The aircraft noise contours on this chart have been calculated using an appropriate modelling process. Airservices Australia has, in accordance with the approved manner of endorsement, considered the physical ultimate capacity of the existing or proposed runways in its endorsement process. The data input and assumptions made in that process are derived in part from external sources. Airservices Australia makes no warranty in respect of that information and excludes all liability for any loss arising from reliance on that information.

Figure 5.7 2047 Australian Noise Exposure Forecast (Endorsed)

Glossary

Term	Definition
acid sulfate soils	Soils containing sulfide minerals which have potential to, or have already started to generate acid on oxidation. Actual acid sulfate soils is soil with a pH of four or less, and can usually be identified by the presence of yellow mottles and coatings of jarosite (iron sulfate). Potential acid sulfate soil is soil which contains iron sulfides that have not been exposed to air or oxidised. Potential acid sulfate soil poses an environmental risk as it may become acidic when exposed to air.
airport activities	Activity or activities undertaken by airport operator(s).
air traffic control	Air traffic control service provided by Airservices Australia.
Airport Emergency Plan	A plan developed by the Airport operator to co-ordinate all agencies and their individual airport emergency procedures, state or supporting area plans for dealing with an airport emergency.
airshed	A geographic area, sharing the same air mass, within which airborne contaminants can be retained for an extended period.
Airport Building Controller (ABC)	Position appointed by the Secretary of the Federal Department of Infrastructure and Regional Development to administer regulatory functions in relation to airport building control matters.
Airport Environment Officer (AEO)	Position appointed by the Secretary of the Federal Department of Infrastructure and Regional Development to administer onsite regulatory functions on behalf of the Department in relation to environmental matters.
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.
airport operator	A person or organisation operating a business; carrying out an activity, dealing, operation, process or work; and operation of any facility, plant, machine or equipment on Gold Coast Airport. Includes GCAPL staff, all tenants and contractors.
airside	The movement area of an airport, adjacent terrain and buildings or portions thereof, access to which is controlled.
alluvial	Alluvial soil or sediment is that which has been transported and deposited by running water.
apron	The part of an airport used: For the purpose of enabling passengers to board, or disembark from aircraft; For loading cargo onto, or unloading cargo from, aircraft; and/or for refuelling, parking or carrying out maintenance on aircraft.

Term	Definition
aquifer	An aquifer is an underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, silt, or clay) from which groundwater can be usefully extracted using a water well.
aviation security	A combination of measures and human and material resources intended to safeguard civil aviation against acts of unlawful interference.
bund	An enclosure designed to contain fluids should they escape from the tank or vessel inside the bund.
Code C aircraft	A code C aircraft is an aircraft that has a wingspan 24 metres up to but not including 36 metres and an outer main gear span of 6 metres up to but not including 9 metres. An example is a Boeing 737 or Airbus A320.
Code E aircraft	A code E aircraft is an aircraft that has a wingspan 52 metres up to but not including 65 metres and an outer main gear span of 9 metres up to but not including 14 metres. An example is a Boeing 747 or 777 or Airbus A330 or A340.
contractor	A person or organisation engaged by GCAPL or by a tenant of GCAPL, to undertake an activity at Gold Coast Airport.
control tower	A unit established to provide air traffic control service to airport traffic.
environmental aspect	The element of an organisation's activities, products or services that can interact with the environment.
environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.
Environmental Management System	A management system that includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy and managing the environmental aspects of an organisation.
environmental objective	Overall environmental goal, arising from the environmental policy, that an organisation sets for itself to achieve, and which is quantified where practicable.
environmental target	Detailed performance requirement, quantified where practicable, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
ephemeral	Transitory, existing only briefly. For example a water body that only exists for a short period following rainfall.
eutrophication	An increase in chemical nutrients in an ecosystem, such as from sewage effluent or stormwater run-off. This generally results in an increase in primary productivity which can cause lack of oxygen and severe reductions in water quality, fish, and other populations.

Term	Definition
Gold Coast Airport	The extent of land leased by GCAPL. This encompasses all operators at Gold Coast Airport, including staff, tenants and contractors.
Gold Coast Airport Pty Ltd (GCAPL)	The Airport lessee company.
landside	That area of an airport and buildings to which the public normally has free access.
Major Development Plan (MDP)	A major development plan is required for each major development at an airport and is prepared by the Airport-lessee company taking into account public comments. Part 5, Division 4 of the Airports Act 1996 provides a full definition.
movement area	That part of an airport used for the surface movement of aircraft, including manoeuvring areas and aprons.
phenolic	Relating to a class of chemical compounds known as phenols, consisting of a hydroxyl group bonded directly to an aromatic
Regular Public Transport (RPT)	A service consisting of Regular Public Transport aircraft operations, as prescribed in the Civil Aviation Regulations.
siliceous	Composed of silica (silicon dioxide, SiO ₂). Silica is most commonly found in nature as sand or quartz and is the most abundant mineral in the earth's crust.
tenant	A sub-lessee or licensee of the Airport lessee company.



