BRISBANE AIRPORT MASTER PLAN

2020

PRELIMINARY DRAFT

BRISBANE AIRPORT AUSTRALIA BNE

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2020

PRELIMINARY DRAFT

BNE

Connecting Australia to the rest of the world is the challenge we proudly take on every day. Our passion and perseverance have cemented Brisbane Airport as Australia's gateway to the world. But at Brisbane Airport our goal is to do more than just connect people - we create Queensland's future.

CEO WELCOME

Welcome to the Brisbane Airport 2020 Preliminary Draft Master Plan

The Master Plan is arguably the most important document we produce. While it is a regulatory requirement, these comprehensive five yearly documents form an essential part of our medium and long-term planning at Brisbane Airport to ensure the continued delivery of the highest quality of secure and efficient aviation and business services.

The period since the publication of the last Master Plan has been one of continued growth. We are now serving more than 23 million passengers a year, a number that recent forecasts indicate will more than double by the year 2040. There has been an increase in the numbers of airlines using the airport with a corresponding increase in the frequency of flights and the number of destinations available. International passenger numbers have continued to grow and the recent addition of new services and carriers represents another forward step for Brisbane Airport's international business.

In our role in supporting the Queensland economy, it is worth noting that an independent report by PricewaterhouseCoopers which has informed this Master Plan estimates that each international flight arriving into Brisbane generates an estimated $620,000 in expenditure, a high percentage of which is spent in Queensland.

With a fast-growing reputation as one of the region's most desirable places to do business, the last five years has seen the arrival of new tenants to the airport from both the aviation and non-aviation industries. The airport is now home to more than 400 businesses, large and small, together employing more than 23,000 people. Forecasts suggest that the number of people working on the airport could also double by 2040.

The Aviation Strategy of this Master Plan outlines proposed plans for enhanced and expanded facilities and services. Investments in the capacity of the airport to meet its airline customers' needs will enable the entrance of new carriers and new services to Brisbane Airport, providing the essential aviation infrastructure that Queensland will need in the future.

This Master Plan also details our continued commitment to environmental responsibility. Our development objectives are underpinned by a commitment to sustainability in all our investments, activities and future plans. Headline environmental initiatives since 2014 include the introduction of a new electric bus fleet and the installation of 22,000 solar panels, annually generating electricity capable of powering 1,700 homes, with a carbon offset equivalent to planting more than 50,000 trees.

The common theme of the Brisbane Airport 2020 Master Plan is one of planning for growth. Growth in demand for both more frequent flights and for new destinations, growth in the businesses that call the airport their home and growth in the important freight and cargo services, both imports and exports that connect businesses across Queensland to Australia and the world.

It's a testament to long term planning that this Master Plan will be published a few months before the opening of Brisbane's new runway, a major investment that will double the capacity of the airport, future proofing it for future generations and providing Brisbane with Australia's most efficient runway system.

The option to construct a parallel runway has been a long standing feature of Brisbane Airport planning. It was in Brisbane Airport Corporation's 2003 Master Plan that we formally announced our intention, pending approval to commence planning for construction. After eight years of construction the runway, due to open in 2020, is a perfect example of good forward planning.

This Master Plan continues in the same vein, detailing proposed initiatives across our business and operations designed to safeguard the growth of Brisbane Airport over the next five years and also over a twenty-year horizon. This Preliminary Draft version of the 2020 Master Plan has been produced for public comment and we welcome feedback of all types from passengers, business partners and neighbours as we strive to continue the successful growth of Brisbane Airport.

Gert-Jan De Graaff
CEO, Brisbane Airport Corporation

“Connect the world, create the future”

CONTENTS

EXECUTIVE SUMMARY

This preliminary draft of the Brisbane Airport 2020 Master Plan has been produced for public review and comment. A statutory requirement under the Airports Act 1996, Airport Master Plans are updated every five years and contain information on all aspects of airport operations for the next five years, as well as considerations of investments and initiatives that may be required over a planning horizon of twenty years.

Due to be published following approval in early 2020, the Brisbane Airport 2020 Master Plan outlines the 5 year strategy for the ground transport plan, proposed development pathways and their likely effect and details of how environment responsibilities will be managed at the airport through to 2025. The Master Plan also includes consideration of possible development initiatives over a 20 year planning horizon.


Departures

PLANNING FOR GROWTH

The central theme of the Brisbane Airport 2020 Master Plan is one of planning for growth and creating Brisbane Airport's future. As Australia's largest capital city airport by land size, flying to more than 80 destinations in Australia and the rest of the world, Brisbane Airport plays a critical role, not just in connecting people, but in driving the future economic prosperity of the region.

PASSENGER GROWTH

Currently serving more than 23 million passengers a year, the aviation and passenger forecasts commissioned for this Master Plan predict an increase in passenger movements of more than double the current levels.

Aircraft movement forecasts, including general aviation movements, are forecast to increase to an estimated 380,000 annual movements by 2040.

A combination of continued population growth in Brisbane and Queensland and an unprecedented level of capital investment in the city of Brisbane and surrounding areas are both catalysts in creating a greater demand for both more frequent flights and for the addition of new international destinations.

ECONOMIC GROWTH

The theme of growth, central to this Master Plan is underlined by the economic projections that PricewaterhouseCoopers provided as part of the planning process.

Brisbane Airport's total economic contribution to the Australian economy is forecast to grow from its current figure of $4.7 billion per annum to an estimated $8.7 billion by the year 2040, a real annual growth rate of 3.1 per cent.

Together, the direct and indirect economic contributions of Brisbane Airport are estimated to currently account for approximately 1.3 per cent of Queensland Gross State Product.

JOBS GROWTH

With more than 23,000 people working on the airport site, employment at Brisbane Airport is estimated to provide $1.5 billion annually in employee wages to Queensland families, with a further $818 million earned through the associated supply chains.

In line with a strong economic outlook for the region, employment at the airport is forecast to grow by 3.1 per cent per year, with direct employment at the airport forecast to reach a figure of more than 46,000 jobs by the year 2040.

THE GROWTH OF BRISBANE

In the five-year planning horizon of this Master Plan, the City of Brisbane looks set to be transformed by a number of major construction projects worth approximately $31 billion.

Together these projects represent a major step forward for the city and for its economy.

THE IMPORTANCE OF BRISBANE'S NEW RUNWAY

Once open, the new parallel runway effectively doubles the capacity of the airport. By providing the services and facilities that allow Brisbane to become a globally connected city, Brisbane Airport is creating the investment confidence that underpins the city's plans for future growth.

Economic forecasts estimate that the new runway will contribute an annual figure of more than $1 billion directly to the Queensland economy, a figure set to more than double over the twenty-year period of the Brisbane Airport 2020 Master Plan.

INTRODUCING THE BNE AUTO MALL

Also due to open in the time frame of this Master Plan is the ground-breaking new BNE Auto Mall, a unique development that will change the face of car retailing in the region.

The first of its kind, the development includes a test track and a host of associated facilities

Open 24/7 and already the subject of a great deal of enthusiastic anticipation from the automotive industry, the BNE Auto Mall is certain to increase visitation to the airport, creating new jobs and greater prosperity for the region.

CAPACITY AND EFFICIENCY UPGRADES

BRISBANE'S NEW RUNWAY

Since the very first days of the planning for Brisbane Airport on its current site, a wide-spaced parallel runway system in a north-south alignment has been a key feature of the ultimate development vision.

A proposal for construction was included in the Brisbane Airport Master Plan in 2003. Following review, including community and stakeholder consultation, the construction plan and associated environmental plan was approved in 2007.

This Master Plan contains the full history of the construction of the runway, an eight year project that included the movement of 11 million cubic metres of sand from Moreton Bay to the future runway site while the airport remained fully operational.

Once open in 2020, Brisbane's new runway will create significant new opportunities for the region. With the most efficient runway system in Australia, Brisbane Airport will be well placed to meet the development objective of increasing the choice of destinations and increasing the frequency of services, together connecting Brisbane to the world better than ever before.

TERMINAL DEVELOPMENT

Since 2014, baggage handling systems, check in and bag drop facilities have been upgraded in both the Domestic and International Terminals, with both terminals undergoing expansion. Airside enhancements have included upgrades to taxiways and the expansion of the International Terminal Northern Concourse and apron.

These and other projects anticipate the forecast increase in passenger demand and the likely increases in the numbers of airlines using Brisbane Airport.

The Terminal Development Strategy outlines how Brisbane Airport Corporation will respond to this growth, including the expansion of existing International and Domestic Terminals, as well as identification of areas for new terminal expansion(s).

The strategy is intentionally flexible to allow response to changing drivers and presents outline development strategies for the next five years, as well as potential development pathways over a 20-year planning horizon.

Aviation support facilities and services have been considered for both existing operations and future requirements.

New precincts for expanded aviation support facilities are identified, including a potential airside road connection.

GROUND TRANSPORT

Research shows that ample capacity exists in the Brisbane Airport transport network to meet demand. The popular pick up and drop off facilities located close to the two terminals are used by more than a third of daily visitors.

Investment since 2015 in an inter-terminal transport facility as well as enhanced services for operators and passengers of taxi, ride share and bus services have also anticipated the continuing growth in passenger demand.

This Master Plan outlines plans for further enhancements to roadways and intersections as well as kerbside improvements at both terminals.

The 2020 Ground Transport Plan also includes details of projects being considered over the longer term. It considers both a potential future mass transit system and an opportunity to work in partnership with Airtrain and the Queensland Government on providing a new train station at Skygate.

Both projects have the potential to further enhance the satisfaction of customers using airport services and will be considered in line with relevant planning and development legislative requirements.

ENVIRONMENTAL RESPONSIBILITY

In all aspects of planning, Brisbane Airport remains committed to preserving the environment and acting sustainably. With 10 per cent of the airport site dedicated to bio diversity, long term environmental sustainability is a fundamental tenet of Brisbane Airport Corporation's operating philosophy and intrinsically linked to the successful attainment of economic, operational and social objectives.

Since the publication of the 2015 Master Plan, new environmental initiatives at Brisbane Airport have included the introduction of an electric bus fleet which reduced carbon emissions by 250 tonnes a year, the installation of a recycled water pipeline, the installation of a large scale solar power system and the commencement of a food recovery programme sending unused food to the needy.

The project to construct the new runway met every obligation in it's environmental plan.

In addition to providing details of these and other environmental initiatives already in place, The Brisbane Airport 2020 Master Plan Environment Strategy highlights twelve areas of focus in terms of environmental responsibility for the next five years.

CLEANER AIR	**SUSTAINABLE DEVELOPMENT**	**WATER CONSERVATION**
BEST PRACTICE WATER QUALITY MANAGEMENT	**REDUCING GREENHOUSE GAS EMISSIONS**	**PROTECTING BIODIVERSITY**
SOIL AND GROUNDWATER MANAGEMENT	**CLIMATE CHANGE ADAPTATION**	**PRESERVING AND PROMOTING OUR HERITAGE**
MINIMISING GROUND-BASED NOISE	**REDUCING WASTE**	**TENANT AND CONTRACTOR COMPLIANCE**

In all, 26 key objectives are nominated against these twelve areas of focus, with each area of focus also including detailed action plans to ensure that any investment in construction and new facilities is sustainable and meets Brisbane Airport Corporation's ongoing commitment to environmental responsibility.

CUSTOMER SATISFACTION

In the digital age, planning for the future is a challenging task, with many large industries experiencing disruptive shifts to new working models. Brisbane Airport's 2020 Master Plan has been designed to both anticipate the known future and to retain the flexibility to review services as passenger and business needs change.

This Master Plan outlines Brisbane Airport's long-term plans for ensuring that as passenger numbers continue to grow, the facilities offered continue to provide safe and efficient services to make people's journeys easy and worry free.

Passenger safety and aviation security remain focal points of all airport operations and the Master Plan includes details of improvements to baggage and passenger screening facilities due to be introduced in the next twelve months as a result of a change in legislation.

As part of an "access for all" approach, Brisbane Airport Corporation (BAC) considers the needs of passengers of all ages and those with a disability when designing future plans to ensure that journeys are as intuitive and simple as possible.

BAC works directly with a range of community and special interest organisations as well as attending local fairs and events to ensure that neighbours, partners and all airport visitors are kept well informed of changes to airport operations.

The Airport Accessibility reference group meets bi-annually to discuss options to maintain a high level of accessibility at the airport, while the Brisbane Airport Community Aviation Consultation Group brings together representatives of all levels of Government, the aviation industry, and members of the community to discuss topics including airport developments, airport operations and terminal access. Independently chaired, the group meets three times per year.

Over the past two years, more than 250 meetings or forums have been held to discuss this preliminary draft of the 2020 Master Plan, with input from more than 1,250 individuals. That programme of public engagement continues with the publishing of this draft for public comment. If you wish to know more about how you can comment on this plan, please go to the Brisbane Airport website at www.bne.com.au


BNE
& THE COMMUNITY
285HA
BIODIVERSITY ZONE
HONEY BEE
HIVES
ELECTRIC
22,000
SOLAR PANELS
FREE
BUS TOURS
$500,000
IN COMMUNITY GRANTS
DID YOU KNOW?
BRISBANE AIRPORT
INDIGENOUS HISTORY
SIR CHARLES
KINGSFORD SMITH
1920s
1930s
TURN FOR A VISUAL
HISTORY TOUR

01

PREFACE: BRISBANE AIRPORT 2020 MASTER PLAN

LEGISLATIVE CONTEXT

Produced every five years, an Airport Master Plan is a statutory document, which under the Airports Act 1996 is required to be reviewed and approved by the Australian Government. Once approved, the Master Plan becomes the authority under which future airport projects and activities may proceed into detailed planning and implementation.

LEGISLATIVE REQUIREMENTS

The specific legislative requirements contained in the Airport Act 1996 are as follows;

- To outline the strategic direction for efficient and economic development
- To provide for the development of additional uses of the airport site
- To inform the general public of intended uses of the airport site
- To ensure that uses of the airport site are compatible with the surrounding areas and to reduce or minimise any potential conflicts between uses of the site
- To ensure that airport operations are compliant with relevant environmental legislation and requirements
- To establish a framework for assessing environmental compliance and to ensure ongoing improvement in environmental management;

GOVERNING LEGISLATION RELATING TO LAND USE AND DEVELOPMENT

STATUTORY REQUIREMENT	ISSUES TO BE ADDRESSED	RELEVANT MATTERS
MASTER PLAN	• Covers a 20 year planning period • Must be reviewed every five years • Draft plan open for public comment for 60 business days • Requires approval by the Federal Minister for Infrastructure, Regional Development and Cities.	• Outlines Brisbane Airport's development objectives • Outlines intended land uses and related development • Provides Australian Noise Exposure Forecasts for the area adjacent to the airport • Outlines environmental issues associated with the implementation of the plan • Outlines consistency with State and Local Government planning schemes • Includes a Ground Transport Plan.
AIRPORT ENVIRONMENT STRATEGY	• Covers a five year period after which it must be reviewed • Draft strategy open for public comment for 60 business days • Requires approval by the Federal Minister for Infrastructure, Regional Development and Cities.	• Specifies objectives for environment management at Brisbane Airport • Identifies environmentally significant areas • Identifies sources of environmental impact • Identifies studies, reviews, monitoring and specific measures to be carried out to address environmental impacts.
MAJOR DEVELOPMENT PLAN	• Required for new or extended runways or passenger terminals, new buildings costing more than $20 million, new roads or railways which significantly increase airport capacity • Required for developments that are likely to have significant environmental or community impact • Must be consistent with the approved Master Plan • Draft strategy open for public comment for 60 business days • Requires approval by the Federal Minister for Infrastructure, Regional Development and Cities.	• Outline objectives for the proposed development • Details the proposal including design aspects • Sets out effects on noise exposure levels • Outlines other regulatory approvals needed • Contains an assessment of environmental impacts and mitigation measures.
BUILDING APPROVAL	• Issued by ABC appointed by the Department of Infrastructure, Regional Development and Cities. • Must be consistent with the approved Master Plan, Major Development Plan (MDP) (where one is required) and Airport Environment Strategy(AES). • Required for new buildings and structures, including runways, taxiways, aprons, earthworks, demolition, electrical and hydraulic works.	• Assesses building design and compliance • Addresses fire safety measures • Provides details of design including construction methods, material type and environmental compliance • Details services including drainage and lighting • Shows how building activity will be consistent with the Master Plan, MDP and AES.

NAVIGATING THE 2020 MASTER PLAN

BRISBANE AIRPORT MASTER PLAN HISTORY

The Brisbane Airport 2020 Master Plan is supported by over 40 years of master planning history. The initial planning for the current airport site was undertaken in the early 1970s by the Brisbane Airport Advisory Committee, comprising representatives of the Queensland Government, Brisbane City Council and the Australian Government.

The Department of Civil Aviation's initial Master Plan, published in 1981 provided the framework for development over a 20-year time frame, and for the ultimate development of an airport with the aeronautical and associated facilities to cater for a total of 40 million annual passengers.

A new plan, published in 1991, included a provision for the future development of a western parallel runway and further terminal precinct development.

BRISBANE AIRPORT CORPORATION MASTER PLANS

Since acquiring the lease from the Australian Government in 1997, Brisbane Airport Corporation has produced four previous Master Plans commencing in 1999, with new editions published in 2003, 2009 and 2015.

As passenger demand grew, successive plans highlighted key development objectives to continue to deliver quality services to meet travel demand and to continue to create new opportunities for business and industry to benefit from the airport's growth.

The 2009 Master Plan introduced new community engagement initiatives and expanded a framework established in the 2003 plan for Brisbane Airport's future planning to be based on sustainability

That approach was continued in the 2015 Master Plan, along with a continued expansion in the size of the community engagement programme which remains a central focus of the approach to this plan.

BRISBANE AIRPORT 2020 MASTER PLAN

The content of the Brisbane Airport 2020 Master Plan responds to the specific statutory requirements of the Airports Act 1996. It includes information on changes at the airport since the publication of the 2015 Brisbane Airport Master Plan and a detailed outline of initiatives and developments planned for the next five years.

The plan considers social and economic factors likely to affect the airport in the future as well as forecasts of changes in passenger numbers, aircraft movements, traffic and freight.

Specific development objectives for the five year period of the plan are grouped into four pillars, with a focus on sustainability remaining the uniting theme.

In a change from previous years, the plan now includes dedicated chapters detailing the airport's Aviation, Land Use and Property Strategies to complement the Ground Transport Plan and Environment Strategy chapters required by the Act.

Each chapter summarises important changes and achievements since the 2015 Master Plan and outlines planned future activities. While the Master Plan chapters are linked, by organising information in this way, information about development plans for each area is more readily accessible.

NEW APPENDIX ASSISTS IN LOCATING CONTENT

In response to the statutory requirements of The Act, a new appendix has been created to provide a detailed guide to the location of all information required by the legislation in a single reference section.

Future initiatives mentioned in the plan are subject to a public comment, government assessment and approval process and not all development and infrastructure projects proposed within it are already approved.

To ensure appropriate governance and oversight, including compliance with relevant regulations, individual projects are the subject of separate Commonwealth planning and statutory approval processes and Brisbane Airport Corporation's commercial and due diligence processes.

LOCATION OF OBJECTIVES

OBJECTIVE		CHAPTER	WHERE TO LOCATE CONTENT
01	**Establish the strategic direction for efficient and economic development.**	ALL	Each of the chapters outlining airport activities include details of objectives for 2020-2025 as well as a review of activity since the previous Master Plan.
02	**Provide for the development of additional uses of the airport site.**	6 and 7	Chapter 6 outlines permissible land uses in each of the different airport zones. The content has been updated to reflect changes in State and Local Government Planning considerations.
03	**Explain all intended future uses of the airport site to the public.**	6 and 7	Chapter 7 details Brisbane Airport Corporation's approach to commercial property planning, with specific reference to permissible uses in each airport neighbourhood. These uses have been updated to mirror changes in State and Local guidelines.
04	**Reduce potential conflicts between uses of the airport site and ensure that uses are compatible with surrounding areas.**	6 and 7	Chapters 6 and 7 explain how future airport land use guidelines are designed to minimise all conflicts.
05	**Comply with relevant environmental legislation and standards.**	10	Chapter 10 is a dedicated Environment Strategy outlining 12 areas of focus and including details of all compliance measures in place at Brisbane Airport.
06	**Maintain a framework for assessing compliance with environmental legislation and standards.**	10	The Brisbane Airport Environmental Framework is described in detail at the front of Chapter 10.
07	**Actively promote and encourage the improvement of on airport environmental management.**	2 and 10	Sustainable environmental management is a consideration of all activity. The Environmental Strategy includes details of environmental management processes in place, as well as specific objectives for the 12 areas of focus.

02

WELCOME TO BRISBANE AIRPORT

OVERVIEW

Operating 24 hours a day and serving more than 23 million passengers each year, Brisbane Airport is a leading aviation hub, connecting Brisbane, Queensland and Australia overall to more than 50 Australian airports and a growing number of international destinations.

Bounded by the Brisbane River to the east, the Kedron Brook Floodway to the west, Moreton Bay to the north and the Gateway Motorway to the south and located less than 20 km from the Brisbane CBD, Brisbane Airport is one of the fastest growing airports in the country and serviced by high quality road, rail and public transport connection.

Substantial ongoing investment by Brisbane Airport Corporation has seen the airport and associated businesses become an important source of employment for the region, playing a catalytic role in tourism, business and industry growth with benefits being felt across Australia.

More than just an aviation hub, Brisbane Airport is a convenient and safe place of work for more than 23,000 people and a thriving suburb that supports and fosters over 400 businesses in both aviation and non aviation industries.

Working closely with the local community, the last five years have seen a focus on environmental responsibility at Brisbane Airport, with new initiatives including the installation of a network of 22,000 solar panels, the introduction of an energy efficient electric bus fleet and a variety of recycling and waste management initiatives.

Recognised nationally and internationally with awards for work in the areas of environmental sustainability, accessibility and engineering excellence, Brisbane Airport was awarded the title of Best Airport (Australia/Pacific) in the prestigious 2019 Global Skytrax World Airport Awards.

2020 will be a landmark year in the modern history of Brisbane Airport with the opening of a new runway, a forward looking construction project that guarantees the continuing ability of Brisbane Airport to provide the highest quality of services to airport visitors in the future.

Brisbane Airport Corporation's overall vision is to create a sustainable world-class airport, a distinctive place that visitors keep coming back to, and the best possible neighbour and business partner, building collaborative relationships, exploring opportunities for sustainable growth and acting with integrity in guiding the airport towards a brighter future for all.

BRISBANE AIRPORT AT A GLANCE

Brisbane Airport is managed with a strong focus on community, sustainability, education, knowledge and economic growth.

OVERVIEW

BEST AIRPORT IN AUSTRALIA/PACIFIC
2019 Skytrax World Airport Awards

BEST AIRPORT IN OCEANIA REGION
2017 Future Travel Experience Asia Awards

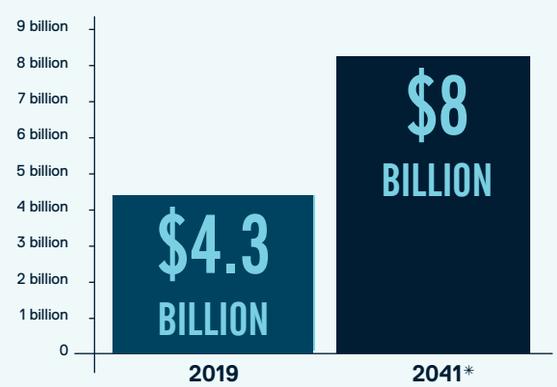
WORLD'S TOP 100 AIRPORTS
Ranked 18th

33
AIRLINES

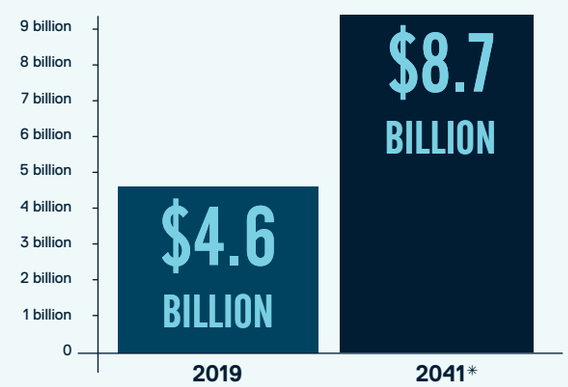
84
DESTINATIONS

ECONOMY

CONTRIBUTION TO QUEENSLAND ECONOMY



CONTRIBUTION TO AUSTRALIAN ECONOMY



BNE Opened in **1988**

BNE 24/7 365 — Operates 24/7 365 days a year

23M+ Passengers in 2018

Largest capital city airport in Australia by land size

BRISBANE'S NEW RUNWAY - OPENING 2020

BRISBANE'S NEW RUNWAY SYSTEM WILL BECOME THE MOST EFFICIENT IN AUSTRALIA

90%
OF CONSTRUCTION EMPLOYEES LIVE IN SEQ

$1.3BN
TOTAL COST TO BUILD

360HA
2.5 TIMES THE SIZE OF BRISBANE CBD

11M
CUBIC METRES OF SAND DREDGED

BRISBANE'S NEW RUNWAY IS 3.5KM IN LENGTH

ENVIRONMENT

10%
of the Airport is dedicated to biodiversity

BUSINESSES AT BRISBANE AIRPORT

400+
Businesses are located at Brisbane Airport, servicing a diverse range of industries

23,000+
Collectively, businesses employ more than 23,000 people

46,000+
Expected to reach more than 46,000 by 2040

LOCATION

LESS THAN 20KM
TO BRISBANE CBD

COMMUNITY

Distributed through the community partnership program

Third-largest airport in Australia by passenger numbers

Brisbane Airport is a suburb in its own right

Driving time to the city is 20 minutes

BRISBANE AIRPORT AUSTRALIA BNE


CEO WELCOME

ABOUT BRISBANE AIRPORT CORPORATION

Brisbane Airport Corporation has a vision for Brisbane Airport to be a world-class and distinctive place that visitors will keep returning to and the best possible partner for airlines and businesses.

Brisbane Airport Corporation Pty Limited, (BAC) the operator of Brisbane Airport is a proud, private, unlisted Queensland company, helping employ thousands of Queenslanders and creating economic opportunities for the state and city of Brisbane equating to more than $4 billion a year.

BAC first acquired Brisbane Airport from the Australian Government in 1997 under a 50-year lease agreement with an option to renew for a further 49 years.

BAC has a long-term vision to continue to grow the airport to provide a wider range of services to the people of Brisbane, Queensland and the rest of Australia.

Brisbane Airport has significant scope for future expansion, with the long-term capacity to continue to grow into a major international gateway, while maintaining the large buffer zones that separate airport operations from surrounding communities.

BAC has ultimate responsibility for the operations of Brisbane Airport including all airport infrastructure investment. The airport is managed with a strong focus on responsible development, ensuring that it will continue to be viewed with pride by future generations.

In connecting Brisbane and the state of Queensland to the rest of the world, operational priorities of BAC include a focus on building collaborative relationships, supporting the local community, including the arts and charitable organisations, and ensuring safe and secure accessibility to airport services.

Details of some of those activities appear on the following pages.

BRISBANE AIRPORT CORPORATION'S VISION

CONNECTING THE WORLD CREATING THE FUTURE

From building opportunities for our community to fostering cultural and economic growth, the management team and staff at BAC thrive on the knowledge that their collective efforts are helping passengers and business partners connect with Australia and the world.

Helping passengers every day, BAC's frontline Ambassador team is at the heart of everything the airport strives for – to be an extraordinary host.

A team of more than 160 ambassadors work inside the Domestic and International Terminals seven days a week, providing efficient, informative and compassionate assistance to travellers and airport visitors.

In 2018, the Ambassador team volunteered nearly 31,000 hours, assisting around 390,000 domestic and international passengers, including the thousands of athletes and officials who travelled through the airport for the 2018 Commonwealth Games.

CREATING STRONG COLLABORATIVE PARTNERSHIPS

BAC has fostered strong collaborative relationships with Government at all levels, the aviation industry and the local community.

Community partnerships and engagement activities are a vital part of the ongoing operations of the airport. All future planning involves a committed program of engagement, discussion and collaboration to ensure that all parties have an input.

Throughout the year, the airport actively engages with the community through a range of forums, information exchanges and festivals and works hard to ensure all contact is meaningful, robust and based on a two-way exchange of information.

ACTIVE ENGAGEMENT IN FORWARD PLANNING

BAC places great emphasis on the importance of regularly reviewing forward planning and through ongoing and constant collaboration and engagement with stakeholders, industry, the community and Government at all levels. The team seeks and values feedback on new initiatives from conception through to construction and completion.

The Corporation has strong and long-standing relationships with aviation industry partners, with a year round range of working groups, forums and regular meetings addressing operational issues.

Together these groups actively research, plan and implement initiatives to support the continued growth of the airport, including introducing new destinations and services.

SUSTAINABILITY AND PROTECTING THE ENVIRONMENT

BAC is committed to reducing the impact on the environment and has programs in place to manage and minimise the long-term impacts of climate change and adverse environmental impacts from aviation and property development activities.

The benefits of embedding eco-efficient initiatives and values into the business are significant cost savings and the guarantee of supply as the airport grows.

A team of 35 Ambassadors – the Food ResQ team – donated more time to rescue nearly 52 tonnes of untouched food for Oz Harvest, which was then distributed to schools in Brisbane for their breakfast program.

PARTNERSHIPS AND ACCESSIBILITY

COMMUNITY AND THE ARTS

BAC is a dedicated supporter of local charity, community, arts and sporting organisations and distributes more than a million dollars in sponsorship and philanthropic donations each year to more than a hundred local community initiatives and charities.

Partners include the Brisbane Roar Football Club, Brisbane Festival, Museum of Brisbane, Queensland Theatre, Brisbane Powerhouse, QAGOMA, La Boite Theatre Company, Brisbane Writers Festival, Camerata of St John's, and Brisbane Philharmonic Orchestra.

THE COMMUNITY GIVING FUND

BAC's major charitable partnerships include The Royal Flying Doctor Service, Crime Stoppers, Surf Lifesaving Queensland and Life Flight.

To benefit smaller community groups, the Brisbane Airport Community Giving Fund has been developed to provide much needed financial assistance to smaller community groups and schools in the Brisbane area.

The fund has been designed to assist community groups of all types to apply for assistance in a range of fields, including education, health and wellbeing services, as well as community initiatives promoting sporting activities, environmental responsibility and other initiatives of benefit to the community.

Applications for grants from the fund are invited every six months.

ACCESS FOR ALL

BAC is committed to removing the barriers that inhibit travel and has invested more than $3 million in the last five years implementing its Disability Access Management Plan.

All future planning at Brisbane Airport will continue to recognise the importance of providing accessible services and ensuring that compliance with appropriate legislation is maintained in new developments.

As part of the planning process, each element of the passenger journey is thoroughly reviewed with the intention of delivering the best accessibility solutions.

Brisbane Airport was the first in Australia to open a dedicated 'Changing Places' facility, with specialised equipment including a hoist, adult change table, and a toilet with moveable handrails.

BAC has also developed a dementia friendly action plan and is actively working towards becoming a dementia friendly organisation. It will continue to work closely with airline partners and organisations representing disability groups to ensure access needs are met, while continually upgrading services to remove barriers for those with special needs.

RECONCILIATION ACTION PLAN

Brisbane Airport is proud to be the first airport in Australia to formally commit to celebrating and promoting the traditions, laws and customs of Aboriginal and Torres Strait Islanders, with its Innovate Reconciliation Action Plan (RAP) officially endorsed by Reconciliation Australia.

Working in close partnership with Traditional Owners, the RAP is based on building relationships, showing respect and looking for opportunities, while helping create social change and economic contributions for Aboriginal and Torres Strait Islander communities.

To help strengthen professional development, employment and economic opportunities for Aboriginal and Torres Strait Islanders, the plan includes work internships for Indigenous students.

Other initiatives including flying the Aboriginal and Torres Strait Islander flags in front of the International Terminal and performing both Acknowledgement of Country and Welcome to Country at airport events.

Above: *Maxwell Gilbert Gabori, Amanda Gabori, Dorothy Gabori, (Family of the acclaimed Indigenous artist, the late Mirdidingkingathi Juwarnda Sally Gabori) - whose artwork adorns the International Terminal Arrivals concourse.*

KEY STRENGTHS OF BRISBANE AIRPORT

Brisbane Airport Corporation places the utmost importance on being a great host and providing world-class infrastructure and facilities. As the first and last experience passengers and visitors have of Brisbane, Brisbane Airport Corporation has invested significant capital in creating a unique and engaging sense of place within the terminals, a place that proudly showcases the very best of Brisbane, Queensland and Australia.

GEOGRAPHY

Being closer to both the USA and a number of major Asian ports, Brisbane Airport enjoys a strategic geographic advantage. This is of particular importance to fresh produce exporters. Further, with a high number of tourism destinations located in Queensland, Brisbane Airport is the state's primary gateway for many national and international tourists.

THE CAPACITY TO EXPAND

Brisbane is Australia's largest capital city airport by area, covering approximately 2,700 hectares. This extensive land area provides significant scope for future expansion, giving the airport capacity to continue its growth into a major international gateway, while still maintaining buffer zones that separate airport operations from surrounding communities.

PROXIMITY TO THE CBD WITH GOOD CONNECTIONS

Brisbane Airport is served by excellent road, rail and public transport connections. Recent major road infrastructure projects delivered by local and state Government have improved the airport's connectivity to the CBD with a network of underground motorways allowing swift and convenient access at even the busiest times of the day.

THE ABSENCE OF A NIGHT TIME CURFEW

Brisbane's curfew-free status provides a competitive advantage that facilitates the continued growth of Queensland and Australian business and tourism interests. The ability to operate 24/7 allows global carriers to effectively link Brisbane to international networks which hub from cities including Dubai, Singapore, Hong Kong and Bangkok.

The absence of a night curfew is also critical for air freight, with time-sensitive and perishable freight reliant on the airport's 24/7 operation to achieve timely delivery.

CAPACITY TO RESPOND TO CHANGE

With air travel experiencing a rapid pace of innovation and change, manufacturers are working hard to deliver new aircraft that respond to changing demands. Brisbane Airport is configured to service the wide variety of current and future aircraft, including the new runway, taxiways, terminal facilities and aviation support services.

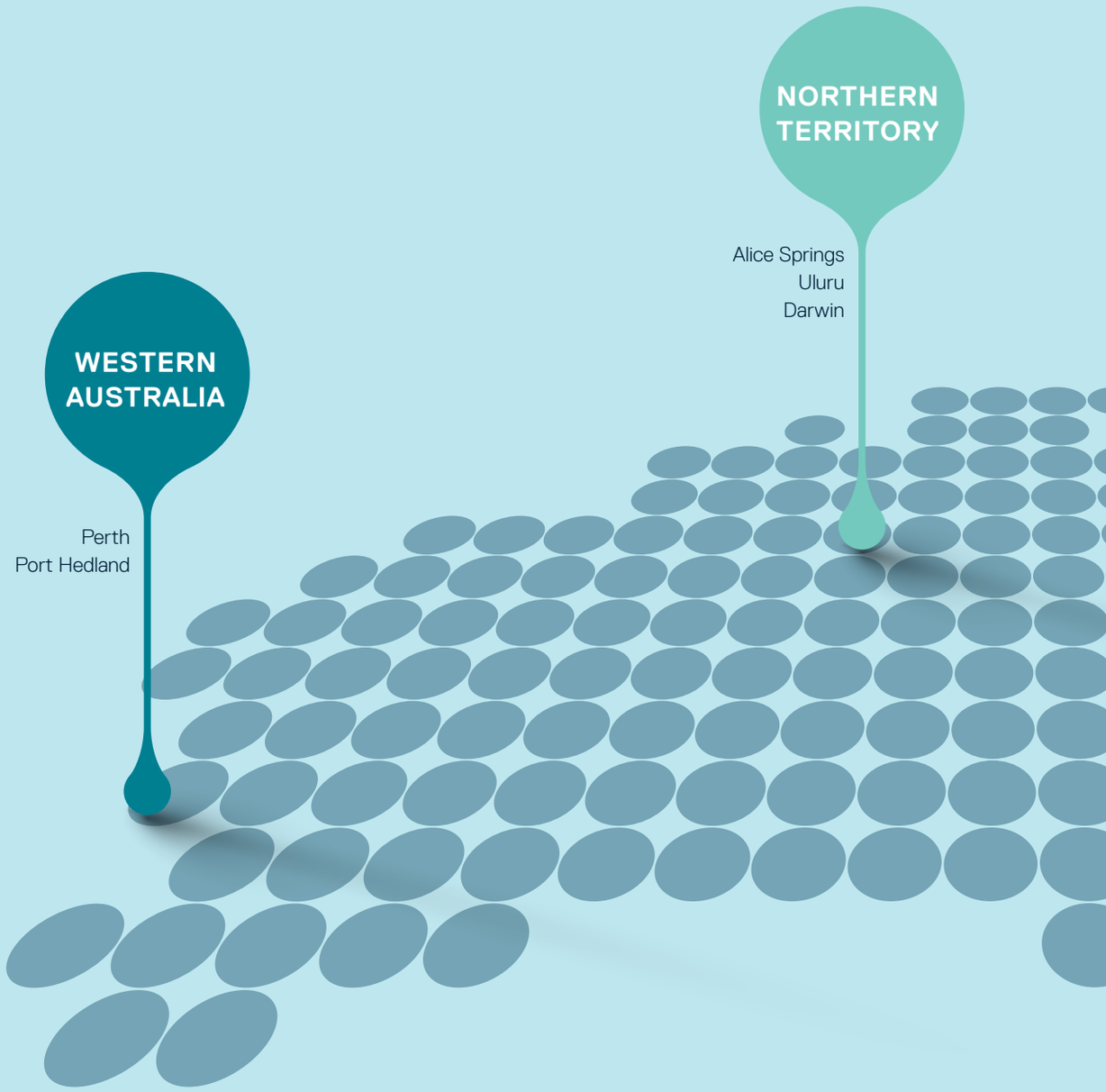
In line with state and local Government planning intent, the development of an on airport network of neighbourhoods will cluster together businesses with similar needs.

BRISBANE'S NEW RUNWAY

A testament to long term planning, Brisbane's new runway is Australia's largest aviation project and will double the capacity of the airport. First considered when the original airport plans were created, approval for the construction of the new runway was granted in 2007.

THE LARGEST BUFFER ZONE OF ANY CAPITAL CITY AIRPORT

Brisbane Airport has the largest buffer zone from surrounding communities of any capital city airport in Australia, helping to minimise the impacts of aircraft noise.



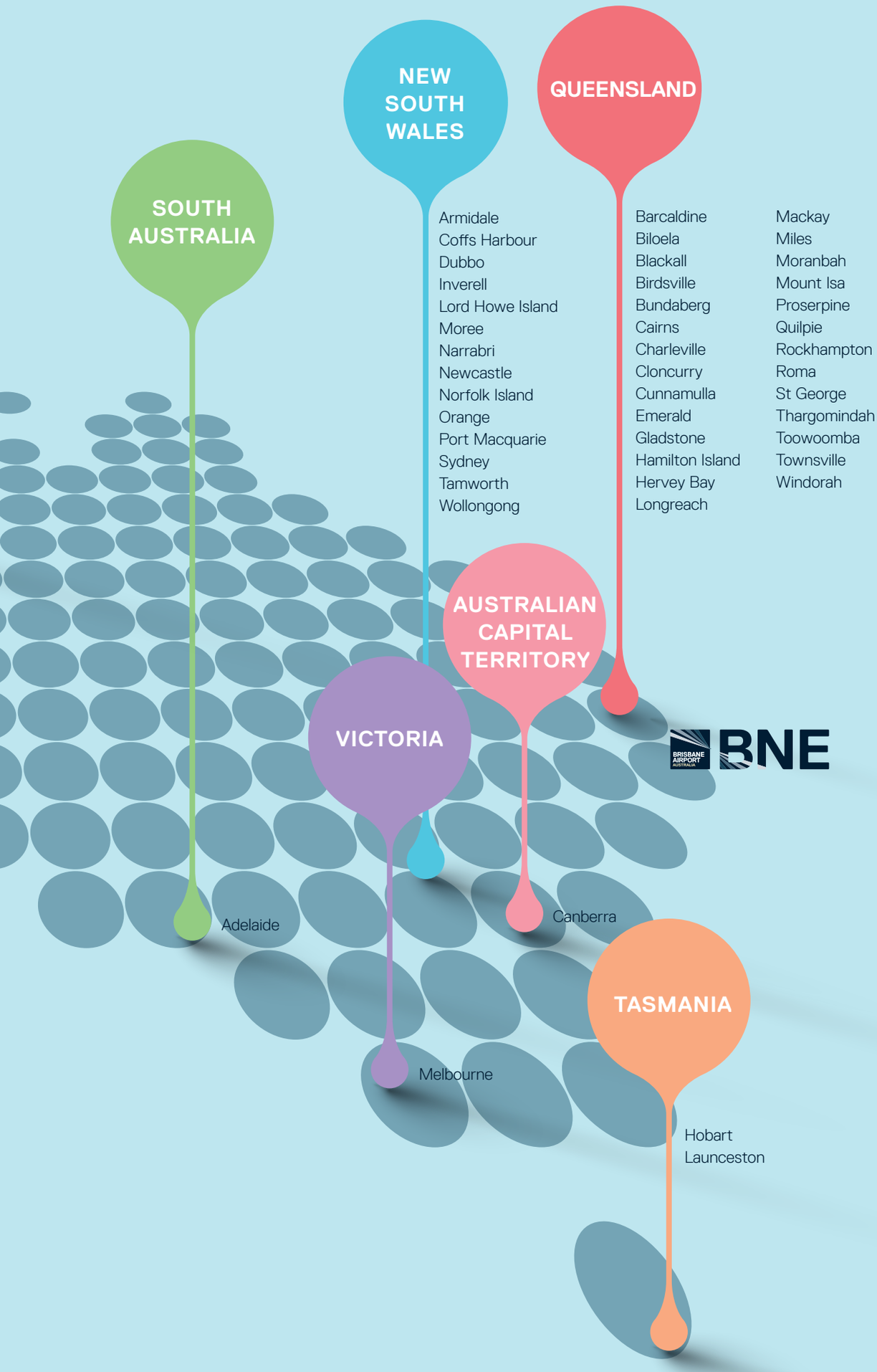
WHERE WE FLY

52 DOMESTIC PORTS

Brisbane Airport is Australia's most domestically connected airport, flying to 52 Australian ports, including 27 separate destinations in its home state of Queensland. A number of Queensland regions depend entirely on Brisbane Airport for all their incoming traffic.

Brisbane Airport to Sydney and Brisbane Airport to Melbourne are amongst Australia's busiest routes, with over 150 daily services departing from and arriving at Brisbane Airport.

Alliance Airlines · Fly Corporate · Jetstar · Qantas · Rex · Tigerair · Virgin Australia



Armidale
Coffs Harbour
Dubbo
Inverell
Lord Howe Island
Moree
Narrabri
Newcastle
Norfolk Island
Orange
Port Macquarie
Sydney
Tamworth
Wollongong

Barcaldine
Biloela
Blackall
Birdsville
Bundaberg
Cairns
Charleville
Cloncurry
Cunnamulla
Emerald
Gladstone
Hamilton Island
Hervey Bay
Longreach
Mackay
Miles
Moranbah
Mount Isa
Proserpine
Quilpie
Rockhampton
Roma
St George
Thargomindah
Toowoomba
Townsville
Windorah

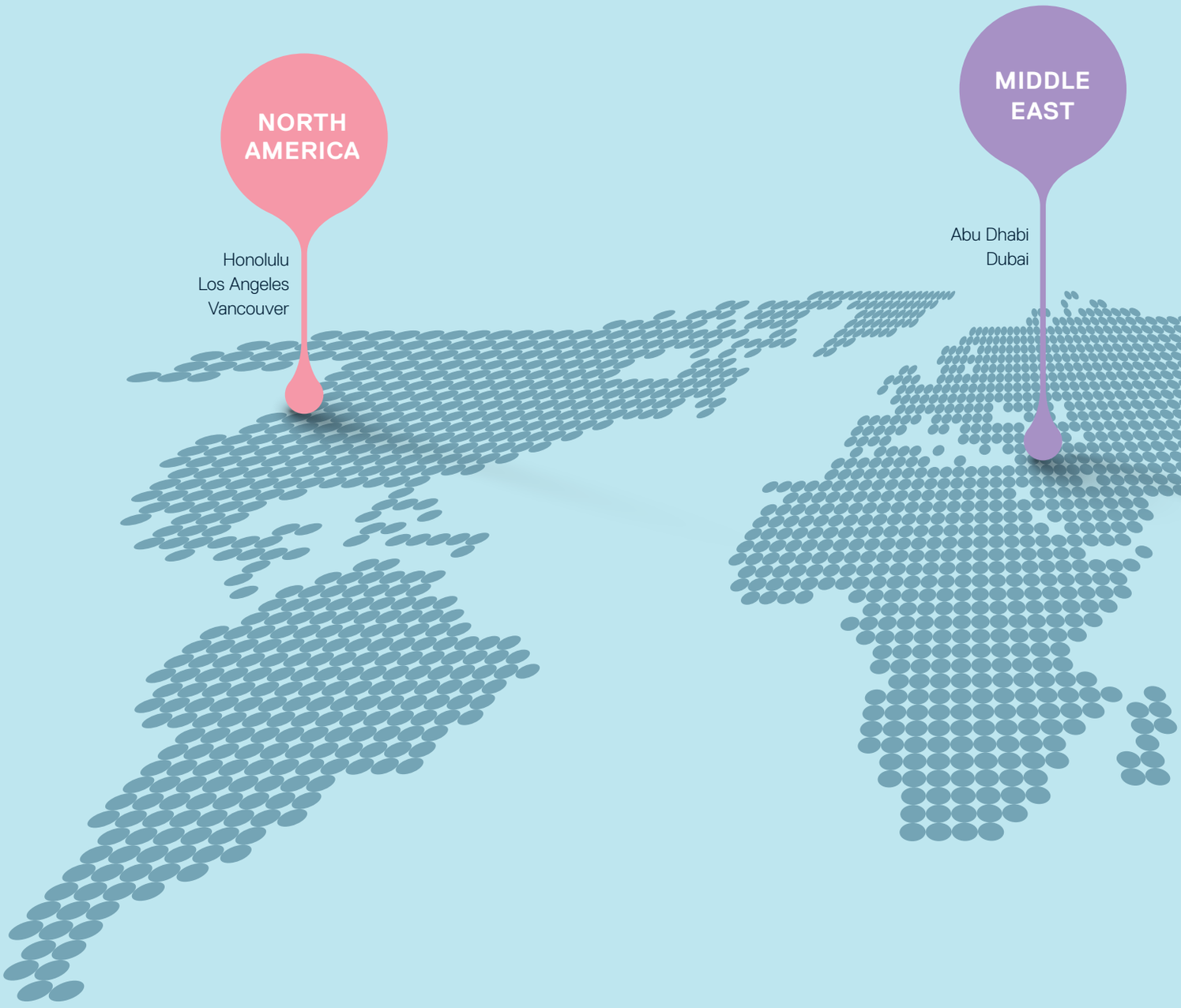
WHERE WE FLY

32 INTERNATIONAL PORTS

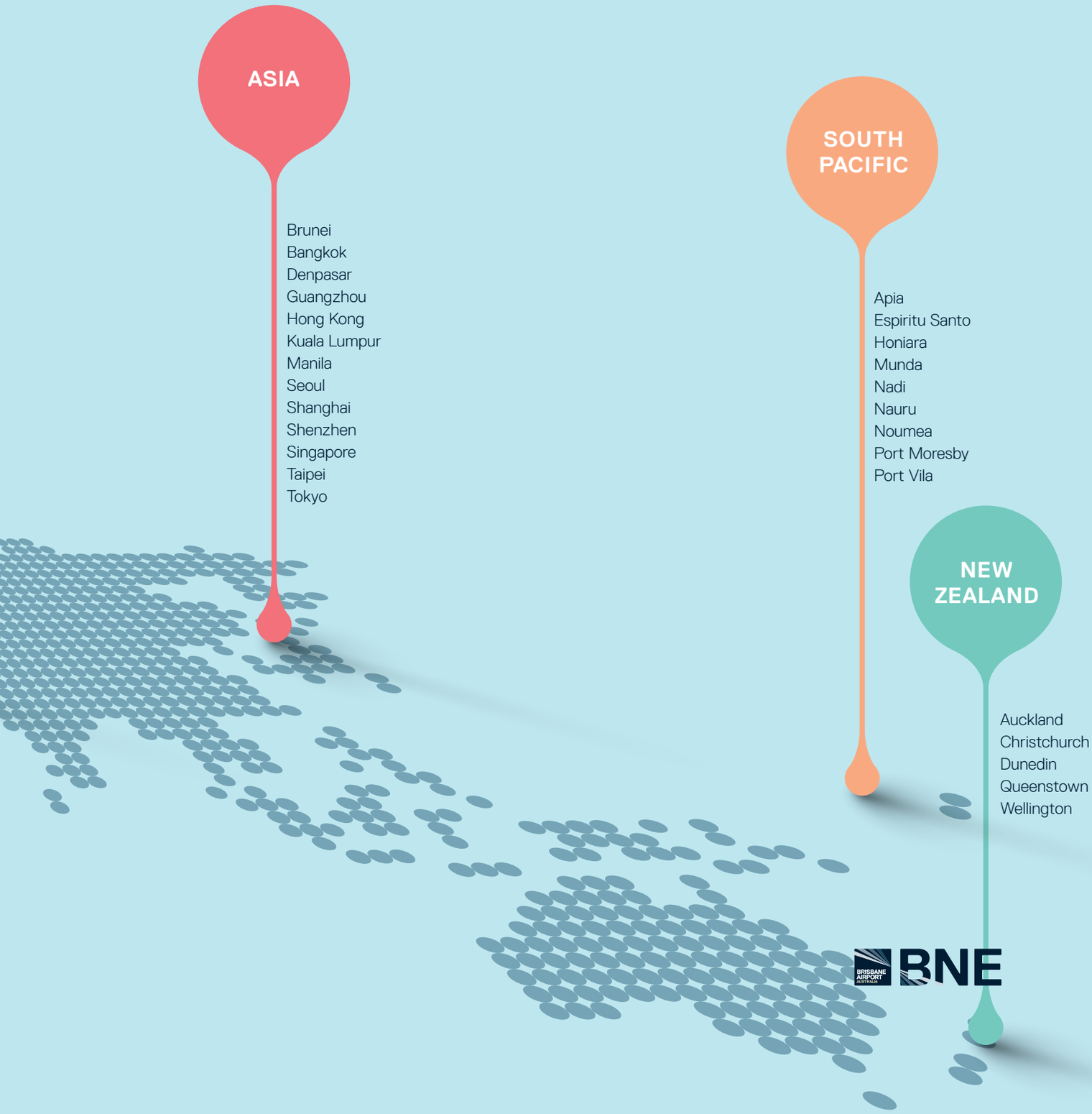
Internationally, Brisbane Airport enables access to the Australia's broadest network in the South Pacific, from Port Moresby in Papua New Guinea to Apia, Samoa and Dunedin, New Zealand.

From an import and export perspective, Brisbane offers the shortest flight times between an Australian state capital city and the major freight distribution hubs of Hong Kong, Guangzhou and Shanghai.

For business and leisure travellers, Brisbane Airport provides direct connections to 32 international destinations including major travel hubs in Asia, North America and the Middle East as well as New Zealand and the islands of the South Pacific.



Air Asia · Aircalin · Air Canada · Air New Zealand · Air Niugini · Air Vanuatu · Cathay Pacific · China Airlines · China Eastern Airlines · China Southern Airlines · Emirates · Etihad · Eva Air · Fiji Airlines · Hainan Airlines



Jetstar
Hawaiian Airlines
Malaysia Airlines
Korean Air
Nauru Airlines
Malindo Air
Qantas
Philippine Airlines
Samoa Airways
Royal Brunei
Solomon Airlines
Singapore Airlines
Virgin Australia
Thai Airways

AWARDS

Brisbane Airport Corporation's commitment to excellence has been rewarded with success in a number of national and international awards.

At Singapore's Future Travel Experience Asia Awards, Brisbane Airport was voted Best Airport (Oceania region).

Brisbane Airport received the HSBC Award for Doing Business in Asia at the Brisbane Lord Mayor's Business Awards.

Brisbane picked up three Australian Airports Association awards for its Customer Experience Program, Runway Overlay Project and Innovative Tracker AIRSIDE program.

Winners of Construction/ Engineering and Program/Project Director Project of the Year at the Annual Institute of Project Management Awards.

Category winner in the Airports Going Green Sustainability Awards for our Sustainability Strategy recognising the contributions in pursuit of sustainability.

Winner of a Business Development Award in Hong Kong Australia Business Association Awards, Qld Chapter for Aviation Business.

The Brisbane Airport team won the Excellence in Marketing award at the Property Council Awards.

Brisbane Airport and GHD won the Queensland Engineering Excellence Award for the Runway Stage 2 Overlay Project.

Category winner for Best Accessible Toilet in the MyTravelResearch.com International Toilet Tourism Awards.

SKYTRAX WORLD AIRPORT AWARD

Brisbane Airport reclaimed the title of Best Airport (Australia/Pacific) in the prestigious global Skytrax World Airport Awards 2019.

This is the third time Brisbane Airport has claimed Best Airport (Australia/Pacific) in the past four years.

The only Australian airport to appear in the top 20, it was voted 18th in the World's Top 100 Airports list, up from 22nd place in 2018.

ROUTES ASIA 2019 MARKETING AWARD

Brisbane Airport was recognised for its outstanding achievements in route development marketing at the Routes Asia 2019 Marketing Awards being named the Overall Winner, while also taking out the 20+ million passenger category.

CUSTOMER INITIATIVES

THE BRISBANE AIRPORT APP

Constantly updated, the Brisbane Airport Smart Phone App is available in English, simplified Chinese, Japanese and Korean.

The App has the latest information on arrivals and departures information with the option to receive text notification of changes to flights including gate changes and timings.

The App is available in an Apple and Android version and is free to download.

JOURNEY PLANNER

BAC has developed an Accessibility Journey Planner to ensure accessibility for all.

The Planner provides advice on getting to and from the airport, parking, transferring between the terminals and moving around the terminals, as well as details of services and facilities at the airport.

The content of the Planner is based on guidance from the Department of Infrastructure and Regional Development and Cities and was produced in consultation with the Brisbane Airport Accessibility Reference Group. It includes advice for visitors with general accessibility requirements and also for any visitors who may require specific additional assistance at Brisbane Airport.

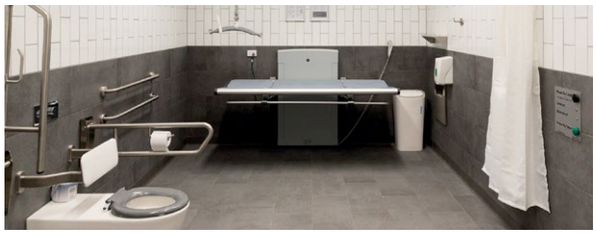
ASSISTANCE ANIMAL FACILITIES

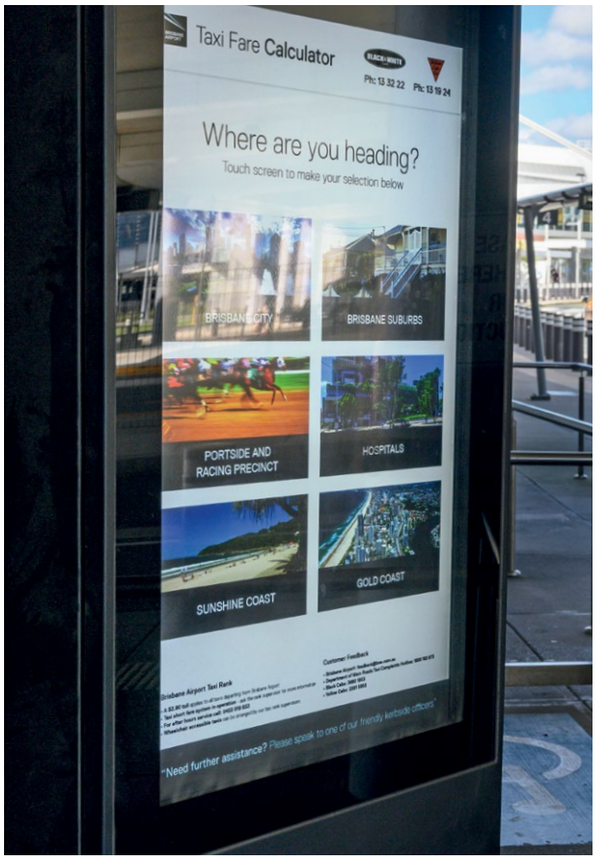
Brisbane Airport Corporation introduced new assistance animal facilities in both the International and Domestic Terminals in 2014.

The first of their kind in Australia, these purpose built amenities provide both toileting area and watering facilities for assistance animals. screening areas in both terminals.

ACCESSIBLE CHANGE FACILITIES

Accessible changing facilities were installed in the Domestic Terminal in 2017, followed by the installation of similar facilities in the International Terminal in 2018. These purpose built facilities provide additional space and specialised equipment for use by people with disabilities and their carers, including an adult change table, hoist and toilets fitted with movable handrails.





IMPROVED CONNECTIVITY

New initiatives to make journeys easier include a new Real Time Passenger Information system with digital signs on terminal bus stops an inside buses.

For taxi users, new screens display advance estimates of fares from the Domestic Terminal with a new 'short fare system' allowing drivers to collect short trip and lower fare passengers.

Bus passengers are also benefiting from a new Con-x-ion ticket office and upgraded waiting area at the Domestic Terminal and a new dedicated bus and coach parking area at the BNE Service Centre.

DEDICATED RIDE SHARING, AND PASSENGER PICK UP POINTS

In 2016, BAC introduced a dedicated location for ride-sharing pick up at both terminals, with dedicated waiting areas provided for vehicles collecting passengers.

At the International Terminal, public pick-up was relocated from Level 2 to Level 1, providing an increase in the kerbside area of over 300 per cent.

The improvements helped accommodate baggage trolleys and other bulky passenger luggage, releasing capacity on the terminal ramps.

ACCESSIBILITY PARTNERSHIPS

AIRPORT ACCESSIBILITY REFERENCE GROUP

The Airport Accessibility Reference Group (AARG) started in 2016 and convenes bi-annually. Its core function is to discuss options to maintain a high level of accessibility for all throughout Brisbane Airport.

The AARG includes representatives comprised of a number of disability organisations across Queensland, including Vision Australia and Guide Dogs Queensland.

AIRPORT FAMILIARISATION TOURS

Airport familiarisation tours commenced at Brisbane Airport in 2016. Conducted in collaboration with a range of disability organisations the tours are specifically designed to alleviate the anxieties of travel.

Specifically, they allow future passengers with a disability, including hidden disabilities, to better understand available facilities and the operation of the airport, prior to travelling.

INFRASTRUCTURE INITIATIVES

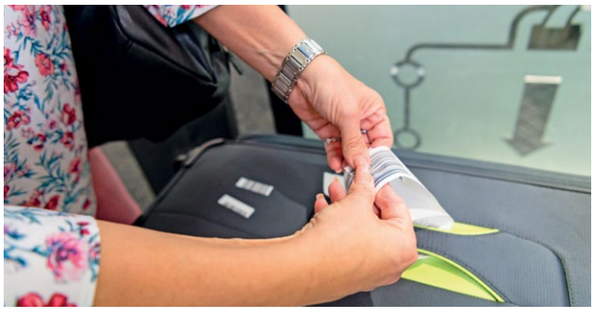
BUILDING THE DRYANDRA ROAD UNDERPASS

A new purpose-built underpass at Dryandra Road will allow road vehicles to travel between the Domestic Terminal and the airport's northern facilities once the new runway is open.

The underpass will allow continuous uninterrupted vehicle access to the airport's northern facilities including the General Aviation precinct, Royal Flying Doctor Service and the Acacia Street Plane Spotters Loop.

The physical structure is comprised of approximately 20,000 cubic metres of concrete and 4,000 tonnes of reinforced steel. The underpass will be able to bear more than 700 tonnes, which is 140 tonnes more than the heaviest passenger plane - a fully loaded A380.

More than 300 jobs were created in the construction process due to the enormity and complexity of the works.



CHECK-IN AND BAG DROP UPGRADES

Between June 2015 and June 2018, BAC made further improvements to services including innovative new self-service check-in and automatic bag drop facilities at the International Terminal.

The upgrade of these areas saw the addition of 96 new self-service kiosks and 32 new automatic bag drops.

SKYGATE EXPANSION

Development of the Skygate precinct started in 2005 with a plan to create a dynamic commercial, retail and leisure precinct. As it continues to grow in popularity, 2015 saw a $35 million expansion of DFO, recently complemented by the opening of Skygate Home & Life, home to a number of popular large scale Australian and international retailers.

TERMINAL REDEVELOPMENT

In 2015, BAC redeveloped the departure level and retail precinct at the International Terminal.

New features include a themed departures lounge, with local artists selected to provide key pieces, using locally sourced stone, materials and plants to give the building an iconically Queensland feel.

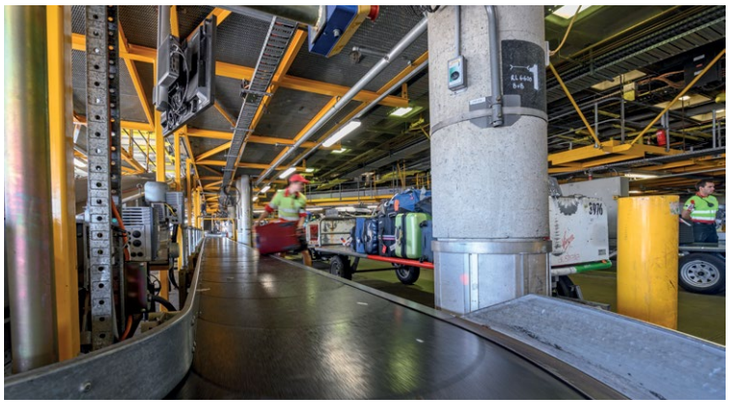
New 'walk through' Duty Free shopping, plus a range of specialty retail and food and beverage outlets now offer the best of local produce and products.

INTER-TERMINAL TRANSFER

The new Inter-Terminal Transfer Facility was designed to reduce connection times between terminals.

A new transfer check-in service in the arrivals area of the International Terminal included new bus stops and extra bus services during peak periods.

Facilities for transferring passengers were complemented by the installation of covered areas for walkways and enhanced digital way-finding signs in the forecourt area of the Domestic Terminal.



BAGGAGE HANDLING UPGRADES

The security and efficiency of baggage handling is an important part of airport operations. In 2017, the Domestic Terminal baggage handling system was upgraded and modernised.

With the installation of new baggage carousels and improved bag sortation software, complemented by the addition of new x-ray machines, baggage handling systems are now larger and more efficient, anticipating the continued increase in passengers using the airport.

SUSTAINABILITY INITIATIVES

NEW ELECTRIC BUS FLEET

In 2018, Brisbane Airport became the first Australian airport to roll out a fleet of fully electric buses,

The use of electric buses for landside transport reinforces an ongoing commitment to creating a cleaner, greener environment and improved passenger experiences at Brisbane Airport.

The new fleet boasts reduced noise pollution and zero tail pipe emissions and, will result in a reduction of 250 tonnes of carbon emissions each year, equivalent to taking 100 cars off the road.

The new buses sport all passenger comforts, with tailored interiors designed specifically for travellers, including ample baggage and luggage racks and featuring three full size double doors making boarding and disembarking more efficient for all.

SOLAR POWER GENERATION

As part of a commitment to renewable energy, $11 million has been invested in a solar power generation project across six sites at Brisbane Airport.

The major project includes the largest commercial rooftop solar system in the southern hemisphere.

Consisting of about 22,000 panels, it spans an area at least twice the size of the GABBA Cricket Ground.

Electricity is one of the most significant expenses in running Brisbane Airport with multiple large buildings requiring cooling, lighting and heating all year round.

The solar energy generated at Brisbane Airport is equivalent to powering more than 1,700 Australian homes for a year, with carbon offsets equal to planting more than 50,000 trees or taking 1,500 cars off the road each year.

RUNWAY LIGHTING

Brisbane's new runway will be the first runway system in the southern hemisphere and Asia Pacific region with a fully addressable LED runway lighting solution.

It is estimated that the system will save 460 tonnes of carbon emissions each year, in comparison to a traditional incandescent system.

In addition to the environmental benefits, the new system increases effiiciency of operation. Addressable airport lighting systems allow the flexibility for each individual airport navigation light to be remotely controlled and monitored for correct operation, maximising pilot safety and operational efficiency.

REDUCED EMISSIONS

A range of proactive measures have seen Brisbane Airport Corporation's carbon emissions continue to decline since reaching a peak in 2013.

The Brisbane Airport Energy Management Strategy describes the preferred mix of grid electricity and renewables to ensure a high level of energy security and quality, while meeting emissions reduction commitments.

The Brisbane Airport Emissions Reduction Strategy includes a commitment to ongoing emissions reduction through a low carbon policy, with regular audits benchmarking continued improvement in carbon and energy performance.

RECYCLING PROGRAMS

As part of day to day operations, the Environment team at Brisbane Airport is actively seeking opportunities for effective waste management and recycling.

A voluntary food recovery initiative launched in 2014, in partnership with the charity Oz Harvest, on airport catering companies and the airport's Ambassador Program has led to more than 50 tonnes of food being redistributed to the needy each year.

New cardboard compactors installed at the Domestic Terminal in 2017 saw the volumes of recycled cardboard double to 300 tonnes per year, reducing consumption and saving waste destined for landfill.

CURRENT MAJOR PROJECTS UNDERWAY

Through ongoing investment by Brisbane Airport Corporation, Brisbane Airport plays a catalytic role in tourism, business and industry growth with benefits being felt across Australia. Major projects underway at Brisbane Airport include the following;

BNE AUTO MALL

Following final approval, the revolutionary development will create a high-profile visitor attraction and the only automotive precinct in Australia offering 24/7 operation.

INTERNATIONAL TERMINAL CHECK-IN UPGRADE

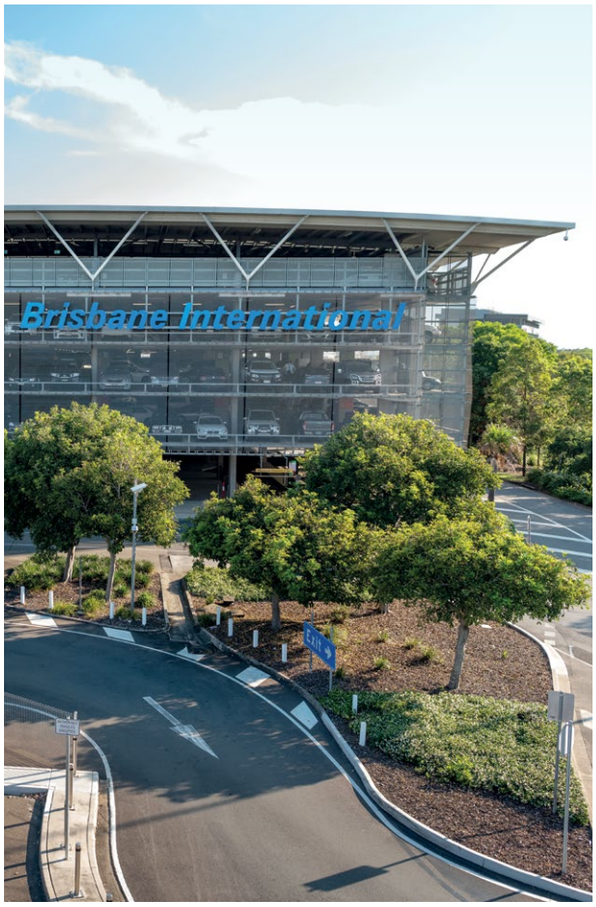
A $12.6 million upgrade of check-in and bag drop facilities as part of an ongoing program of work. Four of the six check-in rows have been completed to date including the provision of 96 new self-service kiosks.

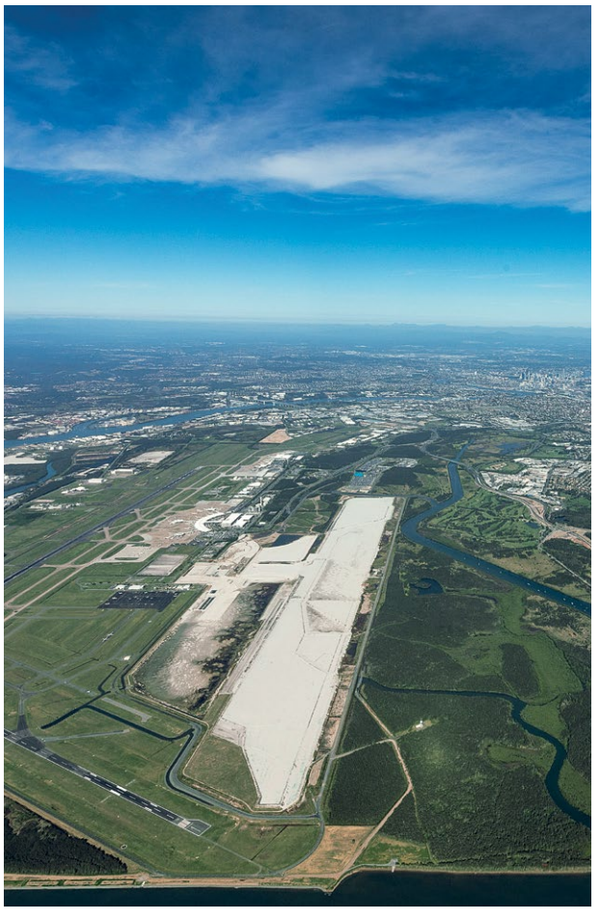
DOMESTIC TERMINAL RETAIL UPGRADE

A major project delivering a range of improved services. Including 50 new and refurbished retail offerings, each contributing to an improved passenger experience.

MULTI STOREY CAR PARK

Ideally located for visitors to the International Terminal, the car park will provide up to 2,800 additional parking bays and will be linked by a new intersection on Airport Drive.





BRISBANE'S NEW RUNWAY

Brisbane's new runway is the culmination of long term planning which commenced in the 1970s. Work on the site began in 2012, with the runway scheduled to open in 2020.

THE HISTORY OF BRISBANE AIRPORT

EARLY HISTORY

The first aircraft to use the Brisbane Airport site as a landing field was 'The Queen of Sheba', piloted in 1922 by Captain Jack Treacy. Three years later, the 32 hectare Eagle Farm Aerodrome was officially opened, with records showing that in 1928, an estimated 26,000 people welcomed Sir Charles Kingsford Smith arriving at the Aerodrome aboard the Southern Cross after completing a record-breaking 11,566 kilometre, three stage flight from Oakland, California.

The original Southern Cross is now preserved in a specially built exhibition hanging at the airport.

Scheduled flights to regional centres commenced in the late 1920s with Qantas beginning operations in 1926 and Australian National Airways commencing services to Sydney in 1930.

The onset of the Second World War saw Eagle Farm used as a US Military airfield. With the end of the war in 1945, the hangars and administration facilities at Eagle Farm soon became a key part of Brisbane's commercial aviation operation, taking advantage of the additional facilities constructed during the war, as well as the more favourable meteorological conditions.

MOVING TO THE CURRENT SITE

In the early 1970s, in response to an emerging increase in demand, research began into finding an alternative site for a significantly larger airport complex to serve Brisbane and Queensland. A large site to the north-east of Eagle Farm was identified for the new airport. History shows that the chosen site included the former suburb of Cribb Island, the childhood home of one of Australia's most successful pop groups, The Bee Gees.

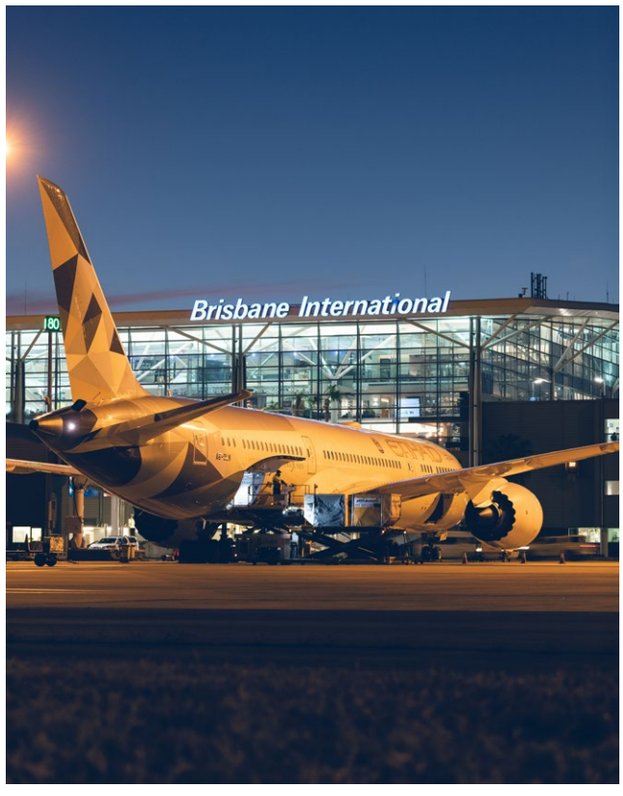
The chosen site allowed the development of widely spaced long parallel runways in NNE/SSW direction and was also large enough for the runways to be sufficiently separated to permit independent operations on each parallel runway and allow the optimum central location of terminal facilities. The runway's orientation minimised the noise and height restrictions on areas including the Brisbane CBD.

Construction of the new airport and associated aviation facilities commenced in May 1980. During this period, the Australian Government was responsible for the operation and development of the airport including the planning and construction of the new International Terminal. The airport commenced operations in 1988, with the International Terminal opening in 1995.

BRISBANE AIRPORT CORPORATION

In July 1997, Brisbane Airport Corporation purchased the long-term lease of Brisbane Airport and took over management and operations. From the outset, the strategic plan was to redefine the role of the modern airport in Australia with a strong emphasis on the importance of community, sustainability, education, knowledge and economic growth.

In the intervening years, Brisbane Airport has become one of Australia's most progressive and fastest growing airports.



HISTORY OF BRISBANE'S NEW RUNWAY

BRISBANE'S NEW RUNWAY

LOOKING BACK: OBJECTIVES OF THE PROPOSAL TO BUILD A NEW RUNWAY

The original proposal for the construction of the new runway had five main objectives;

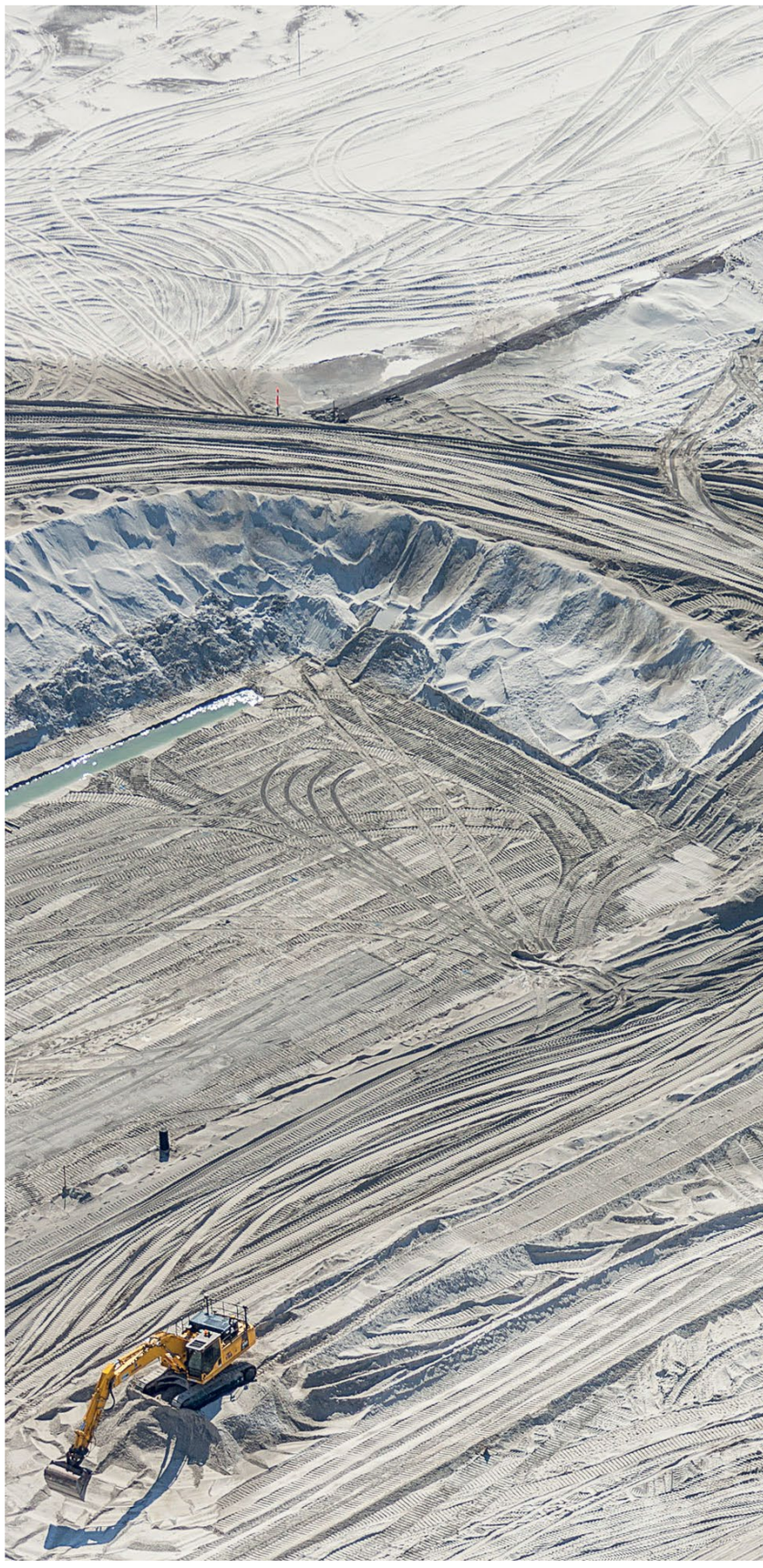
- Meeting future capacity needs by the staged delivery of the new runway in an economically justifiable time frame
- Driving the generation of regional economic growth
- Balancing economic benefit, social and environmental impact
- Maintaining appropriate risk management
- Achieving stakeholder support throughout the delivery of the project.

LOOKING BACK: WORKING WITH THE COMMUNITY

The projected economic and operational benefits to the city of Brisbane and the surrounding region in the proposal to create a new runway were clear.

The proposed new runway would double the capacity of Brisbane Airport, facilitating up to 50 million passengers by 2040, with that extra capacity predicted at the time of the original proposal to deliver $5 billion per year in regional economic benefit.

While the economic argument was strong, it was important also to consider the reaction of local communities. In 2006, once terms of reference for the Environmental Impact Strategy were released, more than 30 independent consultants were employed by BAC to engage with residents and communities of interest to both explain the plan and to consider all feedback.



LOOKING BACK: THE LEGISLATIVE APPROVALS REQUIRED TO PROCEED

From a legislative point of view on what would become Australia's largest aviation project, the proposal to build the new runway required;

- Approval of the relevant 'Controlled Actions' under the Environment Protection and Biodiversity Conservation Act 1999
- Approval of a Major Development Plan under the Airports Act 1996
- Approval for building activities under the Airports (Building Control) Regulations pursuant to the Airports Act 1996 and
- Approval for controlled activities under the Airports (Protection of Airspace) Regulations pursuant to the Airports Act 1996.

The potential for environmental impact on Commonwealth land, including on wetlands of international importance and on listed threatened and migratory species meant that a further environmental assessment was needed prior to the approval of the project, in line with the environmental impact process provided for under the Environment Protection and Biodiversity Conservation Act 1999.

To fulfil all legal and compliance requirements, Brisbane Airport Corporation, in consultation with key stakeholders from Government and industry developed a Major Development Plan and an Environmental Impact Statement.

The final versions were provided for public comment during 2006. Following further consultation and consideration of feedback, the development plan for the new runway was approved in 2007 by the then Federal Minister for Transport and Regional Services. The Australian Government approved Brisbane Airport Corporation's Public Engagement Strategy shortly thereafter.

Since the approval of the project, BAC has continued to actively engage with all stakeholders providing them with the ongoing opportunity to participate in and to comment on issues of interest and concern.

MASTER PLANNING FOR THE NEW RUNWAY

1970s 1980s 1990s 2000s

1970s

The opportunity to build a new parallel runway at Brisbane Airport was first identified in the 1970s by the Brisbane Airport Advisory Committee. Formed before the airport moved to its current site, the committee included representatives of the Queensland Government, Brisbane City Council and a selection of Federal Government departments.

BRISBANE'S NEW RUNWAY

1970s | **1980s** | 1990s | 2000s

1980s

A series of studies into the requirements and impacts of potential developments at Brisbane Airport, including a 1981 report by the Parliamentary Standing Committee on Public Works were followed in 1983 by the creation of the Federal Department of Aviation's Brisbane Airport Master Plan, providing the first framework for development of the airport to the year 2000 and beyond. Broadly this plan provided for future aeronautical and associated facilities to cater for a projected ultimate capacity of 40 million annual passengers. Forecasting ahead, the plan envisaged the airport having two 01/19 parallel runways and a 14/32 cross runway configuration.

Once construction of the new airport site commenced, initial development works on the new site were governed by the content of the first airport Master Plan published in 1983. Major works included the construction of the existing main and cross runways and taxiways, the Domestic Terminal Building, Control Tower and Air Services Australia facilities, plus essential airline support facilities, roads and services infrastructure.

As passenger numbers and the demand for flights to and from Brisbane Airport grew, an updated Master Plan also identified opportunities for development of the terminals and commercial precincts. The 1988 plan retained the same airfield planning layout as the original plans, including the future development of a western parallel runway. A plan published in 1991 continued to adopt the same airfield planning layout, providing for the future development of a western parallel runway and further terminal precinct development and identifying opportunities for the development of commercial precincts within the airport lease area.

MASTER PLANNING FOR THE NEW RUNWAY

1970s | 1980s | **1990s** | 2000s

1990s

The first Master Plan published by BAC recognised the significant investment in infrastructure to date and the airport's physical site extents, form and limitations.

In consideration of industry trends and external influences, the Master Plan maintained the aeronautical layout strategies of previous Plans, while proposing improvements to surface transportation strategies and considering potential future opportunities for business and industry development.

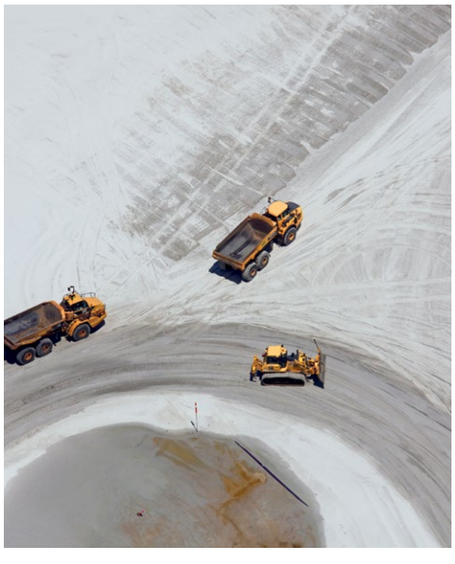
In that Plan, BAC continued to support the location of a new runway located parallel to and 2,000 metres west of the existing 01/19 runway.

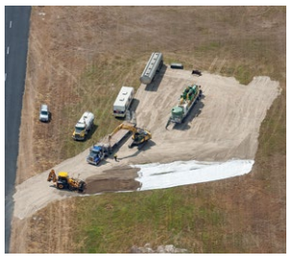
BRISBANE'S NEW RUNWAY

1970s | 1980s | 1990s | **2000s**

2000s

The 01/19 parallel runway layout concept was further refined in the 2004 Master Plan. Following public consultation, Ministerial approval and publication, BAC commenced the first stages of active planning and preparation required to bring the Plan to build a new parallel runway to fruition.





BUILDING THE RUNWAY

Once approvals had been received, there were three major stages to a construction project lasting over eight years in total.

PHASE ONE
2012–2015

DREDGING AND RECLAMATION

PHASE TWO
2016–2020

AIRFIELD PLANNING, DESIGN AND CONSTRUCTION

PHASE THREE
2016–2020

AIRSPACE DESIGN

BRISBANE'S NEW RUNWAY

PHASE ONE: CIVIL WORKS, DREDGING AND RECLAMATION

The preparatory works for the construction of the new runway commenced in 2012 with the construction of access roads and site compounds. The new site was cleared of Casuarina plantation placed on site when the airport was built in the 1980s to stabilise the soil.

Prior to any construction commencing, the new runway project team was faced with a series of complex construction challenges. The site was located at sea level on an old estuarine delta of the Brisbane River and featured deep, soft, alluvia soils, in some places more than 30 metres in depth across the areas where the new runway would be built. Engineers at the time described the surface as having the consistency of "sticky toothpaste".

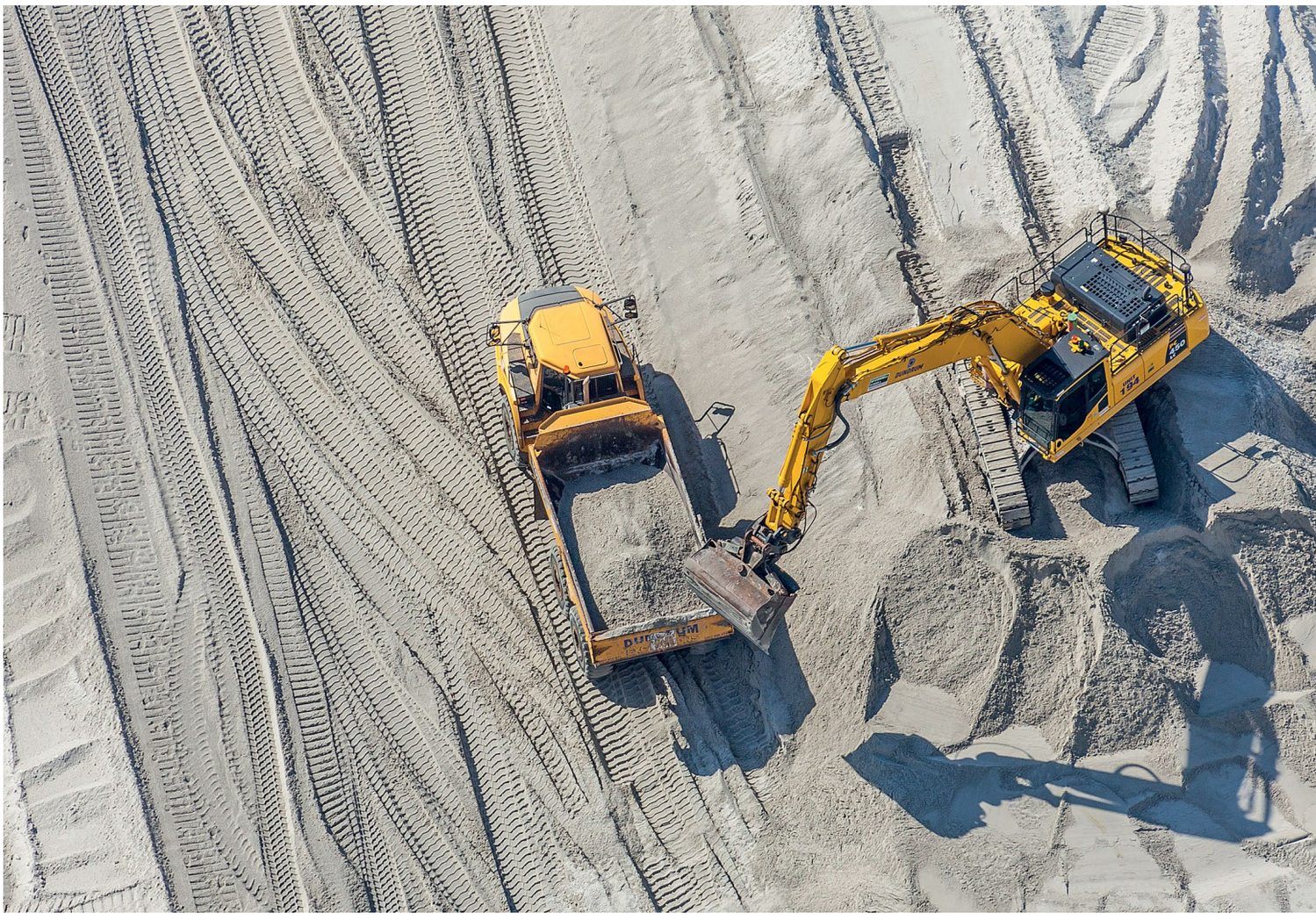
Project Director, Paul Coughlan, when interviewed about the original site outlined the enormity of the issues that the project faced. "The site has a "California Bearing Ratio" (CBR) of between 1 and 1.5. That's incredibly soft soil.

You would normally see runway projects built on CBRs of 10 or better. Put in perspective, the Federal Aviation Authority in the US runway pavement software packages don't assume a CBR of anything less than 3. We're not even on that package!"

The expert firm hired to complete the engineering design of the new runway had more than 35 years' of high-level airport experience, yet had never previously had to build a runway on a site with such a low bearing ratio.

In these unusual circumstances, the plan to reclaim the site prior to the construction of the new runway became dependant on the Airport Project team being able to identify an environmentally-sound and economical source of the sand needed to create a surface for construction.

PHASE ONE: CIVIL WORKS, DREDGING AND RECLAMATION



SOURCING SAND TO ALLOW CONSTRUCTION: A LOCAL SOLUTION

The Environmental Impact Study conducted prior to the approval of the construction plan in 2006/07 had proposed that Moreton Bay could potentially be an ideal source for the type of sand needed to surcharge the land and make it suitable for construction. Surcharging involves the application of a large volume of sand as a heavy load to a sodden soil surface, causing the ground level to sink and consolidate to form a stable foundation.

Having found a potential source of the sand needed, the challenge of finding an economical way of transferring it from the bay and on to the airport again proved to be complex and multi-layered.

To tackle the challenge of the dredging itself, the team sourced the use of a specialist vessel, the "Jumbo Class" dredge known as the Charles Darwin.

The Charles Darwin measured 183 metres long, 40 metres wide and had the capacity to store up to 30,000 cubic metres of sand. The closest to the site the dredge could comfortably berth however was at the mouth of the Brisbane River in an area called the swing basin for the Port of Brisbane. That location meant it had to pump the sand upwards of 8 kilometres from its mooring to the runway site. It was also directly adjacent to the Luggage Point Sewage Treatment Plant, the main treatment plant for Greater Brisbane.

BRISBANE'S NEW RUNWAY

The chosen solution involved running a pipeline across the treatment plant land and the operational airfield, to reach the site for the new runway.

A solution for the route of the pipeline through the sewage treatment plant was arrived at in discussion with Brisbane City Council and the site manager Queensland Urban Utilities. Once solved, the next challenge was to find ways for the pipeline to go around the main runway, as well as under the cross runway. A series of large concrete culverts were created under the cross-runway through which the pipeline was threaded with facilities to turn the pipe to avoid breakage.

Two large diameter concrete enveloper pipes were constructed under the cross runway. This enabled the heavy steel dredge pump out pipeline to be installed through the enveloper pipes on steel rollers.

In total, the three-year dredging phase saw almost 11 million cubic metres of sand sourced from the bay and transported to a 3,300 metre strip of solid land on a greenfield site of 360 hectares, helping to create a platform fit for the construction the new runway.

The work had transformed the site by raising the ground level by three metres, making it free from flood impacts as well as achieving the strength necessary to make it suitable for construction.

To accelerate ground settlement, once the first 2 metre layer of sand had been pumped ashore onto the new runway site, some 350,000 wick drains were installed down to depths of up to 30 metres over approximately 40 per cent of the site.

The wick drains provided an uninhibited vertical pathway for soil moisture to be squeezed from the ground under the downward pressure of the heavy sand and the effects of gravity.

The last cubic metre of sand was pumped on 7 December 2014. Estimates assumed that the sand base would take around three years to settle. The sand and wick drains were left in place to consolidate the underlying soils.

To monitor progress, a series of regular monitors were created to establish the point where the site had reached a suitable level of settlement to commence building the runway and taxiways.

PHASE TWO
AIRFIELD PLANNING, DESIGN AND CONSTRUCTION (2016-2020)

The second phase of the construction project, including the runway system and all necessary airfield infrastructure, commenced in August 2016 with the Seawall and Site Access contract and in early 2017, the construction of a four-lane underpass, to allow traffic to pass under the new taxiways linking the runway to the terminal buildings.

Work on the airfield commenced in mid-2017 with the first task, before runway construction could commence being the redistribution of an estimated 4.5 million cubic metres of now surplus sand to other parts of the airport site for use in future development.

The runway project itself involved the construction of a new runway 3.3 kilometres long, 60 metres wide, topped with asphalt, 12 kilometres of taxiways, topped with concrete supported by taxiway pavements and airfield infrastructure including navigational aids, lighting, multiple utilities, signage, operations roads, airfield drainage and landscaping, security fencing and control systems.

A high intensity approach lighting system is located at both ends of the runway, with 300 hectares of landscaping undertaken to cover all non-paved areas of the airfield.

THE DRYANDRA ROAD UNDERPASS

The building of the new purpose-built underpass at Dryandra Road was essential to allow road vehicles to travel between the Domestic Terminal and the airport's northern facilities once the new runway is open. The Dryandra Road Underpass allows continuous uninterrupted vehicle access to the airport's northern facilities such as the General Aviation precinct, Royal Flying Doctor Service and the Acacia Street Plane Spotters' Loop.

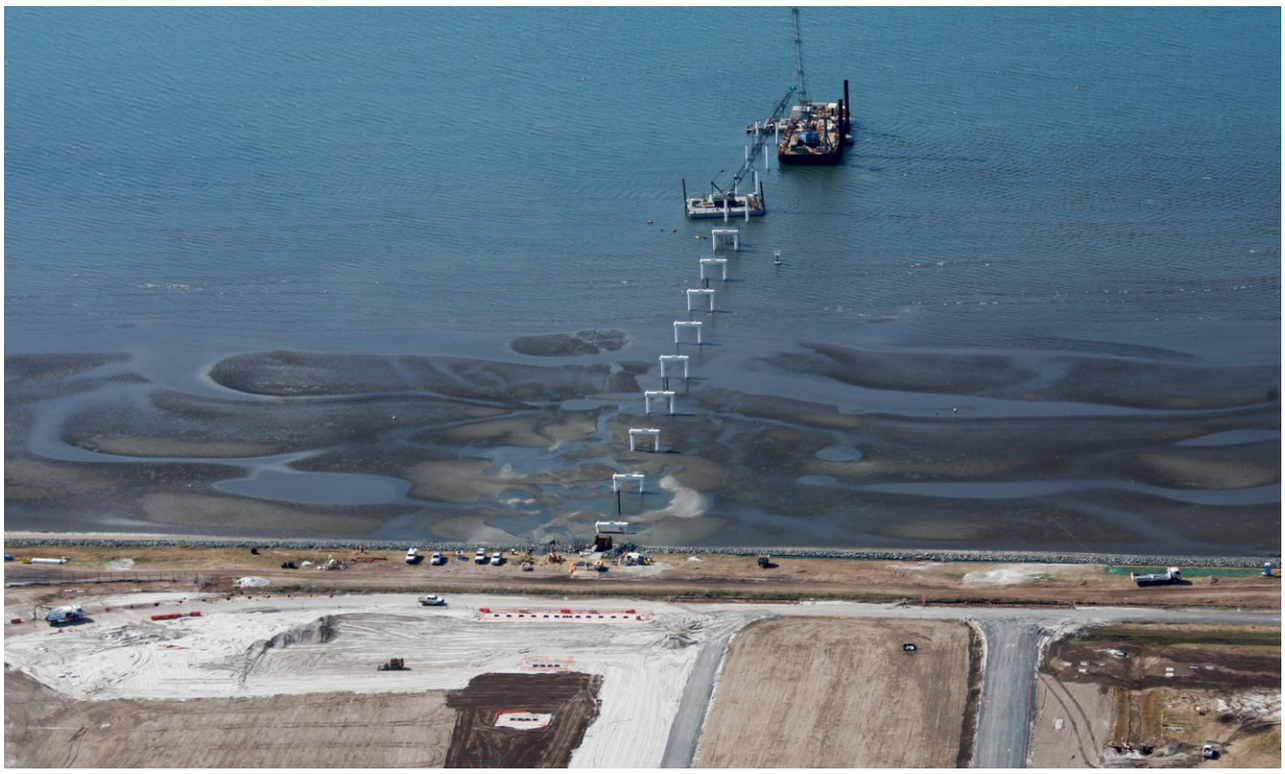
Building the new underpass proved to be a highly complex project, constructed five metres below sea level, with a dewatering system required to remove the equivalent of the volume of two Olympic swimming pools in a single, 24-hour period.

The physical structure is comprised of approximately 20,000 cubic metres of concrete, and 4,000 tonnes of reinforced steel. 750,000 cubic metres of sand was moved for construction of the underpass.

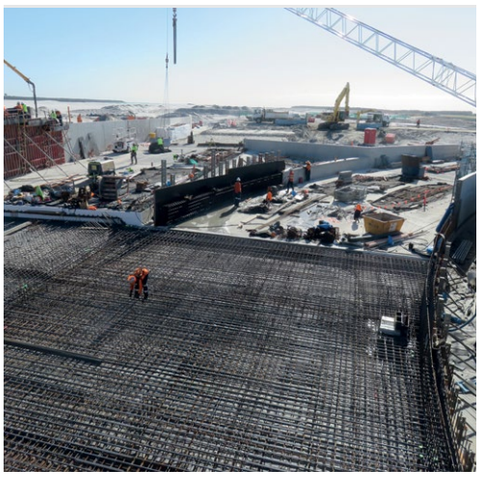
Including an estimated 20, 000 cubic metres of very heavily reinforced concrete 1.6 metres thick at the deepest point, the underpass will be able to bear more than 700 tonnes, which is 140 tonnes more than the heaviest passenger plane - a fully loaded A380, and is future proofed for aircraft of the future

Employing more than 300 people due to the enormity and complexity of the works, the underpass co-locates vehicle access, partitioned down the centre, for public use on one side and restricted secure operational use on the other side. Each side has one lane each way. All vehicle traffic will travel under the soon-to-be-built link taxiways with aircraft taxiing overhead between the new runway and the existing passenger terminals.

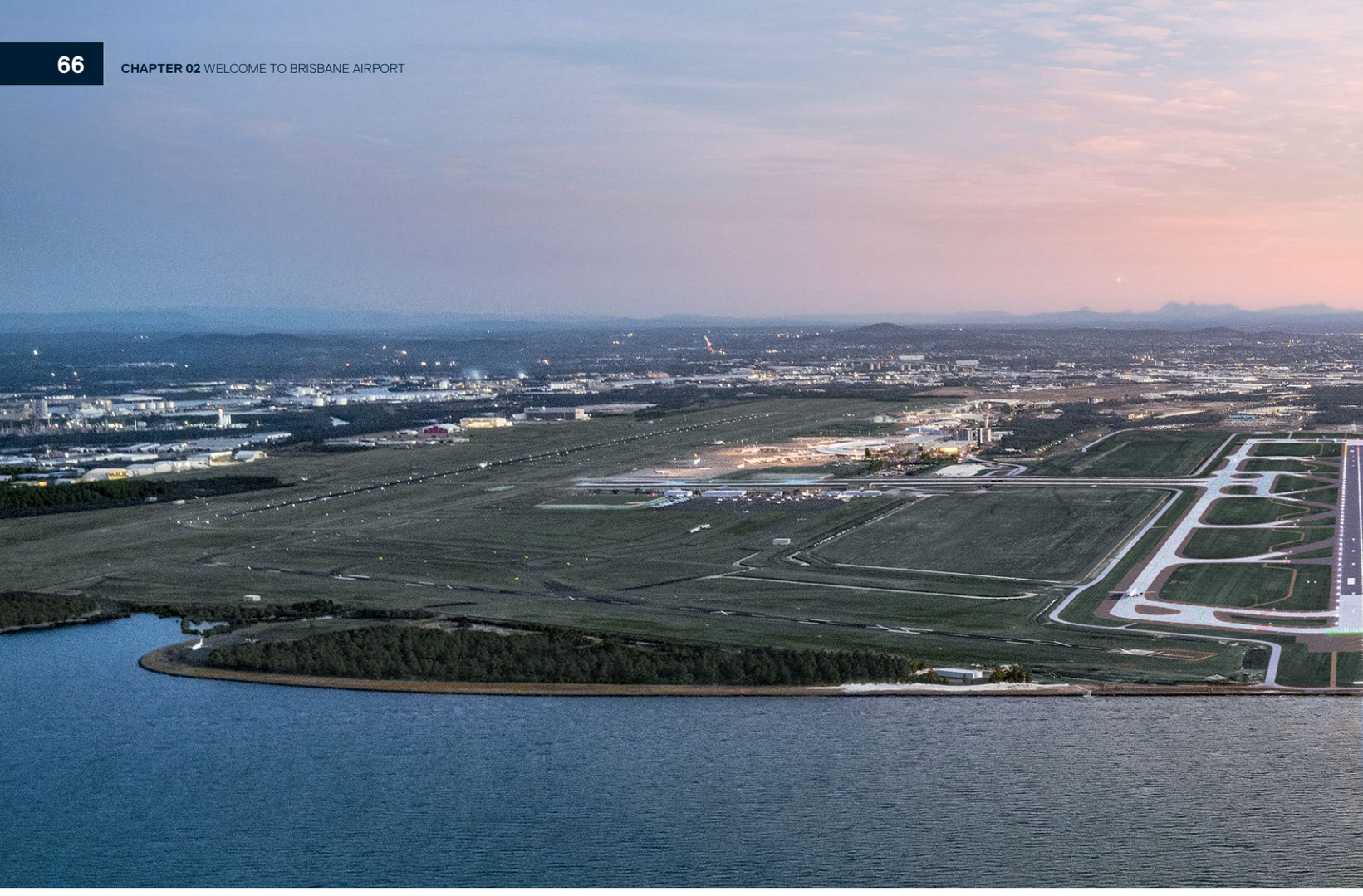
BRISBANE'S NEW RUNWAY



Installation of new Runway Lighting



Dryandra Road Underpass



PHASE THREE
AIRSPACE DESIGN (2016-2020)

One of the final stages of the development of the new runway will be the introduction of new flight paths as part a revised airspace design.

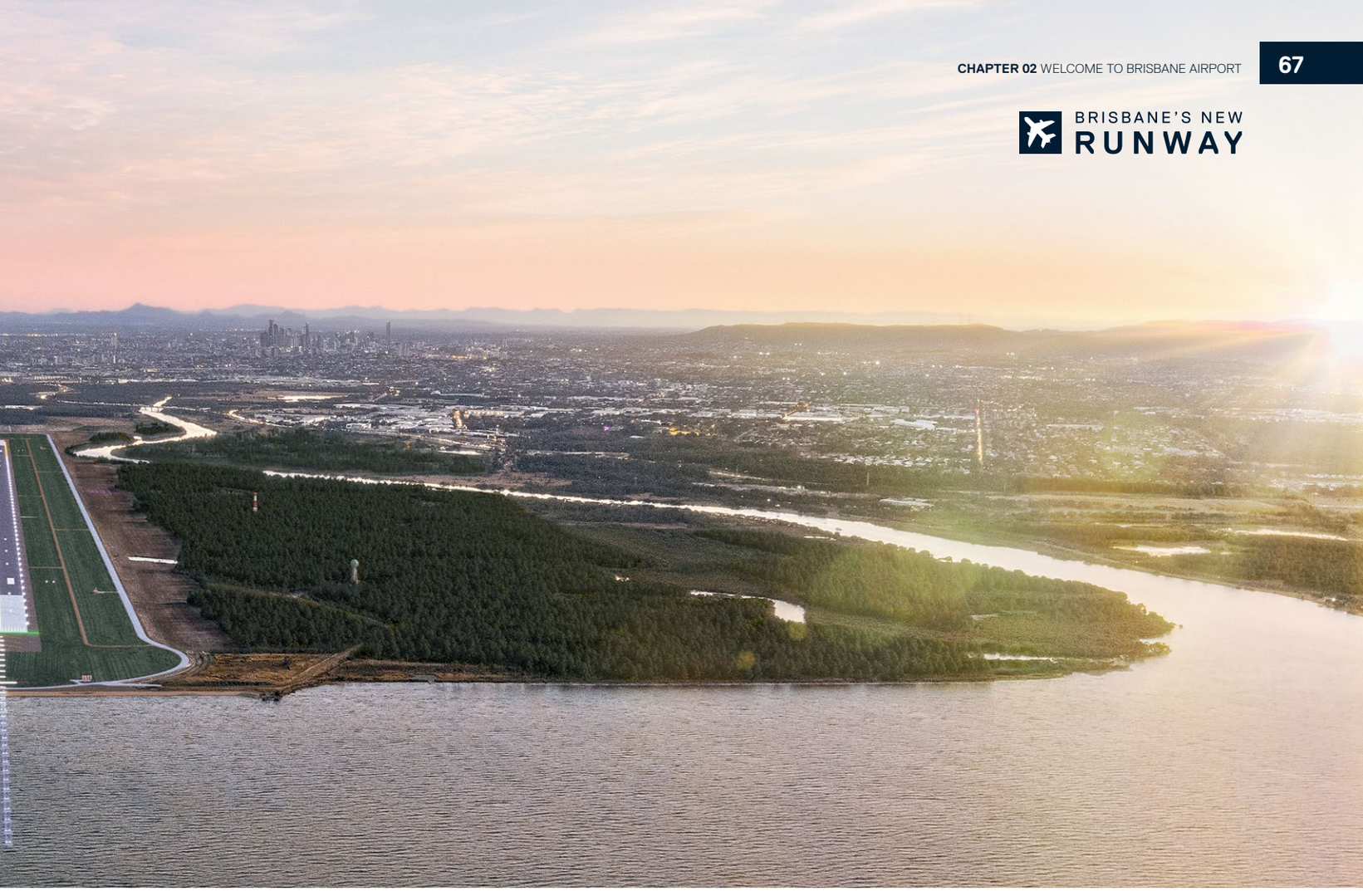
The airspace design for Brisbane's new runway was undertaken as part of the original Environmental Impact Statement and Major Development Plan approved by the Australian Government in 2007.

Those original plans and supporting materials are published on the Brisbane Airport website.

In preparation for the opening of the new runway an expert team is reviewing the changes to airport operations, aviation procedures and policies that have come into effect since the original airspace design was created.

The review is a collaboration between BAC and Airservices Australia who are responsible for designing and managing airspace across Australia, with further input also being sought from industry stakeholders and Government departments.

BRISBANE'S NEW RUNWAY



Artist Impression of the new runway at Brisbane Airport

Following that review, BAC will confirm the Standard Arrival Routes and Standard Instrument Departures to be introduced after the opening of the new runway.

The airspace design work focuses on achieving safe and efficient operations for all aircraft, while minimising noise impacts for the community. Other factors in deciding the airspace configuration include consideration of emerging aviation technology, airline fleet capabilities and the airspace needs of other airports.

Greater detail on the aviation considerations regarding the new runway can be found in chapter eight of this Master Plan.

03

COMMUNITY ENGAGEMENT & PARTNERSHIPS

OVERVIEW

Brisbane Airport Corporation (BAC) is committed to keeping the community informed about what is happening at their airport. Regular community engagement activities provide opportunities for people to ask questions, provide feedback and to learn more about Brisbane Airport.

The 2020 Brisbane Airport Master Plan is the result of more than two years of careful planning. To meet legislative requirements and as an ongoing part of medium and long-term investment planning for the future of Brisbane Airport, the creation of a Master Plan requires the airport to anticipate and plan for changing needs across a five and 20 year horizon. In compiling the various elements that make up a Master Plan, BAC has undertaken an ongoing and comprehensive program of consultation and engagement.

The consultation program for the Brisbane Airport 2020 Master Plan has been specifically designed to encourage open discussion about all issues affecting the airport, including those of frequent and infrequent users, stakeholders and partners, to seek comment and feedback on plans for future development at the airport and overall to help BAC better understand the thoughts, concerns and ideas of all parties.

Specifically, consideration has been given to the future changing needs of passengers, covering issues including an increased demand for both frequency of flights and new destinations, as well as ensuring the highest levels of safety and security. The Master Plan also considers the needs of passengers with special needs as part of designing plans to ensure that journeys are intuitive and simple.

The Master Plan also considers the changing needs of businesses that use the airport for export and import and those actually on site, considering new environmental and demographic trends, as well as known as potential changes in the aviation industry.

Measures to ensure environmental sustainability at the airport and new initiatives planned have also been discussed with user groups, environmental experts, Government representatives and other interested parties.

Similarly, proposed changes to ground transport at the airport that anticipate changing needs in the way people may wish to travel to and from the airport have been the subject of regular discussion forums with representatives of local and state Government, as well as local community and user groups.


BNE
& THE COMMUNITY
Brisbane Airport Corporation is committed to keeping the community informed about what is happening at the airport. Our community engagement activities provide opportunities for people to ask questions, give feedback and to learn more about Brisbane Airport.
285HA
BIODIVERSITY ZONE
Brisbane Airport has a Biodiversity Zone of 285ha, protecting the ground dwelling Lewin's Rail Bird and Eastern Grass Owl.
HONEY BEE HIVES
European honey bee hives are located in Brisbane Airport's Biodiversity Zone assisting with pollination of local flora.
100% ELECTRIC
Brisbane Airport's bus fleet is 100 per cent electric, reducing carbon emissions by 250 tonnes a year.
22,000 SOLAR PANELS
Brisbane Airport Corporation has installed a 6 Mega Watt system consisting of 22,000 solar panels.
FREE BUS TOURS
The free bus tours and presentations focus on current infrastructure projects, including the new runway. Ask our staff for more information.
$500,000 IN COMMUNITY GRANTS
Annually, Brisbane Airport Corporation donates more than $500,000 to support local community groups, charities and schools. Find out more at bne.com.au.
DID YOU KNOW?

ENGAGEMENT AND CONSULTATION ON THE BRISBANE AIRPORT 2020 MASTER PLAN

ENGAGEMENT THROUGH COLLABORATIVE DISCUSSION

BAC recognises the contribution of strong relationships with Government, industry and the community to the achievement of its vision and the development objectives as outlined in this Master Plan. The diagram overleaf shows the many different forums in which the Brisbane Airport 2020 Master Plan has been discussed over the last two years.

As can be seen, the consultation program includes a range of different forums, working groups, vision workshops and briefings.

GOVERNMENT PARTNERS

From a planning perspective, BAC works closely with Brisbane City Council (BCC), the Queensland State Government and the Australian Government. This approach promotes integration with, and understanding of, on-airport and off-airport land use planning, road networks, public transport initiatives and environmental management. Understanding, the strategic goals of agency partners is critical to the long-term planning of the airport.

MANAGING NOISE

Similarly, managing aircraft noise at Brisbane Airport is a responsibility shared by a number of organisations and bodies. Together these groups actively research, plan and implement initiatives to achieve the optimal balance between the safe operation of the airport and minimising noise impacts on the community.

PARTNERS IN MANAGING NOISE

Our partners in managing noise include the International Civil Aviation Organization, Airservices Australia, the Aircraft Noise Ombudsman, the Commonwealth Department of Infrastructure and Regional Development, the Civil Aviation Safety Authority and individual airlines operating through Brisbane Airport.

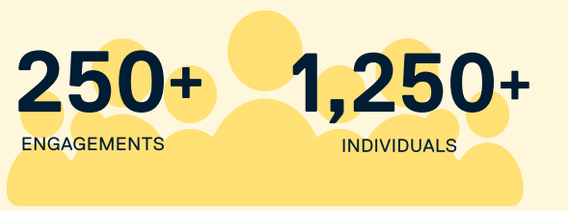
WORKING GROUPS

Working Groups made up of representatives from the airport, Queensland Government and BCC were created as a forum for discussion and direction on four key areas of airport operations; Ground transport; land use; noise and the protection of the environment.

The Working Groups were able to provide valuable inputs to the scope of the Master Plan, including clarification on issues arising for BAC and its consultants. They also identified areas where additional work is required to support inputs to the Master Plan and provided feedback on draft chapters of the report.

Additionally, working groups in areas including freight and cargo, general aviation, business and industry and aviation support with both industry and airline partners were vital in developing and shaping initiatives that will provide complementary outcomes in the future.

MASTER PLAN DIRECT CONSULTATION TO MAY 17TH 2019



These 8-year-old's are able to let their imagination influence their ideas. These fresh ideas could be the next level of innovation that Brisbane Airport needs in preparing for 2040.

Justin Hill, Teacher

THE BRISBANE AIRPORT SCHOOLS DESIGN SYMPOSIUM

As part of a series of community engagement exercises, for the last three years Brisbane Airport Corporation has partnered with St Paul's School to explore new ideas and new thinking in the Brisbane Airport Schools Design Symposium.

In the first year, students were asked to design and prototype transport systems to help navigate the Brisbane Airport of the future. From hovercraft wheelchairs to zip-lines connecting different parts of the airport, there were no limits to the imagination and ingenuity of the students.

Last year, the students were invited to imagine what air travel might look like in the future. The challenges included consideration of likely changes to almost every facet of airport operations including aircraft, entertainment, security, baggage handling and catering. The work had a special and important flavour as students were encouraged to focus on the needs of the airport users, mirroring a principle at the heart of planning at the airport itself.

This year's design symposium was all about the Brisbane Airport Master Plan 2040 and once again, the ideas that came out of the day were imaginative and inspiring.

One group created a prototype for a mass transit system that could distribute everything from shopping, cargo and fuel around the airport. Another group developed the idea of creating a wind farm at Moreton Bay to charge electric batteries, while some of the other students turned their minds to the forward-thinking idea of a remote facility for driverless cars with easy access for passengers, visitors and airport staff.

Following the success of the symposium in the first two years, in 2019 the Brisbane Airport Design Symposium was expanded to include students from four new schools in the local area – Morningside State School, Coorparoo State School, Kelvin Grove State School and Our Lady of the Way, Petrie.

BACACG

The Brisbane Airport Community Aviation Consultation Group (BACACG) is a consultative forum designed to bring together Government, the aviation industry, and the community to discuss a range of topics including aircraft noise, airport developments, airport operations and terminal access.

The group is independently Chaired by Major General Peter Arnison (Retd) and meets three times per year. The Master Plan team has provided a number of Q and A sessions to the group since 2018.

FESTIVALS AND FAIRS

Being available for the local community is the foundation for all BAC engagement activities. The corporation is proud to participate in and support local cultural and community activities that help make South East Queensland one of the world's great places to live, work and visit.

Every year airport staff set up and man information stands at local fairs and festivals including EKKA and the Bulimba, Morningside, Nundah, Racecourse Road and Teneriffe street festivals, to bring the airport to the community. At these events, questions are answered on everything ranging from the new flight paths, ground transport to our artist in residence program.

BRISBANE AIRPORT AREA ROUND TABLE

The Brisbane Airport Area Round Table (BAART) is the Planning Coordination Forum for Brisbane Airport. BAART is attended by all levels of government, Brisbane Airport, Airservices Australia and the Civil Aviation Safety Authority. BAART provides the mechanism for the sharing of major project and infrastructure updates. Additionally, the forum facilitates discussions around planning initiatives, policy and regulatory changes, relevant industry innovation and emerging trends.

BAART is a quarterly forum and has been found to proactively support integrated planning outcomes. The development of the master plan has been a standing agenda item over the past two years and the master plan team has been able to share updates and receive valuable feedback through this.

LOCAL BUSINESS ADVISORY GROUP

The Brisbane Airport Local Business Advisory Group was formed to monitor levels of project knowledge, awareness and issues of interest regarding Brisbane's new runway, as well as to get independent feedback on the communications program.

The advisory group mainly consists of small businesses not based on airport which are in the property, retail and services sectors as well as transport operators and economic development agencies.

Meeting twice a year, the advisory group was formed with input from local political representatives within Brisbane Airport's catchment.

There are also planning consultation groups related to ground transport, environment, land use and aviation development which contribute direct to the Master Planning process.

SUMMARY OF 2020 MASTER PLAN ENGAGEMENT TO DATE

To date, Brisbane Airport Corporation has taken part in more than 250 engagements, forums, meetings and briefings with over 1,250 individuals including representatives of the aviation industry, government, airport tenants and the local community to explain the details of the Brisbane Airport 2020 Master Plan including:

Briefings

- Qantas and Virgin airlines
- Board of Airline Representatives
- Brisbane Airport Freight and Cargo Community
- Elected officials – Local and State
- Chamber of Commerce and Industry Qld
- SEQ Council of Mayors Executive
- Indigenous land owners
- Airport tenants
- Brisbane Airport Corporation staff
- Brisbane Airport Area Round Table
- Brisbane Airport Community Aviation Consultation Group
- Department of Infrastructure, Regional Development and Cities
- Department of the Environment and Energy
- Civil Aviation Safety Authority

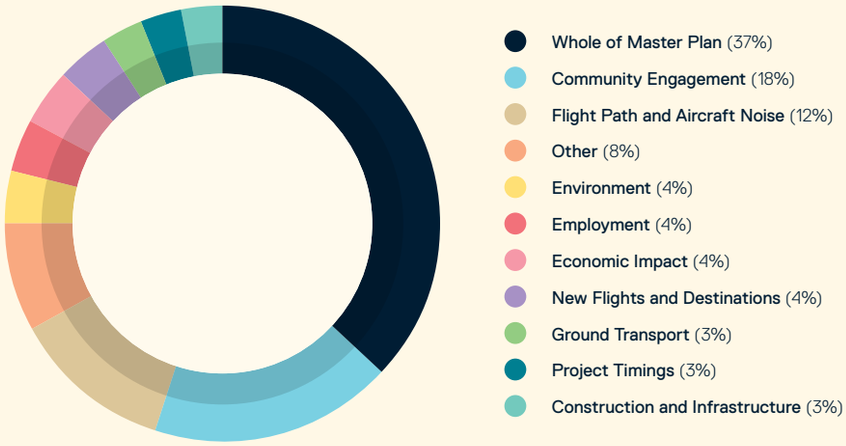
Working Groups and Workshops

- Ground Transport (with state and council)
- Land Use Planning (with state and council)
- Australian Noise Exposure Forecast consultation (with state and council)
- AirServices Australia workshop
- Cargo and freight community workshop
- Airline operations and aviation support workshops
- Aircraft refuelling strategy with Joint Users Hydrant Installation
- Development objectives workshop with BAC Senior Management Team
- Planning challenges workshops with BAC Board
- Airline workshops

Community

- EKKA – Royal Queensland Show
- Local festivals
- St. Paul's School Design Symposium
- Brisbane Airport website update
- 2020 Master Plan information.