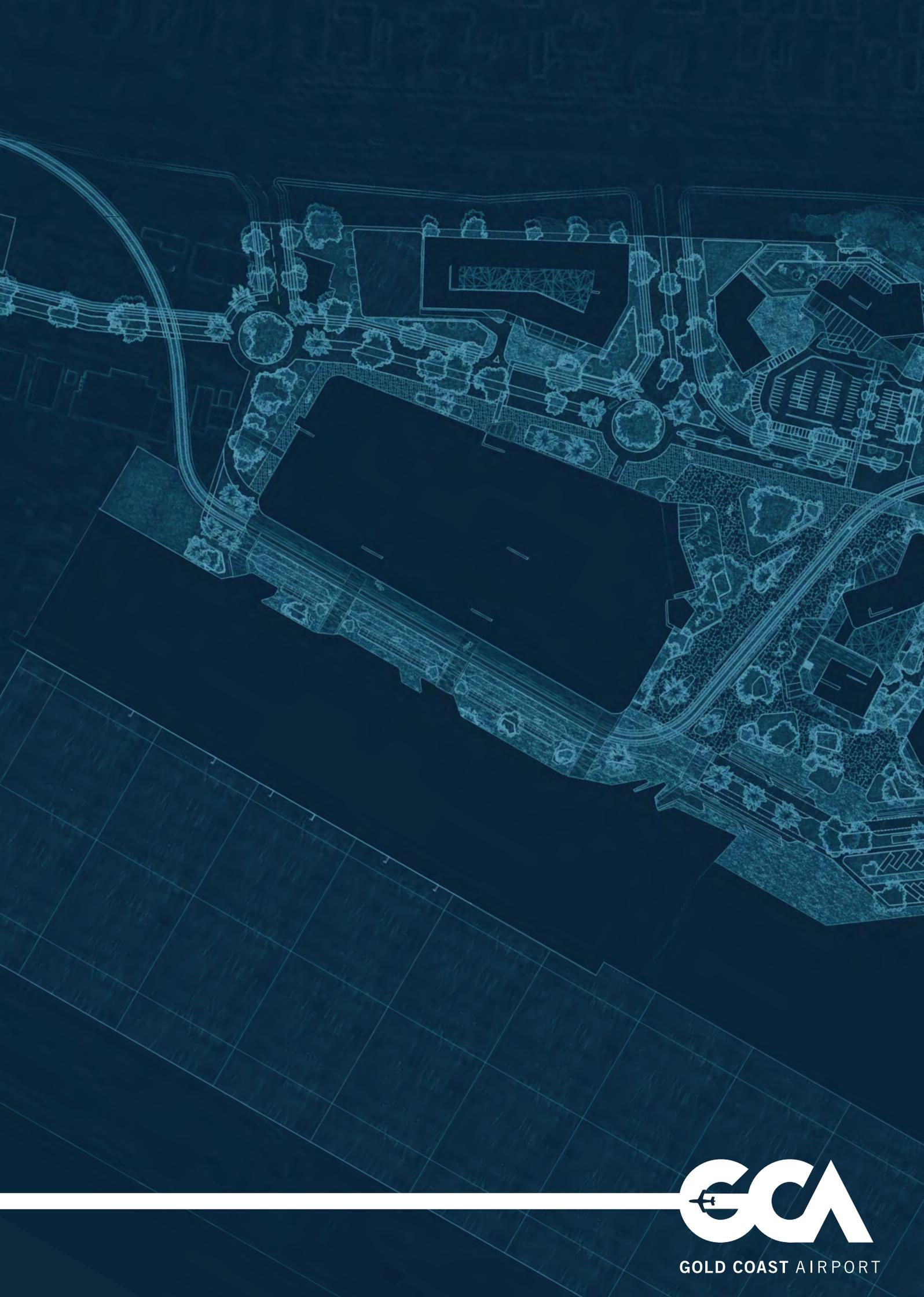
Acronyms/Phrases

Acronym/Phrase	Title/Meaning
ABC	Airport Building Controller
Airports Act	<i>Airports Act 1996</i>
AEO	Airport Environment Officer
AEPR	Airports (Environment Protection) Regulations 1997
Air NEPM	National Environment Protection (Ambient Air Quality) Measure
Airspace Regulations	Airports (Protection of Airspace) Regulations 1996
Airport	Gold Coast Airport
AMSL	Above Mean Sea Level
ANACC	Airport Noise Abatement Consultative Committee
ANEF	Australian Noise Exposure Forecast
ANEI	Australian Noise Exposure Index
CACG	Community Aviation Consultation Group
CASA	Civil Aviation Safety Authority
CGCC	City of Gold Coast Council
CEMP	Construction Environment Management Plan
CHMP	Cultural Heritage Management Plan
DME	Distance Measuring Equipment
DIRD	Federal Department of Infrastructure and Regional Development
EMU	Environmental Monitoring Unit
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FAC	Federal Airports Corporation
GBAS	Ground-Based Augmentation System
GCAPL	Gold Coast Airport Pty Ltd
GFA	Gross Floor Area
GPS	Global Positioning System
ICAO	International Civil Aviation Organisation

Acronym/Phrase	Title/Meaning
ILS	Instrument Landing System
INM	Integrated Noise Model
ISO 14001	International Standards Organisation – Standard for Environment Management Systems (AS/NZS ISO 14001) (at time of Airport Master Plan preparation, current version was ISO 14001:2015)
JUHI	Joint User Hydrant Installation
LEP	Local Environment Plan (New South Wales)
MDP	Major Development Plan
Minister	Minister for the Department of Infrastructure and Regional Development
NAPS	Noise Abatement Procedures
NASAG	National Airports Safeguarding Advisory Group
NDB	Non Directional Beacon
NFPMS	Noise and Flight Path Monitoring System
NIR	Noise Information Reports
OLS	Obstacle Limitation Surface
PANS-OPS	Procedures for Air Navigation Systems – Aircraft Operations
Project LIFT	Project Lets Invest For Tomorrow
QAL	Queensland Airports Limited
RNP-AR	Required Navigation Performance with Authorisation Required
RPT	Regular Passenger Transportation
SCU	Southern Cross University
SEPP	State Environmental Planning Policy (New South Wales)
SPP	State Planning Policy (Queensland)
VOR	VHF Omni – Directional Range







GOLD COAST AIRPORT