ENGAGEMENT CONTENT



04

QUEENSLAND'S BUSINESS & TOURISM HUB

OVERVIEW

Airports are important economic enablers for major cities, facilitating the easy movement of people and goods across local and global destinations and markets. The location of Brisbane Airport, along with its 24 hour operation and increasing choice of flights and destinations positions it as a critical hub connecting passengers, Queensland businesses and their customers to local and global markets.

FUTURE ECONOMIC FORECASTS

In preparing the 2020 Master Plan, Brisbane Airport engaged PricewaterhouseCoopers to quantify the current and future economic contribution of Brisbane Airport to the Queensland and Australian economies.

The reports, detailed in this chapter, predict continued growth. Brisbane Airport's total economic contribution to the Australian economy is forecast to grow from the current figure of $4.7 billion per annum to an estimated $8.7 billion per annum by 2040, a real annual growth rate of 3.1 per cent.

Direct employment at the airport, currently calculated to annually contribute $2.6 billion annually to Queensland's Gross State Product, is forecast to increase to more than $5.2 billion by 2040 as the number of people employed by the businesses operating from the airport grows to more than 46,000.

INCREASED CAPACITY AND MORE DESTINATIONS

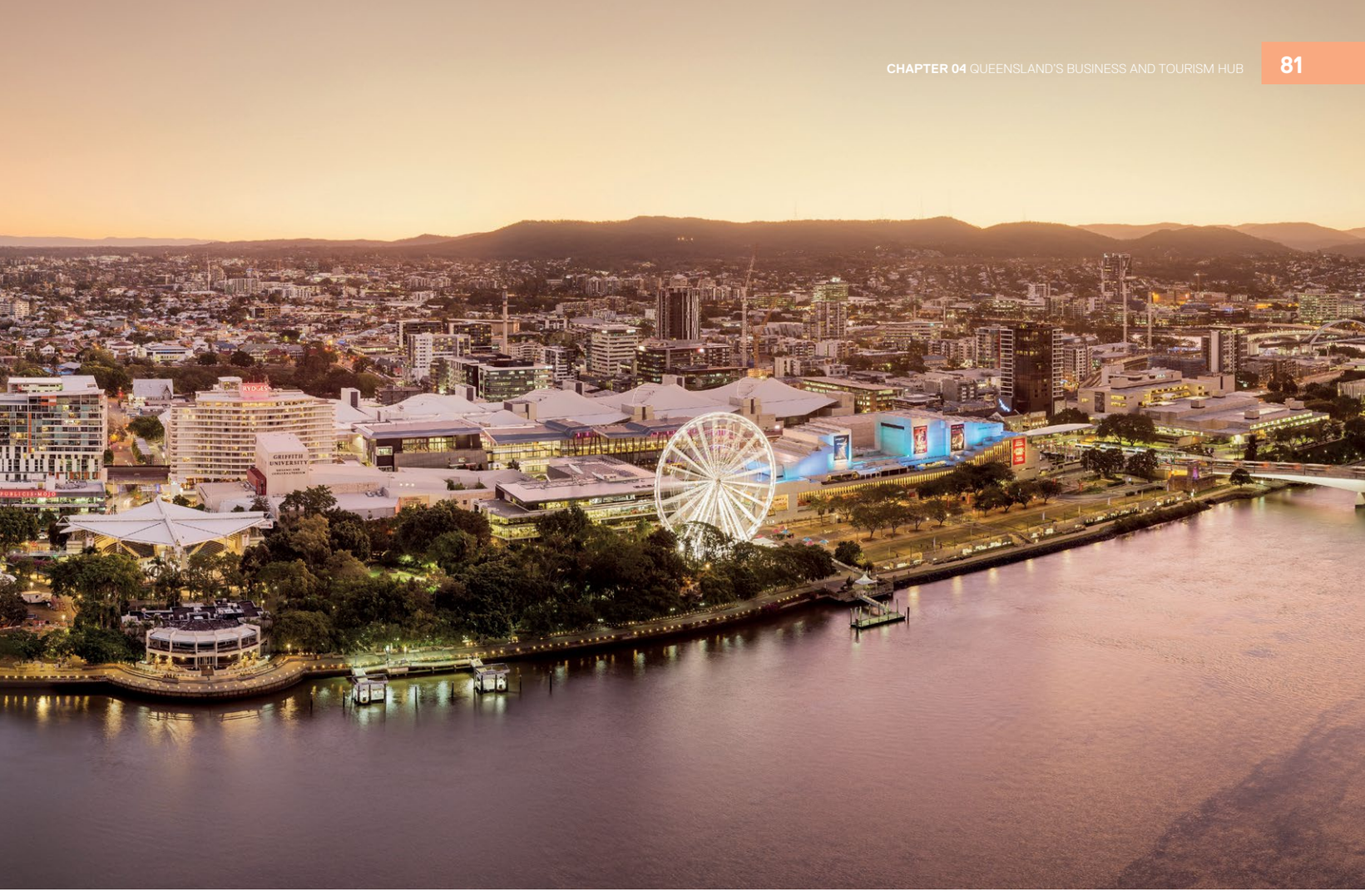
Already Australia's most domestically connected airport, the last five years have seen a consistent increase in passenger demand from the Asian region. New international services added include regular direct flights to Bangkok, Ho Chi Minh City, Kuala Lumpur, Manila and Shenzhen.

Domestically, as part of 52 Australian destinations to choose from, passengers now have access to direct services to Alice Springs and Inverell. New services will continue to be added in line with customer demand and availability.

DRIVING ECONOMIC PROSPERITY

Brisbane City Council's plan for economic development recognises Brisbane's connectedness as one of the top 80 globally-linked economies. Delivering round the clock connectivity is one of five different ways in which Brisbane Airport plays a major role as an economic and business hub both for the city and the state of Queensland overall.

The economic values of each are explained in the following pages.



01. CREATING WEALTH

As Queensland's leading aviation hub and the home to more than 400 businesses, Brisbane Airport is a key driver of wealth creation across the state and Australia overall.

02. CONNECTIVITY

Serving more than 50 Australian destinations and international airports in Asia Pacific, America and the Middle East, Brisbane Airport links Queensland businesses and their employees to the world, providing ever increasing access to import and export opportunities.

03. JOBS

Brisbane Airport is one of Queensland's most vibrant employment locations,. it is estimated that five per cent of all employment in Queensland is in some way enabled by the existence and operation of Brisbane Airport.

04. BOOSTING REGIONAL ECONOMIES

With an estimated 50 per cent of Queenslanders living outside Greater Brisbane, the airport is home to a range of vital emergency services and provides a vital link for business travel exports and regional tourism, connecting families and local communities.

05. BOOSTING TOURISM

Tourism is one of Queensland's biggest and most dynamic industries. Brisbane Airport is an essential part of the continued growth of domestic and international visitation to the state and Australia overall.

01. CREATING WEALTH

The total economic contribution of Brisbane Airport is set to grow by $4 billion to a total figure of $8.7 billion by the year 2040.

Brisbane Airport plays a crucial role in supporting the economic development of south east Queensland. By providing the services and facilities that allow Brisbane to become a globally connected city, Brisbane Airport is creating the investment confidence that underpins the city's plans for future growth.

The total economic contribution of Brisbane Airport operations in the financial year 2020-21, including direct and indirect contributions is estimated to be $4.7 billion. Together, all direct and indirect economic contributions of Brisbane Airport are estimated to currently account for approximately 1.3 per cent of Queensland GSP. The majority (almost 50 per cent) of this economic contribution is in transport, postal and warehousing.

Included in this total economic contribution is the jobs and economic activity created from the ongoing capital investment at Brisbane Airport.

Capital investment creates jobs in construction and supporting services in the short term, while, in the longer run, supports future employment generated by the use of that capital. Capital investment also facilitates the growth in the direct and indirect economic impact into the future.

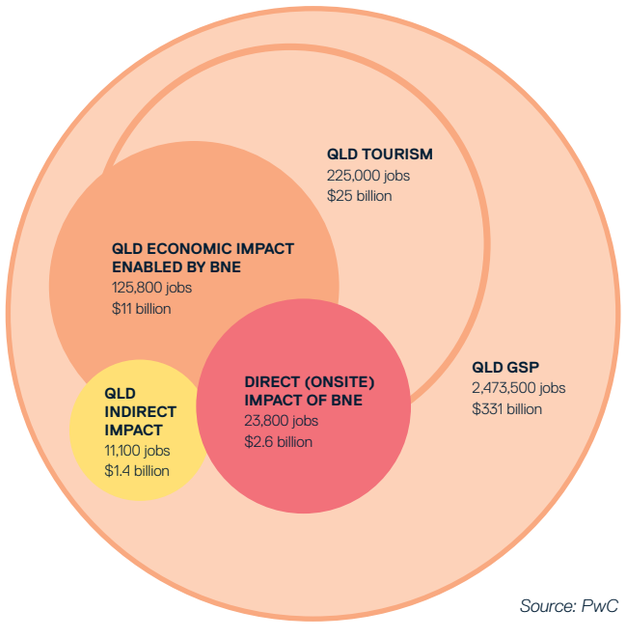
Continued growth in investment at the airport as well as forecast increases in passenger demand mean that the total economic contribution is forecast to grow to a figure of $8.7 billion by 2040-41 with a real growth rate of 3.1 per cent per annum.

The figure alongside shows the indicative relationship between the indirect, direct and enabled contribution of Brisbane Airport to the Queensland economy. The illustration shows that each of these contributions brings a different value to both the Queensland economy and the economy of Australia overall.

Shown in red is the economic impact of Brisbane Airport as a location of employment. The area in yellow shows the supply chains supporting the various industries on the airport. The orange shaded area demonstrates the enabled impact Brisbane Airport has by fulfilling its core purpose of being a transport hub and facilitating economic activity through the movement of goods and people.

The illustration shows that the different measures, while having different focuses, are not mutually exclusive in the employment and activity they capture. Aeronautical activities are included in both the direct contribution onsite but also in the economic impact enabled. Construction jobs created as part on master plan activities are captured within direct and indirect impact.

ECONOMIC CONTRIBUTION OF BRISBANE AIRPORT TO THE QUEENSLAND ECONOMY AT A GLANCE

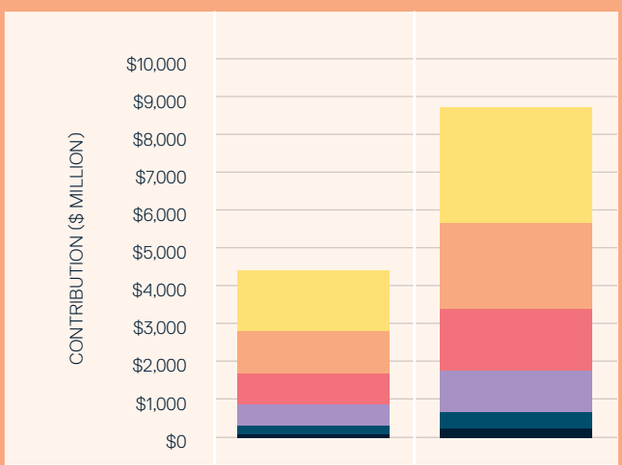


Source: PwC

BRISBANE AIRPORT'S ECONOMIC CONTRIBUTION

FACTS & FIGURES

ECONOMIC CONTRIBUTION OF BRISBANE AIRPORT TO ALL OF AUSTRALIA



	2018-19	2040-41
Direct wages	$1,525	$2,985
Direct GOS*	$1,117	$2,275
Qld indirect wages	$818	$1,602
Qld indirect GOS*	$571	$1,117
RoA indirect wages*	$214	$419
RoA indirect GOS*	$149	$292

DIRECT ECONOMIC IMPACT OF BRISBANE AIRPORT

	2018-19	2040-41
Direct employees	23,800	46,600
Direct wages ($m)	1,525	2,985
Direct gross operating surplus ($m)	1,117	2,275
Direct gross value added ($m)	**2,642**	**5,260**

INDIRECT ECONOMIC IMPACT OF BRISBANE AIRPORT

QUEENSLAND	2018-19	2040-41
Indirect wages ($m)	818	1,602
Indirect gross operating surplus ($m)	571	1,117
REST OF AUSTRALIA	**2018-19**	**2040-41**
Indirect wages ($m)	214	419
Indirect gross operating surplus ($m)	149	292
All indirect gross value added ($m)	**1,753**	**3,431**

ECONOMIC IMPACT OF BRISBANE AIRPORT AS AN ENABLER (2018 REAL TERMS)

REASON	QLD EMPLOYMENT IMPACT (JOBS)	QLD GSP ($ million)	TOTAL GDP ($ million)
Tourism exports	16,300	1,231	889
Traditional exports	94,800	8,197	4,146
FIFO mining	11,200	1,371	1,297
Other business use	6,100	483	405
Total	**128,400**	**11,282**	**6,736**

Source: PwC.

**RoA = Rest of Australia*

**GOS = Gross Operating Supply*

"Every bit of sparkle I've brought into Brissy has arrived on a plane."

Heath from New Farm

FIREFLY LIGHTING

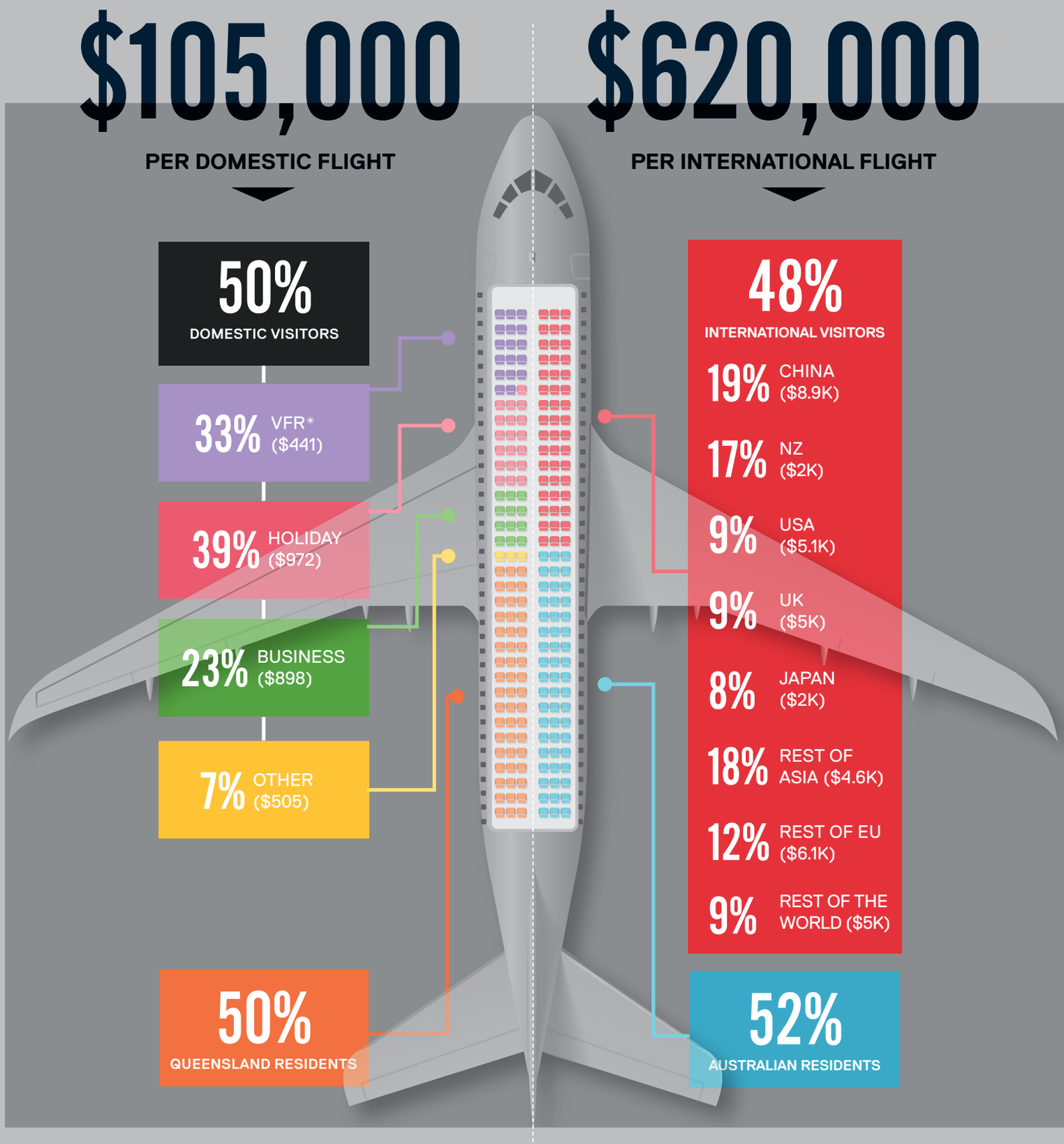
"I'll put 35 tonnes of fresh produce in the bellies of planes this week."

Rohan from Acacia Ridge

PRODUCE ART

AVERAGE PASSENGER AIRCRAFT SPEND

2018-2019



*Visiting friends and relatives

02. INCREASING CONNECTIVITY

Brisbane Airport is Australia's most domestically connected airport, servicing 52 domestic destinations, including 27 destinations in Queensland. The airport accounts for over half of domestic arrivals into Queensland.

In a state where over 50 per cent of residents live outside the greater Brisbane area and there is often considerable distances between communities, Brisbane Airport connects individuals, families and communities with the rest of the state, country and internationally, creating economic and social opportunity.

Eight of Queensland's regional airports; Biloela, Bundaberg, Charleville, Emerald, Gladstone, Longreach, Moranbah, and Roma, rely on connections with Brisbane Airport for all their passenger services. For Rockhampton and Mackay, Brisbane Airport accounts for 97 per cent and 89 per cent of their domestic passenger movements, respectively.

Research shows that entrepreneurs wishing to launch new businesses globally look for cities with high standards of living and easy access to interstate and international destinations.

Additionally, connectivity is one of main influencers of employers in regional Queensland being able to attract the right skills and employees.

Brisbane residents also rely on Brisbane Airport for leisure travel, with travel to regional Queensland a critical driver of local tourism industries in those areas.

In the increasingly connected digital world, Brisbane Airport provides Queensland businesses with the opportunity to extend their markets at home and overseas by providing access to distribution through air freight to an increasing number of local and international destinations.

SUPPORTING TRADITIONAL EXPORTS

While air freight is a relatively small portion of exports by weight, it is a major contributor to the value of exports. As the leading airport and transport hub in the state, Brisbane Airport facilitates the overwhelming majority of air freight exports out of Queensland.

This export market is estimated to support over 93,000 jobs in the state by assessing jobs created in business that export goods, the businesses that supplied inputs to those goods, and the state-wide transport industry to get the goods to point of export.

03. ENABLING JOB CREATION

Offering the dual benefits of excellent connectivity and proximity to airport operations, Brisbane Airport has become a major employment hub. The airport is home to more than 400 enterprises, with three in four being small to middle sized businesses.

The businesses currently operating from Brisbane Airport include a mix of aviation and non- aviation enterprises including food and retail outlets, warehousing, freight, logistics, maintenance and transport companies.

More than 23,000 people are employed on the airport site. The majority are employed in aviation (42 per cent), retail (12 per cent) and freight (8 per cent). Direct employment at Brisbane Airport also supports indirect employment in the supply chain industries providing goods and services to onsite companies. This indirect supported employment is expected to have generated 27,500 indirect jobs across Queensland and the rest of Australia in 2018-19.

Employment at Brisbane Airport is estimated to provide $1.5 billion in employee wages to Queensland families, with a further $818 million earned through the associated supply chains.

Planned future developments will continue to support the growth of the airport. Capital investment on new projects creates jobs in construction and supporting services in the short term while, in the longer run, it supports future employment generated by the use of that capital.

Employment at BNE is expected to grow by 3.1 per cent per year, in line with current trends in real operational expenditure that will see total direct employment at the airport reach a figure of more than 46,000 by 2040.

AIR FREIGHT EXPORTS

$8.2BN QLD GSP — **94,800** JOBS IN QLD

MINING BUSINESS TRAVEL

$1.4BN QLD GSP — **11,200** JOBS IN QLD

TOURISM

$1.2BN QLD GSP — **16,300** JOBS IN QLD

NON-MINING BUSINESS TRAVEL

$0.5BN QLD GSP — **6,100** JOBS IN QLD

04. SUPPORTING REGIONAL ECONOMIES

Queensland's regions rely heavily on Brisbane Airport's role in connecting businesses, individuals, families and communities to Australia and the rest of the world.

Brisbane Airport facilitates access for businesses in Regional Queensland to larger markets. The relationship with Regional Queensland is one of mutual partnership, enabling enterprises particularly in the tourism industry, to connect to customers. BAC supports industry by strengthening and accelerating trade, social and business connections. Companies in the resources, manufacturing and agriculture sectors use airport freight and logistics networks to import and export goods, parts, produce and skills.

FIFO charters support new resource developments with almost 4,500 residents of South East Queensland now working in the regional mining industry. In 2018-19, Brisbane Airport facilitated travel for 3.3 million passengers to and from the mining regions, representing 83 per cent of all flights to these destinations.

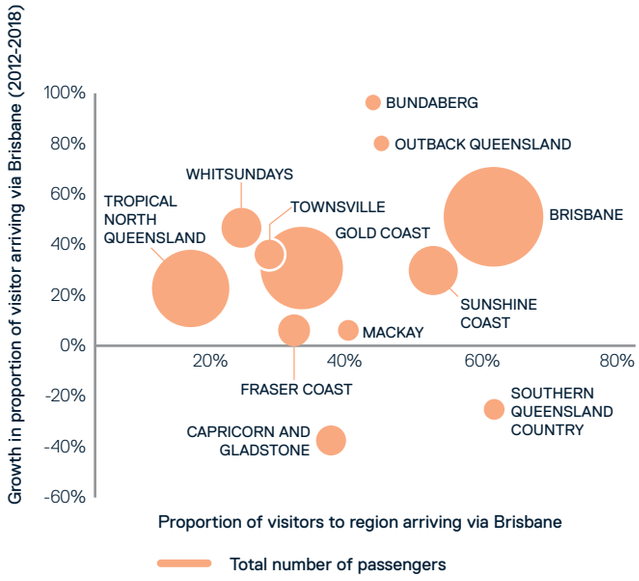
Non-mining industry air travel supports approximately 6,100 Queensland jobs in professional services, wholesale and retail trade. Collaborations with the Royal Flying Doctor Service and Lifeflight provide urgent medical services to the most remote areas in Queensland.

CONNECTING QUEENSLAND

In FY2018, Brisbane was the chosen city of arrival for 41 per cent of international visitors. The number of connections directed through Brisbane Airport to regional Queensland makes the airport critical to the state's tourism industry development.

Almost four in 10 international visitors arrived in the state's capital city, even where their final destination may have been outside south-east Queensland. Brisbane was the city of arrival for 40 per cent or more of international visitors to Darling Downs, Bundaberg and the Sunshine Coast. The majority of Queensland's tourism regions have seen an increase in arrivals via Brisbane in the last decade.

A key component in visitor growth to destinations across Queensland is the role the airport plays in continuing to provide direct and convenient air transport services. Research shows that some regions such as Whitsundays (65 per cent), Northern (28 per cent) and Tropical North Queensland (28 per cent) have seen their visitation from Brisbane arrivals increase substantially since the 2014 Master Plan.



05. BOOSTING TOURISM

Tourism is an important contributor to the Queensland and Australian economies and a major employer.

Tourism is one of Queensland's most important industries, estimated by Tourism Queensland to have a total value of $25 billion. The tourism industry directly and indirectly employs 217,000 Queenslanders, generating in excess of $60 million a day in overnight visitor expenditure across the state. Unlike many industries concentrated in certain geographic areas, the benefits of tourism are widespread.

International tourism spend in Queensland enabled by Brisbane Airport is currently estimated to support over 15,000 jobs across the state and contributes $1.2 billion to Gross State Product with around six in every 1,000 jobs in the state being supported just by international visitors arriving through the airport.

The same modelling revealed that 65 per cent of the state's tourism output was generated in South East Queensland with the Brisbane inner region generating 11.5 per cent of this GVA, making it the largest tourism region in Queensland.

BOOSTING GROWTH IN TOURISM

A key component in achieving visitor growth to destinations across Queensland is the role the airport plays in continuing to provide direct and convenient air transport services via the state's capital.

With state and local governments active in marketing activities, research shows that the majority of Queensland's tourism regions have seen an increase in arrivals via Brisbane in the last decade.

SUPPORTING THE INTERNATIONAL EDUCATION INDUSTRY

Education is one of Queensland largest service exports and it relies on Brisbane Airport to bring international students to the state and disperse them to the regions whereby 42 per cent of international student enrolments are outside of Brisbane.

Key learning institutions such as University of Southern Queensland, Central Queensland University, James Cook University and TAFE Queensland all benefit from air services provided by Brisbane Airport.

There were over 1.1 million international students enrolled in Queensland in 2017, made up of higher education (42 per cent), vocational education and training (26 per cent) and English language intensive courses for overseas students (21 per cent).

International enrolments in Queensland grew 12 per cent in 2017, comparing well with national growth over the same period. 40 per cent enrolments came from the top three countries. Together, students from China, India and Brazil also made up more than half the growth in enrolments.

ECONOMIC CONTRIBUTION OF THE NEW RUNWAY

Due to open in 2020, Brisbane Airport's new runway will be a key driver in the long-term growth of the Queensland economy. The new runway is set to generate new jobs, create new investment and boost economic opportunity in Brisbane and across the state.

ECONOMIC CONTRIBUTION TO QUEENSLAND

It is estimated that in its first year of operation, the new runway will create an additional $1 billion in direct economic contribution to the Queensland economy. Further, indirect benefits accruing from the new runway are estimated to be worth more than $545 million in indirect benefit.

Forecasts indicate that the direct economic contribution to the Queensland economy attributable to the runway will rise over the next 20 years to an estimated $2.1 billion with the indirect contribution growing to an estimated $1.1 billion.

Combining those two figures shows that the total economic contribution of the new runway to Queenslanders is forecast to grow from $1.6 billion in 2020-21 to $3.2 billion by 2040-41, representing an annual growth rate of 3.6 per cent, a higher figure than the Queensland Government estimated for the economy overall.

As a result, it can be seen that the contribution of the new runway will effectively grow in real terms over time.

BRISBANE AIRPORT'S NEW RUNWAY - ECONOMIC CONTRIBUTION TO QUEENSLAND ($ MILLIONS)

Source: QEAS

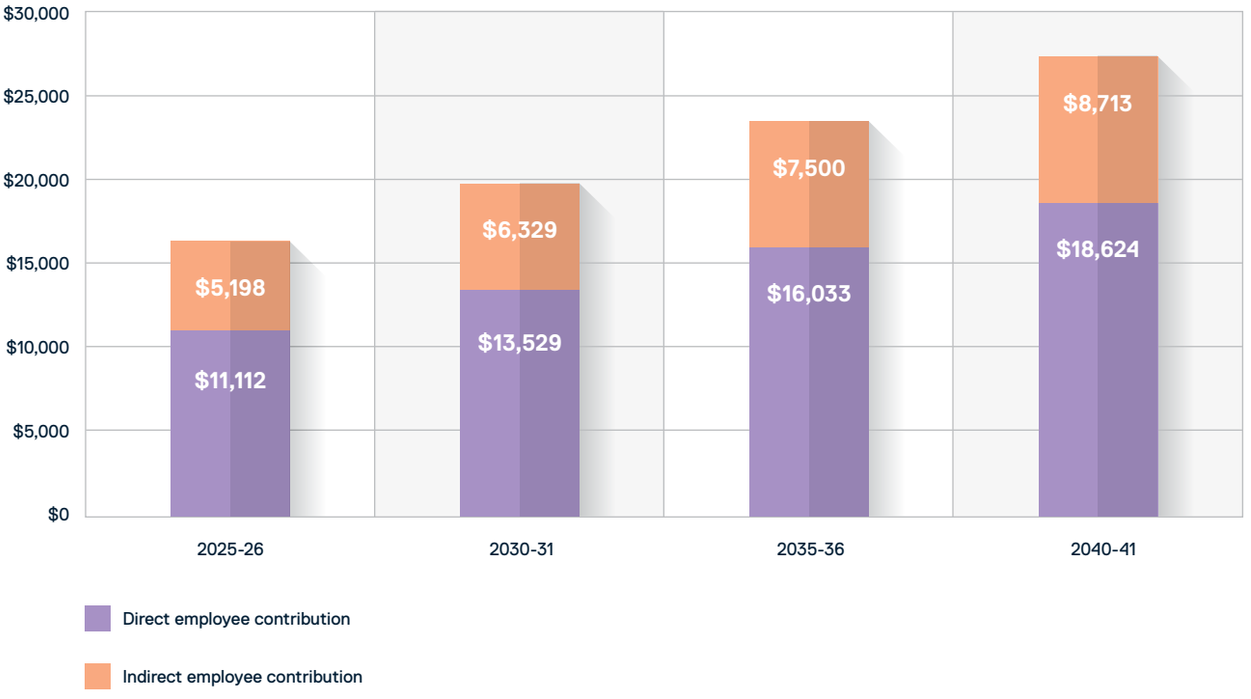
JOB CREATION FACILITATED BY THE NEW RUNWAY

It is estimated that the contribution of $1.6 billion to the Queensland economy will directly support more than 13, 600 jobs, with an estimated 9300 jobs created in direct employment and a further 4,300 created in the various supply chains. An annual growth rate of 3.6 per cent will see an estimated 18,624 jobs directly created and another 8,713 indirectly created by 2040-41.

In total, jobs created as a result of BNE's new runway are forecast to increase to reach 27,337 by 2040-41 from 13,690 in 2020-21.

In summary by 2040-41, Brisbane Airport's new runway will support almost 30,000 direct and indirect jobs and contribute $3.2 billion to Queensland's economy. This total is equivalent to around 0.6 per cent of all jobs in Queensland and represents approximately 0.5 per cent of Queensland's Gross State Product.

BRISBANE AIRPORT'S NEW RUNWAY - ECONOMIC CONTRIBUTION TO QUEENSLAND ($ MILLIONS)



Source: QEAS

WAGES INCOME CREATED BY THE NEW RUNWAY

Each of the new jobs created will result in wages being paid to Queensland workers and their families. It is estimated that in the first year of opening, jobs created by the new runway will have a total value in wage terms of approximately $598 million to employees of Brisbane Airport based businesses and a further $321 million in wages indirectly paid across supply chain businesses to their employees. By 2040-41 these figures are predicted rise to approximately $1.2 billion in direct wages and $640 million in indirect wages.

BRISBANE AIRPORT'S NEW RUNWAY - WAGE CONTRIBUTION TO QUEENSLAND ($ MILLIONS)

Source: QEAS

GROWTH FORECASTS

LONG-TERM GROWTH

Examination of previous estimates of passenger numbers and net exports from Brisbane Airport demonstrate considerable growth in the last decade, with further growth predicted due to a number of underlying trends.

- There has been a sustained increase in the number of international flights to and from Brisbane Airport, with the proportion of international flights compared to domestic showing continuous growth.
- At the same time, the fact that inbound international visitors to Australia are growing faster than outbound Australian travellers means that the proportion of overseas visitors on international flights is increasing.
- The addition of new services from emergent and affluent markets is also a contributory factor in the growth of average spend per visitor.

Construction at Brisbane Airport using local jobs and suppliers is a major driver of this growth with industries expected to benefit from this capital expenditure being those related directly to capital creation, such as construction, professional services (including engineering and design), wholesale trade and manufacturing.

SUPPORTING CITY AND STATE

With a sustained period of growth in passengers, an increased number of airlines and destinations served, accompanied by the development of popular retail and business precincts, Brisbane Airport's role as a vital economic enabler is firmly established.

As the city of Brisbane and the state of Queensland also experience growth in infrastructure investment coinciding with an increase in population, in part due to Australian families moving from Victoria and New South Wales.

The airport will continue to play a critical supporting role connecting a number of proposed and current major projects and developments with their key markets and suppliers.

The international connections provided by the airport enable investment in Brisbane and South East Queensland that may otherwise be less likely to occur.

A range of major projects currently proposed or under development across Queensland have the potential to further increase the demand for passenger and freight capacity offered by the airport.

FACILITATING A CONNECTED CITY

The continued growth of services at Brisbane Airport is a key driver of the corresponding growth of Brisbane as a truly globally connected city.

Brisbane Airport is an important contributor to the viability of future developments through a range of factors, most importantly creating the confidence for organisations new to Queensland to invest in the area knowing that reliable aviation infrastructure is in place to allow the fast and efficient movement of goods and services both domestically and internationally.

Conversely, major infrastructure projects like Brisbane's Queens Wharf Resort and the completion of the Toowoomba Second Range Crossing are expected to increase visitor traffic to the area and to drive greater demand for freight related services.

Through an ongoing program of consultation and engagement, Brisbane Airport is able to plan ahead, ensuring capacity is available to support the anticipated growth in demand generated from these and other major infrastructure and constitution projects.

As the city and the state both continue to grow, Brisbane Airport plays a strategically pivotal role in underpinning the ability to attract and invest in major events in Brisbane and Queensland more generally.

Everything from major sporting and cultural events, conferences and global summits such as G20 rely on a globally connected airport to facilitate visitation and its associated investment and spending.

05

DEVELOPMENT OBJECTIVES

OVERVIEW

SUPPORTING SUSTAINABLE GROWTH

Every day, Brisbane Airport connects the city of Brisbane, the state of Queensland and Australia overall to the rest of the world. As the numbers of destinations offered grows in line with the increasing number of passengers using the airport as a gateway to domestic and international cities, Brisbane Airport has become an increasingly vital contributor to both the Queensland economy and the future of the state.

Brisbane Airport Corporation (BAC) continues to invest in service enhancements, including improved accessibility to terminals, efficient passenger and bag screening services upgrades in visitor comforts and the introduction of smart technologies to help make journeys quicker and worry free.

A VISION FOR A WORLD CLASS AIRPORT

BACs vision is to create a sustainable world-class airport, a distinctive place that visitors keep coming back to, and the best possible neighbour and business partner, building collaborative relationships, exploring opportunities for sustainable growth and acting with integrity in guiding the airport towards a brighter future for all.

Sustainability has been a recurring common theme in the development objectives of previous Brisbane Airport Master Plans, with each plan containing specific objectives designed to ensure sustainable outcomes in operational activities, in boosting economic prosperity in supporting our community and protecting our environment. In the 2020 Master Plan, consideration of sustainability and environmental responsibility remains at the heart of every investment and development project.

The last five years have seen a decline in Brisbane Airport Corporation's carbon emissions, reversing a previous trend. Proactive environmental initiatives have had a significant effect on increasing operational efficiency. A continued focus on sustainability will enable and support future growth.

FOUR PILLARS OF FOCUS

The Development Objectives of the 2020 Master Plan have been grouped into four pillars of focus, with each including supporting objectives to guide future development. The four pillars of focus, described in more detail on the following pages are;

- Growing Aviation Markets
- Excellence in Customer Satisfaction
- Supporting Business Growth
- Driving Economic Prosperity.

PILLAR ONE
GROWING AVIATION MARKETS

INCREASING CONNECTIVITY

Brisbane Airport Corporation's focus is the creation of more frequent connections to a wider range of destinations in Australia and overseas.

DELIVERING CAPACITY TO MEET DEMAND

Investment in improved and extended operating capacity is essential to ensure business continuity and to sustainably meet growing demand for aviation services. In developing more frequent services and new destinations, priority will be given to ensuring that capacity is available to maintain the highest levels of services for passengers and aviation partners.

SECURE, SAFE AND EFFICIENT AIRPORT OPERATION

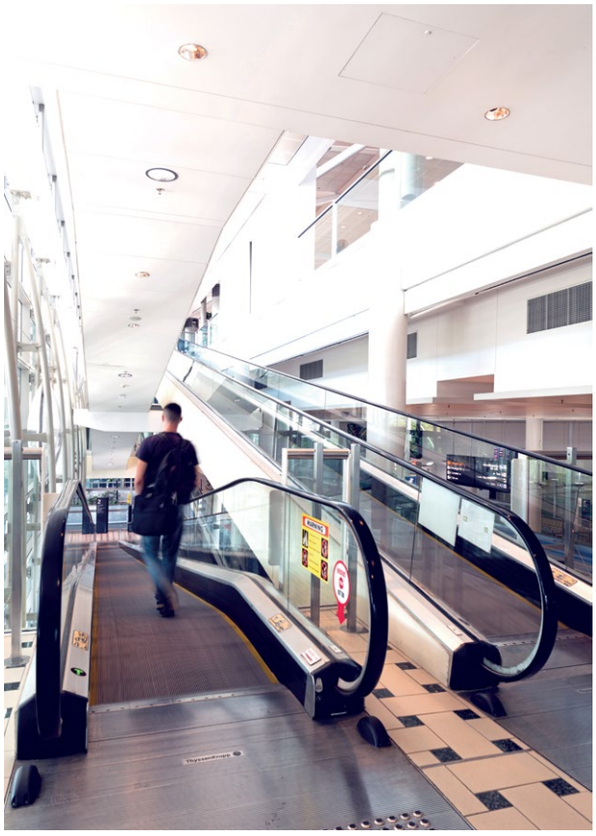
A secure and efficiently run airport is essential to meeting passenger needs, attracting investment from new airlines and new businesses and supporting existing partners. Investments in security initiatives and a continuous focus on safety to protect aircraft and passengers, on the ground and in the air, is a fundamental cornerstone of all development activity at Brisbane Airport.

INVESTING IN COLLABORATIVE PARTNERSHIPS

Strong business partnerships with airlines and aviation partners underpin the continued growth of Brisbane Airport.

In an evolving aviation environment, BAC will continue to actively engage with our partners to explore opportunities for sustainable growth in passenger and air cargo business on domestic and international routes.

PILLAR TWO EXCELLENCE IN CUSTOMER SATISFACTION



ACCESSIBILITY FOR ALL

As a guiding principle, BAC aims to provide facilities and services that are accessible to all members of the community, passengers, staff and visitors.

As part of ongoing collaboration with partners, accessibility needs are subject to constant review in consideration of opportunities to further improve the quality and range of assistance offered to all.

SMARTER JOURNEYS

BAC will continue to embrace opportunities for the deployment of new innovations and services to improve customer experience. From improvements in terminal and airfield design to increased automation of passenger and baggage handling services, opportunities for using technology to streamline operations, passenger processing, aviation support, and landside connectivity will form an important part of all future development plans.

BETTER JOURNEYS

A passenger's journey starts at home. BAC will continue to invest in better digital tools to help passengers enjoy simpler, faster and safer journeys to and through the airport.

Investment in more tailored and enjoyable leisure and retail experiences will ensure that time spent at the airport is stress free and rewarding.

PILLAR THREE
SUPPORTING BUSINESS GROWTH

CREATING COLLABORATIVE BUSINESS NEIGHBOURHOODS

The growth of commercial operations at the airport, in both aviation and non aviation industries is a catalyst for the creation of vibrant business communities. The 2020 Master Plan plans to create collaborative neighbourhoods of businesses in similar industries, using similar support services.

Designed in line with Brisbane City Council's vision, the airport will become a vibrant cluster of connected business neighbourhoods, attracting further investment, creating new jobs and boosting economic prosperity for the region.

INVESTING IN SUSTAINABILITY

Sustainable approaches to future investment at Brisbane Airport have been a cornerstone of previous Master Plans and remain a key area of focus in the 2020 Master Plan. Airport tenants are bound by the Environmental Management Framework, requiring regular compliance audits.

The Biodiversity Zone will continue to be actively managed to protect significant species and habitats. Whilst developing the airport continual evaluation of the broader impact on the surrounding environment over time will be key. Considerations will include the amount of energy and water consumed, the amount of waste and carbon generated and the quality of the surrounding environment.

MAXIMISING GROUND CONNECTIVITY

Brisbane Airport's unique location, with a network of motorways providing easy access to both the CBD and the Port of Brisbane is perfect for business operation. Traffic flow on airport is relatively uncongested and the large land size allows multiple opportunities for easy access to airside and maintenance operations.

To further improve connectivity, this Master Plan contains details of on and off airport initiatives across multiple modes of transport designed to boost connectivity. As the airport grows, the continual involvement of connectivity will be a key consideration in the development of new or expanded businesses or services and ability to meet increased demand and changing mode share.

CONNECTING BUSINESS

Putting local businesses in direct connection with markets across Australia and overseas will build our economy's foundations and create new opportunities across all economic sectors.

PILLAR FOUR
DRIVING ECONOMIC PROSPERITY

ENABLING GROWTH IN ECONOMIC WEALTH

This Master Plan demonstrates the extent to which Brisbane Airport is established as a key driver in the medium and long-term growth of the Queensland and Australian economies. The opening of Brisbane's new runway represents a quantum leap in providing a significant and immediate increase in long term capacity. Future development will look to demonstrate a long term and sustainable vision to further boost economic wealth not just on airport, but for the city of Brisbane, state and Australia overall.

PROACTIVE COMMUNITY ENGAGEMENT

Brisbane Airport is an important member of the local community in which it operates. To ensure our neighbours are aware of our plans, a comprehensive and ongoing community engagement programme has been designed to generate informed discussions about subjects including airport development and potential impacts from increased aircraft operations. Ongoing and regular community engagement is a pivotal consideration of future planning activities.

ENABLING LONG TERM JOB CREATION

With more than 23,000 people employed on airport and a further 11,000 indirectly employed through airport business, future developments will be designed to enable additional job creation wherever possible, in particular in creating jobs for local workers. Investments in increased connectivity will make the airport an increasingly attractive place to work.

CONNECTING BRISBANE TO THE WORLD

Brisbane Airport supports the city of Brisbane in the achievement of its vision of Brisbane as a "New World City" that encourages growth and innovation while protecting the city's values and lifestyle. The global connection Brisbane Airport offers is a catalyst for Brisbane and surrounding regions to create business and tourism opportunities with the fastest growing economies in Asia and beyond.

06

LAND USE PLAN


V-Power
coles express

OVERVIEW

The 2020 Brisbane Airport Land Use Plan provides the community, industry stakeholders and local, state and national Governments with an understanding of the types of future development activities that could potentially be located on different parts of the airport site.

In line with the requirements of the Airports Act 1996, the Master Plan describes current land use and zoning policies in place on Brisbane Airport, with the definitions, terminology and controls in alignment with the Queensland Planning Act 2016, wherever possible.

The airport is divided into five land use "zones". This chapter shows their location and for each zone provides purpose statements and a guide to permissible uses, designed to advise interested parties on the requirements and conditions applying to proposed future developments in that zone.

ADJUSTMENTS FROM THE 2014 MASTER PLAN

This Plan is generally consistent with the 2014 Land Use Plan, however the following small adjustments better reflect existing and intended land uses:

01. Export Park and Airport Industrial Precinct has been rezoned from *Mixed Use* to *Industrial*.
02. A parcel of land north of the Gateway Motorway has been rezoned from *Industrial* to *Conservation.*
03. A small area within the terminals precinct has been rezoned from *Special Purpose Airport* to *Mixed Use*.
04. The possible uses within each zone have been subject to minor adjustments.

This Master Plan has been updated to include changes to relevant state and local Government legislative requirements and guidelines affecting planning and development at the airport.

PARTNERSHIPS AND COMPLIANCE

Brisbane Airport Corporation will continue to work in close partnership with Government at all levels to ensure that airport development activities remain compliant and in line with both development objectives and legislative requirements.

LAND USE & PROPERTY AT A GLANCE

BNE Property is Brisbane Airport's property division, responsible for developing and managing one of the largest single-owner sites in South East Queensland.

AUTO MALL

$300M
DEVELOPMENT AT THE HEART OF THE BNE AIRPORT PRECINCT

TOURISM
A BENCHMARK DESTINATION FOR QUEENSLAND AND AUSTRALIA

24/7 OPERATION
THE ONLY AUTOMOTIVE PRECINCT IN AUSTRALIA OPEN 24/7

MANUFACTURER LAUNCH EVENTS · MEDIA DRIVING EVENTS · DRIVER TRAINING · VEHICLE ENGINEERING AND DEVELOPMENT · CORPORATE EVENTS · TEST DRIVING

DFO EXPANSION

4,950m²
ADDITIONAL RETAIL SPACE

5 NEW
EATERIES

DFO BRISBANE

1,200m²
COMMERCIAL OFFICE SPACE

1,000 BAY
MULTI-DECK CAR PARK

MIELE

7,065m²
WAREHOUSE, WORKSHOP AND OFFICE FACILITY

CAR PARKS

17,000+
CAR PARKING SPACES

BRISBANE AIRPORT LAND USE ZONES

SPECIAL PURPOSE
Aeronautical activities

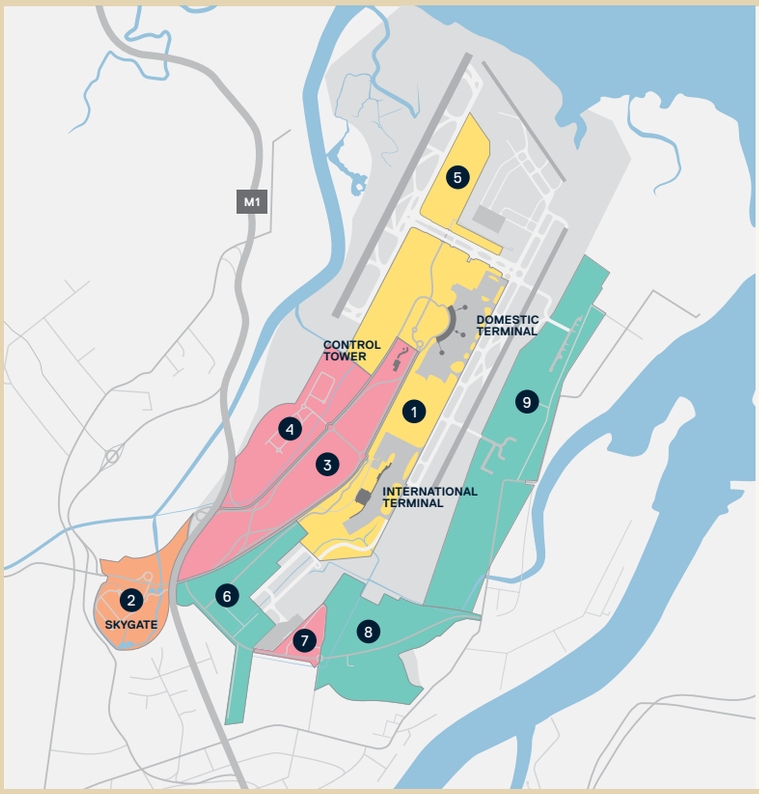
MAJOR CENTRE
Retail, entertainment and offices

GENERAL INDUSTRIAL
Industrial uses capitalising on proximity

MIXED USE
Diverse range of land use

CONSERVATION
Protection of habitats and biodiversity

AIRPORT NEIGHBOURHOODS



1. **THE TERMINALS**
   The heart of the airport and its operations
2. **SKYGATE**
   The airport's commercial, retail and leisure hub
3. **AIRPORT CENTRAL**
   24-hour Service Centre and home to BNE Auto Mall
4. **AIRPORT WEST**
   Includes parking and vehicle charging facilities
5. **AIRPORT NORTH**
   The airport's logistics and aviation hub
6. **EXPORT PARK**
   Home to warehousing and distribution operations
7. **DA VINCI**
   Home to training and education centres
8. **AIRPORT INDUSTRIAL PARK**
   Includes warehouse, storage and distribution facilities
9. **AIRPORT EAST**
   Maintenance and associated businesses

LAND USE PLANNING FRAMEWORK

LEGISLATIVE ENVIRONMENT

Section 71(6) of the Airports Act 1996 and Regulation 5.02(2) of the Airports Regulations 1997 indicate that a Land Use Plan should, where possible, describe land use, zoning and development proposals in equivalent detail and using terminology consistent with Queensland planning law.

The applicable Queensland Law is the Planning Act 2016 (Qld) which provides the template for all Local Planning Schemes in Queensland. Wherever appropriate, the definitions, terminology and controls from the Planning Act 2016 and the Planning Regulations 2017 have been used.

SENSITIVE DEVELOPMENTS

Section 71A of the Airports Act 1996 requires an airport Master Plan to identify any proposed 'sensitive developments', defined as development or redevelopment that increases the capacity of a residential dwelling, community care facility, preschool, primary, secondary, tertiary or other education institution or hospital.

A sensitive development does not include an aviation educational facility, accommodation for students studying at an aviation educational facility at the airport, a facility with the primary purpose of providing emergency medical treatment that does not have inpatient facilities, or a facility with the primary purpose of providing in-house training to staff, or an organization conducting operations at the airport.

Sensitive developments are prohibited on Commonwealth-leased airports except in exceptional circumstances, and require ministerial approval to prepare a Preliminary Draft MDP for the proposed development.

There are no specific proposals for sensitive development in the Brisbane Airport 2020 Master Plan.

ENGAGEMENT WITH GOVERNMENT

As a major employment and economic generator and a vital piece of infrastructure bringing industries, jobs and tourism to Brisbane, the South East Queensland region and the state of Queensland overall, Brisbane Airport has strong business relationships with government at all levels.

As a Federal leased airport, Brisbane Airport is not subject to Queensland Planning Law, however the Airports Act 1996 outlines that the objectives and proposed developments within a Master Plan must address the extent of consistency with state planning schemes. If the Master Plan is not consistent with these schemes, there must be justification for such inconsistencies.

An overview of state legislation relating to land use planning, the relevant state, regional and local planning instruments subject to that legislation, and the consistency of the 2020 Master Plan is provided in this section.

THE PLANNING ACT

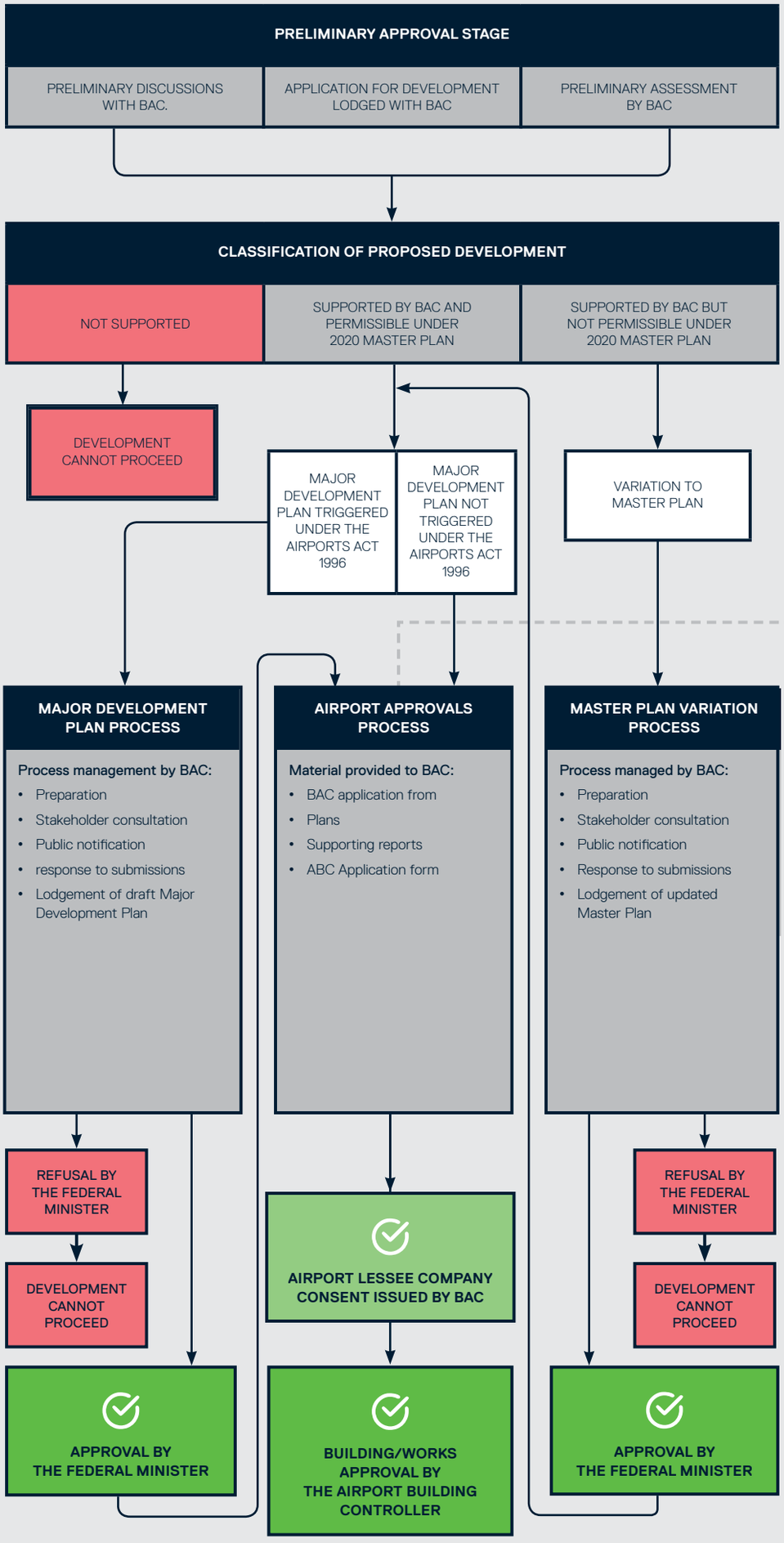
The Planning Act 2016 (Qld) establishes the framework and overarching policy for land use planning and development assessment. State and local Governments share the responsibility for delivery. The Planning Act 2016 and Planning Regulations 2017 (Qld) provide for the making of the planning instruments that guide strategic planning and development throughout the state.

The Queensland State Planning Policy is a planning instrument made by the State Planning Minister which articulates state interests in planning that must be integrated into the planning schemes and development assessment decisions.

Regional Plans are state planning instruments which provide guidance regarding state interests at the regional scale.

The primary document for the regulation of planning outcomes in Queensland is the Planning Scheme, used by local government taking into account the aspirations of their communities as well as the interests of the state.

DEVELOPMENT DECISION PROCESS AT BRISBANE AIRPORT



Before decision on an application, consideration must be given to:

General

- The Airports Act 1996 and regulations.
- The Brisbane Airport Master Plan.
- CASA Manual of Standards Part 139 – Aerodromes.

Airport Operations

- Does the proposal impact on the safe and secure operation of the airport?
- Is it compliant with prescribed airspace requirements?
- Does it address the Australian Noise Exposure Forecast and AS2021 requirements?

Access

- Is it aligned with the Ground Transport Plan, such as the movement of pedestrians, cyclists and vehicle traffic including waste removal and emergency services?
- Has consideration been given to car parking, vehicle loading and access to loading bays, including turning circles, where appropriate?

Use

- Compatibility with adjoining and nearby land use and aircraft operations.

Design and Built Form

- Consideration of whether the proposal contributes to enhancing the amenity of the airport.

Environmental sustainability

- The Brisbane Airport Environment Strategy (part of the Brisbane Airport Master Plan).
- Brisbane Airport's Construction Environmental Management Plan Guidelines.

ENVIRONMENTAL MANAGEMENT

In addition to working with Government and stakeholders to ensure that all construction and development activities on site are compliant with planning regulations, Brisbane Airport Corporation also has clear guidelines in place to ensure that new construction activity aligns with the stated objectives of the Brisbane Airport Environmental Strategy.

Where any new construction is occurring on-airport, the Brisbane Airport Environmental Strategy requires that all developments undergo an environmental assessment.

All new developments are required to show consideration of environmentally sustainable design elements and to meet BAC's ongoing environmental management requirements. Under the Airports Act, certain development projects may also require a Major Development Plan (MDP). In addition to being required due to cost and size, the requirement for an MDP can also be triggered by a potential environmental or ecological impact.

ON AIRPORT BUSINESSES

More than 400 diverse businesses and organisations operate at Brisbane Airport. These businesses include tenants (and their subtenants), contractors (and their subcontractors), licensees and other operators.

To ensure the delivery of Brisbane Airport Corporation's commitment to maintaining long term environmental sustainability, it is a requirement that all tenants and contractors working on the airport site ensure that their environmental responsibilities and practices remain closely aligned with all levels of sustainability adopted by BAC.

Brisbane Airport Corporation provides guidance and direction to tenants and contractors on the management of their environmental responsibilities. An environmental risk rating profile is conducted for all airport tenants with regular audits and monitoring programmes in place to promote best practice environmental practices.

TIMELINE FOR ENVIRONMENTAL APPROVAL

The timeline on the page opposite is a visual representation of the various stages that businesses proposing construction activity must undergo at Brisbane Airport prior to approval and should be read in conjunction with the Land Use Planning Framework on the preceding page.

ENVIRONMENTAL MANAGEMENT TIMELINE: FROM INITIAL DESIGN TO OPERATION

STEP	PHASE	ENVIRONMENTAL MANAGEMENT ASPECT
1	**PRELIMINARY DESIGN**	Desktop review of Major Development Plan/Environmental Assessment Reports if required and assessment for compliance against Master Plan
2	**DETAILED DESIGN**	Development and review of environmental assessment of aspects including: • Hydraulic Design • Stormwater Management Plan • Acid Sulphate Soil/Potential Acid Sulphate Soil Report • Soil and Groundwater Investigation and Contamination Report • Goods and Waste Design • Ecologically Sustainable Design Report • Hazardous Goods Management Plan • Air quality, odour and noise modelling and report • Flora, fauna and heritage report • Other specialist studies as required • Development of documentation to ensure compliance with PFAS National Environmental Management Plan
3	**BUILDING APPROVAL**	Submission of environmental reports to Airport Building Controller
4	**CONSTRUCTION**	Development and implementation of Contractor Construction Environmental Management Plan (CEMP) CEMP Compliance Inspections
5	**OPERATION**	Review of Tenant Operational Environmental Management Plan (OEMP) Review of BAC EMS Risk Register Tenant OEMP and EMS Compliance Inspections and/or in response to incidents BAC/Airport Environment Officer Landside/Airside Inspections Review Tenant Audit Reports

LAND USE PLANNING FRAMEWORK

STATE PLANNING POLICY (SPP)

The SPP outlines the state's interests in land use planning and development. Promotion of state interests through the plan making and development decisions of both state and local government is designed to help secure a liveable, sustainable and prosperous Queensland.

The SPP identifies Brisbane Airport as a critical airport, serving important aviation, tourism, development and economic functions. Consistent with the intent of the Policy, the 2020 Master Plan upholds protection of airport operations, while allowing continued development of associated and supporting land uses. The Brisbane Airport Land Use Plan supports the ongoing development of a commercial centre for business and leisure.

The SPP expressly supports the ongoing expansion of critical airports to enable economic growth through the creation of jobs and economic opportunity, increased trade and distribution of goods, provision of specialist services and to enable the easy movement of people into and out of Queensland.

SHAPING SEQ – THE SOUTH EAST QUEENSLAND REGIONAL PLAN 2017

'Shaping SEQ' is the statutory Regional Plan for the South East Queensland Region, providing a framework to manage growth, change, land use and development. It is designed to do this by reflecting state interests and guiding local planning instruments responsible for delivering good land use outcomes.

Shaping SEQ identifies Brisbane Airport within the Australia Trade Coast Regional Economic Cluster and as Australia's eastern global gateway to the world.

The presence of an international airport with the most efficient runway system in Australia and future capacity similar to Singapore and Hong Kong airports is identified as a major competitive economic advantage.

Shaping SEQ acknowledges the economic and employment opportunities provided by Regional Economic Clusters and highlights the need to invest in enabling infrastructure to allow further expansion. It also outlines that critical airport operations will be protected to enable ongoing expansion.

The 2020 Master Plan vision for further growth in airport operations, economic development, and expansion closely aligns with the intent of Shaping SEQ. It builds on this vision and moves the airport towards becoming a self-sustaining commercial centre for business and leisure that supports Brisbane's plan to become a new world city.

Projected employment growth at the airport will assist the regional target for the delivery of one million jobs by 2041.

The 2020 Master Plan will also support the sustainable growth of the region by ensuring efficient transport connections are provided to allow the movement of goods, services and people into and throughout the region.

"The presence of an international airport with the most efficient runway system in Australia and future capacity similar to Singapore and Hong Kong is identified as a major competitive economic advantage.

Source: "Shaping SEQ"

CONSISTENCY WITH BRISBANE CITY PLAN 2014

Planning for Brisbane Airport is undertaken in accordance with the Airports Act 1996, however the Brisbane City Plan 2014 also provides additional useful guidance on how Brisbane Airport integrates with the city at a strategic level.

The Brisbane City Plan 2014 is Brisbane City Council's plan for future development with a planning horizon of 20 years.

The plan identifies Brisbane Airport as a key centre of economic activity and a crucial gateway to the city for passengers and freight. It envisages that there will be continued development on Brisbane Airport through uses complementary to the airport's passenger, freight, logistics and aviation industry focus.

The property strategy in the following chapter of this Master Plan outlines the ways in which Brisbane Airport will align with both the Brisbane City Plan 2014 and the Brisbane 2022 New World City Action Plan. In addition to ensuring that development is aligned with the requirements of each plan, Brisbane Airport has created nine on airport neighbourhoods in direct alignment with the ambitions of the Brisbane 2022 New World City Action Plan.

The Brisbane City Plan 2014 also acknowledges the need for land uses in proximity to the airport to be compatible with airport operations and acknowledges the varied opportunities for industries to leverage off transport, freight and passenger infrastructure networks.

Brisbane Airport continues to work collaboratively with Brisbane City Council to ensure that alignment continues to be effective in all future development.

CATEGORISATION IN THE BRISBANE CITY PLAN 2014

The Brisbane City Plan 2014 categorizes Brisbane Airport as being in both the "Special Purpose Zone" and "Airport Zone Precinct".

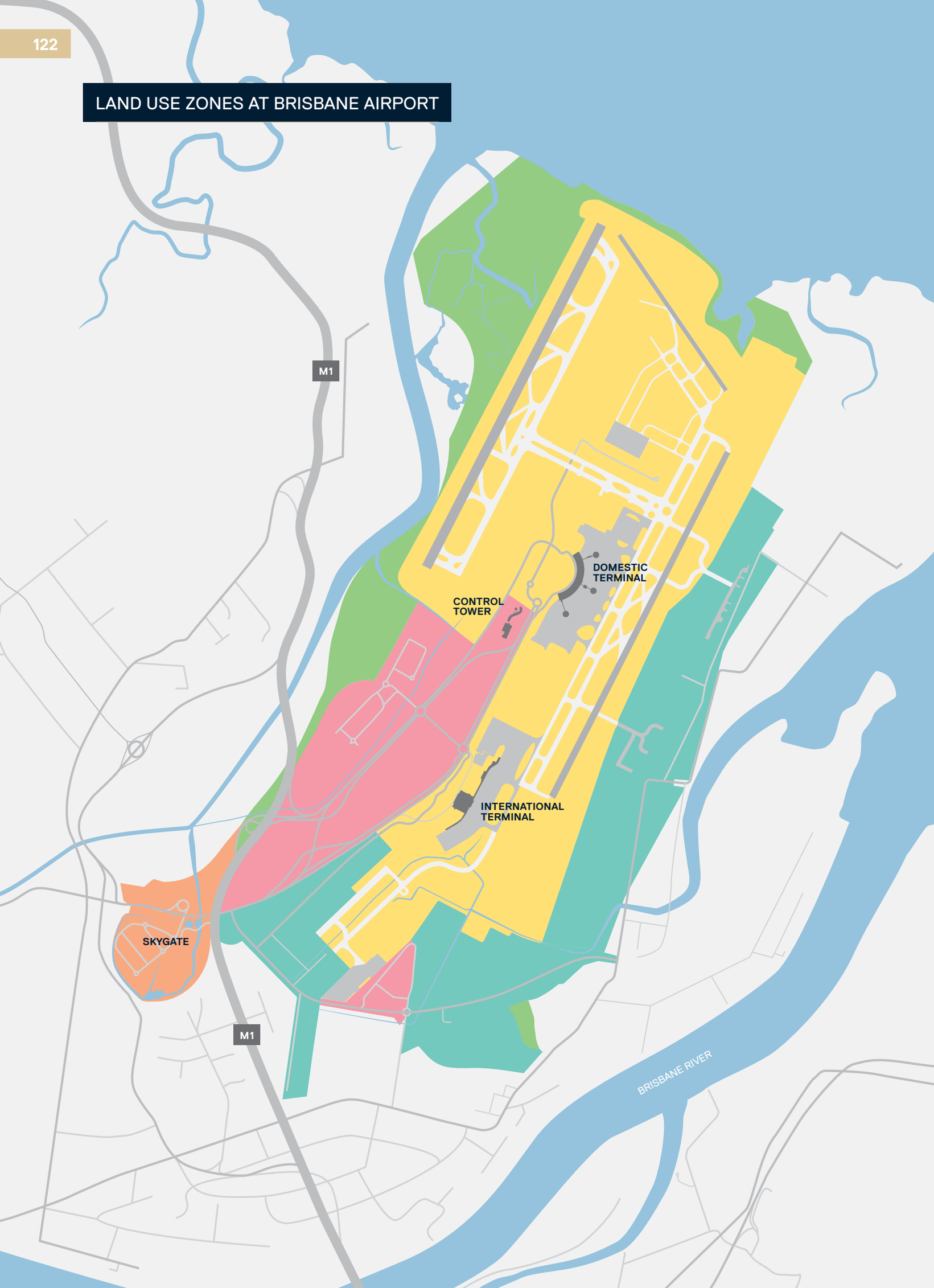
The purpose of a Special Purpose Zone is to protect public facilities and infrastructure and to ensure that incompatible uses do not encroach on the public facilities and infrastructure.

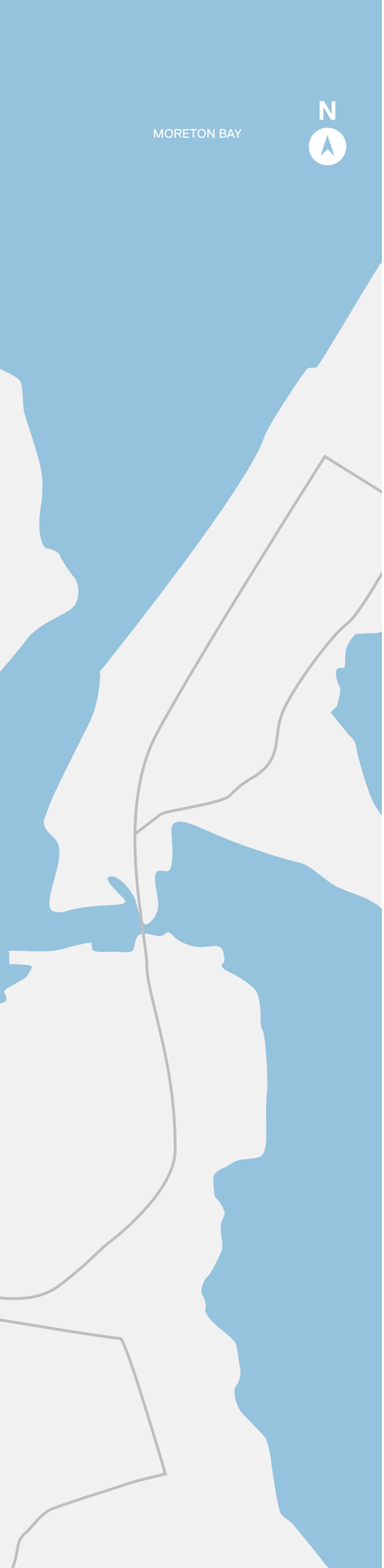
Airport Zone precincts are designed to accommodate airport and related operations and ancillary activities for airport workers, passengers and visitors, including shopping, food and drink outlets and tourism services.

Working in alignment with the Brisbane City Council, this Master Plan considers the further development of Brisbane Airport to become a self-sustaining commercial centre and a key enabler of Brisbane's transformation into a new world city.

Consistent with that intent, this 2020 Master Plan outlines the ongoing development of the airport and facilities including suitable commercial, tourism, industrial and retail developments, while protecting core airport functions.

LAND USE ZONES AT BRISBANE AIRPORT





MANAGING LAND USE

In line with state and local government planning approaches, Brisbane Airport is divided into five separate designated land use "Zones".

For each, a broad purpose statement and list of allowed uses is provided on the following pages to guide interested parties on the specific requirements and conditions that apply to potential development in each zone.

BRISBANE AIRPORT LAND USE ZONES

- Special Purpose Airport Zone
- Mixed Use Zone
- Major Centre Zone
- General Industrial Zone
- Conservation Zone

To ensure that the future development of Brisbane Airport is sustainable and minimises environmental impacts, a rigorous development assessment process has been established to ensure compliance with obligations under the Airports (Building Control) Regulations 1996.(Cth.). The structure of the zones are generally consistent with the planning schemes prepared in accordance with relevant Queensland Planning Legislation as required by Airports Act 1996 (Cth.).

All development proposals at Brisbane Airport are subject to a planning and environmental impact assessment that ensures that the 2020 Master Plan, the Brisbane Airport Environment Strategy, Airports Act 1996 and all other legislative requirements are considered before granting a development approval.

Where that assessment indicates that a proposed development is likely to have a significant environmental impact or affects an area identified as environmentally significant in the Environment Strategy, a dedicated Major Development Plan (MDP) must be prepared for consideration prior to approval. MDP's are also required for other developments such as runways and terminals, new buildings costing more than $25 million and other infrastructure which significantly increases airport capacity. Developments at Brisbane Airport are also guided by the National Airports Safeguarding Framework.

SPECIAL PURPOSE AIRPORT ZONE

PURPOSE

The Special Purpose Airport Zone applies to the aeronautical operational areas of Brisbane Airport including airside activities, runways and infrastructure, the Domestic and International Terminals and landside areas providing necessary, compatible and complementary land uses. The Special Purpose Airport Zone includes the Domestic and International Terminals and Airport North neighbourhoods.

DEVELOPMENT OBJECTIVES

- Development contributes to the function of the Brisbane Airport aeronautical facilities to maximise the operational efficiency of airport infrastructure.
- Development provides housing, servicing, maintenance and repair of aircraft; landing and departure of aircraft; assembly and dispersal of passengers and goods on or from aircraft.
- Ancillary activities serving the needs of workers, passengers and visitors to an airport, including shops, food and drink outlets; tourism services; freight handling and shipping; training, education and aviation facilities.
- Development is appropriately located and has a function, scale, height and bulk compatible with the aeronautical functions of the airport.
- Development provides goods and services to domestic and international travellers at a standard and quality which meets expectations for a world-class transport hub.
- Development facilitates high quality road, rail, public transport and active transport connections enabling efficient and safe movement of people, goods and freight.
- Developments are compliant with aviation standards and relevant regulations and guidelines.
- Development creates a variety of high quality building forms, materials and façade treatments that contribute positively to passenger experiences.
- Complementary uses are of an appropriate scale to serve the needs to employees, passengers and visitors within the zone.
- Development achieves a high standard of environmental performance by incorporating principles of sustainable and efficient design in both the construction and operational phases.
- Development supports efficient movement of goods and freight through the airport to facilitate trade and employment growth.
- Development is designed, constructed and operated to maintain the safety and security of people and property.
- Interim land uses which do not prejudice future development are supported prior to land being needed for it's ultimate land use.
- Development complies with the National Airports Safeguarding Framework.

SPECIAL PURPOSE AIRPORT ZONE POSSIBLE USES

- Advertising device
- Air services
- Boating facility
- Car park
- Distribution centre
- Emergency services
- Entertainment facility
- Food and drink outlet
- Freight handling facility
- Function facility
- Health care services
- Hotel
- Indoor sport and recreation
- Industry
- Industrial retail outlet
- Liquid fuel depot and distribution facility
- Navigational aids
- Office
- Park
- Place of worship
- Public safety area
- Public transport facility
- Research and technology industry
- Research station or centre
- Shop
- Short term accommodation
- Showroom
- Sport and recreation facility
- Telecommunications facility
- Temporary use
- Tourist information centre
- Transport depot
- Utility installation
- Warehouse
- Wholesale supplies
- Works depot

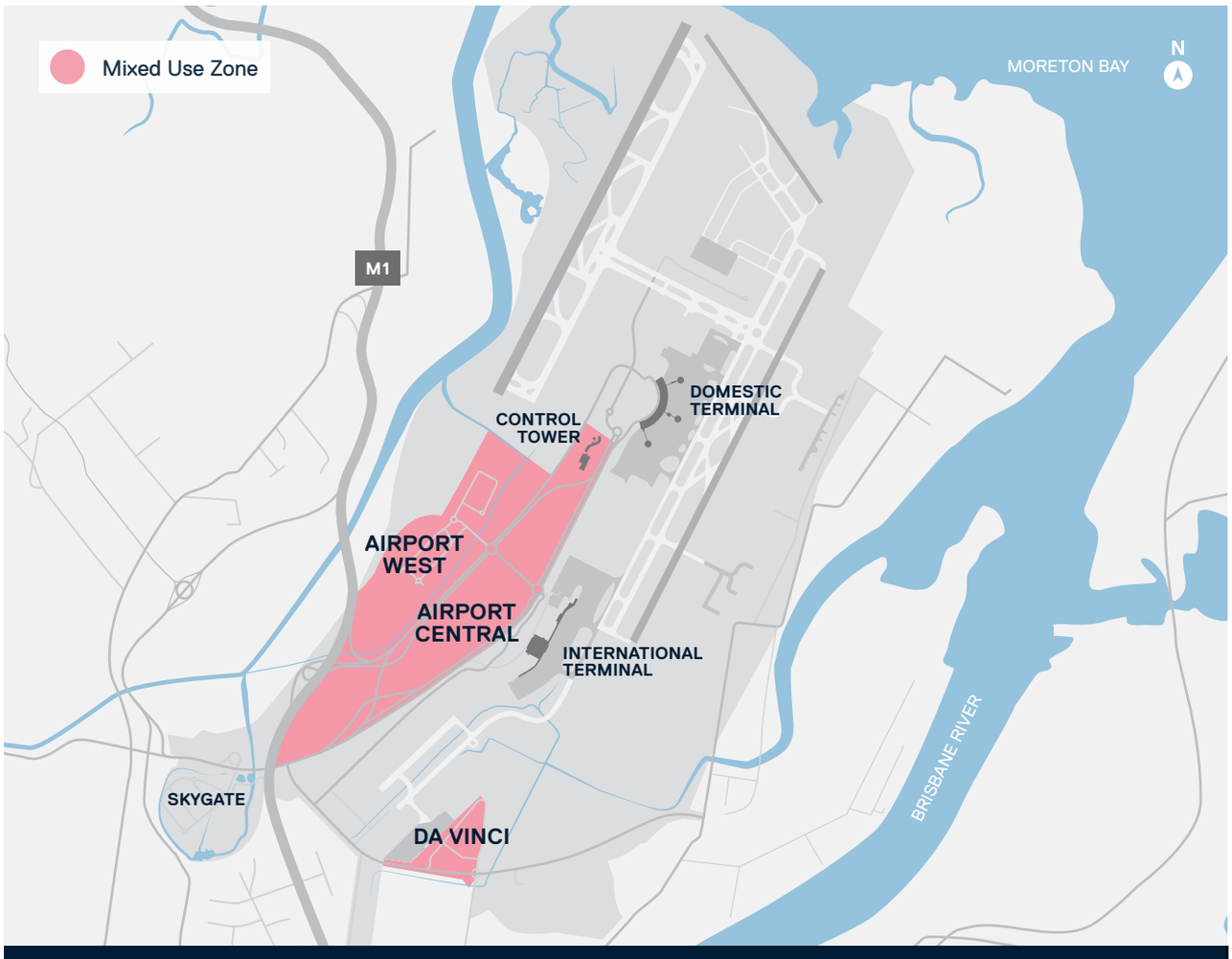
MIXED USE ZONE

PURPOSE

The Mixed-Use Zone allows for a diverse range of land use including business, retail, tourism, short term accommodation and industrial. The Zone provides opportunities for compatible employment generating activities to be clustered into commercial nodes, with highly accessible locations capitalising on the proximity to airport operations. It includes Airport Central, Airport West and the Da Vinci Neighbourhoods.

DEVELOPMENT OBJECTIVES

- Development provides a diverse mix of land uses compatible with wider airport operations and a level of economic and social activity to serve the intended mix of passengers, visitors and employees.
- Provision is made for businesses seeking to combine corporate office and manufacturing/distribution functions.
- Development provides a diverse mix of industrial activities, commercial enterprises and workshops, supported by office activities set in a business park environment.
- Development provides for a wide range of industry and business uses, including research and technology facilities, knowledge creation and entrepreneurial activities and service industries that are more compatible with urban areas.
- Development facilitates a variety of uses operating at different times through each day to create a vibrant commercial environment.
- Building height, bulk, scale and forms create a high-quality commercial environment with intensity and form tailored to the specific location.
- Developments are compliant with aviation standards and relevant regulations and guidelines.
- Development provides for uses which capitalise on the areas proximity to the Australian Trade Coast and Brisbane Airport commercial environments.
- Development achieves a high standard of environmental performance by incorporating principles of sustainable and efficient design within both the construction and operational phases.
- Development is appropriately located and has a function, scale, height and bulk that are compatible with the aeronautical functions of Brisbane Airport.
- Development provides compatible built forms and landscape treatments which create a cohesive streetscape and provide for efficient pedestrian connections.
- Development is sensitively designed and operated to avoid or mitigate any potential adverse impact on adjoining uses.
- Interim land uses which do not prejudice future development are supported prior to land being needed for a future land use.
- Development complies with the National Airports Safeguarding Framework.



MIXED USE ZONE POSSIBLE USES

- Animal husbandry
- Animal keeping
- Advertising device
- Air services
- Boating facility
- Car park
- Childcare centre
- Community use
- Distribution centre
- Emergency services
- Entertainment facility
- Event facility
- Food and drink outlet
- Freight handling facility
- Function facility
- Hardware and trade
- Health care services
- Hotel
- Horticultural activity
- Indoor sport and recreation
- Industry
- Industrial retail outlet
- Intensive horticulture
- Major sport and recreation and entertainment facility
- Market
- Navigational aids
- Nightclub entertainment facility
- Office
- Outdoor sales
- Park
- Produce market
- Public safety area
- Public transport facility
- Research and technology industry
- Research station or centre
- Service station
- Shop
- Short-term accommodation
- Storage premises
- Showroom
- Storage premises
- Temporary use
- Tourist information centre
- Transport depot
- Utility installation
- Veterinary services
- Warehouse
- Wholesale nursery
- Wholesale supplies
- Works depot

MAJOR CENTRE ZONE

PURPOSE

The Major Centre Zone allows for a diverse use mix that includes concentrations of retail, commercial, offices, tourist attractions, short-term accommodation, administrative and health services, community, cultural and entertainment facilities and other uses capable of servicing Brisbane Airport and the surrounding local areas. The Skygate Neighbourhood is the sole major centre zone at the airport.

DEVELOPMENT OBJECTIVES

- Development creates a diverse range of activities, comprising business, commercial, retail, government, service, community and cultural activities, recreation and entertainment functions such as restaurants, hotels and other leisure facilities to provide 24/7 activity.
- Development provides for high order retail and commercial activities that create a focus point for subregional employment and branch government functions including health, education and cultural services.
- Building height, bulk, scale and forms create a high quality commercial and retail environment with an intensity and form tailored to the specific location.
- Development capitalises on proximity to suburban or inter-urban public transport networks.
- Development provides high quality public spaces and landscaping that softens built form, provides breathing space between buildings, encourages outdoor activity and facilitates safe, convenient and attractive pedestrian connectivity.
- Developments are compliant with aviation standards and relevant regulations and guidelines.
- Buildings address and interface with the street through the provision of active uses at ground level to ensure active streets and to facilitate surveillance of the public domain.
- Development occurs in an integrated and coordinated manner both within the site and in relation to surrounding land uses.
- Development is appropriately located and has a function, scale, height and bulk that are compatible with the aeronautical functions of Brisbane Airport.
- Development is sensitively designed and operated to avoid or mitigate any potential adverse impact on adjoining uses.
- Interim land uses which do not prejudice future development are supported prior to land being needed for it's ultimate land use.
- Development complies with the National Airports Safeguarding Framework.

MAJOR CENTRE ZONE POSSIBLE USES

- Advertising device
- Air services
- Bulk landscape supplies
- Car park
- Childcare centre
- Club
- Community use
- Emergency services
- Entertainment facility
- Environment facility
- Event facility
- Food and drink outlet
- Function facility
- Garden centre
- Hardware and trade supplies
- Health care services
- Hotel
- Indoor sport and recreation
- Major sport, recreation and entertainment facility
- Market
- Navigational aids
- Nightclub entertainment facility
- Office
- Outdoor sales
- Park
- Place of worship
- Produce market
- Public safety area
- Public transport facility
- Research and technology industry
- Service station
- Shop
- Shopping centre
- Short-term accommodation
- Showroom
- Sport and recreation activty
- Telecommunications facility
- Temporary use
- Tourist information centre
- Tourist shop
- Transport depot
- Utility installation
- Wholesale nursery
- Wholesale supplies
- Works depot

GENERAL INDUSTRIAL ZONE

PURPOSE

The General Industrial Zone provides for a wide range of industrial uses capitalising on proximity to Brisbane Airport aeronautical operations, extensive transport networks, Port of Brisbane and Australia Trade Coast. Business and other non-industrial uses that complement industrial activities are supported where appropriate separation and buffers are achieved to adjoining uses. The General Industrial Zone includes Export Park, Airport Industrial Park and Airport East.

DEVELOPMENT OBJECTIVES

- Development provides for a broad range of industrial, business and supporting activities maintaining the long-term viability of the zone and facilitating economic interaction with the Zone.
- Development for an industrial use is located, designed and managed to maintain safety to people, avoid significant adverse effects on the natural environment and minimise impacts on adjacent non-industrial land.
- Development provides for uses which capitalise on the areas proximity to Australia TradeCoast and Brisbane Airport commercial environment.
- Development responds to land constraints and mitigates any adverse impacts on environmental values.
- Building height, bulk, scale and forms create a high-quality industrial environment with an intensity and form tailored to the specific location.
- Development achieves a high standard of environmental performance by incorporating principles of sustainable and efficient design within both the construction and operational phases.
- Development is appropriately located and has a function, scale, height and bulk that are compatible with the aeronautical functions of Brisbane Airport.
- Development provides compatible built forms and landscape treatments which create a cohesive streetscape and provide for efficient pedestrian connections.
- Development is sensitively designed and operated to avoid or mitigate any potential adverse impact on adjoining uses.
- Interim land uses which do not prejudice future development are supported prior to land being needed for an intended land use.
- Development complies with the National Airports Safeguarding Framework.

INDUSTRIAL ZONE POSSIBLE USES

- Advertising device
- Air services
- Animal keeping
- Animal husbandry
- Boating facility
- Bulk landscape supplies
- Car park
- Distribution centre
- Emergency services
- Food and drink outlet
- Freight handling facility
- Hardware and trade supplies
- Horticulture activity
- Indoor sport and recreation
- Industry
- Industrial retail outlet
- Intensive horticulture
- Liquid fuel depot and distribution facility
- Major sport, recreation and entertainment facility
- Navigational aids
- Office
- Outdoor sales
- Park
- Produce market
- Public safety area
- Public transport facility
- Research and technology industry
- Service station
- Shop
- Showroom
- Sport and recreation activity
- Storage premises
- Telecommunications facility
- Temporary use
- Transport depot
- Utility installation
- Veterinary services
- Warehouse
- Wholesale supplies
- Works depot

CONSERVATION ZONE

PURPOSE

The Conservation Zone provides for the protection, restoration and management of areas identified as supporting significant biological diversity and ecological integrity. Areas in the Conservation Zone will be managed to retain their biodiversity values in a way that does not compromise airport safety, particularly from wildlife hazards. The Conservation Zone also provides opportunities for nature-based outdoor recreation, where considered appropriate.

DEVELOPMENT OBJECTIVES

- Land is managed to maintain the integrity of local area wildlife, habitats and other significant ecological assets and processes over time, where consistent with safe airport operations.
- Nature conservation values and ecological functions are protected and maintained where this is consistent with safe airport operations.
- Outdoor recreation and nature-based educational activities are provided where best practice planning and management are applied to minimise potential impacts on environmental values and functions.
- Development responds to land constraints and mitigates any adverse impacts on environmental values whilst protecting the existing and future infrastructure.
- Development protects the values and function of the Conservation Zone through innovative design, planning and construction approaches, including application of noise, light and physical buffers external to the values being conserved.
- Development is appropriately located and has a function, scale, height and bulk that are compatible with the aeronautical functions of Brisbane Airport.
- Development complies with the National Airports Safeguarding Framework.

CONSERVATION ZONE POSSIBLE USES

- Advertising device
- Boating facility
- Environment facility
- Navigational aids
- Park
- Public safety area
- Utility installation

UTILITIES

Brisbane Airport Corporation owns and operates a substantial utility network. The network includes an electrical network and networks for, potable and recycled water and sewers. The airport telecommunications network includes an optical fibre network.

This section outlines the details and plans for Brisbane Airport's utility network and details existing arrangements with supporting utility suppliers.

MAJOR INITIATIVES SINCE THE 2014 MASTER PLAN

Brisbane Airport continues to actively plan, develop and maintain the utilities network across the airport, to ensure that it operates reliably and grows in a proactive manner.

Major initiatives in the last five years include:

- High Voltage, communication and hydraulic network expansions to support the new runway.
- Installation of 14 distribution substations to support new aeronautical and commercial developments.
- Installation of solar electrical power generation with a capacity of 6800kW.
- Commissioning a new recycled water supply from QUU STP Luggage Point.
- Extending the distribution network to allow a 50 per cent increase in recycled water use to more than 300 millilitres per annum.
- Establishment of a new sewer discharge point to QUU trunk, including reconfiguration of the airport sewer network increasing capacity and improving network reliability.

The location of those initiatives are shown on the map opposite.

ELECTRICAL NETWORK

Energy Queensland is the Distribution Network Service Provider (DNSP) for the Brisbane Airport site. It supplies power through three 33/11kV main intake substations.

In addition, Brisbane Airport has three 11kV zone substations and a large distribution network including multiple 11kV/415V substations.

The network is supported through stand-by generators, capable of maintaining essential airport operations in the event of a mains supply outage.

POTABLE WATER

Brisbane Airport's potable water network is supplied by dual major intakes provided by Queensland Urban Utilities at the Sugarmill Road intake point.

The network, which is reticulated across airport via a network of pipes and valves, is owned and managed by Brisbane Airport.

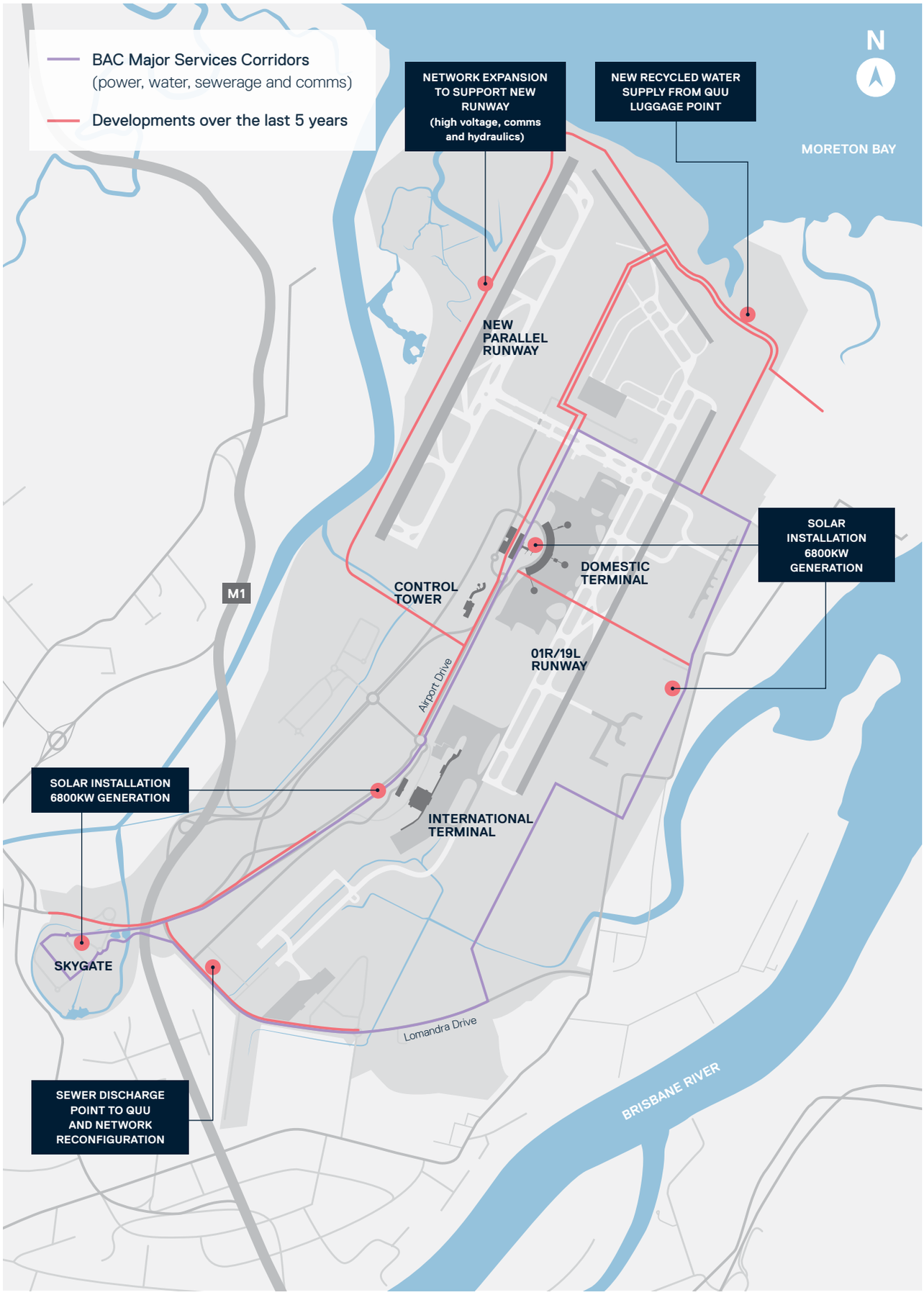
RECYCLED WATER

Recycled water supply is also provided by Queensland Urban Utilities (QUU). The network operates through dedicated lines originating from the Gibson Island and Luggage Point Treatment plants.

Stormwater from onsite lakes in Skygate supplement the recycled water supply, benefiting airport construction projects and reducing the consumption of potable water.

From the intake point of supply, Brisbane Airport owns and manages a recycled water network that supplies class A and class A plus recycled water to several sites including the International and Domestic Terminals.

UTILITIES PROJECTS SINCE 2014



SEWER

Through a combination of gravity and rising mains supported by pump stations, Brisbane Airport's sewer network is connected to the off-airport QUU sewer network at four locations, Airport Drive (connecting to Nudgee Road), Viola Place, Lomandra Drive and Pandanus Avenue (connecting to Luggage Point).

As part of its sewerage services, Brisbane Airport manages the sewerage system and the discharge of trade waste from airport business premises to the QUU sewerage network. These separate discharge points have the benefit of allowing a level of redundancy by design where re-routing of on airport sewer can occur in the event of a line or mains failure.

TELECOMMUNICATIONS

Brisbane Airport has a complex telecommunications network which services a variety of functions including telephony and data transfer. It also assists in aviation management systems via relationship agreements with Airservices Australia.

Brisbane Airport owns and manages an optical fibre infrastructure network to service its own requirements, as well as an extensive duct and access pit network to allow for telecommunications carriers to provide for the needs of their customers.

Telecommunication carriers including Telstra, Optus and Vodafone own and maintain an array of telecommunication towers and antennae and maintain in-ground cables ducts and pits, providing services direct to their business connections.

To explore opportunities for optimising the network and infrastructure, Brisbane Airport and telecommunication carriers have established an ongoing working group. The working group will focus on developing a strategy for accommodating technology advancements, such as the roll out of the 5G network, and other digital innovations at Brisbane Airport.

GAS SUPPLY

Brisbane Airport is not currently serviced by gas mains. Negotiations are underway with gas suppliers and distributors for the provision of a natural gas main to the airport.

Businesses on airport that rely on gas supply currently have their needs accommodated by gas cylinders or tanks located on premises. It is Brisbane Airport's intention in future to manage their demands from a dedicated gas supply reticulated from a mains network.

PLAN FOR UTILITIES DEVELOPMENT

The supply requirements of energy, water, sewer services, telecommunications and gas are expected to increase consistent with the rate of development at the airport.

Brisbane Airport takes its challenge to the reliability, redundancy, sustainability and relationship management response seriously, with a dedicated team actively planning and managing the utility network and continually researching methods to provide a sustainable utility network.

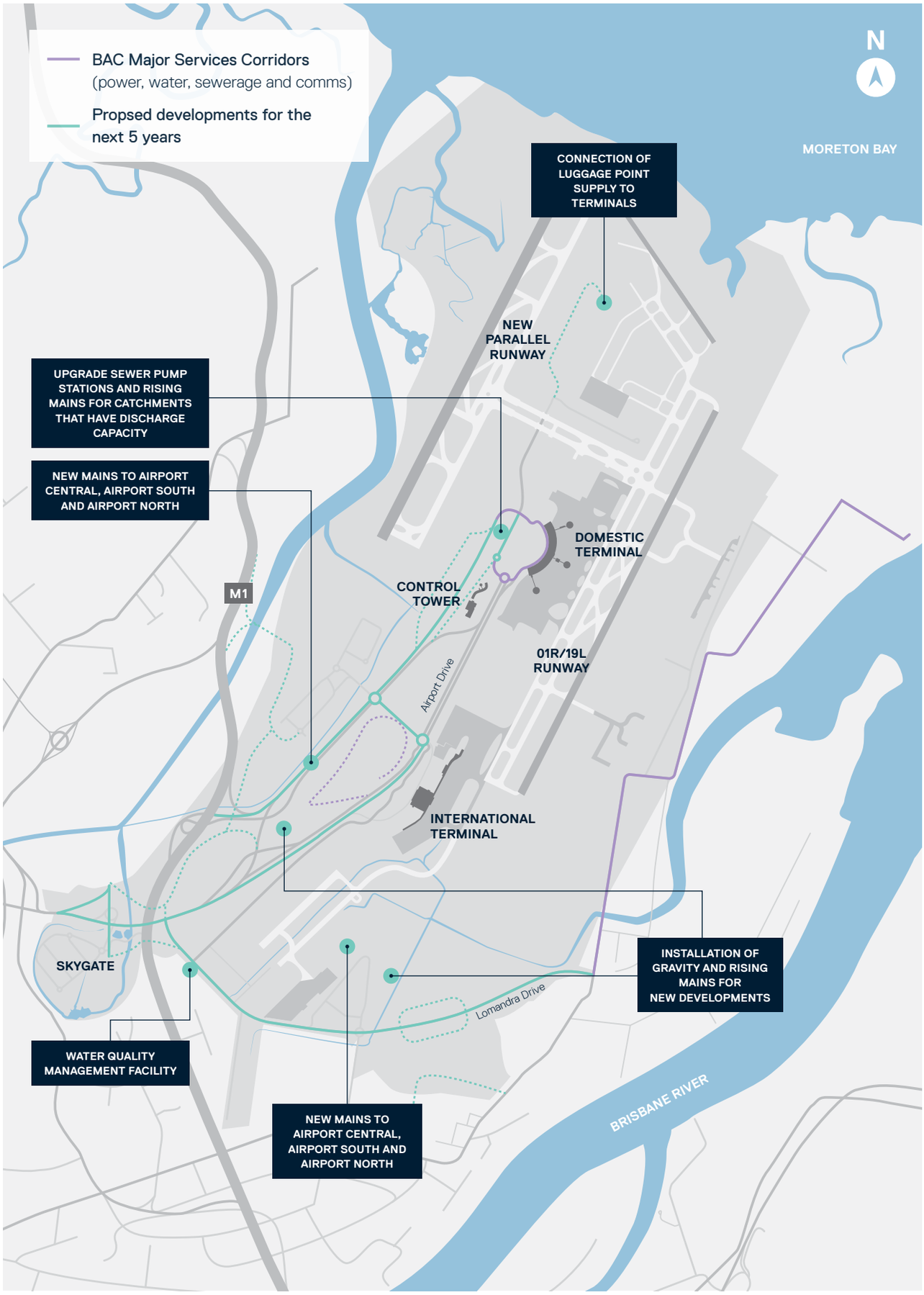
Over time, continued development may place pressure on Brisbane Airport's infrastructure capacity with network upgrades required to accommodate increasing demands.

In planning, constructing and maintaining utility services, Brisbane Airport applies the following key objectives;

- Ensuring distribution networks meet the required future demand and continue to improve network performance.
- Promote energy efficiency and sustainability by harnessing available technologies and encouraging tenants to adopt sustainable operations.
- Active engagement with utility suppliers to ensure that the key objectives are addressed in future plans.
- Establish collaborative relationships with the local, state and federal governments.
- Meet all legal, compliance and corporate governance obligations.

Details of utilities initiatives planned for the next five years and their locations are shown on the map on the facing page.

UTILITIES PROJECTS PLANNED 2020-2025



RESPONDING TO CLIMATE CHANGE

CLIMATE CHANGE IN AUSTRALIA

There is a wide body of evidence available to suggest that Australia's climate has already changed significantly, particularly over the last 50 years. Some of the key changes currently observed (CSIRO & BoM, 2016), at a national scale indicate that:

- Australian sea levels rose by ~20 cm between 1880 to 2015.
- Substantial warming has occurred in the oceans surrounding Australia, with sea surface temperatures having increased by almost 1°C since 1900. The last 3 years have all been in the top 5 warmest years on record.
- Australian temperatures have increased on average by 1°C since 1910, with further temperature rises expected by 2030. 2015 was the 39th consecutive year of above-global average temperature.
- Rainfall has declined across most of eastern and south-western Australia since 1950.

There are several sources of reliable scientific and technical reporting for climate change projections based on historical climate data, these include:

CLIMATE CHANGE RISKS

Key climate change risks that will need to be addressed by BAC as part of its approach to climate change adaptation include:

- Increased sea levels
- Raised groundwater levels
- Storm and cyclone events
- Heatwave
- Drought.

TABLE 1 KEY CLIMATE CHANGE DATA SOURCES

SOURCE	NAMES	PURPOSE AND APPLICATION
International	United Nations' Framework Convention on Climate Change (UNFCCC)	An overall framework for intergovernmental efforts to address the challenges posed by climate change.
Australian government	Intergovernmental Panel on Climate Change (IPCC)	A scientific body responsible for reviewing and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change.
	Department of the Environment and Energy	Greenhouse gas reporting and climate science in Australia.
	Climate Change in Australia	Historic data and future climate projections based on the IPCC standardised emissions scenarios. Sponsored by the Department of Environment and CSIRO.
	Australian online coastal information	Produced by Geoscience Australia and providing modelling and environmental data on Australian coastal environments.

PLANNING AHEAD

FLOOD IMMUNITY

As part of ongoing operations,Brisbane Airport has undertaken master drainage planning for the entire airport site since 1997. This analysis has identified that a storm surge event would lead to the highest potential flood levels across the airport site.

As a result, in all planning, the Minimum Development Levels resulting from a 1 per cent Annual Exceedence probability (AEP) storm surge event coincident with a 10 per cent AEP local catchment event have been adopted for key airport infrastructure. An allowance of 800mm for long term climate change to 2100 is included in the adopted Minimum Development Level as part of the mandated planning process on the airport, risk assessments are undertaken to determine the flood immunity required for each new development on the airport site.

INDUSTRY GUIDANCE

A review of the latest Industry Guidance on Climate Change, including the Intergovernmental Panel on Climate Change (IPCC) AR5 has revealed that the most significant climate stressors for Brisbane Airport are expected to be:

- Sea level rise – 0.14m to 2030 and up to 0.87m (0.45m to 0.87m) by 2090 in a high global emissions scenario.
- Rainfall – an increase in the intensity of rain events and an increase in drought durations.
- Temperature – more frequent occurrences of extreme heat days, warmer winter and summers, with annual average temperature increasing by up to 2.6 to 4.8°C by 2090 in a high emissions scenario.

BRISBANE AIRPORT CLIMATE CHANGE

RISK ASSESSMENT REGISTER

Brisbane Airport's process for responding to climate change involves the approach of relating actions to "trigger points". Under this approach, specific mitigation measures or changes in approach are implemented as a result of particular targets being met. In addition to measures outlined in the Brisbane Airport Environment Strategy and in order to achieve the desired outcomes in response to the effects of climate change, Brisbane Airport has developed a Climate Change Risk Assessment Register.

Measures being monitored include:

- Continual review of sea level risk allowance predictions and observations.
- Long term sea level rise reviews (to include increased MDLs, protection measures for key areas and managed retreat).
- Monitoring of groundwater levels and salinity.

The Climate Change Risk Assessment Register will be maintained and updated in accordance with IPCC and CSIRO updates, and to ensure compliance with any new government legislation.

RESPONDING TO CLIMATE CHANGE

HEATWAVE

Extended periods of elevated temperatures will have a number of impacts for the airport site. Longer periods of hot temperatures will increase the electricity usage, for example to maintain adequate air conditioning, and may affect the operation of overall system. Airside operations, and other outside manual work, would be affected by the elevated temperatures and measures would need to be implemented to protect personnel and potentially equipment. Heatwave may prevent aircraft from operating safely. Heat affects internal components of aircraft and makes it harder for planes to get off the ground as hot air is less dense. This reduces the aerodynamic capabilities of the plane (thrust), increasing runway distance required and reducing climb performance.

The load/passenger numbers may be restricted when temperatures are very high. Smaller jets and propeller aircraft are more likely to be affected then larger aircraft that are better equipped for extreme temperatures. A clear example of this was in 2017 at Phoenix Sky Harbor International Airport where regional flights on American Eagle were the most affected because they use Bombardier CRJ planes that can only operate at temperatures of 118 F degrees or below.

This type of event requires additional assessment to determine the types of aircrafts currently using the airport and when introducing new airlines to BNE.

DROUGHT

Climate change predictions for South-east Queensland include a greater frequency of hot years from 1 in 22 years to 1 in 1.7 years by 2040. Drought will become an increasing reality in South-east Queensland in the decades ahead.

During Queensland's recent experience of drought, Brisbane Airport introduced a range of adaptation measures. The key to addressing drought impacts for the airport is to have a strong focus on site water management including options such as stormwater harvesting, reuse and appropriate drought tolerant vegetation.

Drought can also impact on the growth and maintenance of vegetation across the airport. In particular, the grassed areas of the airfield pose a significant risk. Should these areas become dry they could pose a grass fire risk and if the grass dies completely then the risk of dust generation is high. Dust generation would be extremely hard to control in the airfield and could significantly impact on aircraft movements and operations.

A further risk is contamination of runoff from these affected areas, with high erosion potential leading to risk of siltation and contamination of waterways/drainage structures.

Solutions like the implementation of a Landscape Setting Strategy and the ongoing implementation of Recycled water network will reduce the impacts of this climate risk.

CYCLONE EVENTS

Climate change is projected to increase the relative intensity of storms, east coast lows and cyclones experienced at a particular latitude. Increased storm intensity will have an impact on the rainfall intensities and wind speeds.

The 2018 'State of the Climate' report indicates that there is a statistically significant downward trend in the number of tropical cyclones in the Australian region. In contrast to the number of tropical cyclones, the statistical significance of any observed trend in tropical cyclone intensity is overshadowed by large uncertainties due to the short satellite record and high variability.

So, in summary, there is likely to be a decrease in frequency of Tropical Cyclones, but a possible Increase in cyclone intensity and a southern shift in cyclone travel. From this BAC is looking into operational management procedures to ensure the potential impacts from cyclones are mitigated.

07

PROPERTY STRATEGY

OVERVIEW

A VIBRANT COMMERCIAL HUB

Brisbane Airport is one of Queensland's largest contiguous commercial sites. Access to aviation facilities, excellent transport connections and proximity to the CBD make it an attractive place to do business and currently home to more than 400 commercial businesses large and small, including some of Australia's best known companies.

The new Brisbane Airport Hotels and Conference Centre, located within the Domestic Terminal precinct, along with the 5 star Pullman and 3.5 star Ibis hotels, each complement the existing the 4 star Novotel at Skygate providing a broader spectrum of hotel options available for travellers and conference guests alike.

Brisbane Airport is also home to some of the region's most popular shopping destinations with more than 50 local and international retailers operating at DFO Skygate. The recent opening of Skygate Home & Life has seen the arrival of household name retailers including TK Maxx and Nick Scali Furniture.

Responding to market demand in supplying a mix of business, retail, industry and tourism activities, future developments will seek to achieve best practice built form, landscape and open space design and will be designed to drive increased use of public transport, improved access and connectivity.

Future growth extends beyond aviation and aviation related sectors. Opportunities exist to create beneficial neighbourhoods in food and beverage, logistics and distribution, professional and training industries.

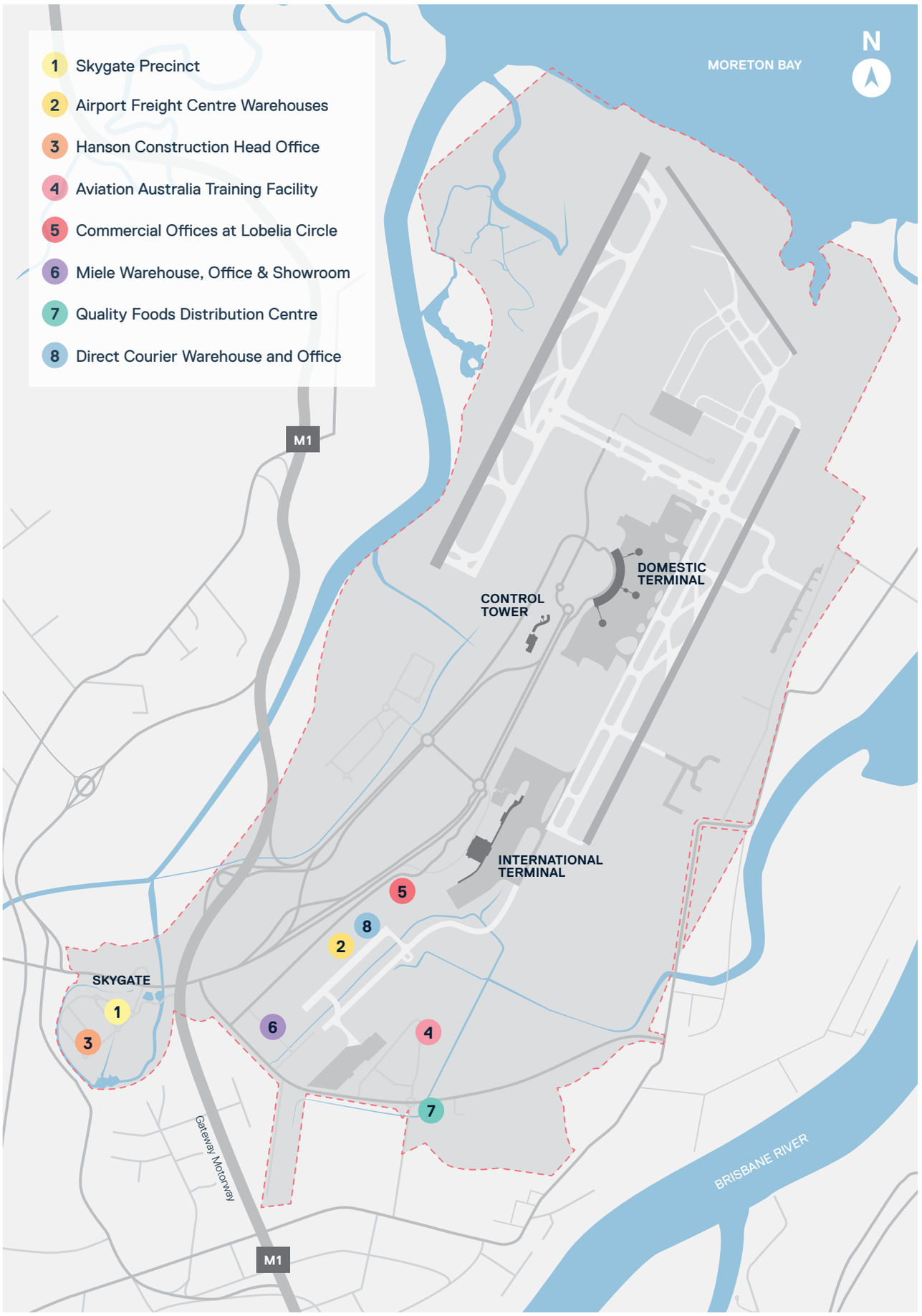
CREATING CONNECTED NEIGHBOURHOODS

Brisbane Airport Corporation's (BAC) approach to land use planning over the next 20 years will be designed to continue to increase the contribution to the successful performance of regional and state economies.

In line with initiatives featured in Brisbane City Council's New World City Action Plan, Brisbane Airport's future vision in developing commercial property is to create integrated business clusters or "neighbourhoods" that group businesses with similar activities together to benefit from shared common services and economies of scale.

This chapter contains details of the types of businesses operating within each neighbourhood as well as information on planning regulations and guidelines governing development at the airport.

LOCATIONS OF PROPERTY INITIATIVES



PROPERTY INITIATIVES IN THE LAST FIVE YEARS

Over the last five years, the combination of modern facilities, high quality transport links and proximity to the airport and its facilities has attracted a number of high profile businesses to relocate to the airport or to increase the scope of existing operations.

1 SKYGATE HOME & LIFE/DFO EXPANSION

Development of the Skygate precinct started in 2005 with a plan to create a dynamic commercial, retail and leisure precinct for passengers.

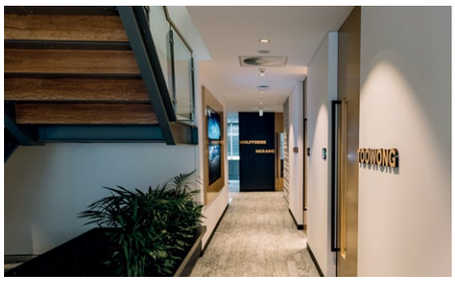
As Skygate continues to grow in popularity, 2015 saw a $35 million expansion of DFO, recently complemented by the opening of the retailing complex, Skygate Home & Life, home to a number of popular large scale Australian and international retailers.

2 AIRPORT FREIGHT CENTRE 4

The 8,887 square metre industrial development, Airport Freight Centre 4 at Export Park, takes full advantage of a unique airside location.

Completed in 2017, direct airside access presents a prime opportunity for logistics and distribution businesses looking to boost their efficiency and market competitiveness.

Leading airline caterer Gate Gourmet has prime position in one of the five warehouses.



3 HANSON CONSTRUCTION & BUILDING MATERIALS

The office, laboratory and showroom facility for Hanson Construction & Building Materials is located in 3,000 square metres of space at Skygate.

Proximity to the North Brisbane concrete plant, major arterials and amenities at Skygate were important factors in selecting Brisbane Airport as the location of their head office State-of-the-art fully automated robotic testing equipment and a call centre housed at the premises service the company's national requirements.

4 AVIATION AUSTRALIA

A specialised education and training facility for Aviation Australia and LifeFlight was constructed to provide additional space for their growing business.

The new facility provides a high-quality learning environment for students with 20 lecture rooms, technical training centre with operational hangar and flight simulator, corporate offices and a cafe.

5 FIVE LOBELIA CIRCLE

Architecturally designed with views to the CBD and the Port of Brisbane, the building at Five Lobelia Circle has a 4.5-star NABERS rating and was a finalist in the 2015 Property Council of Australia Innovation and Excellence Awards.

Prior to taking up residence, the Australian Federal Police worked closely with the airport property development team to ensure the building met their specific security and technology requirements.

6 MIELE

The 7,065 square metre tailored warehouse, office and showroom facility for Miele, a leading manufacturer of premium domestic appliances opened in December 2018.

Located in Airport South, the new location successfully amalgamated two Brisbane operations into one site with double the warehouse capacity, retaining options for future expansion.

7 QUALITY FOOD AND BEVERAGES

Airport Industrial Park is home to the new 11,260 square metre Quality Food and Beverages distribution centre, one of the largest customised facilities built within the Australian Trade Coast in recent times.

Quality Food and Beverages supplies more than 6,000 products to schools, cafés, restaurants and clubs in south-east Queensland and New South Wales. The new premises has allowed the company to automate logistical activities, with space available to accommodate further growth.

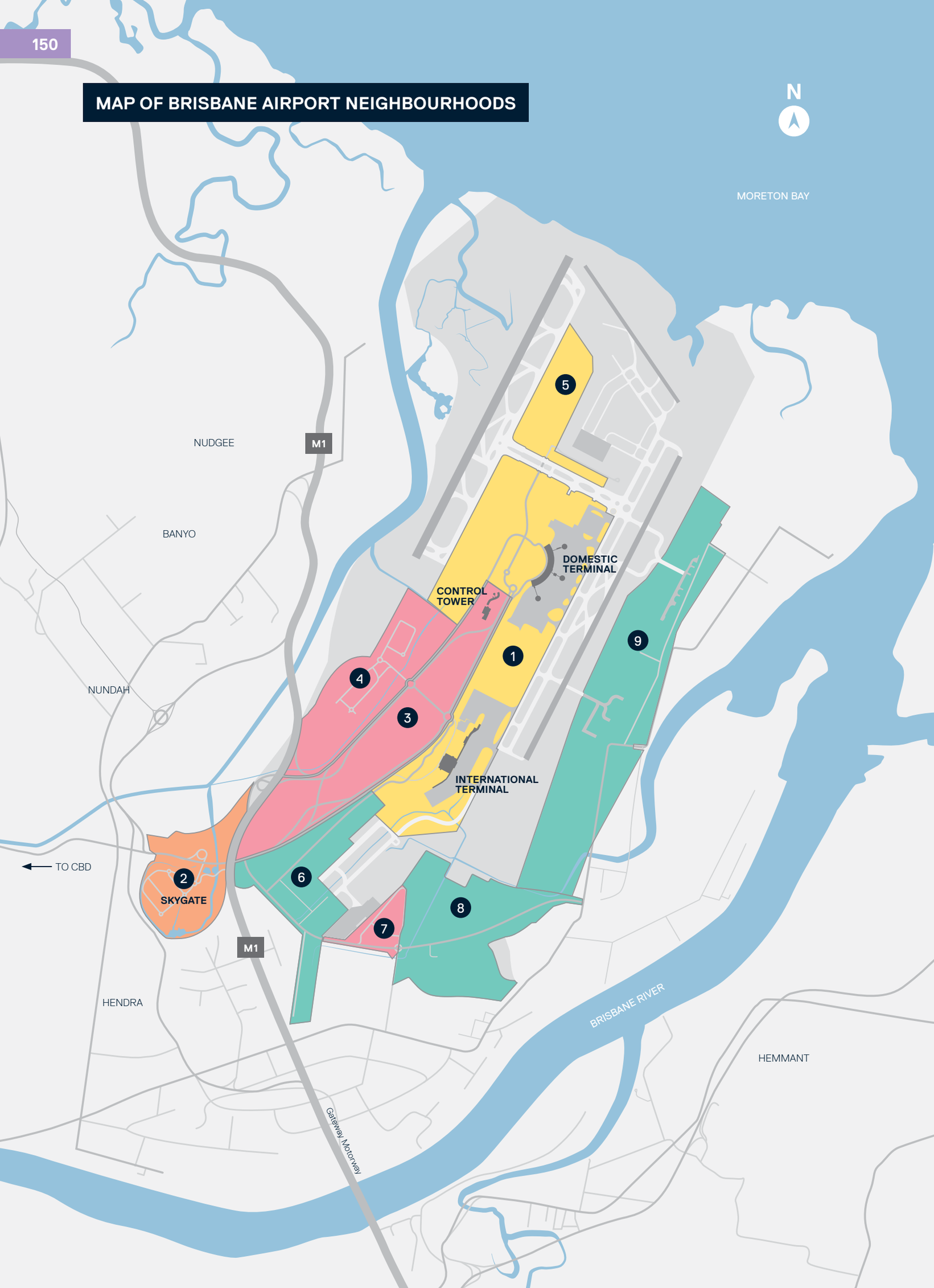
8 DIRECT COURIERS

Like Miele, Direct Couriers had outgrown their previous premises at Brisbane Airport and chose to relocate to the airport.

The transport infrastructure and amenity that Direct Couriers were already accustomed to made it easy for the distribution company to choose another purpose-built warehouse and office facility at Brisbane Airport.

The new property has provided Direct Couriers with approximately 60 per cent more space and allows for planned business growth.

MAP OF BRISBANE AIRPORT NEIGHBOURHOODS



AIRPORT NEIGHBOURHOODS

The 2020 Master Plan is supported by more than 40 years of planning history. The first stage of new airport facilities was constructed from plans written in the 1980s that set the future direction of development at Brisbane Airport.

THE NINE NEIGHBOURHOODS ARE

1. Terminals
2. Skygate
3. Airport Central
6. Export Park
7. Da Vinci
8. Airport Industrial Park
4. Airport West
9. Airport East
5. Airport North

NINE NEIGHBOURHOODS

The organisation of the airport into definable separate neighbourhoods directly aligns with the vision of the Brisbane 2022 New World City Action Plan, which references the development of complementary neighbourhoods.

Neighbourhoods are strong complementary communities of interest where businesses located together each have the potential to derive benefits from their location in terms of shared or common services and facilities.

MANAGING EXISTING LEASES

In becoming the airport-lessee in July 1997, Brisbane Airport Corporation assumed pre-existing lessor obligations and became the head-lessee, subject to other interests in airport land, such as easements.

Although many of those contractual and other pre-existing rights have since expired, Brisbane Airport Corporation will continue to act consistently with remaining obligations or interests.

CHANGES SINCE 2014 MASTER PLAN

This Property Strategy is generally consistent with the 2014 Master Plan. The following minor adjustments have been made to clarify the way Land Use is organised at the airport:

- The on airport areas previously termed “precincts” and “sub precincts’ have now been amalgamated into a single, simpler planning layer and are known as airport neighbourhoods.
- The boundaries of those neighbourhoods now align with the boundaries of the Land Use Zones.
- Minor modifications have been made to the characteristics and outcomes sought for each neighbourhood.

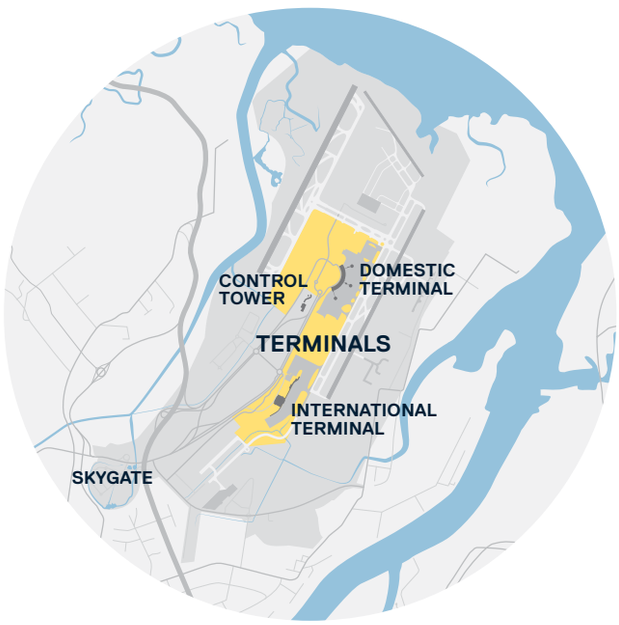
The following pages outline the unique characteristics of the nine neighbourhoods and detail significant developments delivered in each neighbourhood since the publication of the 2014 Master Plan.

AIRPORT NEIGHBOURHOODS
TERMINALS

NEIGHBOURHOOD CHARACTERISTICS

The International and Domestic Terminals are at the heart of Brisbane Airport and represent the focus of airport activity, with more than 23 million passengers using the terminals annually. With the airport operating 24/7, seven days a week, the terminals precinct is a hive of constant activity.

The perimeters of the neighbourhood are defined by the runways and major access roads of Moreton and Airport Drives. The design and buildings convey a distinctively urban Queensland character.



IMPORTANT DEVELOPMENTS OVER THE LAST FIVE YEARS

AERONAUTICAL AND TERMINAL EXPANSIONS

An ongoing and extensive investment program of expansion and improvements to the terminals is designed to provide safe and secure services while making journeys easier and more enjoyable for all.

Over the last five years, upgrade and improvement projects at the International Terminal have included the development of the departure level and retail precinct as well as expansions to terminal lounges and improvements to check-in and bag drop services.

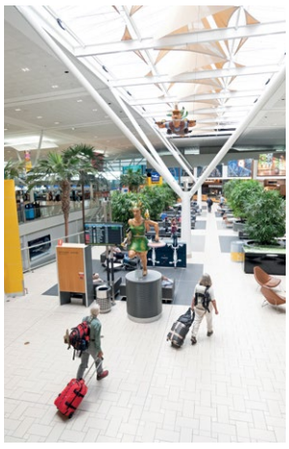
In the Domestic Terminal, changes included a baggage handling system upgrade and a redevelopment of the southern end of the terminal, including the reconfiguration and upgrading of food halls and facilities for specialist retailers.

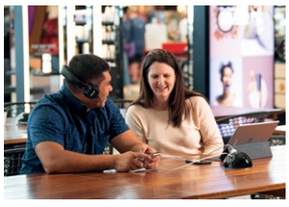
HOTELS AND CONFERENCE CENTRE

Opened in 2017, the new Brisbane Airport Hotels and Conference Centre is ideally located next to the Domestic Terminal.

The state-of-the-art meeting and conference space has been designed with the flexibility to meet the dynamic needs of conference groups large and small with a pillar-less ballroom, conference rooms, executive boardrooms, a large pre-function area, open air terrace and business centre.

The opening of the 5 star Pullman and 3.5 star Ibis hotels at the airport means a full spectrum of hotel options are now available for travellers, from quality affordable to upscale international-standard accommodation.





POSSIBLE DEVELOPMENT OVER THE NEXT FIVE YEARS

ZONING	POTENTIAL AREAS OF DEVELOPMENT	ESTIMATED GFA (SQM)	ESTIMATED ADDITIONAL EMPLOYMENT
Special Purpose Airport	Terminal upgrades, offices, aviation support facilities, ground transport facilities, retail, shops, car parks.	TBA	700

AIRPORT NEIGHBOURHOODS
SKYGATE

NEIGHBOURHOOD CHARACTERISTICS

An expansive commercial, retail and leisure offering at the entrance to the airport, Skygate has become a popular destination, with millions visiting each year to take advantage of Queensland's only 24/7 Woolworths, more than 160 speciality stores at DFO, a hotel and a golf driving range.

The latest addition, Skygate Home & Life brings more large format retailers to the already popular shopping destination.

For easy navigation, the precinct is divided into four areas, Skygate Centre, Skygate Dining, DFO and Skygate Home & Life, each supported by ample parking, transport and pedestrian pathways.

The development and landscape in Skygate celebrates the distinctive subtropical character of South East Queensland.

IMPORTANT DEVELOPMENTS OVER THE LAST FIVE YEARS

DFO EXPANSION

In 2015, the successful outlet shopping enterprise at DFO completed an award-winning expansion that saw the arrival of more than 30 new retailers, additional parking for 1,000 vehicles and alfresco dining options with five new restaurants.

The expansion also provided new commercial office space and improved facilities for pedestrians between Skygate and DFO.

SKYGATE HOME & LIFE

In a further expansion of the retail offering at the airport, 2018 saw the opening of Skygate Home & Life, a new 9,260 square metre retailing complex hosting national and international "large form" retailers including TK Maxx, Nick Scali, Pillow Talk, James Lane, Lighting Illusions, Early Settler and Deco Rug.

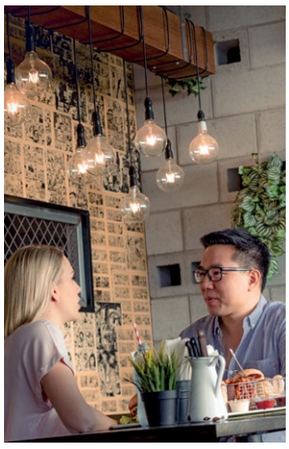
The addition of these new major retailers will continue to create jobs on the airport as well as further boosting Skygate's reputation as a unique shopping destination for the people of South East Queensland and further afield.

HANSON CONSTRUCTION AND BUILDING MATERIALS

Opened in 2016, Skygate is now home to a large scale office, laboratory and showroom facility for Hanson Construction and Building Materials.

Demonstrating the flexibility of the location, the premises include state-of-the-art fully automated robotic testing equipment and a call centre managing national services.

Part of the Heidelberg Cement group Hanson, one of Australia's leading suppliers of heavy building materials to the construction industry, chose the location based on excellent connectivity to road networks and tunnels in all directions and good public transport options.



POSSIBLE DEVELOPMENT OVER THE NEXT FIVE YEARS

ZONING	POTENTIAL AREAS OF DEVELOPMENT	ESTIMATED GFA (SQM)	ESTIMATED ADDITIONAL EMPLOYMENT
Major Centre	Skygate Home & Life (Stage 2), offices, retail, public transport facility.	11,500	650

AIRPORT NEIGHBOURHOODS
AIRPORT CENTRAL

NEIGHBOURHOOD CHARACTERISTICS

Already home to the BNE Service Centre and soon to be opened BNE Auto Mall, the Airport Central neighbourhood attracts airport visitors as well as the greater Brisbane community.

Airport Central is surrounded by the airport's major transport linkages, Moreton and Airport Drives and strategically located between the terminals and the Central Parking Area.

The high profile location, expansive land parcels and the flexibility offered by the greenfield environment present a unique opportunity to create distinctive and memorable addresses within this precinct.

IMPORTANT DEVELOPMENTS OVER THE LAST FIVE YEARS

THE BNE SERVICE CENTRE

First opened to the public in 2014, this $12 million project has grown to now include a centrally located petrol station, supporting the 24/7 operation of the airport.

Since opening, the centre has created more than 200 new full and part-time jobs and includes a 24-hr Shell petrol station, a Coles Express and a 24-hr McDonald's restaurant.

BNE AUTO MALL

Construction has now commenced on Brisbane Airport's innovative new Auto Mall. Scheduled to open pending final approval in 2021, the BNE Auto Mall will revolutionise the way people buy and appreciate motor vehicles.

Situated on 51.3 hectares within Airport Central, this $300 million development is the first of its type in Australia and the airport's largest non-aviation related development to date.

An exclusive and state of the art home to automotive retailers, experience centres, exhibition and conference facilities, hotels, event areas, commercial offices and associated amenities, the unique location on Brisbane Airport offers unrivalled access and the potential for 24/7 operations.

Central to the facility will be a purpose-built performance track which can be divided as needed into a series of independent operational modules or deployed as a 2.5 kilometre all encompassing track to assist with driver training, vehicle engineering, safety testing and development, as well as a unique test-driving environment for motor retailers and the public alike.

When fully operational, it is envisaged the Auto Mall will become a major visitor attraction and vibrant commercial hub for the automotive industry, creating new jobs and acting as an attractive meeting place and conference venue for allied industries and motoring enthusiasts. More details on the construction history and current progress of the BNE Auto Mall can be found at the end of this chapter.

POSSIBLE DEVELOPMENT OVER THE NEXT FIVE YEARS

ZONING	POTENTIAL AREAS OF DEVELOPMENT	ESTIMATED GFA (SQM)	ESTIMATED ADDITIONAL EMPLOYMENT
Mixed Use	Dealerships, performance track, offices, shops, event entertainment facility, food and beverage outlet.	75,000	1,500

AIRPORT NEIGHBOURHOODS
EXPORT PARK

NEIGHBOURHOOD CHARACTERISTICS

Export Park is a well-established, reputable industrial district. Organisations located at Export Park benefit from direct linkages to South East Queensland's dynamic transportation network, with many locations also benefiting from prime airside access.

Developments in Export Park are diverse in use and form, with large scale warehouses, freight handling and distribution centres, catering, wholesaling, and storage facilities.

IMPORTANT DEVELOPMENTS OVER THE LAST FIVE YEARS

HAYMANS ELECTRICAL

Haymans Electrical is part of MM Electrical Merchandising (MMEM); a private, family owned electrical wholesaler, with more than 250 service centres throughout Australia.

In 2016, Haymans opened their offices and purpose built warehouse at Export Park to be the flagship of their facilities nationwide and will be the largest electrical wholesale branch in Australia.

The 5,600 square metre facility for Haymans Electrical took less than 11 months to complete. Haymans chose the airport for its location, amenity and development flexibility.

MIELE

Brisbane Airport's property team worked with Miele to deliver a 7,065 square metre tailored warehouse, office, workshop and showroom facility consolidating all administration, logistics and servicing functions into the one building.

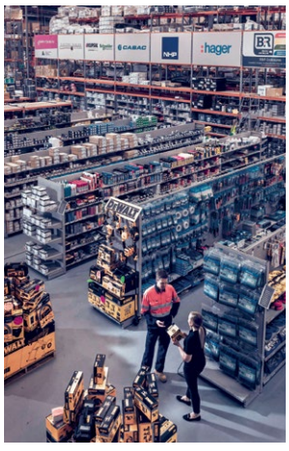
With triple the warehouse capacity and opportunities for the future expansion necessary to cater to forecasted growth in the Queensland market. The larger facility also complements the new Miele experience centre at Newstead.

Widely accepted as a premium supplier of high-end domestic appliances and professional equipment, Miele chose Brisbane Airport because of access to road networks and the convenience of a 24/7 Woolworths, Jetts Fitness and retail, dining and leisure options only a few minutes away.

AIRPORT FREIGHT CENTRE 4

This 8,887 square metre industrial development is designed for logistics and distribution businesses seeking direct airside access within the warehouse facility.

The warehouse is currently home to leading airline caterer Gate Gourmet who upgraded to the larger premises following continued growth at a neighbouring airport facility.



POSSIBLE DEVELOPMENT OVER THE NEXT FIVE YEARS

ZONING	POTENTIAL AREAS OF DEVELOPMENT	ESTIMATED GFA (SQM)	ESTIMATED ADDITIONAL EMPLOYMENT
Industry	Warehousing, wholesale supply, offices, food and beverage outlets.	55,000	500

AIRPORT NEIGHBOURHOODS
DA VINCI

NEIGHBOURHOOD CHARACTERISTICS

The Da Vinci neighbourhood is located at the southern end of the airport and is an attractive location for a diverse range of industrial and commercial businesses.

It accommodates corporate offices, specialised education and training centres focused on aeronautical and related industries, mixed industry and business, warehouses, distribution, and storage and depot facilities in a high amenity, business park environment.

The Da Vinci neighbourhood offers tenants good accessibility, with facilities and amenities to meet the needs of workers, students and visitors. It provides a well-defined urban landscape environment in a parkland setting. It benefits from a clear gateway that creates a distinctive local address for development.

IMPORTANT DEVELOPMENTS OVER THE LAST FIVE YEARS

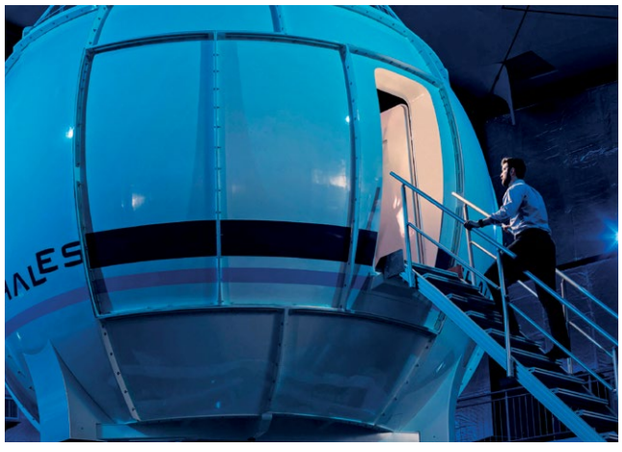
AVIATION AUSTRALIA

Following continued business growth, a new specialised education and training facility was constructed for Aviation Australia and LifeFlight, able to accommodate an additional 500 students, allowing Aviation Australia to continue to improve the services offered to the aviation industry and meeting domestic and international customer demand.

The new facility allows the provision of world-class training in aviation related disciplines including engineering, cabin crew, aviation security, pilot training and ground operations.

It also features a co-located Thales LifeFlight Simulation Centre with Australia's first Augusta Westland 139 helicopter full flight simulator to provide multi-mission training, including training for emergency helicopter pilots and crew.

Overall, the new facility provides a high-quality learning environment for students with 20 lecture rooms, a technical training centre, corporate offices and a cafe.



POSSIBLE DEVELOPMENT OVER THE NEXT FIVE YEARS

ZONING	POTENTIAL AREAS OF DEVELOPMENT	ESTIMATED GFA (SQM)	ESTIMATED ADDITIONAL EMPLOYMENT
Mixed Use	Warehouse, office, educational establishment.	16,000	220

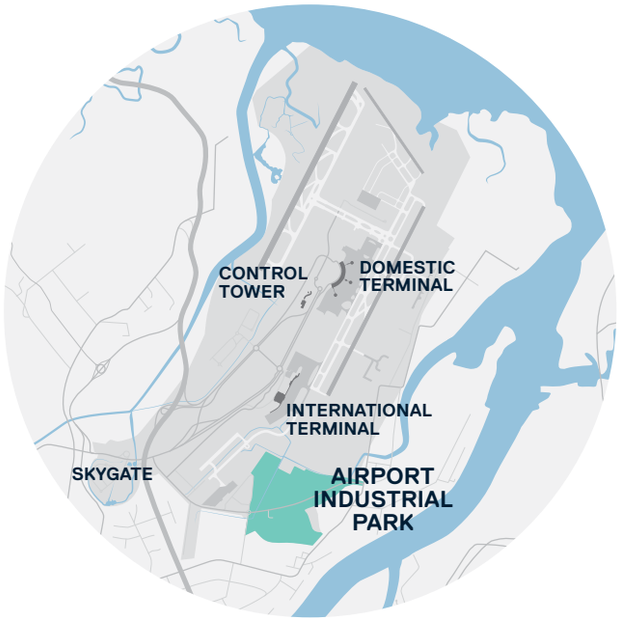
AIRPORT NEIGHBOURHOODS
AIRPORT INDUSTRIAL PARK

NEIGHBOURHOOD CHARACTERISTICS

Airport Industrial Park can be seen as a relatively blank canvas, offering opportunities for industrial development. It currently accommodates a range of warehousing, storage and distribution operations.

Opportunities exist across the 100 hectare site for the establishment of a wider range of uses, including those that benefit from the adjacency of the neighbourhood to the specialised education centres within the Da Vinci precinct, and the current large scale industrial and aviation-related uses within Airport East.

The neighbourhood also benefits from proximity to the southern end of the current runway with the potential for airside access and potential linkages to the Pinkenbah/ Eagle Farm Industrial areas.



IMPORTANT DEVELOPMENTS OVER THE LAST FIVE YEARS

LAND IMPROVEMENT

In anticipation of future requirements, improvement works have been conducted on an area of over 25 hectares of land at Airport Industrial Park.

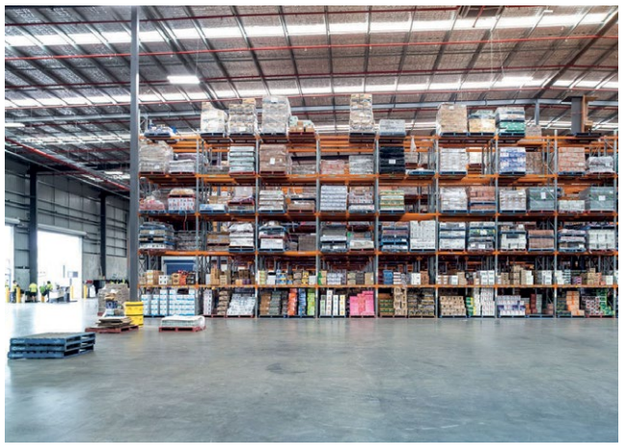
QUALITY FOOD AND BEVERAGES

Airport Industrial Park is home to the new 11,260 square metre distribution centre for Quality Food and Beverages.

Quality Food and Beverages' reasons for choosing Brisbane Airport included a combination of development flexibility, future expansion options and the availability of local amenities, together making the location an attractive option.

Quality Food Services is a wholesale supplier of food solutions to schools, pubs, clubs, cafes, hospitals and retailers, servicing Brisbane, Gold Coast, Sunshine Coast and Northern NSW. It stocks over 5,000 product lines including dry, frozen and chiller foods, beverages, packaging and disposables.

The new premises has allowed the company to automate much of its logistical activities and offer the potential to accommodate growth within the existing building and beyond.



POSSIBLE DEVELOPMENT OVER THE NEXT FIVE YEARS

ZONING	POTENTIAL AREAS OF DEVELOPMENT	ESTIMATED GFA (SQM)	ESTIMATED ADDITIONAL EMPLOYMENT
Industry	Warehousing, animal keeping, sport and recreation, education facility.	75,000	1,000

AIRPORT NEIGHBOURHOODS
AIRPORT WEST

NEIGHBOURHOOD CHARACTERISTICS

Airport West forms part of an important environmental buffer to Kedron Brook, linking Brisbane Airport to Moreton Bay.

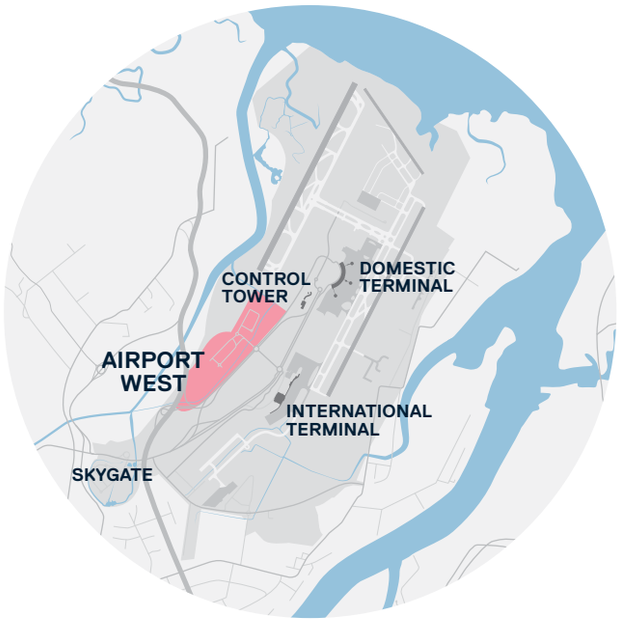
A comprehensive environmental management strategy is in place to uphold the values of the buffer area, including a thorough impact assessment of any adjacent uses.

Considerate of the restrictions of good environmental management and managing the constraints of being located under the flight path for the new runway, the area is most commonly used for low impact, remote support facilities, including vehicle parking, maintenance and storage.

All of these services benefit from the precinct's central location and proximity to Moreton Drive, the airport's busiest transport corridor.

The established character of the environment in Airport West has been protected and enhanced, to reinforce the distinctive bayside setting of the airport.

Development areas integrate with the landscape, framing the extensive network of channels that are a key part of the water management system.



IMPORTANT DEVELOPMENTS OVER THE LAST FIVE YEARS

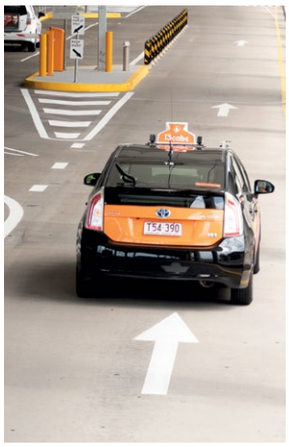
PARKING EXPANSIONS

The last five years has seen a number of parking projects at the precinct's Central Parking Area, responding to passenger demand for new facilities.

Developments have included the $31 million Airpark project and expansion of the airport staff car park.

BUS CHARGING FACILITY

To accompany the introduction of the airport's new electric landside bus fleet, a purpose-built facility has been developed devoted to the parking, maintenance and charging of the vehicles in Airport West.



POSSIBLE DEVELOPMENT OVER THE NEXT FIVE YEARS

ZONING	POTENTIAL AREAS OF DEVELOPMENT	ESTIMATED GFA (SQM)	ESTIMATED ADDITIONAL EMPLOYMENT
Mixed Use	Car park, utility installation, public transport facility, transport depot.	n/a	n/a

AIRPORT NEIGHBOURHOODS
AIRPORT EAST

NEIGHBOURHOOD CHARACTERISTICS

Airport East is currently home to aeronautical businesses, accommodating general aviation, aircraft maintenance, logistics, freight businesses, warehouses, distribution centres, and storage and depot facilities.

These uses each benefit from excellent airside access and links to multiple transport modes.

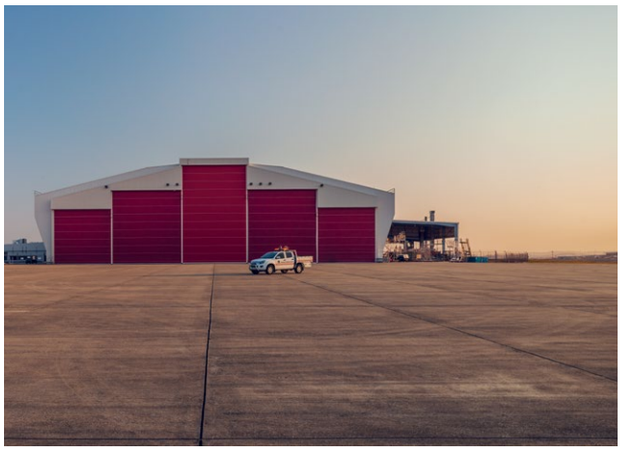
The location also supports the clean working environment needed for sensitive tasks such as aircraft maintenance and testing.

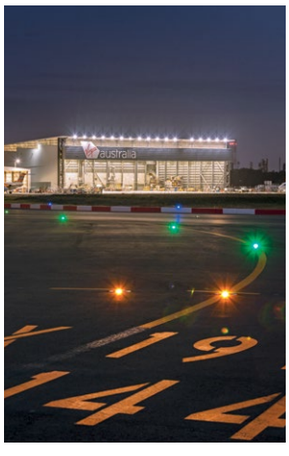
IMPORTANT DEVELOPMENTS OVER THE LAST FIVE YEARS

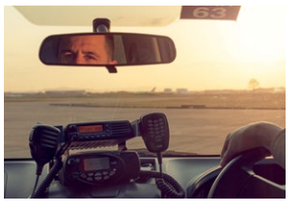
TAXIWAY UPGRADE

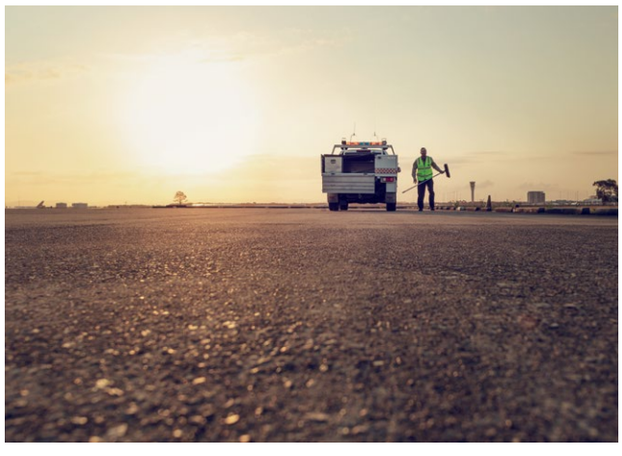
To support ongoing growth, Taxiway 'Hotel' was upgraded to 'Code E' at a cost of more than $25 million.

This upgrade allows larger aircraft to access the aviation support facilities in this neighbourhood.









POSSIBLE DEVELOPMENT OVER THE NEXT FIVE YEARS

ZONING	POTENTIAL AREAS OF DEVELOPMENT	ESTIMATED GFA (SQM)	ESTIMATED ADDITIONAL EMPLOYMENT
Industry	Aircraft maintenance facility, office, car park, storage premises.	45,000	275

AIRPORT NEIGHBOURHOODS
AIRPORT NORTH

NEIGHBOURHOOD CHARACTERISTICS

Airport North is located between Brisbane Airport's current and new runways and represents the ideal destination for a logistics hub, servicing industrial and aviation-related businesses seeking development opportunities with direct airside access.

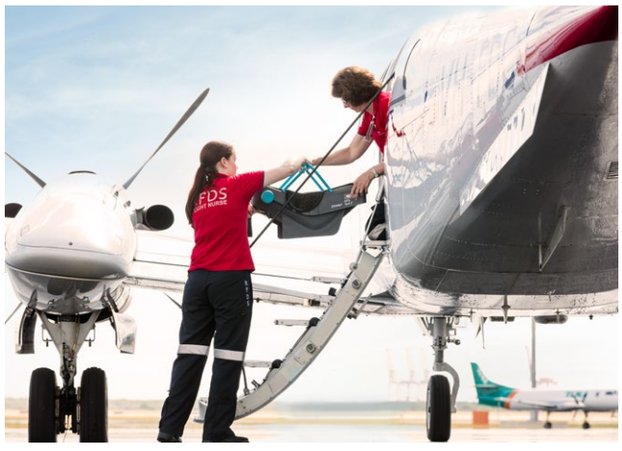
With a less industrial focus, Airport North provides operational areas for smaller, charter carriers and service providers, including the Royal Flying Doctor Service.

The area is also popular with aircraft enthusiasts, providing the airport's best vantage point for plane spotting. As the airport expands, Brisbane Airport Corporation will consider the needs of this dedicated fraternity.

IMPORTANT DEVELOPMENTS OVER THE LAST FIVE YEARS

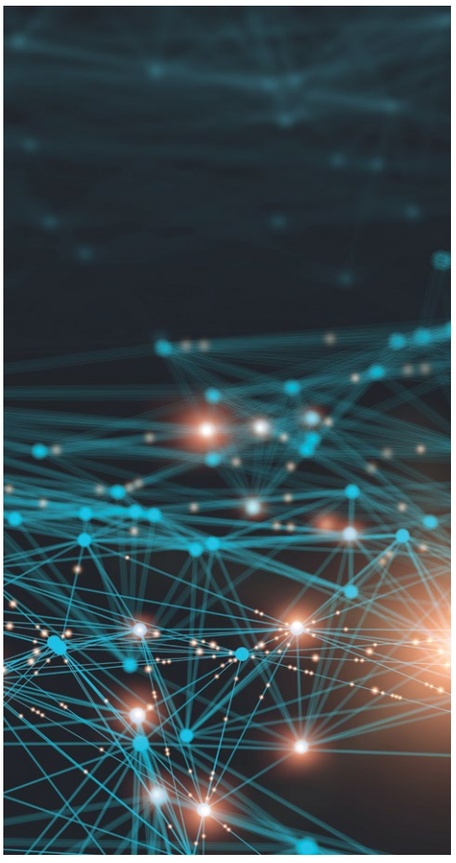
GENERAL AVIATION TERMINAL UPGRADE

The General Aviation Terminal received a $5 million upgrade in 2016. Works included an internal refurbishment of the premises as well as exterior modernisation and the surcharging for the apron expansion.



POSSIBLE DEVELOPMENT OVER THE NEXT FIVE YEARS

ZONING	POTENTIAL AREAS OF DEVELOPMENT	ESTIMATED GFA (SQM)	ESTIMATED ADDITIONAL EMPLOYMENT
Special Purpose Airport	Aviation activity, aviation support facilities, health care services.	13,000	130



FLEXIBILITY IN FUTURE DEVELOPMENT

In line with planning reforms instituted by the Queensland Government, the review of future and proposed developments at Brisbane Airport is subject to a systematic process designed to ensure compliance with all relevant legislation.

RESPONDING TO MARKET DEMAND

To maintain market relevance and flexibility into the medium and long-term future, the intended possible uses within each zoning should not be regarded as an exclusive list of the type of activities that may be permitted for that zoning.

Instead, on a case-by-case basis, giving consideration to compliance requirements, some land uses not specified in a particular airport neighbourhood or land use zoning may be permitted, following a performance-based planning assessment to consider the extent to which the proposal is compatible with the overall outcomes desired for the neighbourhood and the development objectives of the Master Plan.

With the advance of technology, opportunities may also emerge for new types of developments not considered in this strategy that support the economic and employment growth of the region. As such, and to maintain market relevance and flexibility into the medium and long-term future, the lists of potential developments for each neighbourhood should not be interpreted as exclusive or limiting.

INTERIM USES

Subject to fulfilling appropriate criteria, in some instances, Brisbane Airport Corporation may also consider opportunities for interim land uses. Interim uses will be restricted to short-term leases or developments with an option of extending the period only if the aeronautical or other intended long-term land use of the area is not immediately required.

Interim uses will focus on activities requiring minimal infrastructure support and/or where buildings will be of a low key demountable or transportable design. Uses listed as suitable in any of the zones may be considered as possible interim uses.

ENSURING COMPLIANCE

To guarantee that proposals for future development of Brisbane Airport are sustainable and designed to minimise environmental impacts, a rigorous assessment process ensures that all proposals comply with the Airports (Building Control) Regulations 1996.

BAC carries out planning and environmental impact assessments on all new development proposals. This process is specifically designed to ensure that the 2020 Master Plan, as well as the Brisbane Airport Environment Strategy, the Airports Act 1996 and all other legislative requirements are considered before proceeding with any development proposal.

In line with the Queensland Government's planning reforms and associated new regulations introduced in 2017, BAC seeks to retain some flexibility in assessing new proposals, with performance-based planning and merit-based proposals ensuring that 'best fit' land uses, and developments are not excluded, or overlooked.

BNE AUTO MALL

Scheduled to open in 2021, pending final approval, the innovative $300 million BNE Auto Mall development will create a unique new benchmark tourist destination for Queensland and Australia. The BNE Auto Mall will be a multi-purpose auto retailing hub that will see flagship dealers sitting alongside hotels, exhibitions and conferences, hotels, and offices. The development will create more than 300 new jobs.

A major attraction and distinctive feature of the BNE Auto Mall will be a 2.5 kilometre performance track designed to be used for test driving, driver training, manufacturer launch events, vehicle development and corporate events. The design approach to the precinct has placed the track at the heart of the precinct, as a focal point of the development.

The development environment of the BNE Auto Mall will be characterised by a distinctive Queensland feel, high quality and distinctive architecture, and a people orientated and subtropical public realm. Developments will be encouraged to embrace innovation and adopt ecologically sustainable development initiatives.

CONSTRUCTION HISTORY

The first phase of construction commenced in 2017 with the clearing of casuarina plantations and the filling and surcharging of the project site on 38.5 hectares of land between Moreton and Airport Drives, close to the International Terminal. All cleared trees have been mulched for reuse in the development.

To manage the environmental impacts of construction, an Environmental Assessment Report detailed ongoing environmental monitoring commitments to be undertaken during the construction phase. The report also included details of fauna assessments, surface and groundwater monitoring, noise and vibration monitoring, sediment and erosion control, and cultural heritage.

The Environmental Assessment Report was endorsed by the former Department of Infrastructure and Regional Development (DIRD).

CURRENT STATUS

Further periods of earthworks will continue until 2021 with the construction of roads, services, landscaping, and performance track, and building construction. Remaining timelines of the BNE Auto Mall project are:

2020: Complete construction of internal roads and services

2021: Develop initial dealerships and brand experience centres

2021: Construction of the performance track and track operation centre

08

AVIATION STRATEGY


A6-EDP
QANTAS

OVERVIEW

The Aviation Strategy has been designed to develop and maintain aviation infrastructure that provides the highest standard of efficient, amenable, safe and secure facilities and services, while retaining the flexibility to adapt to changes in demand or technology.

Ongoing extensive engagement with aviation partners, government and industry will continue to provide Brisbane Airport with an up-to date understanding of the challenges and opportunities of the current and future operating environment to ensure future plans allow for appropriate aviation developments.

CHAPTER STRUCTURE

The Aviation Strategy is divided into three parts. The introduction includes aviation forecasts and a discussion around influencing factors, historical performance and the methodology used to produce the forecast data. That data forms the basis for decisions on long term strategy.

Part One of the Aviation Strategy outlines the key initiatives undertaken to improve terminal services and airfield operations since the publication of the 2014 Master Plan. The terminal strategy considers future projects on a precinct by precinct terminal strategy basis and also includes a long-term plan for aviation support. Each of the proposed new initiatives are underpinned by robust guiding principles. Part One also explains the operation of the current airfield and the changes that will take place following the opening of the new runway.

Part Two of the Aviation Strategy provides a level of detail and assurance around airspace and the safeguarding of the airport which is synonymous with previous Brisbane Airport Master Plans. Consideration is given to all the measures in place to support the safe and efficient operation of the new parallel runway system. Part Two also details the development of the 2020 Master Plan Australian Noise Exposure Forecast (ANEF). The ANEF assists government agencies with land-use planning decisions and decisions on future land use.

RESPONDING TO GROWTH

- The aviation and passenger forecasts commissioned for this Master Plan predict an increase in passenger movements of more than double the current level of movements.
- Aircraft movement forecasts, including general aviation movements, are forecast to increase to almost 380,000 annual movements by 2040. Robust long-term aviation capacity planning and extensive consultation are essential to ensure the continued provision of the capacity required to meet increasing demand.

The Terminal Development Strategy outlines how Brisbane Airport Corporation will respond to this growth, including the expansion of existing International and Domestic Terminals, as well as identification of areas for new terminal expansion(s).

The strategy for terminal development is intentionally flexible to allow response to changing drivers in the future, including aircraft fleet design and changes to legislative requirements. The Terminal Development Strategy presented outlines development strategies for the next five years, as well as a potential development pathway in the longer term (20+ years).

Aviation support facilities and services have been considered for both existing operations and future requirements. New precincts are identified, including potential future sites for JUHI expansion. In recognition of the importance of these services, a potential airside road connection which will connect the existing terminal development with future terminal developments adjoining the new runway is also identified.

AIRPORT SAFEGUARDING

Airspace protection is a critical element of airport operations and Brisbane Airport Corporation's strategies for future proofing the Airport's airspace are outlined in part two of this strategy, including airspace protection surfaces. An explanation of existing policies as well as description of Brisbane Airport's future flight paths is included to provide clarity with regard to operations on Brisbane's new runway.

Noise management remains of utmost important to Brisbane Airport Corporation and an updated ANEF is also presented in this chapter, alongside an overview of Brisbane Airport Corporation's noise management strategies and their alignment with global best practice.


QANTAS
Spirit of Australia
BOEING 737-800

BRISBANE AIRPORT AVIATION AT A GLANCE

Operating 24 hours a day, seven days a week, Brisbane Airport has two major terminals accommodating 33 airlines flying to 84 domestic and international destinations.

ANNUAL PASSENGER MOVEMENTS

CURRENT ANNUAL INTERNATIONAL PASSENGERS

5,900,000

CURRENT ANNUAL DOMESTIC PASSENGERS

17,500,000

CURRENT TOTAL ANNUAL PASSENGERS

23,400,000

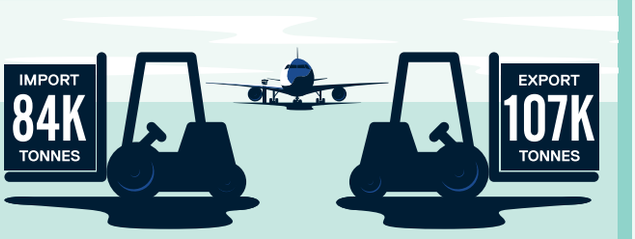
FORECAST TOTAL ANNUAL PASSENGERS BY 2040

51,500,000

33
AIRLINES

84
DESTINATIONS

INTERNATIONAL & DOMESTIC FREIGHT



SKYTRAX WORLD AIRPORT AWARDS

VOTED 18TH BEST AIRPORT IN THE WORLD

2019 Skytrax World Airport Awards

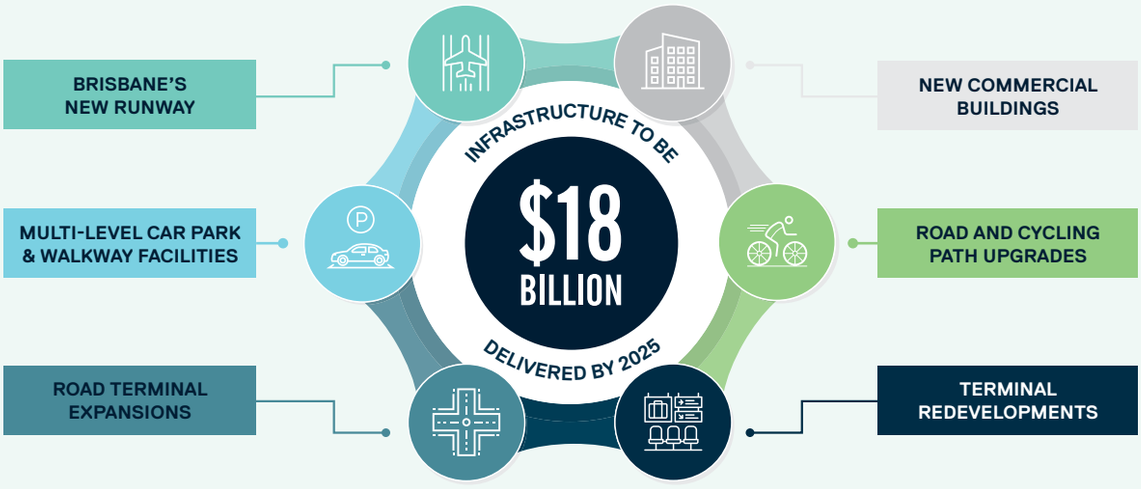
FUTURE READY INFRASTRUCTURE

BRISBANE AIRPORT CORPORATION INVESTED IN TERMINAL FACILITIES

$354 MILLION ACROSS **297 PROJECTS**

INCLUDING

$135M	$13M	$15M
International Terminal Concourse and Apron expansion	International Terminal Self-Service Check-Ins and Bag Drops upgrade	Domestic Terminal retail configuration and upgrades



TOP GROWTH MARKETS - 2018

INTERNATIONAL

CHINA	⬆ +20%
INDIA	⬆ +14.7%
KOREA	⬆ +13.9%
TAIWAN	⬆ +10.2%
UK	⬆ +7.7%

DOMESTIC

PROSERPINE	⬆ +19.4%
MACKAY	⬆ +6.3%
CANBERRA	⬆ +5.5%
SYDNEY	⬆ +2.2%
MELBOURNE	⬆ +1.7%

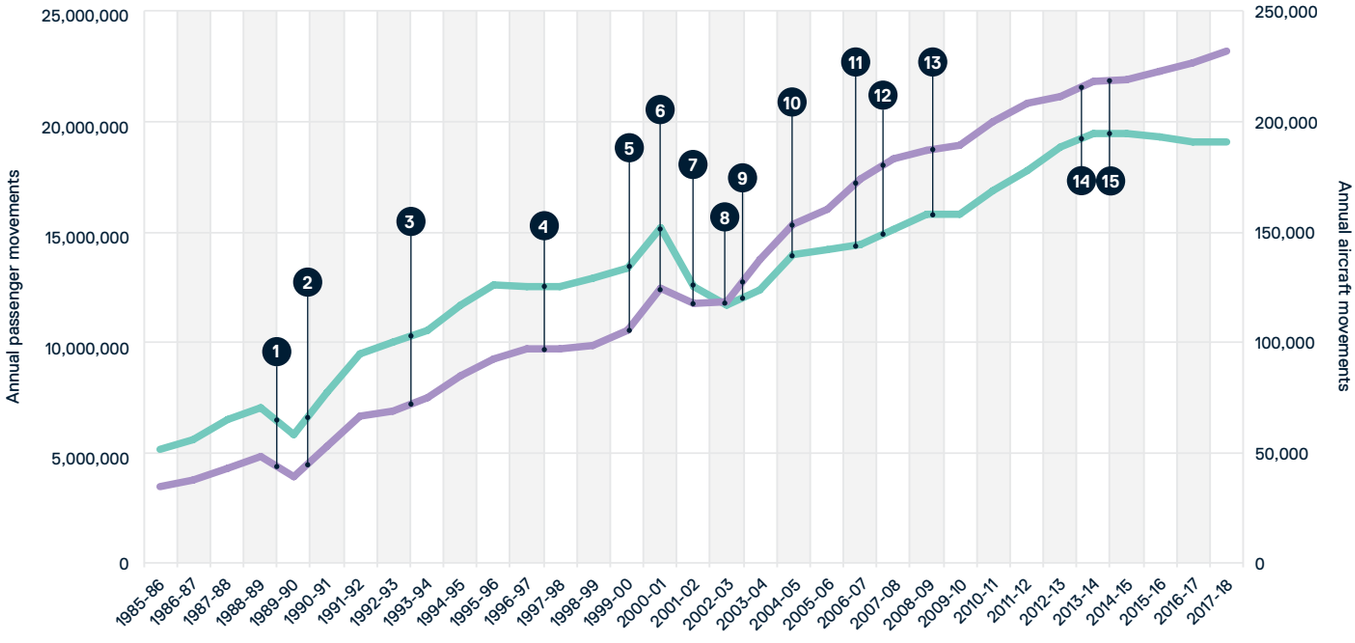
HISTORY OF AIRCRAFT AND PASSENGER MOVEMENTS

In FY2013/14, Brisbane Airport handled almost 195,000 RPT aircraft movements and processed almost 22 million passengers. In FY2017/18, Regular Passenger Transport (RPT) aircraft movements decreased to approximately 186,500 annual movements while passengers increased to more than 23.4 million.

This decrease in aircraft movements is a result of a reduction in small aircraft servicing resource ports in addition to the introduction of larger aircraft servicing international routes.

The graph shown below presents the historical growth in passenger travel and aircraft movements through Brisbane Airport since FY1985/86. This growth has been impacted by many external factors, including global and national events, as well as introduction (and removal) or airlines and aircraft types. Overall, Brisbane Airport has seen steady growth in its history.

HISTORICAL PASSENGER AND AIRCRAFT MOVEMENTS AT BRISBANE AIRPORT



Aircraft movements

Passenger movements

1. AUSTRALIAN PILOTS' DISPUTE
2. OECD RECESSION
3. AUSTRALIAN AIRLINE DEREGULATION
4. BRISBANE AIRPORT CORPORATION AQUIRED THE AIRPORT LEASE
5. VIRGIN BLUE LAUNCHED
6. 9/11 ATTACK
7. ANSETT CEASED OPERATIONS
8. JETSTAR ESTABLISHED
9. SARS OUTBREAK
10. A380 LANDED IN BRISBANE
11. TIGER AUSTRALIA ESTABLISHED
12. GLOBAL FINANCIAL CRISIS
13. SWINE FLU PANDEMIC
14. END OF MINING BOOM
15. G20 HELD IN BRISBANE

NEW SERVICES SINCE 2014

As Queensland continues to grow as a major business and tourism destination, it is anticipated that international airlines will continue to increase their operations through Brisbane Airport. Over the last five years, a number of airlines have either commenced operations, increased service frequency or up-gauged aircraft for operations into Brisbane Airport.

The timeline opposite outlines the changes to services at Brisbane Airport since the last Master Plan.

YEAR (FY)	NEW SERVICES ADDED SINCE 2014
2014	Malaysia Airlines commenced daily services Garuda Airlines re-launch Emirates upgrade to A380 Jetstar service to Denpasar launched Tigerair based two aircraft at Brisbane Airport Philippine Airlines re-launch
2015	Jetstar Honolulu service launched Virgin Australia Los Angeles to daily JetGo launched domestic services
2016	Air Canada launched China Southern Airlines to daily Qantas Tokyo (Narita) launched Singapore Airlines 21 to 24 weekly services Etihad Airways non-stop to Abu Dhabi Qantas Christchurch launched Fly Corporate launched domestic services
2017	China Eastern Airlines launched Malindo Air launched Qantas Port Moresby launched Tigerair based third aircraft at Brisbane Airport
2018	Singapore Airlines 24 to 28 weekly services Hainan Airlines launched Third daily Emirates Dubai service Malaysia Airlines re-launch Philippine Airlines non-stop to Manila Cathay Pacific de-tag from Cairns (seasonal) Qantas Auckland aircraft upgrade Jetstar started a three times weekly service to Uluru in August 2018
2019	Air New Zealand Queenstown and Wellington launched Philippine Airlines to five services a week China Airlines daily year-round Samoa Airways launched Singapore Airlines aircraft upgrade

AVIATION INDUSTRY CHANGES

Since the 2014 Master Plan, there has been significant changes in the aviation industry, including an evolution in aircraft manufacturing and airline fleet strategies shifting towards lower capacity long-range aircraft resulting in Airbus announcing it will end production of the A380 by February 2021.

Several existing airline partners at Brisbane Airport have recently commenced (or plan to commence) longer-range narrow body (A321neo/LR variants) services. The ability of airline customers to operate 'long, thin sectors' with these aircraft means that routes within eight hours flying time previously deemed unprofitable or unsustainable can now be considered. This is important given the emerging middle class in the ASEAN market.

The increasing development and implementation of ultra-long haul services will also impact Brisbane Airport in the future.

Ultra-long haul services from Brisbane Airport could provide non-stop services to the east coast of the USA and Europe. This strategy, also referred to as 'hub-busting', would open direct access between new global markets and Brisbane Airport.

The new 'Middle of the Market' (MoM) aircraft has the potential to relieve congestion on routes between Brisbane, Melbourne, and Sydney airports in the short-term, and is also potentially able to service short to medium-haul ASEAN destinations.

The aviation industry is ever-changing, and Brisbane Airport will continue to remain engaged with airline stakeholders in order to understand future fleet plans and route strategies. In any response to airline fleet strategies, Brisbane Airport will continue to play a role as a key hub for passengers travelling from regional parts of Queensland and northern New South Wales to destinations further abroad.

2020 MASTER PLAN FORECAST

At Brisbane Airport, forecasts of passengers, aircraft movements and air freight volumes provide the fundamental basis for airport planning, informing the strategies for terminal and airfield development across the airport. Air traffic forecasts have been independently prepared to ensure that the planning context for 2020 Master Plan is robust and provides confidence for Brisbane Airport stakeholders.

2020 MASTER PLAN FORECASTS

At Brisbane Airport, forecasts of passengers, aircraft movements and air freight volumes provide the fundamental basis for airport planning, informing the strategies for terminal and airfield development across the airport.

Air traffic forecasts have been independently prepared to ensure that the planning context for 2020 Master Plan is robust and provides confidence for Brisbane Airport stakeholders.

Brisbane Airport Corporation has engaged Tourism Futures International (TFI) since 1997 to undertake annual and peak demand forecasts. These forecasts are a key input for internal budget and business processes, overall airport master planning, major aviation facility development and analysis of aircraft noise metrics for Brisbane Airport. In 2019, Brisbane Airport engaged TFI to update its 20-year traffic forecasts for the 2020 Master Plan.

FACTORS AFFECTING THE DECISION TO TRAVEL

The growth of air travel is affected by a range of different factors including:

- The incomes of travellers and levels of consumer confidence.
- The competitiveness (quality, product attributes) of destinations compared to alternative choices.
- The frequency, reliability and quality of services and aircraft.
- Tourism promotion by governments, airlines and industry bodies.
- Consumer trends and available time for travel.
- The process of air travel and the ground component of travel.
- Perceived threats including war and terrorism or the emergence of pandemics such as SARS or avian influenza.

Taking these variable factors into account, a number of approaches have been used in constructing the forecasts that underpin this Master Plan. TFI has prepared air traffic forecasts for Brisbane Airport based on performance and assumed driver assumptions, prepared using data and assumptions available in late-2018/early-2019.

REVIEW MARKETS AND ESTABLISH TREND GROWTH RATES FOR BRISBANE AIRPORT TRAFFIC

REVIEW STUDIES (MACRO LEVEL COMPARED TO A MICRO LEVEL) TO ESTABLISH RELATIONSHIPS BETWEEN TRAFFIC DRIVERS

The 'macro' approach establishes relationships between aggregate passenger numbers for Brisbane Airport and economic factors such as Australian and/or organisation for economic co-operation and development GDP, as well as identifying specific markets for major tourism generating countries and/or regions.

The 'micro' approach provides an additional perspective on growth and is more responsive to developments in specific regions (e.g. the Asian economic crisis). From previous research and comparable studies within Australia and overseas, estimates of various elasticities have been established, mainly for income and fares.

ESTABLISH THE 'REASONABLENESS' OF THE FORECASTS BY REVIEWING OTHER LONG-TERM FORECASTS AND BENCHMARKING OTHER AIRPORTS

GENERATE ANNUAL AND PEAK HOUR PASSENGER AND AIRCRAFT MOVEMENT FORECASTS

MASTER PLAN FORECASTS APPROACH

The approach adopted by TFI in preparing the Brisbane Airport forecasts included consideration of the following;

- Segmentation of Brisbane Airport's international and domestic markets to assess the significance of traffic drivers.
- A review of the traffic history available for Brisbane Airport and an assessment of statistical trends. TFI reviews various periods over FY1984/85 to FY2017/18 to assess correlations and impacts of significant events.
- A review and analysis of the general aviation and business environment and current airline schedules. This assists in the development of capacity assumptions and identification of qualitative factors that might influence traffic outcomes.
- The development and updating of models - macro, micro (segment), econometric and time series - linking drivers and traffic.
- A review of 'official' tourism forecasts in Australia and elsewhere.
- A review of major airline fleet strategies and forward orders for new airframes.

KEY DRIVERS FOR PASSENGER MARKET SEGMENTS

INTERNATIONAL TRAVEL BY RESIDENTS

- GSP for Queensland
- Trade Weighted Index (TWI)
- Costs including airfares and other travel costs
- Airline capacity

INTERNATIONAL VISITOR TRAVEL TO BRISBANE

- Incomes per capita for markets (aggregate model uses OECD GDP)
- TWI
- Costs including airfares and other travel costs
- Airline capacity

INTERSTATE MARKET

- Australian GDP and Queensland GSP
- Domestic travel costs
- TWI
- International travel by Queensland residents and overseas visitors
- Domestic airline capacity
- Other factors that can have an influence include consumer confidence, housing prices and stock prices which can have an impact on wealth and travel

INTRASTATE MARKET

- Queensland GSP
- Queensland population
- Travel costs
- Mining employment and construction activity in Queensland

ANNUAL PASSENGER MOVEMENTS FORECAST

During the 20-year period of this Master Plan, passenger growth is forecast to more than double, growing from 23.4 million passengers in FY2017/18 to over 51.5 million annual passengers by FY2039/40.

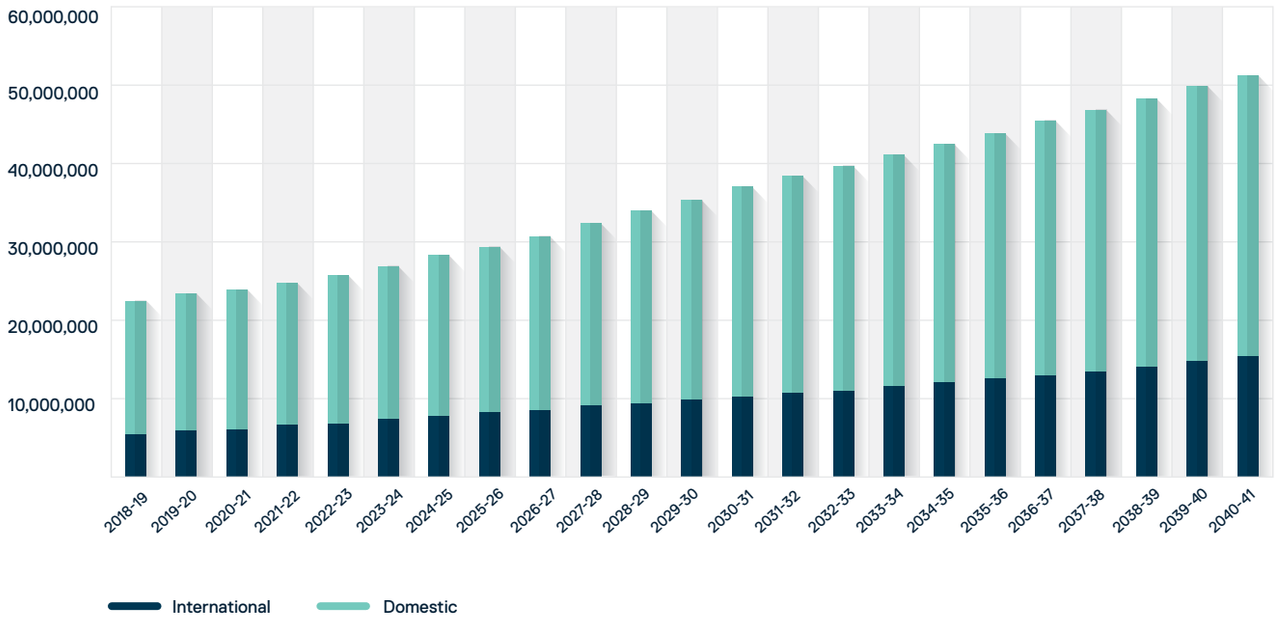
Domestic passengers are expected to grow from 17.5 million annual passengers to 36 million annual passengers by FY2039/40. International passengers are forecast to grow from 5.9 million annual passengers to 15.5 annual passengers over the same period.

New runway capacity in Brisbane (from 2020), Melbourne (between 2022 and 2024) and the second Sydney airport (from 2026) is expected to stimulate domestic traffic growth by providing peak slots in Australia's major east coast airports.

Combined with likely new aircraft deliveries, this will provide a unique opportunity for the airlines to promote additional growth from FY2020/26. Average growth is forecast to increase for the period to FY2028/29 as a result of increased domestic airport capacity on the Australian east coast.

In the long term, the proportion of domestic to international passengers is expected to evolve, with a slight increase in share of international passengers expected. This will result in an increase of international passengers from current levels of approximately 25 per cent to 30 per cent of passenger throughput by FY2039/40.

ANNUAL PASSENGER MOVEMENTS FORECAST



ANNUAL AIRCRAFT MOVEMENTS FORECAST

Annual aircraft movements at Brisbane Airport are forecast to increase significantly during the planning horizon, with an increase from over 213,000 to almost 380,000 movements in FY2039/40.

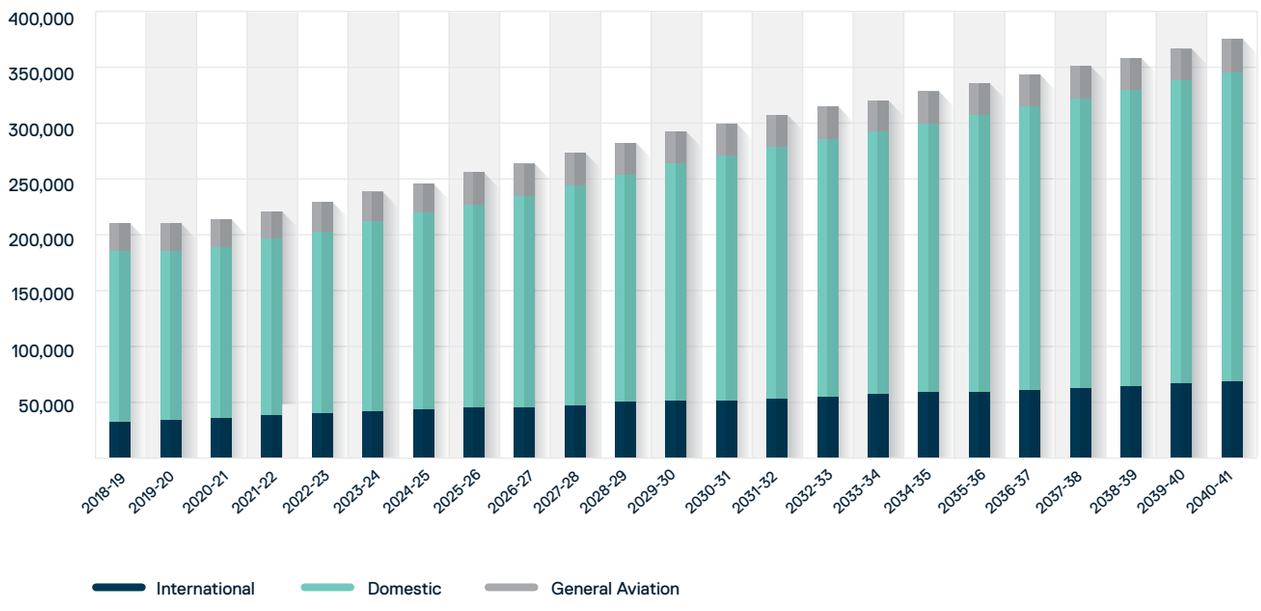
International aircraft movements are expected to grow from 16% of total movements to 19% by FY2039/40, more than 70,000 movements. Domestic aircraft movements are expected to grow from 72% share of total to 73%, resulting in almost 279,000 movements.

GENERAL AVIATION FORECAST

General aviation services will decrease as a proportion of total movements from 12% to 8%, however movements will increase from more than 26,000 movements to almost 31,000 movements.

For the purposes of this forecast, general aviation movements relate to those serviced by the general aviation terminal and supporting infrastructure (i.e. emergency services, charter operations, and training). Regional scheduled-RPT operations are included within the domestic forecast preceding.

ANNUAL AIRCRAFT MOVEMENTS FORECAST



COMPARISON WITH PREVIOUS MASTER PLAN FORECASTS

The tables presented following compare the passenger and aircraft movement forecasts from the three most recent Master Plans (2003, 2009, and 2014) with forecasts for the 2020 Master Plan.

The international forecasts are lower than the previous forecasts reflecting weaker airline capacity growth expectations allied with marginal downgrades of longer term economic and demographic forecasts. The main international variance is in the short term.

Compared with the 2014 Master Plan, the domestic forecasts are lower. This is due to subdued growth since the end of the mining boom, reduced airline capacity expectations in the medium-term, and downgrades of longer term economic and demographic forecasts for Queensland.

Brisbane Airport continually evaluates actual versus forecast movements and adjusts infrastructure development accordingly. A good example of this is the deferment of delivering the new runway from 2015 to 2020.

PASSENGER MOVEMENTS FORECAST COMPARISON

MASTER PLAN YEAR	FORECAST MASTER PLAN PERIOD	PASSENGER TYPE	FY2008	FY2013	FY2018	FY2023	FY2029	FY2034	FY2040
2003	2003 – FY2023	International	3,800,000	5,200,000	6,900,000	9,100,000			
		Domestic	13,100,000	16,600,000	20,700,000	25,900,000			
		Total	**16,900,000**	**21,800,000**	**27,600,000**	**35,000,000**			
2009	2009 – FY2029	International	4,100,000	5,300,000	6,900,000	8,800,000	11,800,000		
		Domestic	14,400,000	18,400,000	22,100,000	26,600,000	33,300,000		
		Total	**18,500,000**	**23,700,000**	**29,000,000**	**35,400,000**	**45,100,000**		
2014	2014 – FY2034	International	4,100,000	4,500,000	5,500,000	7,200,000	9,300,000	11,300,000	
		Domestic	14,400,000	16,800,000	20,600,000	25,600,000	31,800,000	37,000,000	
		Total	**18,500,000**	**21,300,000**	**26,100,000**	**32,800,000**	**41,100,000**	**48,300,000**	
2020		International	4,100,000	4,500,000	5,900,000	7,500,000	10,000,000	12,200,000	15,500,000
		Domestic	14,400,000	16,800,000	17,500,000	19,600,000	25,600,000	30,500,000	36,000,000
		Total	**18,500,000**	**21,300,000**	**23,400,000**	**27,100,000**	**35,600,000**	**42,700,000**	**51,500,000**

AIRCRAFT MOVEMENTS FORECAST COMPARISON

MASTER PLAN YEAR	FORECAST MASTER PLAN PERIOD	PASSENGER TYPE	FY2008	FY2013	FY2018	FY2023	FY2029	FY2034	FY2040
2003	2003 – FY2023	International	24,000	30,000	37,000	45,000			
		Domestic	122,000	153,000	190,000	237,000			
		General aviation	15,000	15,000	15,000	15,000			
		Total	**161,000**	**198,000**	**242,000**	**298,000**			
2009	2009 – FY2029	International	26,000	33,000	40,000	46,000	56,000		
		Domestic	136,000	173,000	204,000	240,000	289,000		
		General aviation	13,000	14,000	14,000	14,000	15,000		
		Total	**175,000**	**22,000**	**258,000**	**300,000**	**360,000**		
2014	2014 – FY2034	International	26,000	29,000	33,000	39,000	45,000	48,000	
		Domestic	136,000	165,000	194,000	227,000	266,000	290,000	
		General aviation	13,000	18,000	19,000	20,000	21,000	22,000	
		Total	**175,000**	**212,000**	**246,000**	**286,000**	**332,000**	**360,000**	
2020	2020 – FY2040	International	26,000	29,000	34,000	42,000	52,000	59,000	70,000
		Domestic	136,000	165,000	153,000	172,000	214,000	244,000	279,000
		General aviation	13,000	18,000	26,000	27,000	29,000	30,000	31,000
		Total	**175,000**	**212,000**	**213,000**	**241,000**	**295,000**	**333,000**	**380,000**

FORECAST PEAK PERIOD DEMAND

FORECAST OF INTERNATIONAL STAND DEMAND

It is anticipated that an additional eight international aircraft stands will be required to meet demand by FY2024/25. Current forecasts indicate an additional 16 international stands will be required to meet 2040 demand.

AIRCRAFT CODE	EXISTING PROVISION	FORECAST STAND DEMAND			
		2020	2025	2040	ULTIMATE
C	26	10	13	14	12
E	12	13	14	24	35
F	7	1	2	2	2
TOTAL STANDS	**19** including 7 Code F and 1 Code E MARS stand	**19** including the use of 5 Code E/F MARS stands	**27** including the use of 4 Code E/F MARS stands	**35** including the use of 5 Code E/F MARS stands	**49**

FORECAST OF INTERNATIONAL PASSENGERS BUSY HOUR

The current 2019 peak hour international passenger arrivals flows is 2,770 per hour and this is forecast to increase to 6,960 per hour in FY2040. Similarly, the current 2019 departure passenger flow of 2,101 per hour is expected to increase to 5,550 by FY2040.

YEAR	ARRIVALS	DEPARTURES
Existing	2,770	2,101
2020	2,770	2,210
2025	3,860	3,080
2040	6,960	5,550

FORECAST OF DOMESTIC STAND DEMAND

It is anticipated that six additional domestic stands will be required by FY2024/25.
Current forecasts indicate that an additional 34 domestic stands will be required to meet 2040 demand.

AIRCRAFT CODE	EXISTING PROVISION	FORECAST STAND DEMAND			
		2020	2025	2040	ULTIMATE
Regional	10	10	10	17	22
C	45	46	50	66	89
E	5	2	4	9	12
TOTAL	**58** including 2 Code E MARS stands	**58**	**64**	**92**	**123**

FORECAST OF DOMESTIC PASSENGERS BUSY HOUR

The current 2019 peak hour domestic passenger arrivals flows is 3,123 per hour and this is forecast to increase to 5,440 per hour in FY2040. Similarly, the current 2019 departures passenger flow of 3,228 per hour is expected to increase to 5,940 per hour by FY2040.

YEAR	ARRIVALS	DEPARTURES
Existing	3,123	3,228
2020	3,170	3,260
2025	3,790	3,840
2040	5,440	5,940

ULTIMATE STAND DEMAND

Brisbane Airport Corporation considers very long-term or ultimate capacity scenarios for elements of major airport infrastructure beyond the 2040 planning horizon of this Master Plan.

Planning has been undertaken to ensure when the runway operations reaches its maximum sustainable peak throughput, there is a balance of capacity between the main elements of the airport system including the runways, taxiways, aprons, terminals and landside infrastructure. Analysis and benchmarking indicates that the runway system will reach its ultimate peak operating capacity by mid-2050's when annual aircraft movements are between 450,000 to 500,000. This ultimate hourly runway capacity translates into an equivalent potential stand demand of up to 172 aircraft stands (contact and remote positions).

The assessment of ultimate capacity scenarios is based on current standards: a consistent demand profile across the day, aviation infrastructure, airspace management and current aircraft fleet technologies.

Future assessments of the ultimate operating capacity of Brisbane Airport could change as a result the introduction of new and more efficient aircraft, changes to growth forecasts or changes to airspace management.

The terminal and apron areas have been sized to accommodate the long-term aircraft demand (including consideration of aircraft fleet mix) matching the potential runway capacity. While long-term forecasts show consistent growth in both domestic and international passengers, shorter-term forecasts in any given period can have larger or smaller rates of growth, as well as variability in the predominant aircraft type. With this in mind Brisbane Airport Corporation will adopt strategies including flexible aircraft parking layouts, integrating domestic and international aprons and MARS stands to ensure aircraft parking aprons servicing all terminal precincts can offer the long-term capacity to match the aircraft demand that the runway system can deliver to the airport.

Multiple Apron Ramp System (MARS) arrangements allow for flexibility of aircraft size and number using an apron parking bay. This allows a pair of aerobridges to service one larger aircraft or two smaller aircraft.

AIR FREIGHT FORECAST

Air freight is an important source of revenue for passenger airlines. The International Air Transport Association reports that air freight contributes one per cent of world trade by volume, but over 35 per cent by value.

Combined throughput of domestic and international freight (inbound and outbound) was approximately 190,500 tonnes in FY2017/18. Based on current growth rates, this is forecast to reach approximately 526,700 tonnes by FY2039/40.

DOMESTIC FREIGHT FORECAST

Domestic air freight is mainly overnight parcel express business carried by dedicated scheduled freighter aircraft operating Australia wide networks. The efficiency of these essential services is highly dependent on Brisbane Airport being fully operational 24 hours a day.

In FY2017/18 Brisbane Airport had a combined inbound and outbound domestic freight throughput of just over 68,400 tonnes. This is forecast to grow to 107,700 tonnes by FY2039/40.

INTERNATIONAL FREIGHT FORECAST

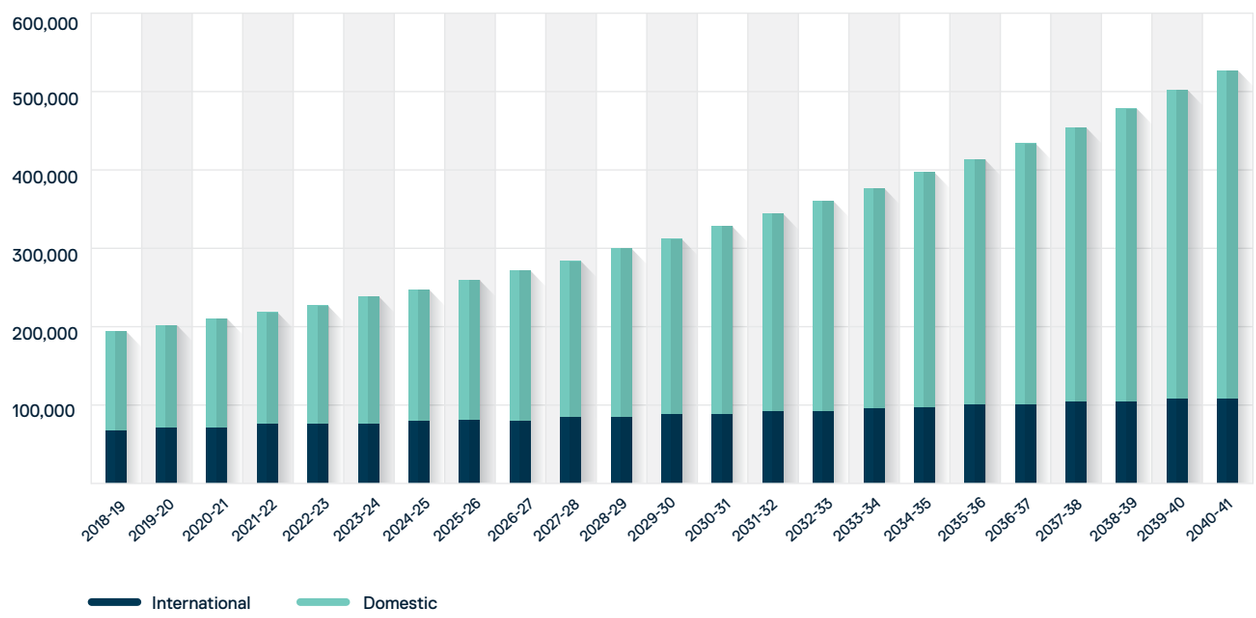
Brisbane Airport handles approximately 12 per cent of Australia's international air freight and ranks third after Sydney and Melbourne. Brisbane is an important international export airport for Queensland and Australian goods, especially perishable produce.

In FY2017/18 Brisbane Airport had a combined inbound and outbound international freight throughput of just over 122,100 tonnes. This is forecast to grow to 419,000 tonnes by FY2039/40.

Approximately 25 per cent of air freight movements into Australia are via dedicated freighter aircraft. The balance of air freight imported into Australia is carried in the cargo holds of passenger aircraft. At Brisbane Airport, future growth in this air freight sector is dependent on increases in the number of RPT services to Brisbane by international network carriers.

Special consignments such as bulky industrial plant, livestock and airframe deliveries are transported by dedicated charter air freighter aircraft. Current trends suggest that this pattern will continue.

COMBINED DOMESTIC AND INTERNATIONAL (EXPORT AND IMPORT) AIR FREIGHT FORECAST



NEW PROJECTS SINCE THE 2014 MASTER PLAN

The 2014 Master Plan outlined potential options for future aviation and terminal development. Since the publication of that Plan and in consideration of the forecast growth in passenger demand, Brisbane Airport has invested in a range of high profile projects designed to upgrade and improve the services provided. Details of nine of those projects are listed here.

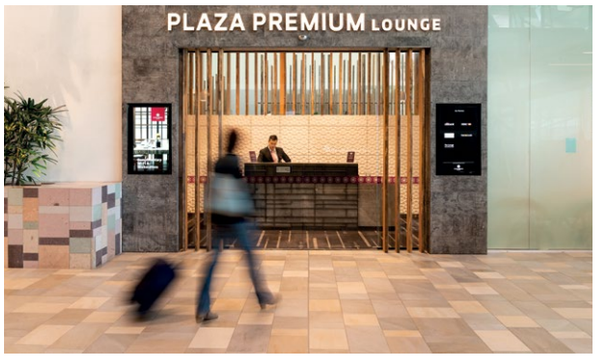
INTERNATIONAL TERMINAL REDEVELOPMENT

In 2015, Brisbane Airport Corporation invested $45 million in a redevelopment of the departure level and retail precinct at the International Terminal. The project has since received accolades from the aviation industry at home and abroad.

Elements of the redevelopment included a themed departures lounge, new 'walk through' Duty Free shopping areas in departures and arrivals, new specialty retail and food and beverage outlets offering the best of local produce and products and improved way-finding for passengers.

Queensland artists were selected to provide key pieces within the terminal and local materials used for a variety of aspects to support Queensland and Australian suppliers.

The stunning fitout features locally sourced stone, timbers, fittings and plants to define dedicated dwell, work and relaxation areas. The construction part of the project created 750 jobs.



INTERNATIONAL TERMINAL LOUNGE EXPANSIONS

In 2016, an underused retail space of 1,800 square metres on Level 4 of the International Terminal was repurposed to create three modern airline lounges and a new day spa.

Following the redevelopment, Air New Zealand's new premium lounge opened in mid-March 2016, with an estimated 70 per cent more physical space than the previous lounge as well as panoramic city views. The new lounge provided an enhanced food and beverage offering with capacity for 200 customers and was followed in May by the opening of Singapore Airlines' new SilverKris lounge which in addition to a larger lounge area with seating for 80 guests includes business pods, a dedicated dining area and a separate VIP area.

In the final part of the redevelopment, in June 2016, Plaza Premium opened Australia's first independent lounge, providing comfortable seating, food and beverage and Wi-Fi services to passengers regardless of airline or ticket class.

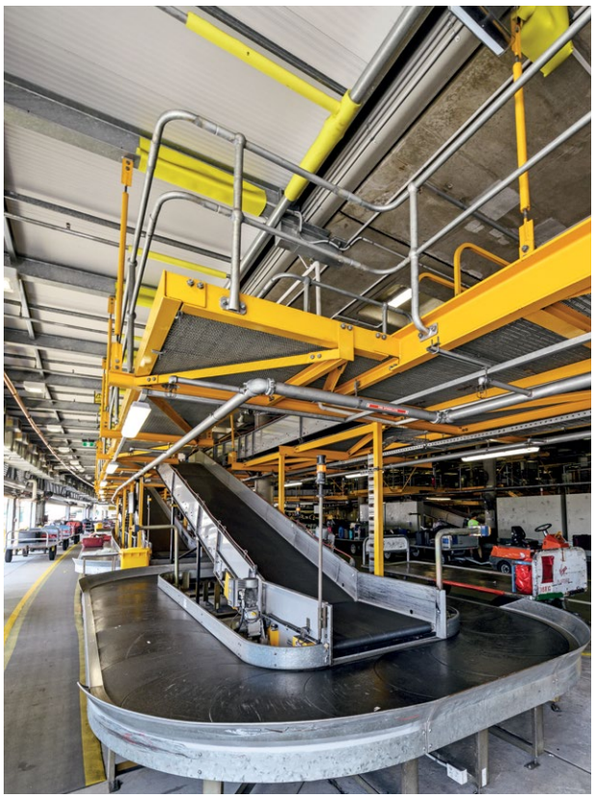
With an upgraded lobby, the new facilities are linked to Level 3 Departures via two newly installed escalators and a lift. The project overall created 70 jobs.

DOMESTIC TERMINAL RETAIL UPGRADE

In addition to the improvements to the International Terminal, Brisbane Airport Corporation also completed a redevelopment of the southern end of the Domestic Terminal building in 2016.

This project included a reconfiguration and upgrading of food halls, the creation of a new, premium bar and restaurant and facilities for new speciality retailers. The work was carried out in stages and at mostly off-peak hours to ensure minimum disruption to passengers and airport operations.

Following the redevelopment, the terminal welcomed 16 new retail tenancies providing a range of new services for passengers, with the project overall resulting in the creation of more than 100 construction jobs. A second stage of development of the retail areas of the terminal commenced in 2018.



BAGGAGE HANDLING SYSTEM UPGRADE

Towards the end of 2017, the baggage handling system at the southern end of the Domestic Terminal was upgraded and expanded, with a total budget of $12 million. The construction phase of the project created more than 50 jobs.

This new multi-million dollar facility has provided the Domestic Terminal with a larger, faster and more efficient baggage handling system. Included in the scope of the project were three new baggage carousels, an upgrade of the existing baggage conveyer belt, improved bag sortation software and an extended canopy airside from the terminal to cover new belts. A new extended mezzanine and gantry also increased bag sortation and was complemented by the installation of new x-ray machines.

INTERNATIONAL TERMINAL NORTHERN CONCOURSE AND APRON EXPANSION

Brisbane Airport's new $135 million expansion of the northern concourse and apron provides significant benefits with the integration of the latest technology, increased aircraft docking and parking space, as well as improved passenger experience and processing efficiency to cater for future growth.

After two years of construction across three levels, the expansion provides an additional 11,000 square metres of space at the International Terminal, including new arriving and departing passenger zones, two new walk-out gates and four new aerobridges.

The expansion project, which created more than 450 jobs during the construction phase also delivered 55,000 square metres of new concrete pavement for aircraft taxiways and three new aircraft parking bays capable of accommodating A380, B747, A330, A340, A350 and B787 aircraft.

INTERNATIONAL TERMINAL CHECK-IN AND BAG DROP UPGRADE

To continue to meet passenger demand, between June 2015 and June 2018, Brisbane Airport delivered innovative new self-service check-in and automatic bag drop facilities at the International Terminal. In total, 96 new self service kiosks were added on Level 4 of the International Terminal.

The project, with a budget of more than $12.5 million, included the creation of 32 new automatic bag drops, with 110 jobs created in the construction phase of the project. Each of the innovations saw passengers overall enjoy quicker and more seamless check-in, as well as creating shorter queues for passengers requiring assistance.

RUNWAY 01R/19L OVERLAY

In 2016, Brisbane Airport completed a maintenance overlay of the central section of the main 01R/19L runway. Brisbane Airport is open 24 hours a day, seven days a week and to preserve the highest standards of safety, maintenance programs are not permitted to hamper normal operations.

Working in five hour overnight shifts, the project involved two key elements, firstly the laying of 42,000 tonnes of asphalt over a total area of 275,000 square metres and, following that, laying of 43 kilometres of electrical cable to update the complex aeronautical ground lighting system. The successful project, essential to maintain safe operations, was completed in six months.

TAXIWAY H UPGRADE

In April 2018, Brisbane Airport upgraded Taxiway H to allow weight restricted Code E aircraft to access the maintenance, manufacturing and aviation services facilities located in Airport East.

Taxiway H is restricted to Code E aircraft in a maintenance configuration with a mandated maximum payload.

More than 40 jobs were created in the construction of high strength shoulder and blast protection taxiway pavements, as well as the installation of ground lighting and movement area guidance signs, construction of stormwater drainage, lateral restraint kerbs, line marking and the demolition of existing pavement.

DIGITAL INNOVATION

In 2015, Brisbane Airport became the first airport in Australia to launch an airport app compatible with the Apple Watch. The airport app won the 'Best in Class' award at the Interactive Media Awards, the highest honour bestowed by the IMA.

Constantly evolving, the smartphone app now includes a special 'My Trip' function allowing passengers to include personalised information details about where they parked at the terminal, while also tracking flights and receiving notifications of flight status and schedule changes.

More recently, passengers are benefiting from real-time passenger information systems on terminal buses and an automated taxi call system that reduces waiting times for drivers and passengers alike.

AVIATION STRATEGY PART ONE TERMINALS AND AIRFIELDS


SIZE
Departures
送客请止步
Passengers only
CUSTOMS AREA
RESTRICTED AREA
Passengers only
beyond this point
AED
HAVE YOUR SAY
FIRE HYDRANT - HOSE REEL

TERMINAL OPERATIONS

Brisbane Airport has two main terminals, the International Terminal and the Domestic Terminal. The International and Domestic Terminals at Brisbane Airport are located 1.5 kilometres apart, with the International Terminal located to the south of the Domestic Terminal.

Together they handle more than 23 million passengers a year, a number that continues to grow.

Brisbane Airport's International Terminal first opened in 1995 and currently provides services to international airlines, flying to a total of 32 international destinations.

The design of the International Terminal purposely reflects South East Queensland's sense of place, with abundant use of natural light within the terminal with the external and internal landscaping and finishes reflecting the area's enviable outdoor lifestyle.

Brisbane Airport's Domestic Terminal hosts airlines flying to more than 52 destinations across Australia, including 27 destinations in Queensland, making Brisbane Airport Australia's most domestically connected airport.

The smaller general aviation Terminal is located north-east of the Domestic Terminal.

This section of the Master Plan includes details of significant new developments in the terminals since the publication of the 2014 Master Plan including a more detailed overview of each terminal and its current operations.

TERMINAL INITIATIVES SINCE 2014

INTERNATIONAL TERMINAL NORTHERN CONCOURSE AND APRON

The $135 million expansion provides an improved passenger experience and processing efficiency to cater for future growth. After two years of construction across three levels, it provides approximately 11,000 square metres of new terminal structure including:

- Gates 73 and 74, designed for full Multi Aircraft Ramp System with 2 aerobridges, providing connectivity for either a Code E or F or 2 Code C aircraft. Future connectivity is provided for a third aerobridge on gate 73.
- New bathroom amenities on Levels 2 and 3.
- Boarding lounges for new walk out Gates 69-72.
- Future proofing lounge space for Gates 65–68.
- 55,000 square metres of new pavement.

Using digital engineering tools including Augmented Reality and Building Information Modelling, a staged program of works kept stakeholders informed on the course of the project and identified operational measures to avoid disruption.

The fact that this project took place in a live airport environment made its success all the more worthy of recognition. The application of digital tools allowed the works to be designed and staged in a live virtual environment ahead of the actual construction.

The new concourse meets the IATA level of service “Optimum” and creates attractive options for new international carriers looking to commence services to Australia and for existing airlines carriers seeking to increase the frequency of services to meet demands.

A significant feature of the terminal expansion is a 90 metre floor to ceiling artwork by Queensland College of Art (QCA) Master of Visual Art student Michael Phillips.

INTERNATIONAL TERMINAL RETAIL AREA REDEVELOPMENT

Opened in October 2015 the redevelopment of the International Terminal retail area was an intensive 18 month project with 38 stages, working on multiple zones and floors.

Twenty-four new retail tenancies were progressively opened with more than 4,600 square metres of additional retail space created.

As part of the build, 7500 square metres of new tiles were laid, equivalent to one and a half football fields in size. All building materials, including tiles, steel, sand and concrete were individually security scanned before being taken into the secure zone.

Works took place during the quiet times of day, with major construction scheduled late at night and in the early morning to minimise disruption to travellers and airport operations.

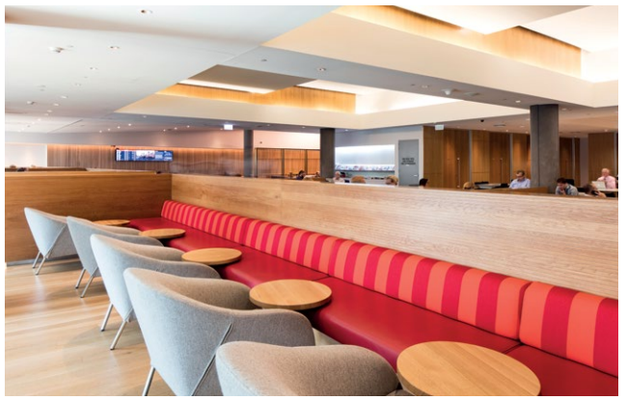
The team managed these constraints by delivering the project in carefully sequenced stages, with a strong focus on ongoing communication with stakeholders and terminal users.

In addition to creating the new tenancies, it was critical to minimise or eliminate the period between closure of an existing tenancy and a new one opening.

To ensure seamless transitions, the project was actively managed between the 24 tenancy contractors and the airport’s head contractor.

As a results, new tenancies were able to open for trading on the target date, a critical element of the feasibility of the project.

The project was delivered in conjunction with more than 100 key stakeholders, including Government agencies, Duty Free operators and a total of 25 new retail and food and beverage tenants.



INTERNATIONAL TERMINAL CHECK-IN AND BAG DROP UPGRADE

The $12.5 million Self-Service Check-In and automatic Bag Drop Upgrade delivered ground-breaking technology and smart infrastructure, radically reducing passenger waiting times and queue lengths in the busy International Terminal.

A rolling, three year, seven-stage schedule delivered the installation of 96 kiosks and 24 bag drops with minimal impact to terminal operations, providing a smart, user-friendly and flexible system for passengers and airlines.

The purpose of the project was to meet airline and passenger demand by more than doubling the number of check-in facilities at the terminal, without the need for an intrusive, disruptive and costly expansion of the terminal footprint.

The construction team delivered leading technology and smart infrastructure that not only reduced peak passenger wait times and queue lengths at check-in, but did it in existing space, negating the need for a major expansion of that area of the terminal.

To achieve this, Brisbane Airport worked closely with one of the world's leading specialists in air transport communications and information technology, and partnered with selected major international airlines and their software vendors, to develop new and improved check-in systems that would operate on a "common user" software platform.

Selected airlines are now able to access any self-service check-in kiosk and automatic bag drop on any row within the terminal, allowing Brisbane Airport greater flexibility and movement on check-in row choices, generating additional capacity within the terminal and providing airlines with greater flexibility to process passengers.

DOMESTIC TERMINAL CAPACITY AND EFFICIENCY UPGRADES

Snce 2014, projects undertaken at the Domestic Terminal and aircraft movement areas to further improve capacity, customer services and operational efficiencies include:

- Expansion of the southern apron expansion to provide dual apron taxiways allowing the efficient simultaneous arrival and departure of aircraft with more efficiency.
- Seven additional aircraft parking bays, extra space for aircraft layover parking and an extra 50,000 square metres of aircraft pavement.
- Conversion of a number of older style check-in areas to automatic bag drop.
- Upgrade of aerobridges to gates 40, 44, 47 and 48, increasing passenger and aircraft processing speed adding and flexibility with the creation of two MARS positions.
- Redevelopment and expansion of the floor plate in the southern satellite, creating an additional 850 square metres of office, retail and seating space.
- New business lounges in both the Northern and Southern ends of the building incorporating upgraded valet services.
- Expanded and upgraded baggage handling infrastructure including new baggage sorting and processing capacity.
- Retail upgrades leading to 16 new tenancies including reconfigured and upgraded food halls, a premium bar and restaurant and speciality retailers. The benefits include more retail choice, additional seating and space for passengers and expanded range of food and beverage choices.

INTERNATIONAL TERMINAL

The International Terminal, originally opened in September 1995 and presents an iconic, spacious and aesthetically pleasing building.

The International Terminal operates as a common user facility, administered by Brisbane Airport and featuring a four-level structure:

- Level 1 – baggage handling, delivery dock, stores and airline offices
- Level 2 – arrivals processing and airline offices
- Level 3 – departure lounges, airline lounges, airside retail and departures processing
- Level4 – check-in and landside retail.

The use of natural light within the terminal, as well as the external and internal landscaping and finishes reflect Brisbane and Queensland's enviable outdoor lifestyle and create an environment encapsulating South East Queensland's sense of place.

Twelve aerobridges (eight apron-drive, two fixed links, one dual headed and one triple headed) connect to either the terminal face or the three level concourses servicing the apron.

Departure gates on the ground level allow walk-out boarding access to five non aero-bridged aircraft stands.

INTERNATIONAL TERMINAL APRON

The International Terminal aircraft parking apron consists of high strength pavement in a linear arrangement with an in-ground fuel hydrant system connected to the Joint User Hydrant Installation (JUHI) facility located half-way between the two terminal precincts.

The apron has 14 primary aircraft contact positions capable of accommodating four Code F aircraft (e.g. Airbus A380) and 10 Code E aircraft (e.g. Boeing B777, Airbus A330 and A350).

There are a further three stands in Multiple Apron Ramp System (MARS) configurations and two Code E positions not currently directly linked to the terminal face or concourses.

The non aerobridge stands have the capacity to serve up to seven Code C aircraft. These are used for both remote parking and walk-out boarding of passenger services.

Ground Service Equipment (GSE) storage areas are located adjacent to both ends of the apron.

INTERNATIONAL TERMINAL LANDSIDE ZONE

The International Terminal landside zone consists of traffic circulation, car parking and ground transport interchange zones. The road system includes two separate elevated ramps servicing the public drop off departures on Level 4 and the taxi and ride share areas on Level 2. A taxi feeder system connected to the arrivals ramp is in the northern corner of the car park zone.

The Airtrain station is located adjacent to the public car park, with an elevated link to the terminal, connected at Level 3. Coach parking is provided at the southern end of the terminal.

The public arrival pick-up area is on ground level with a five level, multi-storey car park located directly opposite the terminal.

DOMESTIC TERMINAL

First opened in 1988, Brisbane Airport's Domestic Terminal is a two storey common-use terminal. The airside presentation of the Domestic Terminal is a convex curvilinear façade with three concourse and satellite structures located in the centre and at either end of the terminal.

The operations of Qantas and Virgin Australia are concentrated at the northern and southern ends of the terminal respectively, with low-cost carriers and smaller regional airlines operating from the centre.

Operated by Brisbane Airport, the Domestic Terminal consists of;

- Level 1 – check-in and bag-drop, northern and southern security screening points, baggage handling system and northern, central and southern baggage reclaim areas. Also located on this level are airline offices, regional boarding gates, ground transport kiosks, retail outlets and entry to premium lounges.
- Level 2 – airline lounges, airline and airport staff offices, central security screening point, boarding gates, retail outlets.

Four primary terminal face aerobridge-serviced gates are located on each side of the central concourse. The northern, central and southern satellites provide access to aerobridge serviced gates and walk-out boarding gates.

Boarding and arrival facilities for regional services are located at both ends of the terminal.

DOMESTIC TERMINAL APRON

The terminal connected apron consists of high strength and tug strength concrete pavement servicing all aerobridge and satellite gates.

An in-ground fuel hydrant system is connected to the JUHI facility.

The apron adjacent to the terminal consists of areas that are a mixture of high-strength and medium-strength rigid and medium-strength flexible aircraft pavement areas suitable for domestic aircraft parking.

Freight, regional operations, and ground service equipment storage areas are located to the south and north of the primary terminal connected stands.

DOMESTIC TERMINAL LANDSIDE ZONE

The landside zone consists of traffic circulation, car parking, transport facilities and surface transport interchange zones. The elevated Airtrain station is linked by a high-capacity elevated walkway to the terminal, known as Skywalk. Skywalk also connects the short-term car park and sits above the circulating roads delivering passengers to the terminal kerb. Travelators, stairs and lifts provide access for passengers from the kerbs to the elevated walkway.

A long-term multi-level car park links by an elevated covered walkway to the short-term car park and from there, to the terminal. Taxi, ride share, rental car, bus and limousine meeting areas are provided on sections of the parallel terminal face roads. Taxi and ride sharing, and bus feeder areas are located at the northern end of the public car parks. Staff car parking is located in the areas to the north of the Domestic Terminal.

GENERAL AVIATION

At Brisbane Airport, general aviation refers to a diverse community operating across the airport site. These operators provide a vast array of services, including charter operations, training and education, aircraft maintenance, and critical emergency services.

General aviation operators are located within the Airport East and Airport North neighbourhoods. Within the Airport East neighbourhood, there are operators who provide various services including the emergency services, training and education and fixed base operations. These operations have access to the logistics apron area and use of the existing runway.

Within the Airport North neighbourhood, there are general aviation operators, charter operations and emergency services for Brisbane Airport. Operators within this neighbourhood use a dedicated apron with a GSE storage area. There is also a small common-use terminal to process charter passenger services which is owned and operated by Brisbane Airport Corporation. In line with one of the 2014 Master Plan initiatives, this terminal was developed in 2016 and has additional capacity for the provision of security screening and further expansion in the future.

Fixed Base Operation (FBO) facilities are established at both the Airport North neighbourhood and adjoining the logistics apron adjacent to the Da Vinci precinct. These two facilities handle VIP operations and closed charter operations, meeting Brisbane Airport's strategy for FBO facilities. Brisbane Airport is not supportive of a proliferation of FBO facilities given the relatively low demand and the need to promote business sustainability outcomes.

The general aviation community plays an integral role in facilitating the relationship Brisbane Airport has with regional Queensland. Communities in regional Queensland are serviced by the general aviation community through RPT operations, small freight operations, and charter flight services which service the resource regions integral to Queensland's economy.

HELICOPTER OPERATIONS

Helicopter operations at Brisbane Airport consist predominantly of emergency services, with very occasional aerial work or charter operations. Helicopter operations are limited to the northern end of the general aviation (Airport North) logistics apron (adjoining Da Vinci). Airport facilities and air traffic control requirements do not accommodate regular public transport helicopter operations.

COMMON GUIDING PRINCIPLES FOR TERMINAL DEVELOPMENT

In the development of the 2020 Master Plan, Brisbane Airport undertook a comprehensive review of the existing development strategy for the terminal areas.

The review considered the factors influencing future planning, including consideration of emerging trends and technology in airport design and passenger processing, passenger demand and other constraints potentially affecting future terminal development.

Following that review, and to ensure consistency of the approach to development, six guiding principles were identified as being important considerations for future development of terminals and associated areas.

SIX GUIDING PRINCIPLES

- FLEXIBLE TERMINAL DEVELOPMENT STRATEGIES
- EFFECTIVE TERMINAL AND LANDSIDE INTERFACE
- MEETING CUSTOMER EXPECTATIONS
- COMPLIANCE WITH AVIATION SECURITY REQUIREMENTS
- EFFICIENT AND FLEXIBLE AREAS FOR AIRCRAFT MOVEMENT
- EFFICIENT AIRSIDE LOGISTICS

COMMON GUIDING PRINCIPLES FOR TERMINAL DEVELOPMENT

PRINCIPLE ONE
FLEXIBLE TERMINAL DEVELOPMENT STRATEGIES

The terminal development strategy is designed to deliver the highest quality of service within an affordable investment framework that delivers benefits to all stakeholders.

Development strategies will incorporate the following considerations:

- Maintain capacity to meet forecast demand while delivering expected service levels.
- Retaining the flexibility to introduce new technologies and to add, remove, expand or relocate processing areas as needed.
- Leveraging innovation in baggage handling to improve efficiencies and offer an increased range of services (including bag tracking, off-site bag-drop and baggage collection and delivery services).
- Consideration of new aircraft types, including larger narrow body and future middle of the market wide body aircraft
- Potential future requirements for international to domestic swing capable facilities.
- The potential consolidation of distributed passenger processing points and integration of domestic and international operations.
- Requirements for effective airline placement and migration strategies.

PROPOSED ACTIONS TO ALLOW FOR FLEXIBLE DEVELOPMENT

CHANGES TO MEET NEW SCREENING REQUIREMENTS

At Brisbane Airport, the upgrade of passenger and baggage screening facilities required to meet the Australian Government's revised aviation security standards represents a significant investment in both the International and Domestic Terminals. In order to avoid creating an unaffordable cost burden on the industry, Brisbane Airport considers it important that the timing of such significant investment in the existing terminals does not coincide with major investment in the future Northern and Western Terminals. For this reason, Brisbane Airport Corporation's policy is that aeronautical investments over the 5 year period of the 2020 Master Plan will focus on extending the capacity of the International and Domestic Terminals to a design horizon of 2030 with new terminals to be planned for the period post 2030.

CONTINUING TO MEET INCREASING DEMAND

Extending the capacity of the existing terminals to 2030 will be achieved through optimising and extending the life of existing processing areas including check-in, security, international outbound and arrivals processing and baggage handling. Strategies to be adopted include further roll out of current technologies including self-service check-in and bag drop, automated border processing, bag tracking and early bag store as well as implementing emerging biometrics technology where appropriate.

Investment across both terminals will also deliver new departure lounge and boarding gate areas and both terminal contact and remote aircraft parking. Brisbane Airport will design flexible future terminal facilities though adopting principles including regular and modular building templates and rectilinear concourses that facilitate incremental expansion.

It is not envisaged that further processing capacity will be added to the Domestic Terminal after 2030. Whilst the Domestic Terminal will continue to operate well into the future, beyond 2030 further domestic processing capacity will be provided within the future Northern and Western Terminals.

In order to continue to service international demand post 2030, the International Terminal would require a major expansion of the core terminal processing areas as well as the development of the southern concourse and supporting apron areas.

MEETING CHANGING INDUSTRY DEMANDS

The terminal strategies presented in earlier master plans have been based on the notion of separate terminals focussed on either domestic or international operations. It is possible however that the introduction of new larger narrow body and new middle of the market wide body aircraft may see airlines seeking to drive optimum fleet utilisation through the cycling of aircraft between international and domestic routes.

Should this demand arise, an opportunity exists in the medium terms to integrate international and domestic operations within the same terminal through the use of swing capable facilities. These facilities have the potential to generate operational and cost efficiencies through the consolidation of separated processing areas and through enabling airlines to operate international and domestic operations within a single terminal.

Therefore, as an alternative to further development of the International Terminal to provide capacity beyond 2030, Brisbane Airport Corporation may instead deliver this international capacity via the development of the future Northern and Western Terminals. Both the future Northern and Western Terminals present a significant opportunity for common use terminals providing integrated domestic and international operations through the use of swing gates, with associated terminal retail and airline lounge facilities.

Prior to 2030, interim opportunities also exist to implement smaller scale swing gate operations at either the International or Domestic Terminals.

In all instances, any proposed changes to terminal design and operations would be subject to consultation and collaboration between Brisbane Airport, the airline parties and the Australian Government.

Prior to the development of a new terminal at Brisbane Airport, the Central Area between the International and Domestic Terminals represents an opportunity to manage overflow during peak periods through the development of a large remote aircraft parking apron.

With excellent connectivity to terminal precincts, the strategic importance of the Central Area as a hub for aviation support facilities such as refuelling, catering, freight and engineering is fully understood. As a result, the 2020 Master Plan contemplates these support functions co-existing with aircraft and passenger processing within this area.

COMMON GUIDING PRINCIPLES FOR TERMINAL DEVELOPMENT

PRINCIPLE TWO
EFFECTIVE TERMINAL AND LANDSIDE INTERFACE

The creation of efficent and integrated terminal and landside interfaces is a priority for Brisbane Airport.

Achieving maximum efficiency in operations is critical to the safe running of a busy airport. A key contributor to the quality of operational efficiency is the existence of effective terminal and landside interfaces. Key considerations in their development include:

- Balancing the efficiency of consolidated and inter-connected terminal precincts with concentrated demand on ground transport infrastructure.
- Planning for easy, efficient and intuitive passenger journeys between the landside ground transport areas and the terminals.
- Maintaining an open corridor and station locations for a future mass transit system linking terminal precincts with round transport service hubs.

PROPOSED ACTIONS TO ENSURE EFFECTIVE TERMINAL AND LANDSIDE INTERFACES

- Provision of adequate car parking facilities offering a range of parking options
- Managing conflict between pedestrian and car movements appropriately
- Providing a diverse range of ground transport products within the proximity of the terminals

PRINCIPLE THREE
MEETING CUSTOMER EXPECTATIONS

In all developments at Brisbane Airport, emphasis is put on ensuring that changing customer needs and expectations continue to be understood and met in full.

Brisbane Airport undertakes regular community and industry consultation to review and understand changing customer needs. important considerations in the review of all future terminal developments include the following:

- Ensuring safe and simple access for all, taking into account lighting, time of day, weather and all mobility and related issues.
- Maxmising the effectiveness of connections between all terminals to minimise waiting times and provide simple way fnding.
- Providing a secure environment for passengers and their belongings, including provision of food and beverage outlets, toilet facilties and associated services.
- Anticipating the needs of customers of all ages including those with disabilities, the provision of information about arrivals and departures, as well as gate locations and other key information.

PROPOSED ACTIONS TO MEET CUSTOMER NEEDS

- Ongoing improvements to café and restaurants facilities and comfortable waiting areas.
- Providing clear signage to allow easy navigation of airport terminals.
- Delivering a range of ground transport options designed to meet the changing needs of the customer, ensuring that journeys into and out of the terminals are simple and intuitive.
- Continue to provide and enhance facilities for passengers using drop-off and pick-up services including free parking for up to 30 minutes in dedicated waiting areas and improved facilities for ride-share and other new transport modes.

COMMON GUIDING PRINCIPLES FOR TERMINAL DEVELOPMENT

PRINCIPLE FOUR
COMPLIANCE WITH AVIATION SECURITY REQUIREMENTS

Aviation security is of paramount importance in the planning of terminal facilities and services at Brisbane Airport.

Future development will respond to existing and future aviation security requirements by:

- Implementing changes to infrastructure and operations to achieve compliance with Australian Government security requirements.
- Improved and efficient screening of public, staff and goods entering the terminal.

PROPOSED ACTIONS FOR SECURITY COMPLIANCE

- In this strategy, plans for upgrades to passenger and baggage screening in the International and Domestic Terminals have been planned to meet requirements for a period of up to 10 years.
- Beyond this timeframe, potential exists for further enhancements to screening and associated services to be accommodated as part of a possible future expansion of the International Terminal and the development of the future Northern and Western Terminals.
- Brisbane Airport will continue to improve operational efficiency through the development of consolidated common-use passenger screening areas and by linking the separated baggage handling systems in the Domestic Terminal.
- Wherever practicable and to maximise efficiencies, screening areas will be located close to the centres of operational and commercial activities.

PRINCIPLE FIVE
PROVIDING EFFICIENT AND FLEXIBLE AREAS FOR AIRCRAFT MOVEMENT

As the airport continues to grow, operational efficiency depends on the provision of efficient and flexible areas for the movement of aircraft.

In line with forecast growth in aircraft movements and changes in aviation, aircraft movement areas will be developed with the following considerations:

- Providing available parking for a mix of aircraft types with proximity to each runway and a balanced and efficient use of the taxiway system.
- Optimise apron infrastructure to achieve the best aircraft parking layouts, anticipating and catering for future demand, including new aircraft fleet design.
- Maintain storage and staging areas for GSE, including support of an electrified ground servicing fleet.
- Ensure sufficient capacity exists for baggage and freight processing.

PROPOSED ACTIONS FOR EFFICIENT AND FLEXIBLE AIRCRAFT MOVEMENT AREAS

- Development of new linear aircraft parking arrangements, where possible, to facilitate the incremental expansion of aprons and concourses.
- Planning of parking areas to accommodate current and future aircraft types.
- Optimise the use of pavement areas using MARS configured bays.
- Maintain flexibility in future apron developments to allow the targeted addition of capacity and ensure balanced load on the taxiway system.
- Maintain the future flexibility to convert remote parking areas to terminal connected gates.

COMMON GUIDING PRINCIPLES FOR TERMINAL DEVELOPMENT

PRINCIPLE SIX
EFFICIENT AIRSIDE LOGISTICS

Thanks to its location and large land area, Brisbane Airport benefits from efficient connectivity to and from the airport and good landside accessibility to aviation support and logistics systems.

Effective landside to airside interfaces and the ability to efficiently move staff, passengers, equipment, goods and freight in the airside environment is critical to the continuation of successful operations. Key future planning considerations include:

- Maintaining the optimal positioning of aviation support and logistics facilities (including aviation fuel, catering, freight handling, engineering and ground service equipment) in proximity to terminal precincts.
- Ensuring sufficient capacity within the airside road network and unobstructed connectivity between the terminal areas.
- Providing suitably located goods and waste management facilities with sufficient capacity to support the flow of goods in and waste out of the terminals.

PROPOSED ACTIONS FOR EFFICIENT AIRSIDE LOGISTICS

- Continue to provide aviation support and logistics facilities in the Central Terminal Area.
- Provide fit-for-purpose and accessible loading dock, waste management and goods storage infrastructure able to accommodate incremental expansion at the extremities of the terminal complex.
- Consider the requirements for forward staging areas for GSE, goods and sensitive freight in the planning of future apron areas.
- Engage with JUHI and into-plane companies to agree and preserve locations for new into-plane facilities.
- Consider the creation of an airside road connection between the eastern side of the airport and the Future Western Terminal to reduce growth of traffic and congestion on the airside Terminal face within the Domestic Terminal and future Northern Terminal areas and minimise travel times for aviation support and logistics vehicles.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TERMINAL DEVELOPMENT STRATEGY

The Terminal Development Strategy for the 2020 Master Plan is informed by the contents of previous Brisbane Airport Master Plans, interpretation of economic and socio-demographic trends which drive passenger demand and by forecast changes in process improvement and technology in the aviation industry.

As with previous Master Plans, the unifying purpose of the terminal development strategy is to continue to provide high quality and flexible facilities to meet growth and changes in demand while maintaining the highest levels of security and customer services.

A FLEXIBLE TWENTY-YEAR PLAN FOR BRISBANE AIRPORT TERMINALS

Brisbane Airport aims to develop its aeronautical infrastructure in order to respond to short to medium term challenges and opportunities whilst maintaining the integrity and capability of the longer term plan. The Airport's strategy to achieve this aim is to create sufficient flexibility in the aeronautical development pathways towards the most optimal long term terminal and airside layout.

Given the constraints of the Airport's planning layout and previous developments, it is unlikely that Brisbane Airport could in the future achieve a single terminal processor model of the type frequently created by today's greenfield airport developments. Therefore a key feature of Brisbane Airport's terminal development plan is the creation of a contiguous series of terminal areas. This approach assists the distribution of demand on both airside and landside systems whilst enabling effective connectivity and access for operations, passengers and public to the various centres of activity.

This section of the Master Plan outlines the high level infrastructure responses within the strategy for providing passenger processing facilities, aircraft parking and related landside developments within the following six interconnected terminal areas of the Airport:

- International Terminal
- Central Area
- Domestic Terminal
- Future Northern Terminal
- Future Western Terminal
- General Aviation

LAND USE PLANNING

The sizing of facilities has considered the requirements at both 2040 and ultimate airport capacity to ensure that the land-use planning and area reservation for passenger and aircraft facilitation is preserved. The strategy also includes a range of short-term projects envisaged for the next five years, with illustrative (not to scale) terminal plans provided for indicative purposes. As part of the overall approach to planning, individual elements are generally interchangeable and designed to provide a flexible response to future industry trends and requirements.

Brisbane Airport will ensure that any proposed changes to the terminal areas will be preceded by consultation with key industry partners and stakeholders including affected airlines, AirServices Australia and relevant Australian Government Departments.

AVIATION SECURITY REQUIREMENTS

Brisbane Airport Corporation places the utmost importance on maintaining the highest levels of security and safety across all operations. Aviation security requirements continue to evolve to manage the threat of terrorism or other activities that potentially affect safety and security, while new technological advances including improved screening systems offer greater protection. Brisbane Airport Corporation continues to review emerging systems in this area to further strengthen safety measures and will implement all new regulatory requirements as they arise.

In May 2018, the Australian Government proposed a series of measures to further strengthen Australia's domestic and international aviation security, bringing Australia screening capability more closely align with the United States and European Union. The upgrade requirements for Brisbane Airport include the implementation of Computed Tomography (CT) technology and increased use of body scanners.

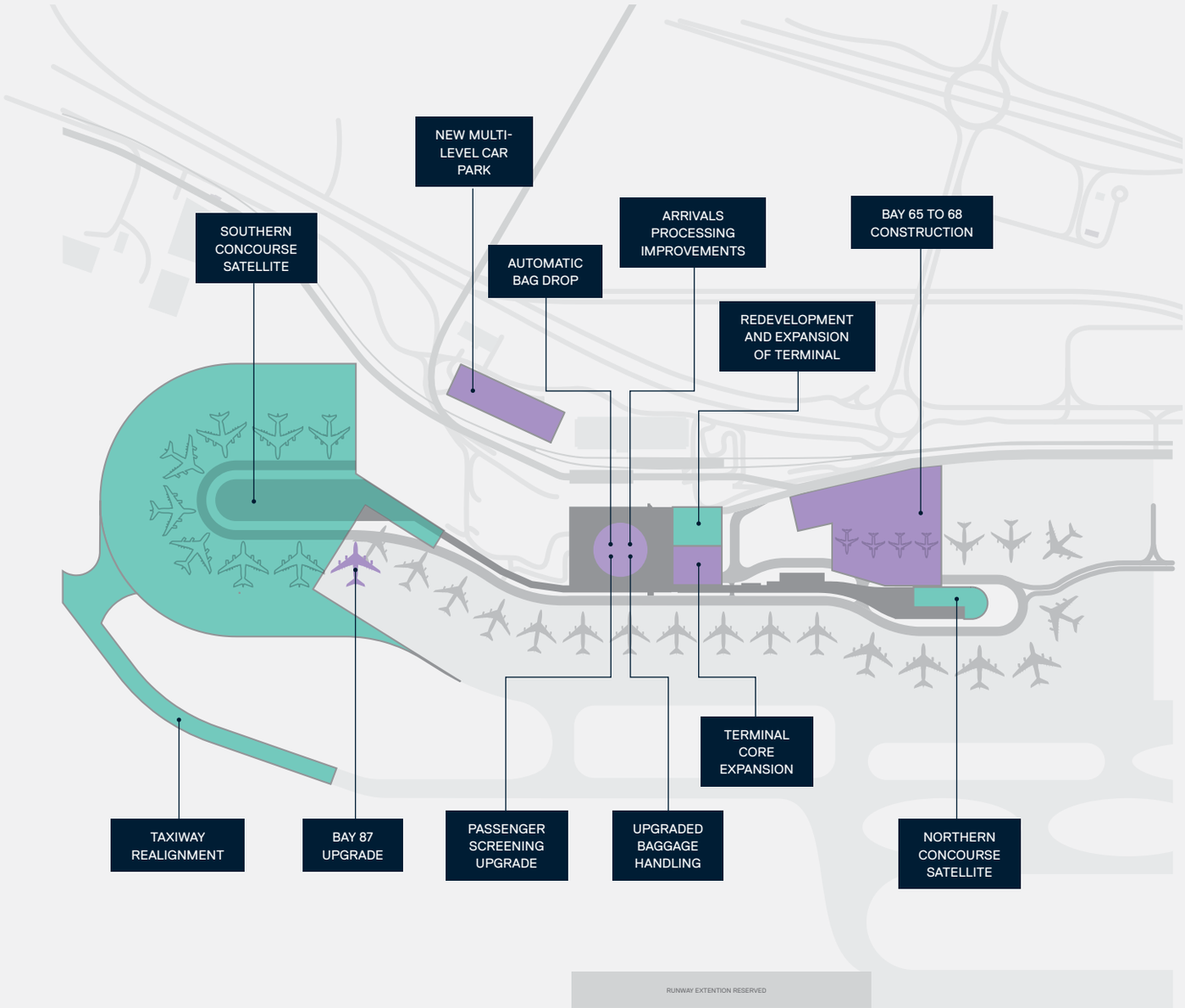
New CT and body scanner technology allows for greater detection capabilities. However compared with the current equipment, the new technology is considerably larger in footprint and will also impose higher loading on the building structure. Therefore significant upgrades are needed at Brisbane Airport in both the Domestic and International Terminals.

The larger floor plate of the International Terminal is able to accommodate the upgrades required to the baggage handling system and all existing passenger security checkpoints. A major redevelopment and expansion of the Domestic Terminal will be required to accommodate the increase in equipment size. The table below presents a summary of the equipment type and terminal upgrade areas required as a result of this legislative change. Brisbane Airport is working with the Department of Home Affairs to implement the updated requirements.

EQUIPMENT TYPE	TERMINAL UPGRADE AREAS
Checked Bag Screening Equipment	• Baggage Make-up areas
Body Scanners	• Passenger screening points • Loading docks • Lounge entries • Transit points
CT Cabin Baggage Screening Equipment	• Passenger screening points • Loading docks • Lounge entries • Transit points

INTERNATIONAL TERMINAL

Within the 20 year planning horizon of this Master Plan, the current International Terminal will continue to be a common use facility for full service and low-cost carrier international airlines. The terminal will be expanded as required to accommodate growth in the international market and to continue to provide the same high level of service.



Planned developments over the next five years

Potential developments over a 20 year horizon

Map not to scale

MASTER PLAN 2020–2025

Projects envisaged at the International Terminal in the next five years include:

- An expansion of the terminal core to provide additional area for terminal retail, airline lounges, departure lounge, arrivals processing, baggage handling, loading docks, and offices.
- Upgrade of Bay 87 to Code E MARS configuration.
- Construction of Bays 65 to 68, fixed links, passenger boarding bridges and departure gates.
- Conversion of conventional check-in counters to automatic bag-drop.
- Upgrade to Australian Border Force arrivals processing areas to accommodate new requirements.
- Expansion of passenger screening area to include installation of body scanners and CT cabin bag x-ray machines.
- Upgrade of baggage handling system to accommodate Standard 3 checked bag screening.
- Construction of a new multi-level car park and enhancement of terminal face roads.

FUTURE PLAN

Over the 20-year horizon of the Master Plan, the following improvements are under consideration:

- Incremental redevelopment of existing facilities, with further expansions of the terminal core, including supporting infrastructure to provide capacity for passenger processing and baggage handling.
- Completion of the northern concourse satellite, creating additional departure gate areas and enabling seven existing aircraft parking positions connected by bridges to the terminal.
- Option to develop a large southern concourse satellite to incorporate up to seven MARS configured wide body parking positions, all of which could be connected with bridges to the concourse expansion.
- Expansion of the baggage handling system including baggage reclaim and early bag store.
- Opportunity for complementary landside commercial development.
- Expansion of taxiway access and other facilities to facilitate wide body aircraft parking.
- Safeguard the corridor and station locations for the MTS connection between the International and Domestic Terminals, as well as connectivity to commercial developments and remote parking areas.

CENTRAL TERMINAL AREA

The 2020 Master Plan recognises the strategic potential of the Central Terminal Area to act as a hub for aviation support and logistics activities, as well as remote aircraft parking servicing both the International and Domestic Terminal areas.

The Central Terminal Area currently has direct airside road linkages to the International and Domestic Terminal areas. In the future, an opportunity exists for a potential road-link between the Central Terminal Area and the Western Terminal effectively creating an airside ring road connecting all terminal.

This Plan envisages the retention of existing aviation support and logistics uses adjacent to a large apron area. In this plan, the option to retain JUHI in its current location is preserved. In the future there is a possibility of expansion into adjacent sites.

The apron would facilitate layover parking and remote passenger boarding operations for both the International and Domestic Terminals and possible freight operations and designed to cater for both narrow body and wide body aircraft including fuelled and non-fuelled positions.

The apron plan potentially allows the connection of a selection of the parking positions to a satellite concourse connected to the southern end of the Domestic Terminal.

Suitable airside road connectivity between the Central Terminal Area and adjoining terminal precincts will be required to facilitate the movement of both passenger buses and GSE vehicles servicing the aircraft.

Consideration has also been given to the relocation of Airport Drive to create an expanded airside precinct in which additional aviation support and logistics facilities could be developed.

MASTER PLAN 2020–2025

Projects envisaged for the next five years include:

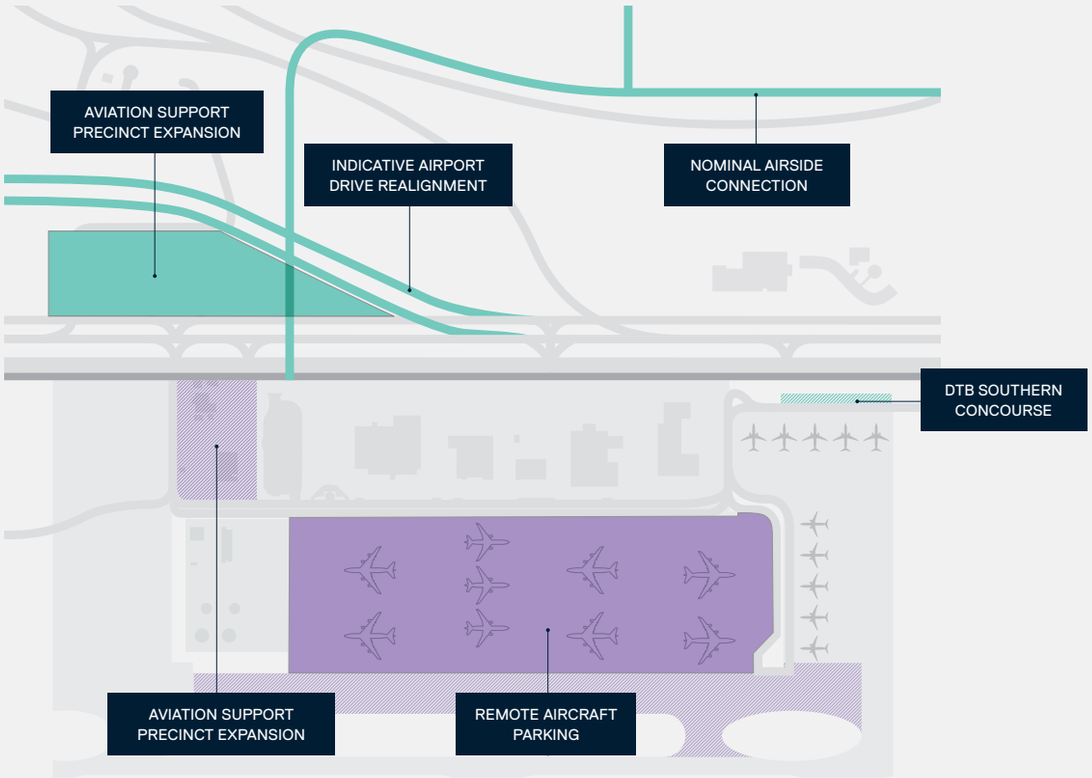
- Construction of remote aircraft parking and enhancement to the airside roads.
- Construction of taxiway connections to existing terminal precincts.
- Further development of existing aviation support and logistics facilities.

FUTURE PLAN

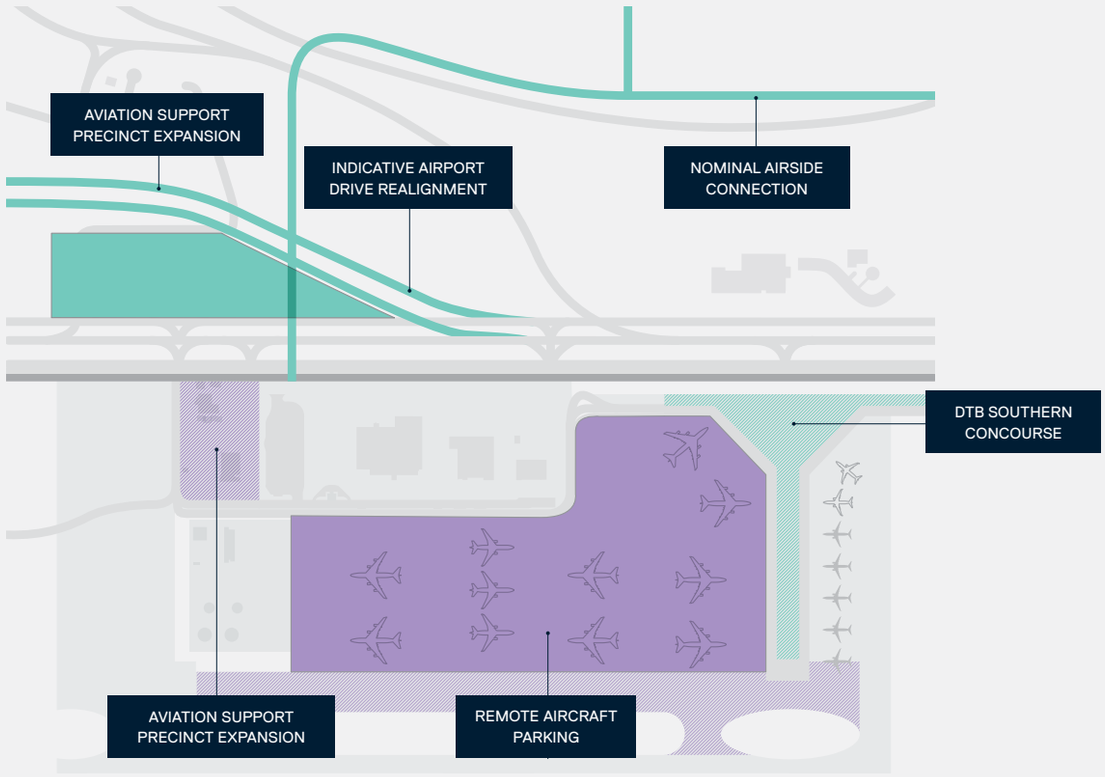
Over the 20-year horizon of the Master Plan, the following improvements are under consideration:

- Construction of a large remote parking apron and taxiway linkages to the International and Domestic Terminal areas.
- Further development of facilities including JUHI, Into-Plane services, catering, engineering support and cargo terminals.
- Potential changes to Airport Drive to create an enlarged aviation support and logistics hub area to the west of Airtrain, providing landside to airside access for new tenancies.
- Potential new airside corridor linking the Central and Western Terminal areas.
- Safeguard the corridor and station locations for the MTS connection between the Central Area and the International and Domestic Terminals.

REMOTE AIRCRAFT PARKING



PIER DEVELOPMENT



Planned developments over the next five years

Potential developments over a 20 year horizon

Maps not to scale

DOMESTIC AND FUTURE NORTHERN TERMINALS

DOMESTIC TERMINAL

During the 20 year planning horizon of this Master Plan, the Domestic Terminal will continue to be used as a domestic common use facility for full service, low cost carriers and smaller regional airlines. The terminal will be expanded to allow it to meet new security arrangements.

With the exception of the planned security upgrades, Brisbane Airport's preferred development strategy for the Domestic Terminal is to limit future modifications to the building core and focus future provision of passenger processing capacity through the development of the future Northern and Western Terminals.

However the plan does include options to add new passenger boarding concourses to the northern and southern ends of the terminal core.

The illustrations on the following pages provide additional detail on the location of potential planning considerations for the short (to 2025) and long-term horizons (2040) for the Domestic Terminal and its connection to the Future Northern Terminal precincts respectively.

Two potential positions are under consideration for the construction of the Domestic Terminal's northern concourse. One presents an optimal arrangement for a domestic operation only and the other an optimal arrangement for a potential shared domestic and international operation. The selection of a final position will follow further infrastructure development planning and feasibility analysis along with consultation with key industry partners including airlines.

MASTER PLAN 2020–2025

Projects envisaged for the next five years include:

- Expansion of the terminal footprint to enable installation of body scanners and CT cabin bag x-ray machines.
- Installation of common use self-service check-in and automatic bag-drops.
- Reconfiguration of baggage handling system and installation of Standard 3 checked bag screening.
- Expansion of baggage make-up and reclaim.
- Upgrades to airline premium lounge entries.
- Expansion and upgrade of retail facilities.
- Reconfiguration and upgrade of facilities within the former airline lease areas to support capacity requirements and the transition to full common use operation.
- Construction of the southern concourse.

FUTURE PLAN

Over the 20-year horizon of the Master Plan, the following improvements are under consideration:

- Incremental expansion of arrivals reclaim facilities into the ground floor spaces vacated by current check-in and security processing.
- Addition of aerobridges to the Central Terminal Area.
- Expansion and upgrade of the food and beverage and specialty retail areas.
- Construction of a southern concourse with additional departure gates, enabling the direct connection of five existing remote bays.
- Potential to connect to central apron area through further extension of the southern concourse.
- Construction of a large northern concourse to provide departure gates and parking for a mix of up to 20 aircraft and connection to the future Northern Terminal.
- A new multi-level short term car park.

FUTURE NORTHERN TERMINAL

The Future Northern Terminal is ideally located with direct connectivity to the cross link taxiway system and both runways and presents a significant opportunity for a common use terminal providing integrated domestic and international operations.

Development within the Northern Terminal precinct is not envisaged during the period from 2020 to 2025, however the interchangeable nature of projects across the various terminal areas makes it strategically important to safeguard this precinct, allowing the option to bring forward development should a suitable project driver materialise.

The development of the Future Northern Terminal could be incrementally staged through connection to the Domestic Terminal, sharing processing capacity and gate infrastructure.

While the final size and position of the terminal is yet to be determined, this plan has created a terminal reserve with sufficient flexibility to accommodate the requirements of the eventual development.

MASTER PLAN 2020–2025

Development within the Northern Terminal precinct is not envisaged within the period from 2020 to 2025.

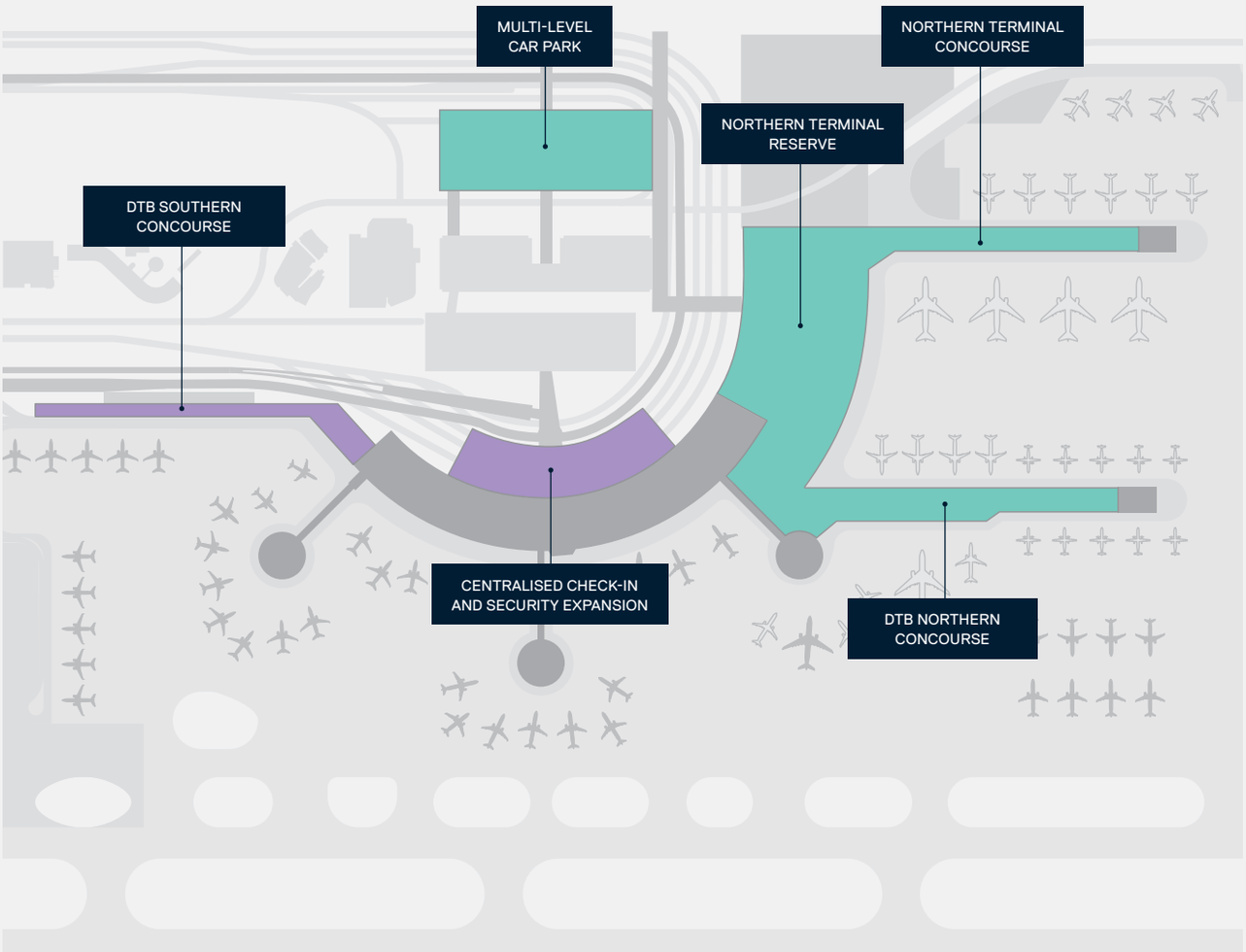
FUTURE PLAN

Over the 20-year horizon of the Master Plan, the following improvements are under consideration;

- Construction of a terminal processor with capability to process domestic and international passengers with associated terminal retail and airline lounge facilities.
- Construction of a concourse serving a combination of dedicated narrow-body gates and MARS configured wide-body gates.
- Connection of the terminal processor to the multilevel car parks and Future Western Terminal via passenger bridges.
- Creation of new terminal-face ground transportation facilities.
- Construction of remote aircraft parking and new GSE storage areas in proximity to the operational apron.
- Planning for compatible landside commercial development.
- Safeguard the corridor and station locations for the MTS connection between the Domestic, International and Future Northern and Western Terminals.

DOMESTIC AND FUTURE NORTHERN TERMINALS

DOMESTIC ONLY OPERATION

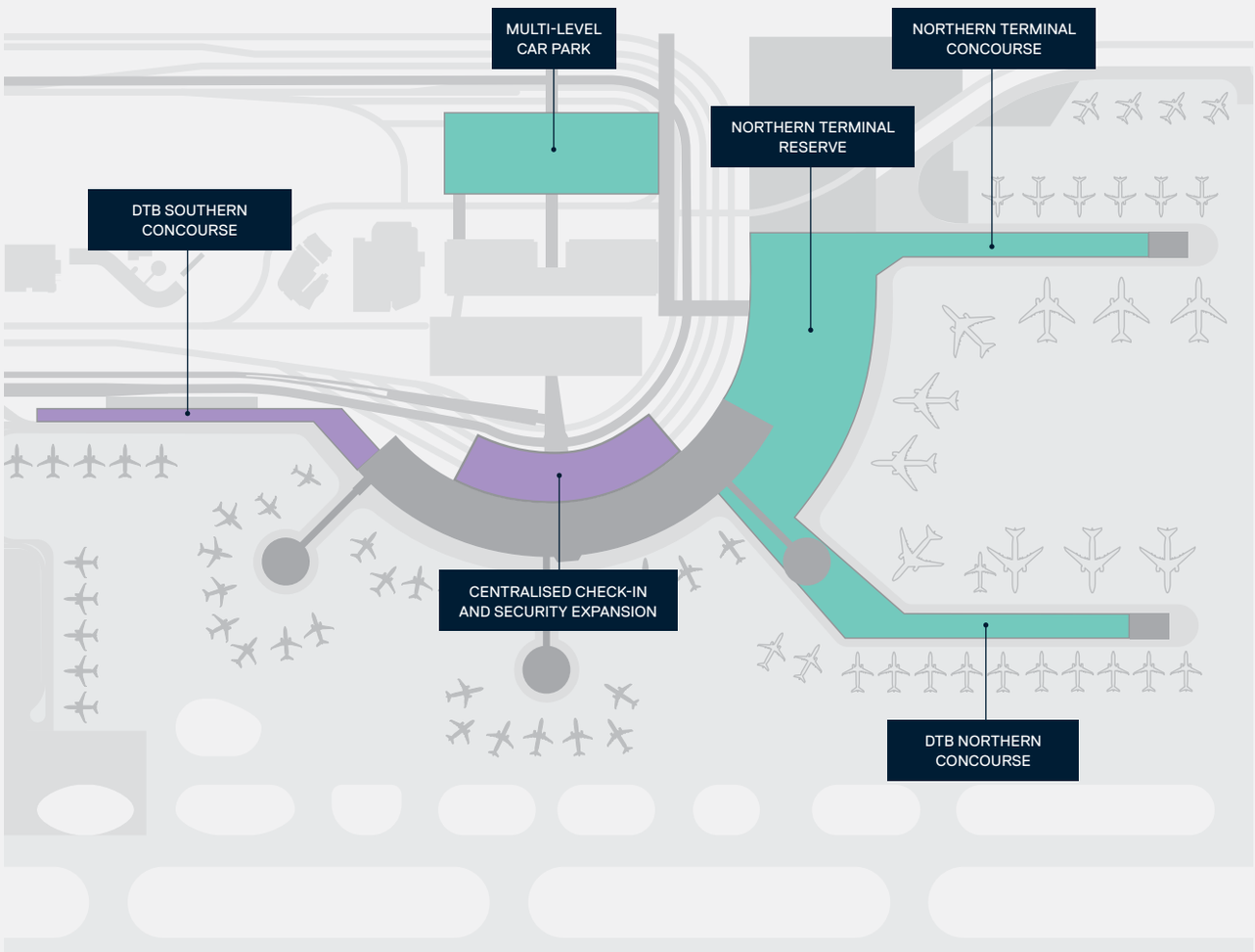


Planned development in the next five years

Potential developments over a 20-year horizon

Map not to scale

COMBINED DOMESTIC AND INTERNATIONAL OPERATION



Planned development in the next five years

Potential developments over a 20-year horizon

Map not to scale

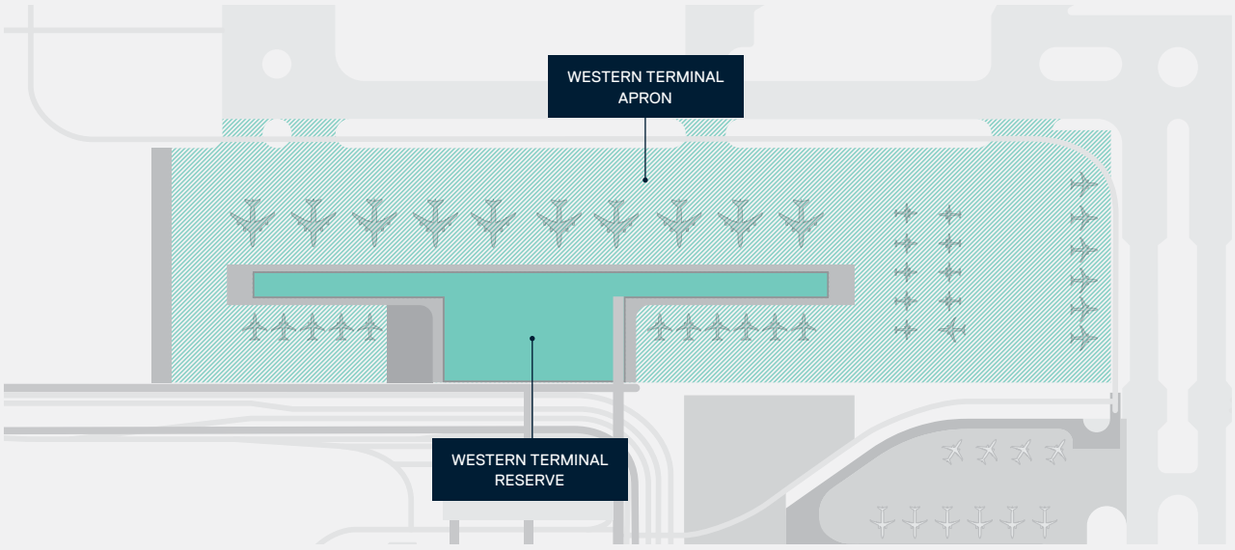
FUTURE WESTERN TERMINAL

The Future Western Terminal is ideally located with frontage to Brisbane's new runway. The planning for the precinct considers the potential for a large terminal reserve of sufficient size to process international and domestic passengers.

In comparison with the Domestic and Future Northern Terminal areas, there is less ability to manage an incremental airline migration plan for the future Western Terminal, due to the separation of the precinct created by Dryandra Road Development of the terminal processor is therefore likely to require a significant step change in infrastructure development, with a single migration step for a single carrier into the new facility.

Nonetheless, opportunities exist to develop the northern extent of the precinct first to provide remote aircraft parking, catering for potential overflow from other terminal areas, potentially assisting staging on the Northern Terminal development.

It is possible that there will be limited development in the Western Terminal Area within a 20-year time frame. This Master Plan however preserves the ability to bring forward development within the Western Terminal Area should a suitable project driver materialise. Brisbane Airport will continually review planning strategies for this precinct that allow the flexibility to respond to market demand.



OVER THE 20-YEAR TO ULTIMATE HORIZON OF THE MASTER PLAN, THE FOLLOWING IMPROVEMENTS ARE UNDER CONSIDERATION

- Construction of a large apron area providing parking positions for a mixture of narrow-body and wide-body aircraft.
- Construction of northern and southern concourses servicing the apron areas on either side of the terminal processor.
- Connection of the terminal processor to the multi level car parks and the Future Northern Terminal via passenger bridges.
- Creation of new terminal face ground transportation facilities.
- Construction of remote aircraft parking and new GSE storage areas in proximity to the operational apron.
- Safeguard the corridor and station locations for the MTS connection to the future Northern Terminal areas, commercial developments and remote parking areas.

Planned developments over the next five years **Potential developments over a 20 year horizon** *Map not to scale*

GENERAL AVIATION

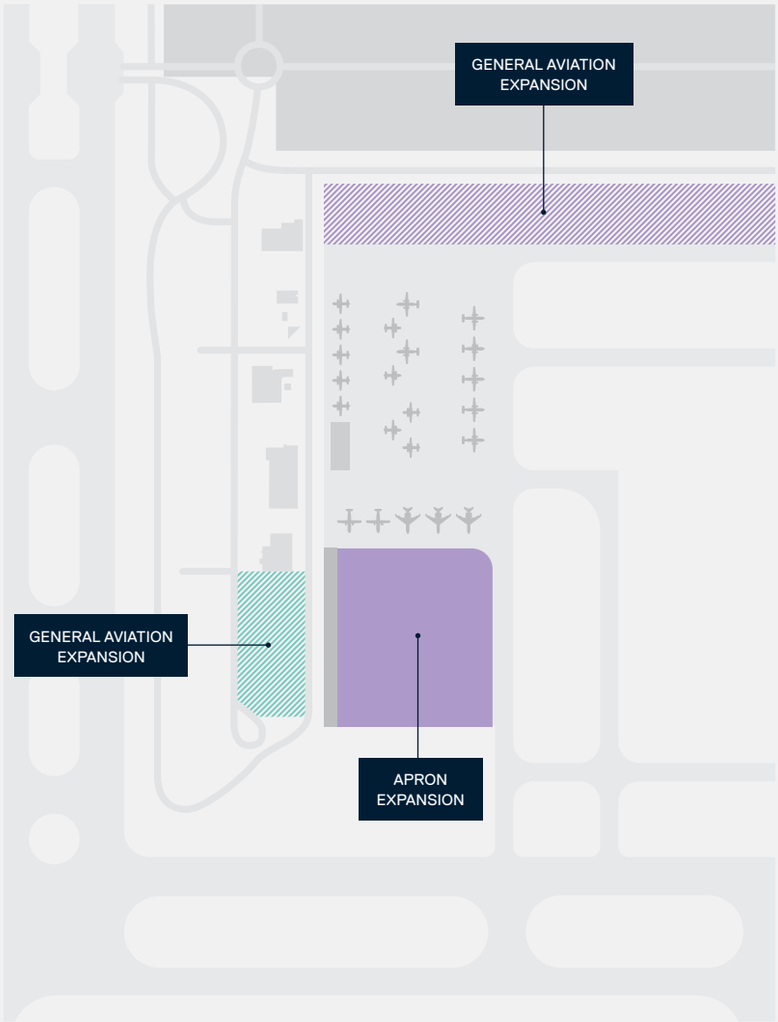
During the 20 year time frame of this Master Plan, General Aviation activities will remain an integral part of the airport supporting domestic and international passenger, freight and medical operations.

Brisbane Airport will continue to operate the dedicated General Aviation Terminal facility positioned against the General Aviation apron in Airport North.

All non-RPT passenger services involving aircraft up to 20 tonnes (excluding FBO and VIP processing) will operate from this facility.

Brisbane Airport has a dedicated FBO located at the Logistics Apron in the Da Vinci precinct. Assessments of the further demand for fixed-base facilities reveal limited airside development opportunities, restricting the further development of facilities of this type.

A future airside access point will be allowed for in Airport North.



OVER THE 20-YEAR HORIZON OF THE MASTER PLAN, THE FOLLOWING IMPROVEMENTS ARE UNDER CONSIDERATION

- Construction of additional apron parking area. Areas for the expansion of the apron will be reserved to provide additional parking for aircraft types (up to a maximum Code C narrow-body).
- Future general aviation expansion areas have been identified adjoining the general apron. These areas will provide for general aviation users which may include medical operations (both fixed-wing and helicopter), charter operations, or small freight operations.

Planned developments over the next five years

Potential developments over a 20 year horizon

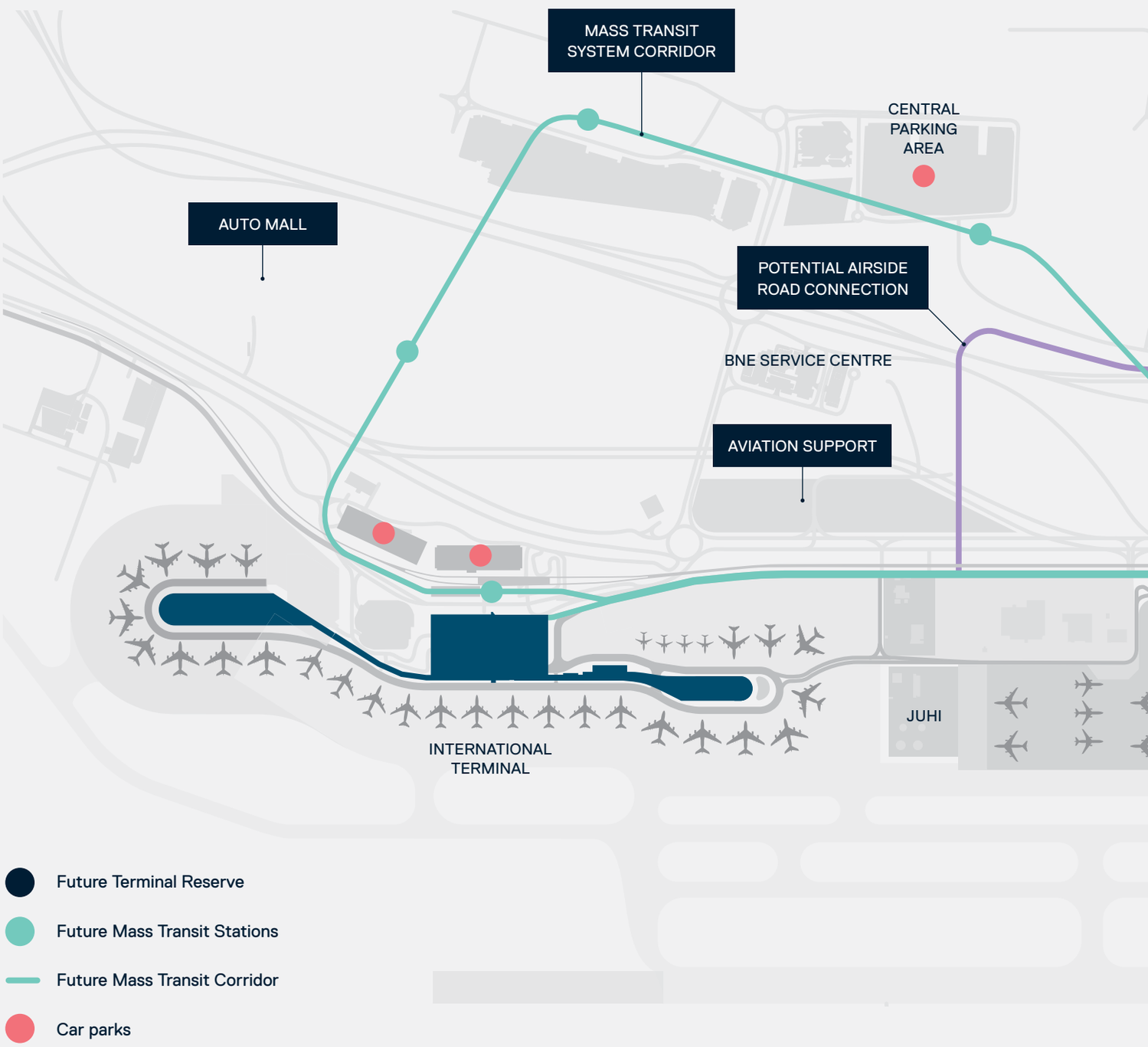
Maps not to scale

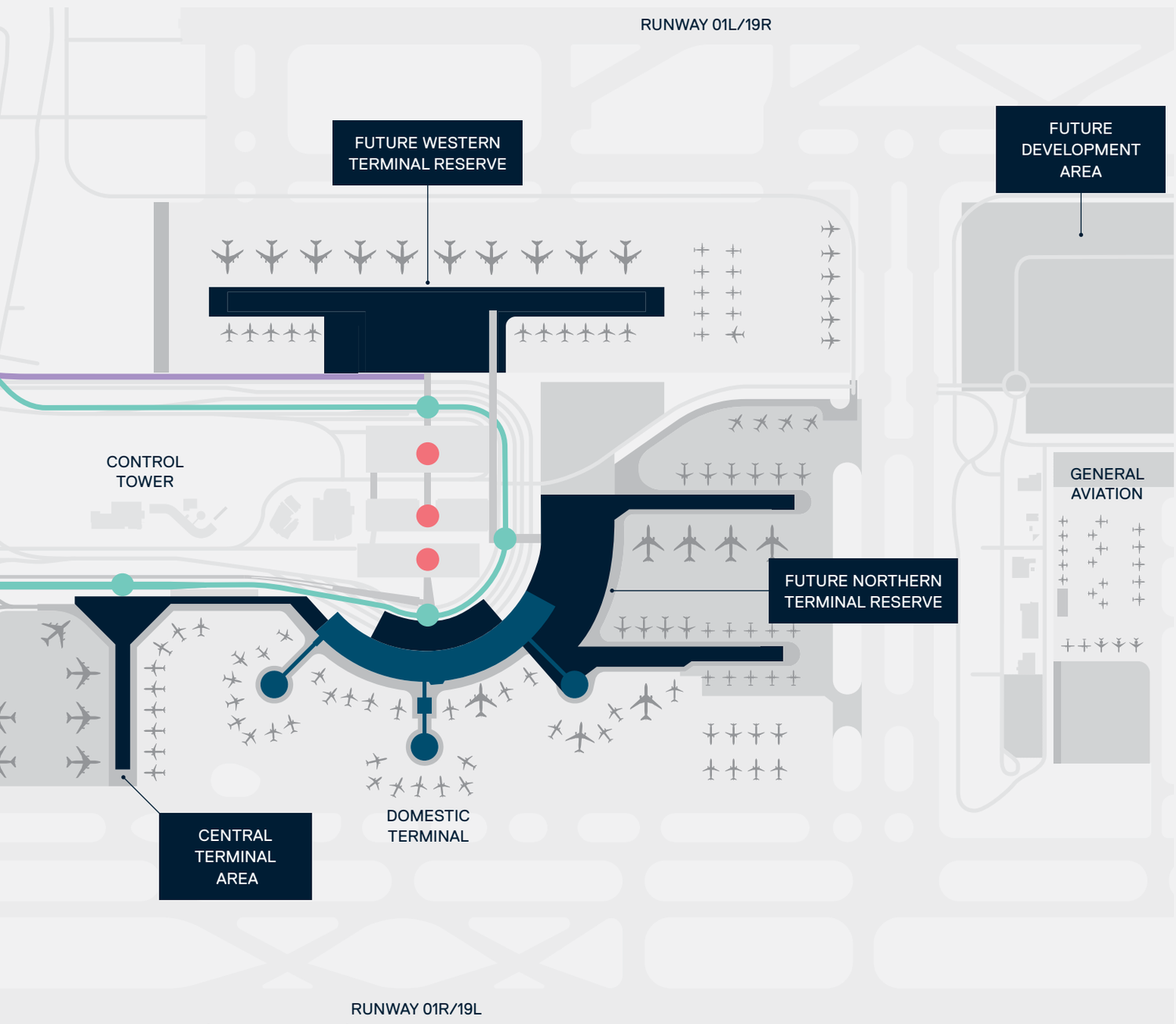
FUTURE TERMINAL CONCEPT

The map below is a combination of the precinct options outlined in the previous pages, illustrating a potential configuration of future terminal development at Brisbane Airport.

This configuration can be augmented to provide the Airport with the ability to respond to the influencing factors outlined in the terminal guiding principles, from future emerging trends and technology to capacity or legislation drivers.

A challenge to be faced in the future will be managing growing demands on access to and between the terminal precincts, however, combined with a flexible approach to aviation support and a number of future mass transit solutions, the airport is well placed to respond to the forecast capacity and operational changes that will eventuate over the period of the Master Plan.

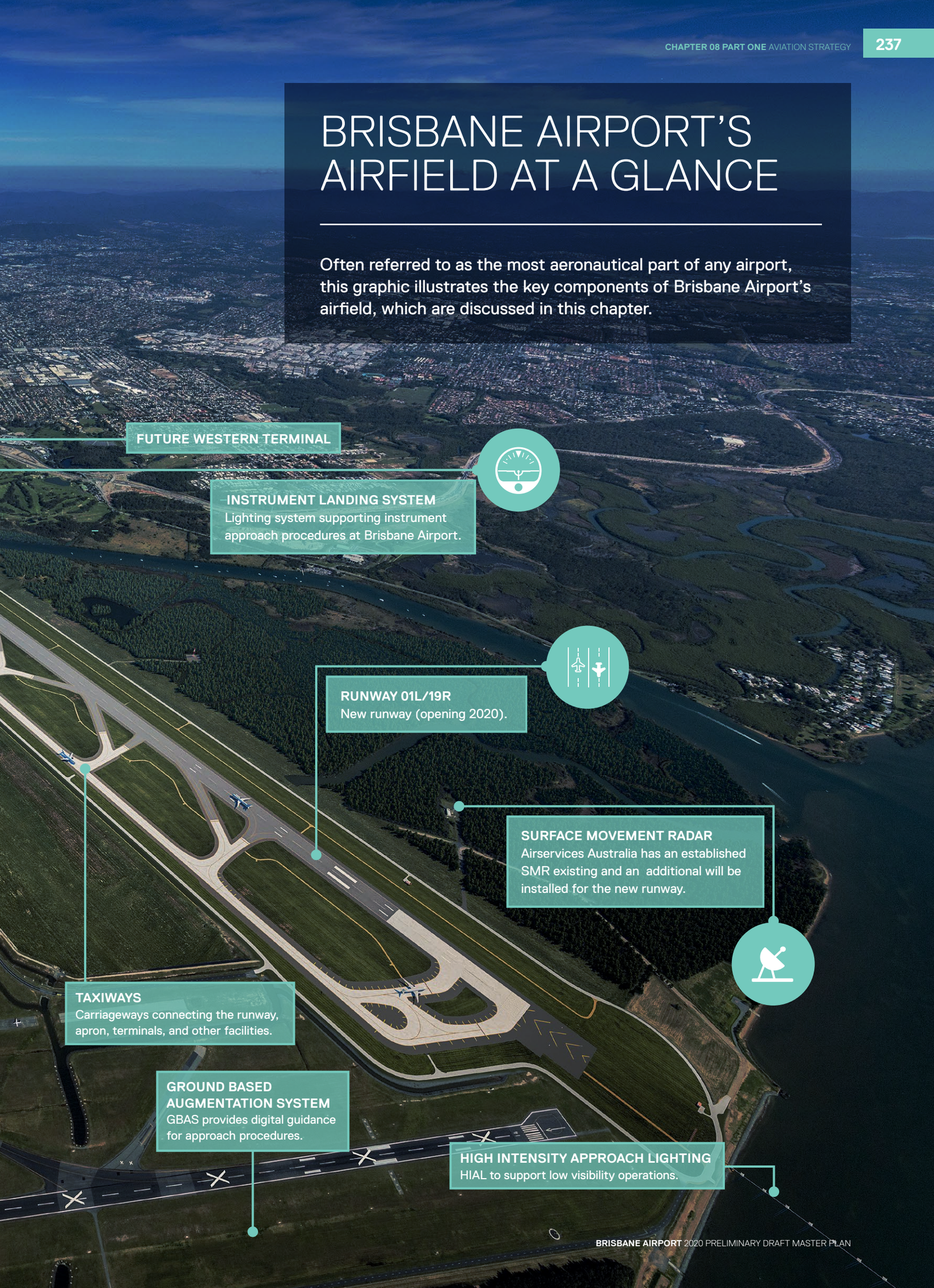



RUNWAY 01L/19R
FUTURE WESTERN TERMINAL RESERVE
FUTURE DEVELOPMENT AREA
CONTROL TOWER
GENERAL AVIATION
FUTURE NORTHERN TERMINAL RESERVE
CENTRAL TERMINAL AREA
DOMESTIC TERMINAL
RUNWAY 01R/19L


LOGISTICS APRON
JOINT USER HYDRANT INSTALLATION
The term JUHI is used to describe fuel storage, transfer and underground.
INTERNATIONAL TERMINAL
DOMESTIC TERMINAL
AIR TRAFFIC CONTROL
Air traffic control tower operated by Airservices Australia 24/7.
RUNWAY 01R/19L (EXISTING)
Runway designations refer to the compass bearing of the runway.
RPT (REGULAR PUBLIC TRANSPORT) APRON
Fixed Schedule aircraft on specific routes available to general public.
FUTURE NORTHERN TERMINAL
CROSS-LINK TAXIWAY
Taxiway being constructed to link existing and new runways.
GENERAL AVIATION TERMINAL AND APRON
AIRCRAFT MAINTENANCE APRON
AVIATION RESCUE FIRE FIGHTING SERVICE
Service provided by Airservices Australia.
RUNWAY 14/32
The existing cross runway will be closed when the new runway is operational.
STOP BARS
Row of lights that, when illuminated, designate a runway hold position for an aircraft.

BRISBANE AIRPORT'S AIRFIELD AT A GLANCE

Often referred to as the most aeronautical part of any airport, this graphic illustrates the key components of Brisbane Airport's airfield, which are discussed in this chapter.



THE AIRFIELD SYSTEM

An integral part of long term aviation capacity planning at Brisbane Aiport, the new runway is essential to ensure the continued provision of the capacity required to meet increasing demand.

Brisbane Airport has experienced significant growth, both in the number of partner airlines using the services of the airport and in passenger demand.

The large scale investment in building a new runway at Brisbane Airport that doubles current capacity is essential in terms of realising the economic benefits to the national and regional economies from air travel through Brisbane Airport.

Increased runway capacity will enable:

- Continued growth in the aviailability of direct airline routes to an increasing number of international, interstate and intrastate destinations.
- Improved connectivity and accessibility for business and leisure travellers.
- A reduction in aircraft delays and improved on-time performance, minimising disruption for travellers.
- Reduced, unnecessary fuel consumption and associated emissions from improved system reliability, for example where aircraft are held on the ground while awaiting a take-off clearance.

The new runway is scheduled to open in 2020 and will be designated as Runway 01L/19R. The current runway is designated Runway 01R/19L. The shorter Cross runway has a designation of Runway 14/32.

This section of the strategy includes details of airfield initiatives undertaken since 2014 as well as detailed assessments of aviation capacity, runway system design criteria and considerations of capacity and demand management included in the formation of the 2020 Master Plan.

DETERMINING CAPACITY

The capacity of the existing runway system is dependent on:

- Aircraft demand and mix during peak periods
- Proportion of arrival and departure movements
- Operating mode and the capacity of that mode
- Meteorological conditions (cloud base, visibility, wind direction and speed, etc.)
- Duration of the busy periods.

In determining when additional airfield infrastructure, such as a new runway, additional taxiways and apron stands for aircraft are required, aircraft movements is a more relevant planning parameter than passenger movements.

VARIATIONS IN USAGE

The volume and frequncy of air travel is not uniform over a year, with the number of daily flights fluctuating according to demand and busy periods. With 75 per cent of all flights at Brisbane Airport being on domestic routes, school holidays and major sports events have a major effect on the volumes of passengers using the airport on any given day.

Equally, with many pasengers using the airport for business travel, the busy times at the airport each day coincide with normal working hours, with especially high demand between 7am and 10am in the morning and 5pm and 8pm in the evening.

BRISBANE AIRPORT CAPACITY

Airfield modelling shows that historically, the capacity of the existing main and cross runway system at Brisbane Airport was in the order of 59 to 63 hourly movements. The cross runway contributes to overall system capacity, however it is dependent on runway operating direction and cannot be relied on. It currently accommodates less than 5 per cent of operations.

The peak hour capacity on the main runway is between 50 and 54 movements depending on the mix of jet aircraft. Larger jet aircraft require longer separation distances and if more of these aircraft arrive during the peak hour, then the capacity may be seen to reduce to approximately 50 movements per hour.

PAVEMENT CLASSIFICATION

When determining appropriate aircraft operations for an airport runway, taxiway, and apron, the Aircraft Classification Number – Pavement Classification Number (ACN-PCN) is used. This is a standardised method to report airport runway, taxiway, and apron pavement strength and used to assess the operational acceptability of an aircraft depending on its weight and on the strength of the pavements.

The ACN is a single unique number that expresses the relative effect of an aircraft of a given weight on a pavement structure for a specified standard subgrade strength.

The PCN is a five-part code associated to any section of the airport pavements (runway, taxiways, aprons or ramps) and indicates its mechanical resistance with respect to excessive wear and tear.

The calculated ACN is compared to the PCN of the foreseen airport pavements to assess the feasibility of the aircraft manoeuvring and operations. As a general rule, if ACN is smaller than the PCN the aircraft can manoeuvre without restrictions. If ACN is great than PCN, the aircraft can be accepted under specific limitations, for example concerning the maximum weight or the operation frequency.

The parallel runway system at Brisbane Airport is of sufficient length and width to enable operations by all types of large jet aircraft, including the Airbus A380, which is a code F aircraft.

RUNWAY SYSTEM DESIGN CRITERIA

Runway systems are designed based on an assumed 'design aircraft'. The design aircraft determines the characteristics of the airfield. Characteristics of Brisbane Airport runways are outlined in the table below.

	RWY 01R/19L	RWY 01L/19R	RWY 14/32
DESIGN AIRCRAFT CHARACTERISTICS			
Code	G*	4F	3C
Wing span	95m	65m but < 80m**	24m but < 36m
Length	113m	-	-
Outer main gear wheel span	-	14m but < 16m	6m but < 9m
AIRFIELD DESIGN CHARACTERISTICS			
Runway width	45m	60m	30m
Runway length	3,600m (extension reserved to 4,080m)	3,300m (extension reserved to 3,600m)	1,760m
Runway strip width	300m	300m	150m

** Code G aircraft are no longer recognised as a category by ICAO. Code F is the largest Code aircraft now recognised by ICAO.*

*** Based on review of historical evolution of aircraft type, Brisbane Airport has adopted a larger allowance for Code F aircraft ("Code F+") for future proofing purposes.*

FUTURE DEVELOPMENT CONSIDERATIONS

ADAPTING TO CHANGE

With technological advances being a catalyst for changes in aviation, ranging from legislative changes to changes in the types, size and weight of future aircraft, Brisbane Airport is in constant communication with aviation partners and key industry bodies to prepare for changing needs in the services it provides.

This strategy has been designed to retain the safety and security of all operational activities while also retaining flexibility where possible to adapt to change.

ANTICIPATING FORTHCOMING REGULATORY CHANGES

At the time of writing, the regulation which defines the design characteristics for an airfield (MOS Part 139) is under review. Brisbane Airport has been fully engaged with CASA throughout the MOS Part 139 update.

The new runway has been designed to meet current requirements. Brisbane Airport will continue to monitor the progress of the Part 139 review and respond accordingly once changes come into force.

New aircraft designs also have a potential impact on Brisbane Airport and it is anticipated that within the planning period of this Master Plan, new passenger aircraft will be introduced into the market.

Brisbane Aiport continues to work closely with aviation partners to ensure that future changes in requirements can be accommodated wherever possible.

CONSIDERING THE IMPACT OF FUTURE PASSENGER AIRCRAFT

Brisbane Airport recognises that the designs of aircraft will continue to evolve.

As an example, Boeing's B777X aircraft, currently under manufacture, will have folding wing-tips allowing it to taxi and park on Code E infrastructure, however when the wing-tips are extended it will be a Code F design. Due to other aircraft characteristics, the B777X will have an ACN impacting the life span of the airfield.

In preparation, Brisbane Airport has taken steps to upgrade parts of the airfield, increasing the thickness of the rigid pavement of the new Runway 01L/19R, and reviewing the capability of existing Runway 01R/19L and supporting taxiway systems.

New 'Middle of the Market' (MoM) or New Midsize Aircraft (NMA) which are larger than a large narrow body, and smaller than small wide body have the potential to relieve congestion on routes between Brisbane, Melbourne, and Sydney airports, potentially able to service short-medium haul ASEAN services as a Code D size aircraft accommodated by Brisbane Airport's parallel runway system.

The biggest impact of this aircraft would be that the taxiway and apron system as a Code D size aircraft (and respective ACN) would not be able to be accommodated on the existing Code C taxiways (and respective PCN).

It is also anticipated that larger aircraft might be introduced into the market. Although the parallel runway system will remain sufficient for aircraft up to Code 4F, the future passenger aircraft characteristics may have other impacts on airfield infrastructure due to the relative ACN and PCN.

The impacts will be a result of the aircraft weight and other at dimensional characteristics for which the current airfield taxiways and aprons may not be designed.

REGULAR MAINTENANCE ACTIVITY ON RUNWAY 01R/19L

Brisbane Airport will continue to conduct a twice-yearly heavy maintenance program for Runway 01R/19L. This entails three-night closures twice a year.

An Integrated Airfield Lighting Control Monitoring System was implemented on Runway 01R/19L in November 2018. Notably, the System does not add any functionality until the Stop Bars on Runway 01R/19L and the new Runway 01L/19R are commissioned in 2020.

The next overlay of Runway 01R/19L is expected to be required sometime between FY2026-FY2029.

Due to the pavement life and increasing demands of large aircraft on pavements, it is expected that major maintenance activities will be required on rigid pavements on Taxiway Alpha, Taxiway Bravo, and Runway 01R/19L thresholds within the planning horizon of the Master Plan.

Brisbane Airport is committed to the implementation of runway LED system lighting on Runway 01L/19R. In the future, progressive replacements of incandescent LED's used in the existing airfield will be considered, potentially aligned with runway overlay works.

Brisbane Airport has also invested in equipment which will allow increased low visibility operations. Since 2014, this has included the installation and implementation of Runway Visual Range infrastructure, and Stop Bars.

Comprehensive inspection and testing regimes are developed by Brisbane Airport to continue to refine the maintenance response to ongoing airfield requirements.

FUTURE CLOSURE PLAN FOR CROSS RUNWAY 14/32

An assessment of Runway 01R/19L has confirmed the high usability outcomes of the runway. The same assessment identified that retaining Runway 14/32 would have a negative impact on system capacity if it was to continue to be used.

The 2014 Master Plan outlined a strategy for the closure of Runway 14/32 and the decision was subsequently made by Brisbane Airport to close it.

The date of closure will align with the Aeronautical Information Regulation and Control (AIRAC) date of 21 May 2020. On this date, the airspace will transition into the new airspace system, despite the new runway not yet being operational.

Following the closure of Runway 14/32, Brisbane Airport has the option to convert the current cross runway into a taxiway. Simulation modelling has confirmed that this will not be required immediately, and is unlikely to occur until 2025, pending numerous industry growth variables.

At this stage, Brisbane Airport envisages this taxiway will be have capacity for aircraft up to Code C size. A potential trigger for this conversion might be development in the Northern Development Area and/or general aviation activity.

Brisbane Airport will undertake a simulation validation exercise to confirm benefits in airfield flows and efficiency prior to converting the current cross Runway 14/32 into a live taxiway.

PARALLEL RUNWAY SYSTEM OPERATION

PROGRESS OF BRISBANE'S NEW RUNWAY

Brisbane's new Runway 01L/19R is on track for construction to be complete in early 2020, followed by commissioning and endorsement of operational readiness by Airservices Australia around mid 2020.

It is anticipated that the physical works associated with the taxiway connections to the new runway will be completed in late 2019.

The new Runway 01L/19R will provide critical additional capacity. In addition, having two runways allows for more efficient shut down of operations when runway overlays and /or major maintenance works are being conducted.

ASSESSMENT OF ULTIMATE SYSTEM CAPACITY

The construction of the new runway will make Brisbane operationally Australia's most efficient airport.

The advantage of operating a set of widely spaced parallel runways is that the hourly capacity rate can be delivered consistently in either runway direction. Given its projected traffic mix, it is anticipated that Brisbane Airport with parallel runways will be able to sustain an hourly rate of 100 to 110 movements per hour over the morning and evening three to four-hour peak demand periods.

The capacity of the parallel runway system depends on the types of aircraft and mix of arriving and departing movements.

The Current and Future Flight Path and Noise Information booklet identifies the runways as being used in mixed mode (i.e. departures and arrivals operating from each of the runways) and given the destination/origin mix of the projected traffic, this will effectively see each runway operate almost as an independent airport.

There will be some interaction of flights paths and hence some small loss of capacity when specific long-haul departing flight requires to use the 300m longer existing runway 01R/19L because of an operational length requirement.

Brisbane Airport has undertaken an assessment of future demand and airline fleet trends and has concluded that in also considering current airspace management practices and standards, Brisbane Airport with the parallel runway system, has capacity to meet expected demands until the mid 2050's.

Unconstrained by artificial caps, with optimum mid-field terminal locations, balanced runway lengths and strength capacities, and positioning against Moreton Bay providing positive noise mitigation opportunities, Brisbane's runway, taxiway and terminal placement will be comparable to the world's best parallel runway airports.

DEMAND AND OPERATIONAL DELAY MITIGATION STRATEGIES

The 2014 Master Plan included details of a number of demand management and operational delay and mitigation strategies. These programs have largely been a success, with Brisbane Airport experiencing a notable decrease in delays since 2014.

AIRPORT CAPACITY ENHANCEMENT PROJECT

The Airport Capacity Enhancement Project (ACE) is a national program that was commissioned by Airservices Australia in collaboration with airports and industry stakeholders to address the growing demand at Australia's major airports.

The goal of the ACE program was to identify opportunities to improve efficiency and to increase the utilisation of existing airfield, airspace and infrastructure in order to increase runway capacity.

ACE is based on the principal of broad collaboration with the airport community to address the common challenge of airport congestion and delay. Led by Airservices Australia, the collaboration has matured and been accorded a high priority by all participants with around 25 capacity enhancement initiatives identified, prioritised, and undergoing progressive implementation.

Brisbane Airport has achieved all initiatives and desired outcomes outlined in the initial period of the ACE.

AIR TRAFFIC FLOW MANAGEMENT

In response to the significant growth and increasing operation delay experience, Airservices Australia implemented an advanced Air Traffic Flow Management application known as Harmony. Capable of simultaneously managing traffic flows at multiple airports, Harmony is used to run arrival Ground Delay Programs (GDP) for Sydney, Brisbane, Melbourne and Perth airports.

Harmony accepts real-time updates to schedule data, either via flight plan submission, airline day of operations changes to scheduled departure times, or Air Traffic Control (ATC) live data.

Harmony can display the most up-to-date demand/capacity information for any monitored airport, in turn providing airlines, airports and air traffic control with an enhanced capability to predict traffic management issues.

From a traffic management perspective, where demand exceeds capacity, Harmony will regulate traffic into a designated airport through the allocation of ground delay. Harmony will issue ground delays through the allocation of Calculated Off Block Times.

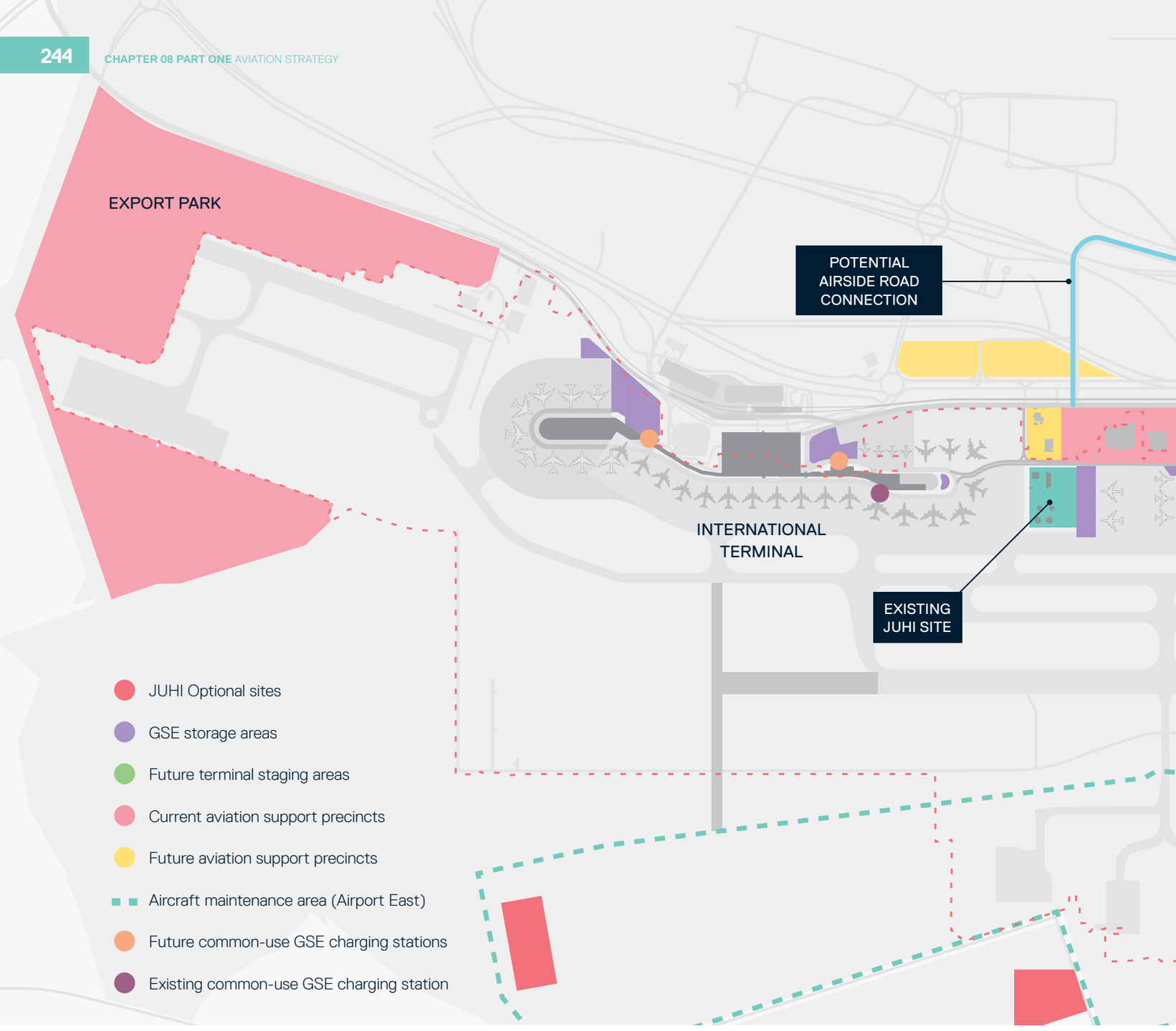
RUNWAY DEMAND MANAGEMENT SCHEME

Brisbane Airport introduced a Runway Demand Management Scheme (RDMS) in 2012. The RDMS was introduced through the Brisbane Airport Corporation Aviation Services and Charges Agreement for the runway system, with airlines/operators contractually bound to comply with its terms.

All operations to Brisbane Airport are required to apply for, and be allocated, a runway slot prior to operation. The RDMS defines the maximum number of slot allocations per hour as well as the process for 48 hours forward planning (weather look-ahead) to control ad hoc slot allocations. Under the RDMS, Brisbane Airport conducts a Local Coordination Committee each scheduling season to review the performance of the previous season, preview the upcoming season, and discuss potential enhancements to the RDMS.

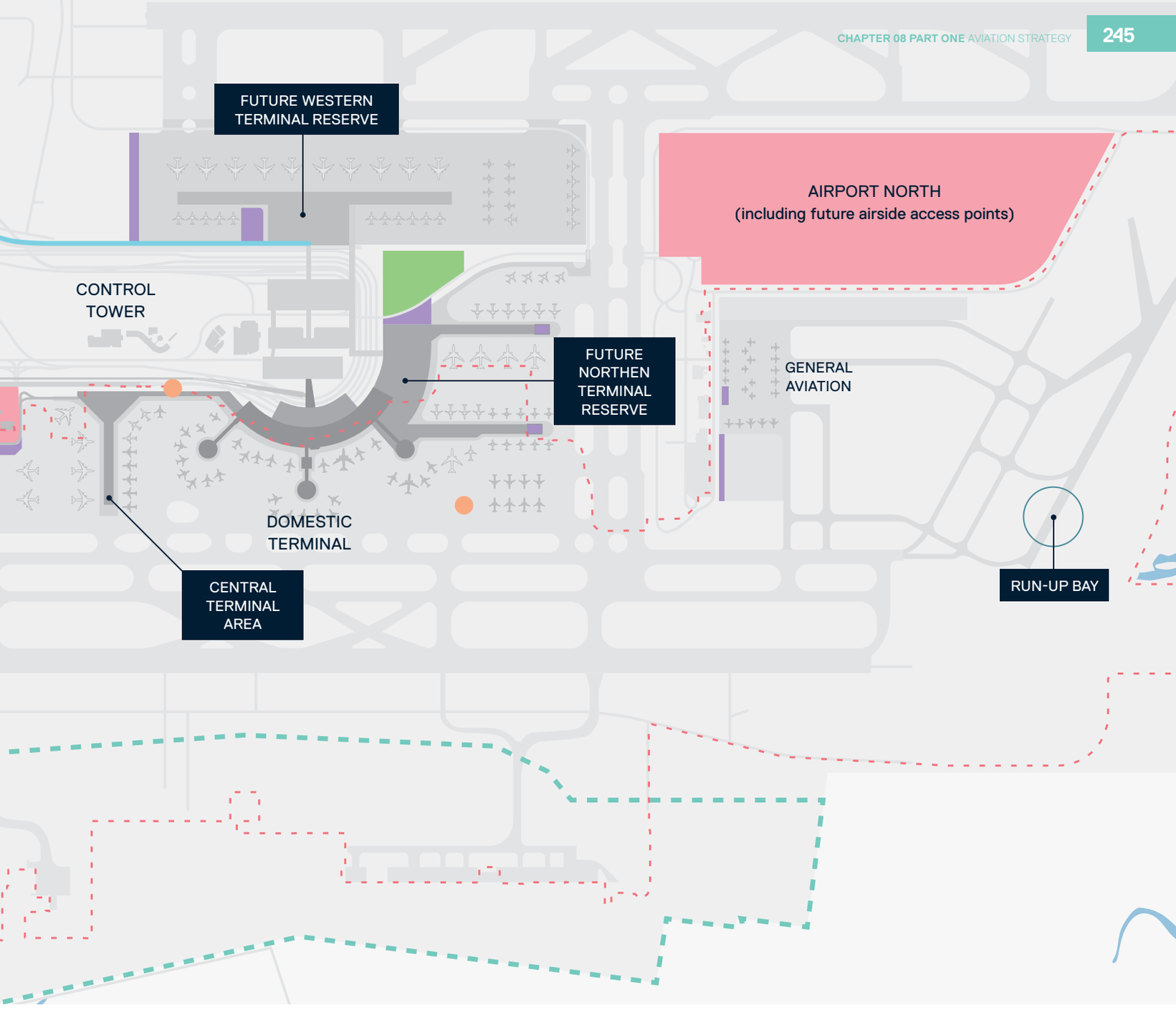
The RDMS has mitigated delays at Brisbane Airport and is a strategic planning tool that generally establishes a compliant, workable schedule on a seasonal basis based on good visual operating conditions.

Brisbane Airport intends to retain the RDMS when the new runway commences operation and it will be updated accordingly for a parallel runway operation.



PLANNING FOR AVIATION SUPPORT

The reliable and ongoing provision of aviation support facilities and services is critical to ensure safe, secure and efficient operations for airlines, passengers and businesses using Brisbane Airport.



Essential support services currently provided by Brisbane Airport include:

- Emergency Service Operations
- Ground Service Equipment storage and maintenance
- The supply and storage of aviation fuel
- Airport and aircraft maintenance
- Freight and logistics facilities
- Flight catering
- Air Traffic Control and other services provide by Airservices Australia

In each of these areas, Brisbane Airport operates reliable and sustainable services directly meeting the needs of users.

Brisbane Airport Corporation is committed to ensuring that the airport continues to operate successfully by facilitating the safe and secure movement of people, freight and aircraft.

In the foreseeable future, the majority of the support services will continue to operate from the sites at Brisbane Airport where they currently occur. Wherever possible, growth will be managed by incremental expansion of existing facilities.

Over time, as the airport continues to grow, Brisbane Airport Corporation will consider options to review the optimal arrangements for the provision of these support activities as terminal and apron areas expand with increased demand.

AVIATION SUPPORT
EMERGENCY SERVICES

Brisbane Airport is home to several emergency service operations including RACQ LifeFlight, the Royal Flying Doctors Service, Queensland Government Air and Aviation Rescue and Fire Fighting Services operated by Airservices Australia.

ROYAL FLYING DOCTORS SERVICE (RFDS)

RFDS is an essential and iconic service for Queensland's regional and remote communities. In recognition of this, Brisbane Airport supports operations to enable medical emergency support and patient transport throughout the state.

Brisbane Airport has contributed towards fitting out aircraft for medical use and purchasing aeromedical equipment for the Brisbane base of the RFDS team.

With more than 3,500 landings a year on average, these aeromedical flights are often the highest priority, carrying the most precious of cargo – premature babies to the Mater Hospital, children to Queensland Children's Hospital and critical patients to tertiary hospitals across Brisbane.

Brisbane Airport is also home to the RFDS Queensland Head Office and a dedicated hangar and administration facility in Airport North, close to landside vehicle access for emergency vehicles and the Brisbane Airport helipad.

RACQ LIFEFLIGHT

RACQ Lifeflight operates from an aeromedical base facility in Airport East. LifeFlight's helicopters take to Queensland skies an average of five times every day.

Queensland's rural and remote communities rely on the RACQ LifeFlight Rescue helicopters to bring the hospital to them. In medical emergencies, these flights are given priority.

Non-urgent RFDS flights are scheduled in non-peak periods to minimise any unforeseen delays wherever possible.

RESCUE AND FIREFIGHTING SERVICES

In addition to the emergency operations provided for Queensland bases at Brisbane Airport, the airport facilitates the Aviation Rescue and Fire Fighting Services operated by Airservices Australia.

More information about the services can be found in the Airservices section of this chapter.

QUEENSLAND GOVERNMENT AIR (QGA)

QGA delivers life-saving, community safety and state support aviation services to the people and government of Queensland. It operates five rotary wing and seven fixed wing aircraft from a variety of location across the state, with a base located in Airport East.

AERODROME EMERGENCY PLAN

The Brisbane Airport Aerodrome Emergency Plan (AEP) details the arrangements and agencies responsible for command, control and coordination of the notification, response to, management and initial recovery process for an emergency within the boundary or adjacent to Brisbane Airport. It also outlines procedures for the activation of operational centres and supporting facilities for emergencies.

The AEP includes planning and coordination requirements for full scale emergency deployment exercises every two years, with emergency exercises and table-top exercises based on credible risk based scenarios for Brisbane Airport conducted annually.

The Aerodrome Emergency Committee coordinates emergency planning at the airport including reviewing the AEP. It includes representatives from Australian Border Force, Air Traffic Control, Australian Federal Police, ARFFS, Australian Transport Safety Bureau, BCC, Commonwealth Departments (Agriculture and Water Resources and Department of Defence), Queensland Departments (Ambulance Service, Fire and Emergency Services, Health and Police) and Airlines.

AVIATION SUPPORT
GROUND SERVICE EQUIPMENT

Ground Service Equipment (GSE) supports the operations of aircraft on the ground. Areas are designed for contact and non-contact layouts and allow vehicles and equipment to be parked indefinitely. They can be either on or off-apron, including areas where vehicles and equipment may be held while waiting to service aircraft.

GSE CATEGORIES

The three main categories of GSE are:

- Equipment used by ground handlers for services including loading/unloading baggage and cargo, aircraft cleaning, lavatory service and potable water supply.
- Equipment used by ramp engineers for aircraft line maintenance, including ground power, pre-conditioned air and aircraft push-back.
- Aircraft containers and unit load devices (ULD).

GSE SERVICES

Ground handling is currently undertaken by four main providers, with some airlines handled by smaller ground service providers. The four major ground handling providers and airlines handled by each are:

- Qantas (Qantas).
- Toll (Virgin Australia).
- Aerocare (Tigerair).
- EGH (Jetstar).

FUTURE CAPACITY

CAPACITY REQUIREMENTS TO 2040

GSE storage areas are dedicated areas where vehicles plant or equipment may be stored. Equipment clearance areas are time limited areas adjacent to the apron for servicing aircraft equipment. Equipment storage areas are dedicated areas where vehicles plant or equipment may be stored.

Brisbane Airport currently has approximately 46,300 square meters of dedicated equipment storage area. It is anticipated that the areas dedicated for GSE use by the year 2040 will be approximately 85,000 square metres.

Brisbane Airport has equipment clearance areas identified adjacent to the stands at the both the international and domestic aprons. Equipment clearance areas are time limited areas adjacent to the apron for servicing aircraft equipment. The size and availability of these areas are dependent on stand configuration and aircraft type and these will be provided in the future to supplement GSE storage areas and the individual airline operational requirements.

ULTIMATE CAPACITY

At ultimate capacity, Brisbane Airport is anticipated to require more than 140,000 square metres of GSE area across the terminal precincts. The following GSE considerations will allow a more efficient use of both the GSE storage areas and equipment clearance areas.

GSE CONSIDERATIONS

EQUIPMENT POOLING

The potential future pooling of GSE may represent an opportunity for airlines to reduce costs to improve operational efficiencies. Greater cross utilisation of major equipment is also likely to drive increased efficiency, while less movement of equipment also reduces safety risks.

In addition, GSE pooling has the potential to reduce the volume of GSE required and reduce airside traffic. Consideration of future GSE pooling will be reviewed in consultation with airlines and aviation support partners.

ELECTRIFICATION OF GSE

Most GSE equipment currently used at Brisbane Airport runs by diesel refuelling. Electricity is more cost effective and more sustainable than diesel.

In considering a potential increase in the use of electric GSE, full consideration will be given to proposed changes to supporting infrastructure as well as any impacts on day to day operations. Currently, plans are in place for trials of two electric charging stations.

GSE SERVICING

On airport maintenance of GSE is currently provided for minor maintenance needs, with facilities distributed between apron areas. A future opportunity exists to locate a dedicated GSE servicing area within the central terminal precinct.

AVIATION SUPPORT
SUPPLY OF FUEL

Aircraft fuelling facilities at Brisbane Airport are owned and operated by an unincorporated joint venture comprising four major fuel companies, Viva Energy Australia, BP Australia Limited, Mobil Oil Australia Pty Ltd, and Caltex Australia Petroleum Pty Limited. This joint-venture is referred to as the joint user hydrant installation (JUHI).

The joint venture was created to maximise capital efficiency in the provision of aircraft fuelling infrastructure.

All facilities and assets are owned by the oil industry participants, under operating lease and licence arrangements with Brisbane Airport Corporation and their own joint working protocols.

Control is delegated to an operating committee comprised of representatives of each participant.

JUHI operators are responsible for the storage, management, and delivery of jet-A1 fuel at Brisbane Airport, in accordance with the standards identified by the Joint Inspection Group (JIG), the world-leading organisation for the development of aviation fuel supply standards.

These standards cover the entire aviation fuels supply chain from refinery to wing-tip.

AVIATION FUELLING FACILITIES

The term JUHI is used to describe the fuel storage, transfer and underground reticulation facilities to aircraft bays.

The Brisbane JUHI includes a complex system of storage tanks, fuel pipes, filters and other quality control equipment, and pipeline and hydrant systems for the distribution of jet fuel to aircraft at a number of locations throughout Brisbane Airport.

At Brisbane Airport JUHI is supplied via two pipelines

- BAPFII – Pinkenba Terminal to JUHI
- BP – Bulwer Island Terminal to JUHI

The installation servicing Brisbane Airport is located at Hakea Street between the International Terminal and Domestic Terminal aprons.

At Brisbane Airport, JUHI consists of four above ground Jet A1 storage tanks. With a total usable volume across these tanks of 12.8 Megalitres. Shell manages and operates the Brisbane JUHI on behalf of the JUHI JV.

This consists of:

- Tank 5 - 1.2 Megalitres
- Tank 6 - 1.2 Megalitres
- Tank 7 - 6.4 Megalitres
- Tank 8 - 4.0 Megalitres

The International Terminal apron is serviced by a system of in-ground fuel hydrants supplied by a high capacity 600 mm fuel pipeline from the Hakea Street depot.

The Domestic Terminal apron primary gates are also serviced by a system of in-ground fuel hydrants supplied by a medium capacity 450 mm fuel pipeline from the Hakea Street Depot.

Regional aircraft and remote stands on the domestic apron are serviced by tanker fuelling, as is the general aviation apron, and those aircraft requiring refuelling in Airport East.

GSE and airside vehicle refuelling requirements are currently addressed by several secondary facilities located within airline leased and licensed areas.

INTO-PLANE OPERATIONS

There are three into plane operators at Brisbane Airport. Each provide the vehicles and staff to service contracts and each are responsible for management of their airline contracts.

FUEL RESERVES

Currently there is approximately 2.9 days reserve held in the large tanks at the JUHI site, a surplus achieved by the successful commissioning of Tank 8 in mid 2019.

Forecasts indicate that the level of the reserve may reduce to two days by 2027, at which point Tank 9 is planned to be commissioned to ensure ongoing supply and suitable fuel reserve status.

Compared to other Category 1 airports in Australia, Brisbane Airport fuel supply is considered as moderately robust.

Reasons for this include:

- Proximity of four major fuel suppliers utilising two underground pipelines.
- Ability to move/share product between pipelines improving supply chain flexibility and reliability.
- Operating refinery in local area that has direct pipeline to Airport Suppliers Fuel Storage yard.

DEMAND MANAGEMENT

Within the period of this Master Plan, it is envisaged that the current JUHI facilities and storage tanks will be sufficient to continue to meet demand for fuel storage and delivery, however forecasts suggest that by 2023 there may not be enough available parking for the into plane carts and tankers servicing the system. Brisbane Airport will work closely with the JUHI operators and into plane partners to review and identify additional areas to stage from after 2023.

AVIATION SUPPORT
SUPPLY OF FUEL

FUTURE STRATEGY FOR AVIATION FUELLING FACILITIES

In planning for the future expansion of the JUHI depot and storage facility, two key factors have been considered – the amount of storage reserve on site and, the distribution system to the aircraft.

While newer aircraft are more fuel-efficient, demand for fuel at both the International Terminal and Domestic Terminal aprons is predicted to increase in-line with the growth in aircraft movements.

Additionally, planning for more storage reflects international benchmarking for fuel reserve criteria.

During the timeframe of the 2020 Master Plan, fuelling requirements will be planned and aligned with the projected future demand for fuel.

SHORT TO MEDIUM TERM

For the short to medium-term, to continue to provide the same level of services, considerations include:

- Installation of additional fuel storage at the Hakea Street Depot.
- Additional primary apron hydrant feeder route to the apron expansion areas to the north of the domestic apron.
- Establishment of common-user GSE and airside vehicle fuelling facilities within a functional operating distance of the major apron areas. A landside interface would minimise the requirements for airside supply access by tankers.

LONGER TERM

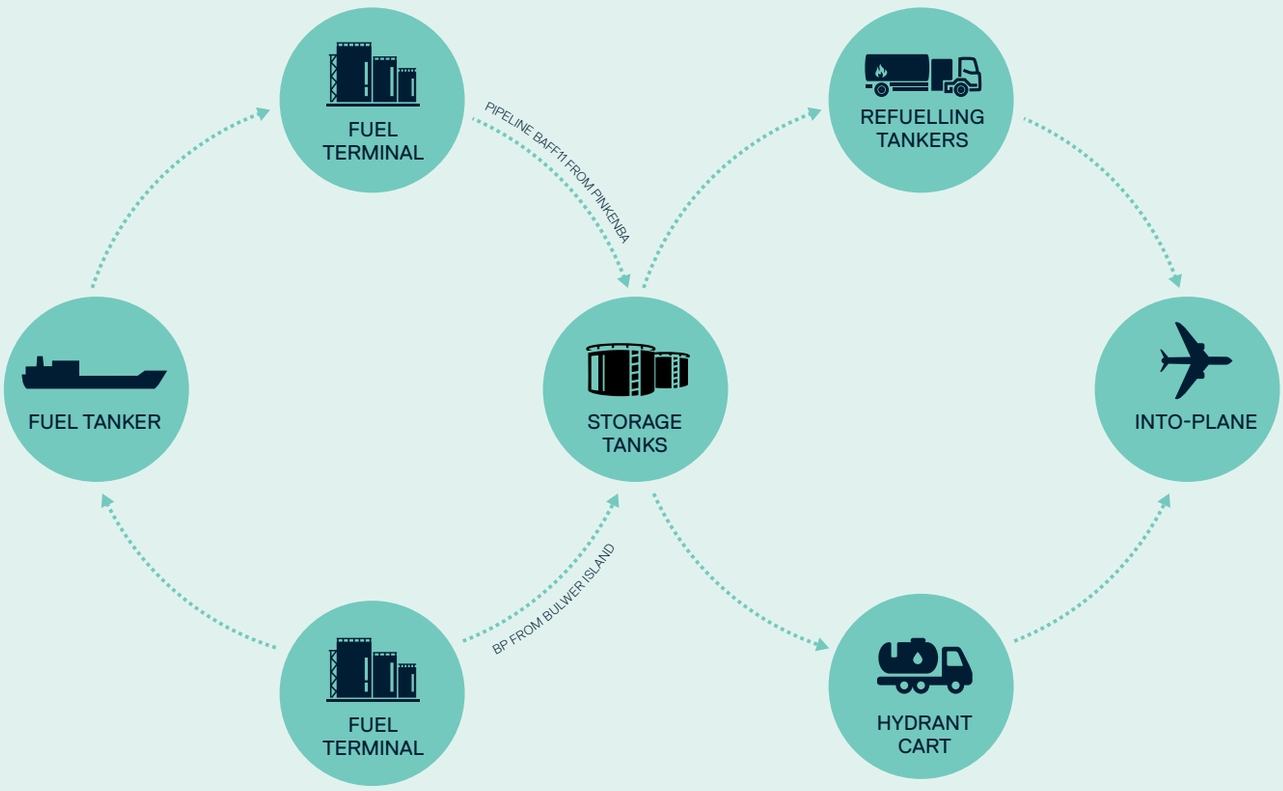
In the long-term, it is anticipated that to ensure connectivity between the apron and current and future satellite terminals, by 2032, the existing JUHI depot at Hakea Street may require relocation.

The 2020 Masterplan provides for three alternate futute sites for a JUHI facility. One option may be to operate a primary and secondary ‘booster’, with the booster site located in Airport North or Airport Central.

Alternatively the current site at Hakea Street has the ability to expand if the ancillary services are staged elsewhere to provide sufficient capacity to 2050.

Brisbane Airport Corporation will continue to work with JUHI and airline partners to develop and expand the use of biofuels for aviation.

FUEL SUPPLY AT BRISBANE AIRPORT



FUEL SUPPLY CHAIN	JUHI	INTO-PLANE
OUTSIDE BRISBANE AIRPORT	BRISBANE AIRPORT	

The JUHI facilities consist of a large on airport storage facility supplied by underground pipe connections to off airport regional bulk fuel terminals. JUHI manages the storage and hydrant facilities. The into-plane operators refuel aircraft from the hydrant system via hydrant carts or directly via tender.

AVIATION SUPPORT
AIRCRAFT MAINTENANCE

At Brisbane Airport, two types of aircraft maintenance activities are carried out on-airport, line maintenance and heavy maintenance. Line maintenance is carried out at the aircraft gate and within dedicated hangar facilities, while heavy maintenance requires a hangar conforming to relevant aviation standards.

GROUND RUNNING AND ENGINE TESTING

Aircraft engine tests are currently undertaken in Airport East. Following the closure of Runway 14/32 an option exists in future to relocate testing to Airport North, potentially to legacy pavement areas of the former runway system.

Regulations require that procedures are in place for reducing environmental impacts including the generation of noise.

Brisbane Airport is aware of the impact noise has on the community surrounding the airport and is continually reviewing measures to minimise this impact wherever possible.

Noise generated from aircraft ground running activities is managed in accordance with a Brisbane Airport Policy which outlines that all operators are required to request approval prior to commencement of any engine ground running.

Depending on the type of aircraft, varying ground running limitations apply with regard to time of day, allowable power settings, maximum allowable ground run duration, and locations available.

RELOCATION OF MYRTLETOWN ROAD

Increases in the demand for maintenance creates follow on needs for services including paint shops and upholstery repair and component supply and maintenance.

The Airport East precinct has been configured to provide connected airside front-line and supporting second-line sites to provide these services, however planning of this precinct is currently constrained by the alignment of main Myrtletown Road.

A planned relocation of the road to a 30 metre corridor reserve along the far eastern boundary of the precinct will remove two sharp corners, significantly improving access for aircraft maintenance and providing better public ground transport access to the Myrtletown industrial zones.

Airport East precinct has historically poor in-situ ground conditions, requiring improvement works to support foundations for buildings and aircraft aprons. To resolve this issue, aeronautical grade sand has been laid across approximately 30 hectares of the southern sections of the precinct in preparation for future development.

FUTURE STRATEGY

Additional space is available at Brisbane Airport to cater for the expansion of maintenance hangars, whether for new airlines requiring maintenance facilities or existing airlines choosing to relocate their maintenance programs to Brisbane Airport.

AVIATION SUPPORT
FREIGHT AND CARGO

Air freight is the most effective means to transport time-critical or high-value freight domestically and internationally.

As part of the development of the 2020 Master Plan, Brisbane Airport engaged with the air freight community in a series of consultations including a dedicated workshop for freight and cargo stakeholders.

As a result, a range of initiatives and strategies to nurture the growth of freight business will be established including the creation of the Brisbane Airport Freight and Cargo Working Group as part of a commitment to further ongoing engagement with the industry.

GUIDING PRINCIPLES

Brisbane Airport provides facilities for a number of freight forwarding companies, primarily located within Airport Central and Airport East. Freight operations service domestic and international destinations.

Guiding principles in the future planning of freight management at Brisbane Airport are:

- Proximity: Ensuring easy access to aircraft gates.
- On Airport Routes: Consideration of airside travel between terminals and the freight forwarding facility.
- Off Airport Routes: Consideration of maintaining optimal transport corridors to arterial connections.

GROWTH IN FREIGHT VOLUMES

Since 2014, there has been a 21.6 per cent growth in international wide body passenger aircraft movements at Brisbane Airport which contributed to an increase of 20.3 per cent in the volume of international air freight processed at Brisbane Airport.

Over the same period, the numbers of domestic freight flights increased by 37.8 per cent.

The combined volume of freight tonnage across domestic and international freight in 2018 was an estimated 190,500 tonnes.

REGULATORY CHANGES

Brisbane Airport Corporation is cognisant of security regulatory changes requiring all exports to be examined at piece-level or to originate from a known consigner.

Brisbane Airport will continue to engage with freight stakeholders to consider the impacts on their businesses and to understand how the airport may address or potentially assist in mitigating challenges.

FUTURE FREIGHT STRATEGY

By 2040, the combined volume of domestic and overseas freight tonnage is forecast to grow to approximately 526,700 tonnes. An estimated 80 per cent of that total is international freight.

The map in this chapter shows existing and future areas required to support the continued growth in freight.

Planning for freight will continue to locate facilities near passenger aprons wherever possible. In the longer term, future expansion of freight facilities will also be considered at Airport North.

Brisbane Airport recognises the future challenges faced by air freight stakeholders at Brisbane Airport, and within the industry. Brisbane Airport will continue to implement measures to alleviate 'pinch points' of the supply chain on-airport, potentially by including dedicated corridors for some airside movements, forward staging areas, and alternative routes for freight operators both airside and landside.

Direct airside access from Airport North to the Domestic Terminal precinct would be facilitated by the Dryandra Road underpass and an expanded airside road system.

FUTURE RELOCATION OF FACILITIES

In the longer term, freight facilities located between the International Terminal and Domestic Terminal precincts can be located in either the Airport North or Airport Central.

The relocation of catering and cargo facilities will allow for the expansion of aviation facilities including the satellite terminal, southern extension of the Domestic Terminal, additional apron area and a southern remote pier of the Domestic Terminal.

Brisbane Airport Corporation anticipates the majority of air freight will continue to be transported in the belly of passenger aircraft in the immediate future. Dedicated freighter services to and from Brisbane Airport may eventuate over the longer timeframe of this Master Plan.

In addition, to the logistics apron, the former international apron is capable of accommodating up to six Code E size aircraft. This provides opportunities for specialised freight and event operations and/or future dedicated freighter services.

AVIATION SUPPORT CATERING

The provision of flight catering facilities is an important support facility for airline operations. With both premium and low cost carriers operating from Brisbane Airport, catering facilities to suit both short and long-haul flights are an essential service.

CATERING SERVICES PROVIDED

Key services provided by Brisbane Airport include:

- Storage and replenishment of supplies, toiletries and equipment.
- Food preparation and storage.
- Management of food waste generated in flight.

Flight catering support services are currently located in the Central Terminal Area.

FUTURE CONSIDERATIONS

In the short-term and following the opening of the new runway, Brisbane Airport is planning a realignment of Airport Drive.

Once complete, it is envisaged that future needs for flight catering facilities could be met by the future development of a proposed airside zone between the current terminal zones.

As the location of these facilities has a potential impact on the on-time performance of airlines, Brisbane Airport will liaise with stakeholders in providing the most appropriate location and facilities.

It is understood that catering requirements may evolve and change. As an example, airlines offering catering to passengers for collection could reduce waste and reduce the need for aircraft to carry a full galley of food.

New innovations of this nature will be considered as they arise and are subject to discussion and agreement with all stakeholders before any changes are made to operations.

AUTOMATIC WEATHER STATION

An automatic weather station (AWS) operated by the Bureau of Meteorology (BOM) provides meteorological information for Brisbane Airport. The AWS is located near the existing ARFFS mains station on the eastern side of the airport.

In addition to this automatic weather station, the primary automatic weather station for the parallel runway system will be positioned between the two parallel runways adjacent to the airside road at the northern end of the airport.

The combined weather station facilities provide essential airport meteorological information required for aircraft operations including wind speed and direction, barometric pressure, temperature and humidity, rain intensity, cloud height and visibility measurement with contingency to ensure continuous 24/7 capability.

The weather information from the AWS is communicated via NextG wireless technology and may also be supported by physical connection to the air traffic control tower.

The information is presented to air traffic controllers to inform decisions about runway and flight path nomination and to ensure accurate and immediate weather information is provided to pilots.

Pilots can also access the information independently if required through the aerodrome weather information service.


dnata
catering
dnata
catering

AIRSERVICES AUSTRALIA FACILITIES

Airservices Australia owns and operates a range of support facilities at Brisbane Airport, providing integral services for airport users in addition to their regulatory responsibility.

AIR TRAFFIC CONTROL

Brisbane Airport's air traffic control tower was completed in 1985 and, along with its related facilities, remains well suited to provide air traffic control services for all aircraft and vehicle movements on taxiways and runways at Brisbane Airport.

Refurbished by Airservices Australia as part of a mid-life upgrade, including installation of the latest digital tower technology and consoles for additional air traffic control positions for Brisbane's New Runway, Brisbane Airport has been advised that the operating life of the tower will be at least another 20 years.

Advances in technology may impact the future need for an air traffic control tower in its current format however it is envisaged that the footprint of the current site will remain sufficient.

The protection of existing aviation infrastructure remains a key consideration in any future development

RESCUE AND FIREFIGHTING FACILITIES

Airservices Australia provides Aviation Rescue Fire Fighting Services (ARFFS) at Brisbane Airport in accordance with the standards and requirements prescribed in Civil Aviation Safety Regulation (CASR) 139H. ARFFS Brisbane provides the capability to deal with aircraft emergencies at Brisbane Airport, as well as a structural response capability to deal with fire or the threat of fire at the aerodrome. As part of this service, ARFFS Brisbane also provides a dedicated water rescue service and difficult terrain capability that is tailored to suit the local conditions at the airport.

ARFFS is required to respond to aircraft incidents at either end of the runways within three minutes from the initial call and must be able to apply fire-fighting agent at 50 per cent of the maximum discharge rate. All other vehicles required to deliver the appropriate discharge rate must also respond in time to ensure there is a continuous application of fire-fighting agent at the required rate.

In addition to Airservices regulated responsibilities, ARFFS Brisbane currently provides an emergency first aid response capability at the airport. This service allows ARFFS staff to respond quickly to medical emergencies on the aerodrome, to assess and treat patients until ambulance staff arrive. The ARFFS Brisbane Station also includes dedicated training infrastructure and facilities that support ARFFS ongoing training needs and contemporary training practices.

The extent of firefighting and rescue facilities is determined by the protection level recommended by ICAO for an airport of the size of Brisbane Airport. There are 10 categories of service that can be provided by ARFF stations at Australian airports. Categories dictate the required amount of water and foam carried, response times, water discharge rates and the number of personnel.

ARFFS Brisbane provides up to a Category 10 service in accordance with its Civil Aviation Safety Authority-approved certificate for existing A380 operations. Future B777X operations will also require provision of Category 10 services. ARFFS Brisbane service will continue to evolve to accommodate the potential introduction of new and different aircraft types and future changes to Brisbane Airport infrastructure and facilities.

In addition to the satellite and main existing ARRFS stations on the airport, a new station will open prior to the commencement of operation on the new runway, located in Airport North. The Fire Control Centre will continue to operate from the main existing station due to greater visibility of the airfield from this location. The satellite station was located to meet the response requirements for aircraft operating on Runway 14/32 and will no longer be required when this runway is closed on 21 May 2020.

Brisbane Airport, as part of the construction of the new runway, has built access ramps to facilitate emergency response for ARFFS into Moreton Bay, north of the airport.

AIRSERVICES AUSTRALIA FACILITIES

FIRST RESPONSE FIRST AID

The ARFFS also provides first response first aid to incidents in terminals/buildings at the airport. Where an incident is deemed serious enough to call a fire emergency vehicle, a paramedic should also be called. ARFFS personnel are firefighters with Advanced First Aid and assist or provide a first response until Queensland Ambulance Service (QAS) arrival who assume control immediately upon arrival. The exception to this would be at a major incident where Australasian Inter-Service Incident Management System Incident management principles have been engaged and authority to operate within a scene would be sought through incident control.

TRAINING FOR REGIONAL AIRPORTS

ARFFS facilities at Brisbane Airport are also used for training for Regional Airports. This is an ongoing strategy of ARFFS and Brisbane Airport and provides a contribution to the region to support ARFFS operations at other airports.

ARFFS has an MOU with the Queensland Fire and Emergency Service (QFES), drawn up in 2006, to provide assistance in the event of an emergency on or within the vicinity of the airport. This document ensures that in the event of an emergency, assistance will be rendered if requested if either service has the resources to assist. The MOU is current until 2021.

INCREASE IN RADAR FACILITIES

Airservices Australia has an established surface movement radar (SMR) installation at Brisbane Airport.

A Surveillance Radar facility is established at Mt. Hardgrave on North Stradbroke Island.

An on-airport Terminal Area Radar is located at Brisbane Airport. Since the 2014 Master Plan, the Terminal Area Radar has been upgraded to have a 'dome' added to provide greater protection from adverse weather conditions.

NEW SURFACE MOVEMENT RADAR (SMR)

A new SMR and a number of remote units (RU) will be installed for the new runway.

The system involves a SMR installation in the Airport East precinct supplemented with a system of distributed RUs that have the capability to, as a minimum, triangulate all areas of the movement area. The transponder-based system provides a comprehensive real-time surveillance screen image of the airport's airfield, operational area and terminal area airspace. It will assist Air Traffic Control (ATC) in managing flight operations at Brisbane Airport and further reducing the risk of runway incursions.

NAVIGATIONAL AIDS AND SYSTEMS

INSTRUMENT LANDING SYSTEM

The key navigational aid at Brisbane Airport on Runway 01R/19L is an Instrument Landing System (ILS) consistent with the ICAO Category 1 standard set.

Additional instrumentation continues to be implemented to improve the safety and efficiency of operations in low visibility conditions.

A Category 1 ILS is being installed for the new runway. In construction, hardware and conduits will be installed in order to allow for an easy future upgrade to Category 2.

It is anticipated that the ILS will remain a relevant navigational aid in the foreseeable future. Advances in technology may impact the future use of the system, however it is likely to remain in use as a back-up network.

RADIO NAVIGATION SYSTEMS

Brisbane Airport uses Very High Frequency (VHF) Omni-Directional Range (VOR) and distance measuring equipment (DME) combined radio navigation stations for aircraft.

VOR produces an angle between the station and the receiver in the aircraft, while DME does the same for range. Together, they provide the two measurements needed to produce a navigational "fix" using a chart.

Airservices Australia have indicated that within the planning period of this Master Plan, the VOR will become redundant however the DME will remain and be used in conjunction with the ILS.

FUTURE NAVIGATIONAL AIDS AND SYSTEMS

The Ground Based Augmentation System (GBAS), known in Australia as Honeywell SmartPath, is a satellite-based precision landing system. It uses GPS signals to provide aircraft with precise positioning guidance during the final stages of an approach, both horizontal and vertical allowing for a safer, more efficient descent and landing.

A single installation has the capacity to guide up to 26 highly precise approach flight paths simultaneously within a 42-kilometre radius. As it is not fixed by function (e.g., proximity to runway centreline), there are a greater variety of siting location options, potentially reducing the need for extensive site preparation effort typically associated with ground-based precision approach and landing systems.

Brisbane Airport will continue to safeguard a site for this infrastructure. If newer technology replaces the need for GBAS, the current sites nominated for GBAS will be utilised where possible.

Upgrades to navigation aids and systems will be dependent on the equipment and capability or aircraft and would be affected the cycles of aircraft production and manufacturing.

AIRSERVICES AUSTRALIA FACILITIES

SURFACE MOVEMENT CONTROL

The separation of aircraft taxiing on the apron manoeuvring area is a joint pilot and air traffic controller responsibility. Brisbane Airport will support digital solutions to provide additional information to the surface movement controller in the central tower where required.

DIGITAL TOWER SERVICES

Brisbane Airport recognises the proposed strategy of Airservices Australia to adopt a remote (virtual) tower concept of operations.

Brisbane Airport understands Airservices Australia is currently reviewing the potential for this technology and looking to trial across three scenarios in Australia. At this stage, it is understood that Brisbane Airport is not being used as a trial location.

TECHNOLOGY STRATEGY

Line of sight of the airfield is vital for safe airport operations. Subject to CASA compliance approval, it is possible that Airservices Australia may wish to use alternative technology to visually reproduce the display for the controllers, rather than looking out the traffic control tower window.

There may also be an opportunity to use technology to fill any black spots with regard to line of site, if approved by CASA.

This technology may also be utilised to ensure that future developments built do not compromise line of sight and would be subject to a stringent safety case.

Any move towards digital controlling will be required to meet telecommunication and aeronautical requirements.

AVIATION STRATEGY PART TWO AIRSPACE AND SAFEGUARDING

AIRSPACE PROTECTION

Ensuring adequate protection from infringements to the airspace surrounding Brisbane Airport is as important to the safe and efficient use of the airport as the safe design and operation of on-ground infrastructure including runways, taxiways, terminals and navigational aids.

Facilitating the safe and efficient movement of aircraft is a fundamental principle in the development of a Master Plan. Aviation provides an efficient means of long distance transport, particularly in Australia with long distances between major population centres.

Unlike land transport, where long land corridors must be quarantined for road or rail infrastructure and then constructed and maintained, air transport utilises 'highways in the sky' for travel from one city to another.

The physical infrastructure required for air transport is limited in the main to the airports at each end of the journey. Suitable sites for airport infrastructure are increasingly difficult to identify and establish in existing urban areas. Competing land uses and community concerns about noise make the establishment of new airport sites very difficult.

Despite continued growth in demand for air travel across Australia, Brisbane Airport remains the most recently established Australian capital city airport.

THE NEED FOR BRISBANE'S NEW RUNWAY

Originally considered as part of the original construction of the airport in the 1970s, Brisbane Airport is currently nearing the completion of construction of a new runway located two kilometres west of and parallel to the existing main runway. It will be the most important piece of aviation infrastructure to be built in Queensland in the last 30 years.

Forecasts of continued growth in passenger demand reveal that the existing runway system would find it increasingly difficult, and ultimately impossible, to continue to provide the quality and frequency of services required by the people and businesses of Brisbane and the state of Queensland overall.

PLANNING IMPERATIVES FOR SAFE OPERATIONS

Safe aviation operations rely on maintaining an airport environment as free as practical from obstacles that might impede the safety, efficiency or regularity of current and future aircraft operations.

In considering planning imperatives for the 2020 Master Plan, a primary concern is to ensure that the state's largest aviation gateway is able to continue to operate safely and efficiently, and that constraints necessary to maintain aviation operations are understood and recognised in local planning processes, including development around the airport site.

AVIATION REGULATION & LEGISLATION

Aviation operations are carefully regulated to ensure the highest possible level of safety for the travelling public. A regulatory framework provides for the identification and protection of what is known as prescribed airspace within the vicinity of an airport to ensure aircraft flight paths and procedures can be planned and operated safety.

Essentially, the definition of prescribed airspace provides the certainty required to ensure aircraft are separated from each other and from any obstacles which may pose a safety risk.

LEGISLATIVE ENVIRONMENT

As a leased Commonwealth airport, Brisbane Airport is subject to the *Airports Act 1996* (Cth) **(Airports Act)** along with the *Airports (Protection of Airspace) Regulations 1996* (Cth) **(Airports Airspace Regulations)**. Part 12 of the Airports Act and the Airports Airspace Regulations establish a framework for the designation and protection of prescribed airspaces at, and around, airports.

The Airports Act defines prescribed airspace as the airspace specified in, or ascertained in accordance with, the Airports Airspace Regulations, where it is in the interests of the safety, efficiency or regularity of existing or future air transport operations into or out of an airport for that airspace to be protected.

Under the Airports Act, any activities which would result in an intrusion into the prescribed airspace for Brisbane Airport (referred to as 'controlled activities') are prohibited unless otherwise approved.

The Airports Airspace Regulations provides a framework for the Secretary of DIRDAC **(Secretary)** to approve applications to carry out controlled activities (with any necessary conditions) if certain criteria are satisfied. Where proposed controlled activities do not comply with the criteria set out in the Airports Airspace Regulations, they cannot be approved.

QUEENSLAND STATE PLANNING POLICY

The Queensland State Government published a revised State Planning Policy (SPP) in 2017, identifying Brisbane as a strategic airport. The policy outlines the key role airports and aviation facilities play in facilitating economic growth in Queensland.

Specifically, it states that "the operation of strategic airports and aviation facilities is protected, and the growth and development of Queensland's aviation industry is supported".

Brisbane Airport supports and integrates the following state policies in its approach to current operations and future planning:

- Strategic airports and aviation facilities are identified, including the associated Australian Noise Exposure Forecast contours, obstacle limitation surfaces or height restriction zones, public safety areas, lighting area buffers, light restriction zones, wildlife hazard buffer zones, and building restricted areas.
- The safety, efficiency and operational integrity of strategic airports are protected. Development and associated activities must not create incompatible intrusions, or compromise aircraft safety, avoid increasing risk to public safety and be compatible with forecast levels of aircraft noise within the 20 ANEF contour or greater.
- Developments must complement the role of a strategic airport as an economic, freight and logistics hub, and enhances the economic opportunities that are available in proximity to a strategic airport.
- Aviation facilities are protected by avoiding development and associated activities within building restricted areas that may affect the functioning of the aviation facilities.
- Key transport corridors (passenger and freight) linking strategic airports to the broader transport network are identified and protected.

NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK

The National Airports Safeguarding Framework (the Safeguarding Framework) is designed to enhance the current and future safety, viability and growth of Australian aviation operations.

The Safeguarding Framework Implementation Plan will identify the processes through which jurisdictions will seek to implement the guidelines taking into account:

- The implementation of best practice in relation to land-use assessment and decision making in the vicinity of airports.
- Assurance of community safety and amenity near airports.
- Better understanding and recognition of aviation safety requirements and aircraft noise impacts in land-use and related planning decisions.
- The provision of greater certainty and clarity for developers and land owners.
- Improvements to regulatory certainty and efficiency.
- The publication and dissemination of information on best practice in land use and related planning that supports the safe and efficient operation of airports.

The Safeguarding Framework provides the opportunity for improvements in consistent planning outcomes across jurisdictions, and to improve the safety and viability of operations at Australian airports. It includes information to guide government depaertments in regulating and managing:

- Measures for managing intrusion by aircraft noise.
- The risk of building-generated windshear and turbulence at airports.
- The risk of wildlife strikes in the vicinity of airports.
- The risk of wind turbine farms as physical obstacles to air navigation.
- The risk of distractions to pilots from lighting in the vicinity of airports.
- The risk of intrusions into the protected operational airspace of airports. It is anticipated that guidelines for public safety areas and the protection of communications, navigation and surveillance infrastructure will also be considered.

The Safeguarding Framework Implementation Plan will identify the processes through which jurisdictions will seek to implement the guidelines taking into account:

- Existing Commonwealth, state and territory legislation and regulatory processes.
- Responsibilities of each level of government.
- Local conditions and circumstances.
- The need for efficiency, effectiveness and appropriate risk management.
- Provision for evaluation and review of regulatory arrangements over time to accommodate changing circumstances and technologies.

Brisbane Airport Corporation advocates the full incorporation of the current Safeguarding Framework guidelines in Queensland planning policy and encourages the continued development of such guidelines as a best practice approach to ensuring sustainable airport operations.

AIRSPACE DEFINITION

Prescribed airspace can be thought of as a series of three-dimensional shapes, radiating from the airport to as far as 30 kilometres from the runway ends.

When aggregated, these shapes determine a series of surfaces, above which any potential obstacle should be assessed to determine whether it has an unacceptable impact on the safety, efficiency or regularity of air transport operations (both existing and future).

DECLARATION OF AIRSPACE

PRESCRIBED AIRSPACE

Aviation operations are carefully regulated to guarantee the highest possible level of safety for the travelling public.

The regulatory framework provides for the identification and protection of controlled airspace within the vicinity of an airport (referred to as the 'prescribed airspace') to ensure that aircraft flight paths and procedures can be planned and operated safety. The prescribed airspace ensures aircraft are separated from each other and from obstacles posing a safety risk.

Prescribed airspace is a series of three-dimensional shapes, radiating from the airport to as far as 30 kilometres from the runway ends.

CONTROL MECHANISMS

The Airports Act and the Airports Airspace Regulations are the primary control mechanisms for airspace protection.

The Airports Airspace Regulations establish a system for the protection of airspace at, and around those privatised airports regulated under the Airports Act, in the interests of the safety, efficiency or regularity of existing or future air transport operations into or out of airports.

AREAS COVERED

Under the Regulations, the 'prescribed airspace' for Brisbane Airport is made up of:

- The OLS and PANS-OPS surfaces, and the airspace above those surfaces, for existing and future air transport operations into and out of Brisbane Airport.

Any additional airspace that has been declared under the Regulations by the Secretary of the Department of Infrastructure and Regional Development and cities. In making that declaration under the Airports Airspace Regulations, the Secretary must have regard to:

- The OLS and PANS-OPS surfaces for the ultimate runway system for the airport proposed in the approved Master Plan.
- Any advice from the CASA.
- Any other matters the Secretary considers relevant.

This declaration process has allowed Brisbane Airport to protect airspace around the New Parallel Runway (NPR) runway system and extensions to the existing main runway. It also takes account of new aircraft navigational procedures that are introduced as a result of technological advances.

BRISBANE AIRPORT'S APPROACH TO DECLARING THE PRESCRIBED AIRSPACE

After commencing as the Airport Lessee Company and Operator of Brisbane Airport on 02 July 1997, Brisbane Airport Corporation first had the prescribed airspace for Brisbane Airport declared on 5 July 2001.

Following further refinement of the positioning of the new runway, combined with the evolution and implementation of satellite-based airspace procedures, a major update exercise for the Brisbane Airport airspace resulted in a revised declaration on 19 April 2013.

In consideration of best-practice precedent (including additional components used by other major Australian airports, incluidng visual segment surfaces and protection of major airfield lighting systems), Brisbane Airport also initiated a minor update process in 2012.

That update included a slight relaxation of Radar Terrain Clearance Chart (RTCC) surfaces to a consistent high-rise building height allowance along the CBD riverfront, with aviation industry stakeholders recognising the value of such development outcomes. The minor change, which will potentially benefit CBD development included an assessment of the implications for safety, efficiency and regularity outcomes.

This third iteration of Brisbane Airport Airspace was declared on 14 July 2017. In each instance, Brisbane Airport's approach involved both an inception and a process finalisation workshop with representation typically from:

- Department of Infrastructure, Regional Development and Cities.
- State Departments of Transport, Planning and Development.
- Brisbane City Council.
- Major Airlines – Qantas Airways and Virgin Australia.
- Board of Airline Representatives of Australia.
- Civil Aviation Safety Authority.
- Airservices Australia.
- Procedure design specialists.

Facilitating each of the three separate airspace definition processes undertaken since airport privatisation, Brisbane Airport has engaged specialist airspace consultants to undertake the analysis necessary to identify the prescribed airspace in accordance with the Airports Airspace Regulations.

Close consultation was required with CASA and Airservices Australia, the procedures designer for Brisbane Airport pursuant to Part 173 of the Civil Aviation Safety Regulations 1998.

It is noted that in each instance Brisbane City Council has challenged the process and the airspace design standards applied, requesting consideration of higher CBD building height outcomes.

While carefully and comprehensively considered, their submissions have not been supported due to negative implications for the long-term sustainability of, and impacts on safety, efficiency and regularity outcomes for aviation operations at Brisbane Airport.

The "Prescribed Airspace" for Brisbane Airport is a combination of the airspace surfaces included in both the 2013 and 2017 Declarations.

An Airspace Declaration is largely focussed on securing future airspace – the airspace associated with current procedures and airspace systems is declared by default.

While Brisbane Airport's processes identify future airspace requirements, the airport produces large-scale detailed charts of all airspace surfaces to allow government and industry to review proposed developments and activities that may constitute a "Controlled Activity".

CHANGES FOLLOWING THE OPENING OF THE NEW RUNWAY

Brisbane Airport is working with Airservices Australia to finalise airspace design, flight paths, arrival and departure procedures and runway allocation principles for Brisbane Airport's new runway.

Once complete and with all necessary regulatory approvals in place, Brisbane Airport will undertake a full review of the required airspace surfaces.

CONTROLLED ACTIVITY

Any activity that involves infringement of an airport's "prescribed airspace" (either because of its height, or because of the efflux generated by it), is termed a "controlled activity", and the Airports Airspace Regulations detail the notification and approval procedures to be followed in that event.

INTRUSIONS INTO AIRSPACE

Under the Airports Regulations, an application to conduct a controlled activity which would result in an intrusion of the PANS-OPS airspace cannot be approved, however a short-term (less than three months) penetration of PANS-OPS surface may be permitted if Brisbane Airport supports the approval.

The most common example is a request to use cranes that penetrate the airspace for short periods to a greater height (above the PANS-OPS surface) than the finished structure.

AIRSPACE PROTECTION
PROTECTION SURFACES

PUBLIC SAFETY AREAS

The term "Public Safety Area" (PSA) is used to describe a defined area at the end of the runways where there is increased risk of an aircraft accident occurring.

In a PSA, development may be restricted to control the number of people on the ground at risk of injury or death in the event of an aircraft accident.

The probability of an accident occurring during any single aviation operation is very low. However, analysis of aircraft accidents suggests that most accidents occur either immediately beyond the ends of a runway, up to 1,000 metres before the runway (during landing) or up to 500 metres beyond the runway end (on take-off).

Consistent with Queensland State Planning Policy and previous Brisbane Airport Master Plans, the PSAs at Brisbane Airport form the shape of an isosceles trapezoid symmetrically positioned on the runway centreline – 1,000 metres long, 350 metres wide at the runway end tapering to a width of 250 metres furthest from the runway.

Brisbane Airport has six PSAs, to reflect the runway system of the three runways. In five of the six instances, they are on airport land or over Moreton Bay. The locations are shown in the map opposite.

The exception is the PSA at the end of runway 14/32, which will no longer be required once the runway is decommissioned. From May 2020, all PSAs will be within Brisbane Airport site.

Brisbane Airport's land-use strategy minimises the risk to public safety by avoiding any significant increases in people living, working or congregating in the PSAs. The use or storage of hazardous, explosive or flammable materials is restricted in the PSAs.

In the event of runways being extended in future, the PSAs will be realigned appropriately.

RUNWAY END SAFETY AREAS

The term "Runway End Safety Area" (RESA) describes an area at the end of a runway to protect the aircraft in the event of under-shooting or over-running the runway. These areas are designed to address the risk to aircraft and passengers.

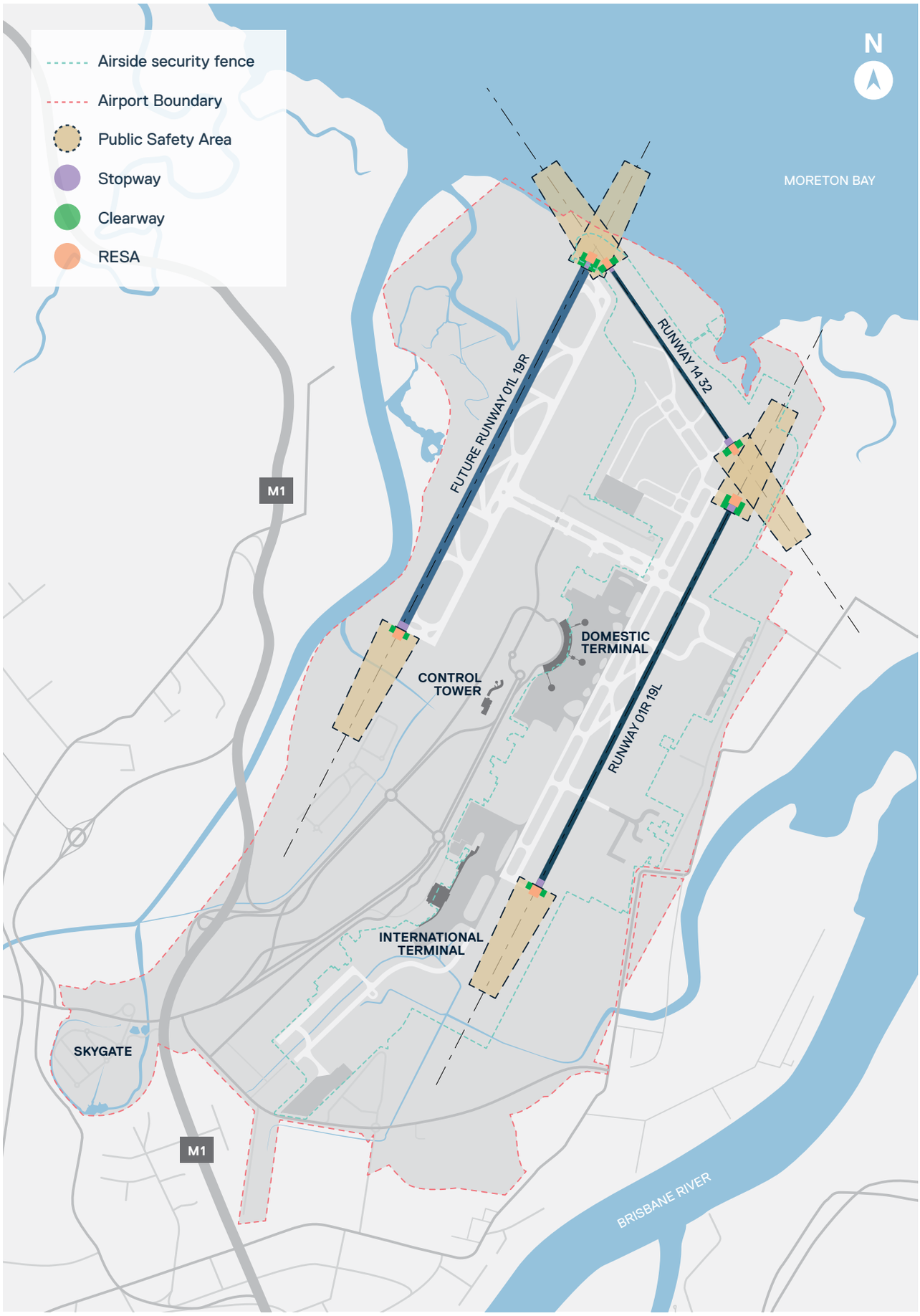
RESAs are required to be free of fixed objects, other than visual or navigational aids for the guidance of aircraft or vehicles. All fixed objects must be of low mass and frangibly mounted. A RESA must also be free of any mobile objects that may endanger aircraft when the runway is being used.

CASA requires that Code 4 runways adopt a 240 metre RESA at all runway ends, in accordance with ICAO recommendations.

Compliant with now superseded standards, Existing Runway 01R/19L and the Cross Runway 14/32 both have a RESA length of 90 metre. Brisbane's new runway will have a 240 metre RESA.

If runways are extended in the future, affected RESAs will be realigned appropriately. Development proposals will be reviewed in consideration of future runway extension and RESA realignment.

SAFETY AREAS AT BRISBANE AIRPORT



AIRSPACE PROTECTION
PROTECTION SURFACES

OBSTACLE LIMITATION SURFACES (OLS)

The OLS for an airport is a surface ascertained in accordance with the procedures in Annex 14 to the Convention on International Civil Aviation (the Chicago Convention), signed on 7 December 1944. In Australia, CASA publishes the criteria in the Manual of Standards for Part 139 of the Civil Aviation Safety Regulations 1998.

The OLS for an airport charts the volume and dimensions of operational airspace that should be kept free of obstacles to aircraft operations being conducted under visual flight rules or during the visual stages of instrument-controlled operations. As such, the OLS protects aircraft operating under visual flight rules.

REQUIREMENTS FOR ENFORCEMENT

The requirements to protect operational airspace need to be enforced most rigorously along the extended centrelines of runways in the approach and take-off areas.

At major airports, this can extend up to 15 kilometres from the ends of the runways. Similarly, other OLS surfaces that protect aircraft circling to land may also extend up to 15 kilometres.

Structures, or other activities such as plumes that intrude into the OLS (i.e penetrate above the OLS surface) could constitute obstacles to aircraft taking off or approaching to land.

The effects of individual obstacles may be relatively minor, but together a number of obstacles may seriously limit runway utilisation, cause airspace congestion or reduce the effective handling capacity of the airport.

ASSESSMENT OF INTRUSIONS

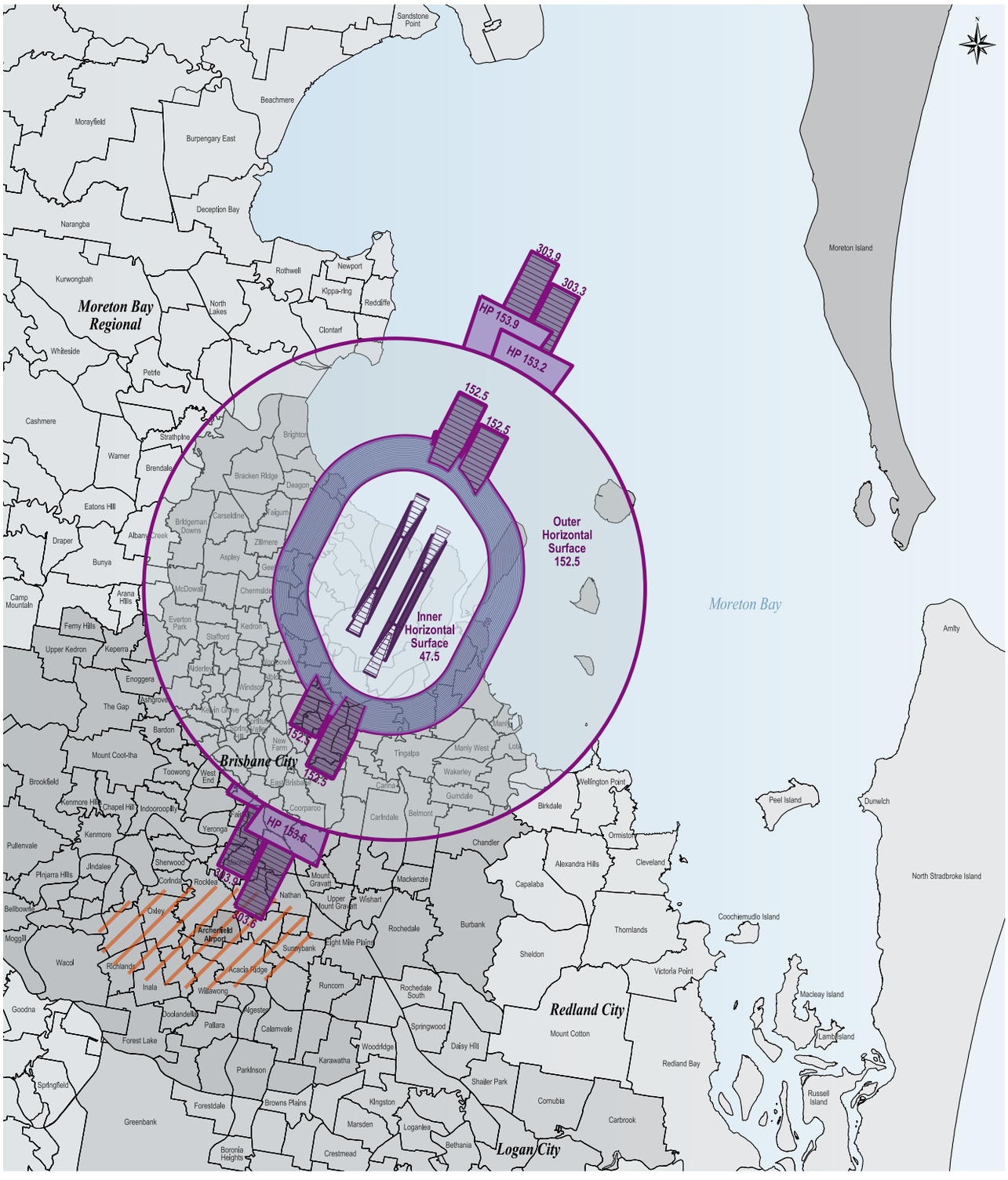
Certain intrusions into the OLS may be approved under the Airports Regulations. Applications for such intrusions are assessed to identify and consider the potential impact on aircraft operations.

The assessment determines whether an intrusion is permissible, and which risk mitigation requirements should be imposed. (Mitigation measures might include lighting or visual marking of obstacles).

Under the Airports Airspace Regulations, the pre-existence of a nearby structure or other intrusion into the OLS does not necessarily mean that a new proposed penetration would be approved.

The diagram on the facing page shows the Obstacle Limitation Surfaces (OLS) for Brisbane Airport, to be effective in 2020 following the opening of new Runway 01L/19R and the decommisioning of Runway 14/32.

ULTIMATE DEVELOPMENT OBSTACLE LIMITATION SURFACES (OLS)



OLS Contours

Airspace surfaces in the vicinity of Archerfield Airport relating to its operations may be more restrictive than Brisbane's Prescribed Airspace

AIRSPACE PROTECTION
PROTECTION SURFACES

PROCEDURES FOR AIR NAVIGATION SERVICES – OPERATIONS

In addition to Obstacle Limitation Surfaces, a second group of criteria is used to determine the volumes and dimensions of airspace required to protect the safety of aircraft operating under instrument flight rules (IFR).

Under IFR operations, pilots are reliant on aircraft instruments for navigation. Airspace protection for IFR operations cannot allow for any long-term penetrations.

The relevant criteria are established by the International Civil Aviation Organization (ICAO) and are published in a document titled 'Procedures for Air Navigation Services – Operations (PANS-OPS)'. The surfaces determined in accordance with the criteria in the PANS-OPS publication are called PANS-OPS surfaces.

The PANS-OPS surfaces are used in the construction of take-off, landing and approach procedures which are based on navigation solely reliant on aircraft instruments. They are complex surfaces designed to protect aircraft from colliding with obstacles when flying on instruments. Minimum safe altitudes are established for each segment of an instrument procedure.

PERMANENT PENETRATION OF PANS-OPS

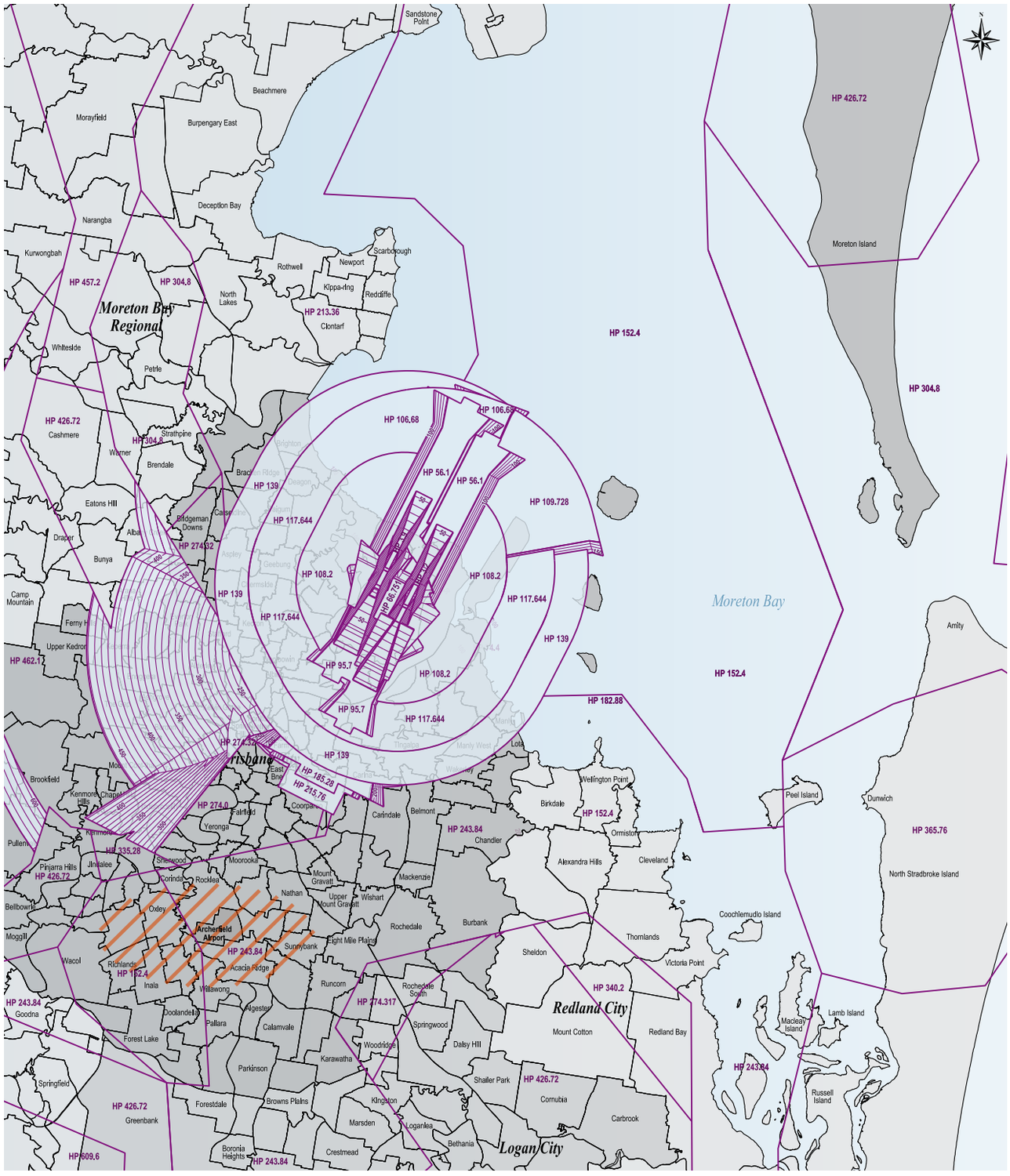
The Airports Airspace Regulations do not permit the permanent penetration of PANS-OPS surfaces. However, short-term (maximum duration of three months) penetrations of the PANS-OPS surfaces may be approved in certain circumstances (if the short-term proposal has the support of the airport operator) under the Airports Airspace Regulations.

In the event that all stakeholders were to agree that a proposal for long-term penetration of the existing PANS-OPS surfaces is desirable, the PANS-OPS surfaces must be raised so they are clear of the development causing the penetration.

Any such decision would be irreversible and would be likely to lead to operational penalties for aircraft operations and possible community impacts, such as re-design of flight paths that increase the population exposed to high levels of aircraft noise.

The diagram opposite presents the Procedures for Air Navigation Services – Operations (PANS-OPS) Surfaces (OLS) for Brisbane Airport from 2020 and following the opening of Runway 01L/19R and the decommisioning of Runway 14/32.

ULTIMATE DEVELOPMENT PROCEDURE FOR AIR NAVIGATION SERVICES AIRCRAFT OPERATIONS (PANS-OPS) AND RADAR TERRAIN CLEARANCE SURFACES



PANS-OPS Surfaces

Airspace surfaces in the vicinity of Archerfield Airport relating to its operations may be more restrictive than Brisbane's Prescribed Airspace

AIRSPACE PROTECTION

AIRSPACE DECLARATION – 2020 MASTER PLAN IMPACT

Under the Airports Act requirements for airport Master Plans, Brisbane Airport must specify any change to the OLS or PANS-OPS surface "that is likely to result if development proceeds in accordance with the Master Plan".

Consistent with the 2014 Master Plan, the prescribed airspace drawings contained in this 2020 Master Plan present the airspace required to protect Ultimate Runway configuration, including the planned extensions to both 01 / 19 runways to the south, and the implementation of Displaced Threshold landing points maintaining touch-down points on both runways in their current position.

Due to the imminent airspace change that will occur on 21 May 2020 and the permanent closure of the 14 / 32 Cross Runway, airspace surfaces associated with the 14/32 Cross Runway are no longer included in the airspace diagrams included in this master plan.

The figures included in this section of the Master Plan are, within the constraints of presenting at a small scale, indicative of the extent of the airspace surfaces associated with the ultimate runway system development as articulated throughout this Master Plan.

The detailed definition drawings and data-sets of the OLS and PANS-OPS surfaces required for the development assessment process will be provided to all appropriate agencies.

CONTROLLED ACTIVITY / DEVELOPMENT ASSESSMENT

An activity that involves infringement of an airport's "prescribed airspace" (either because of its height, or because of the efflux generated by it), is termed a "controlled activity", and the Airports Airspace Regulations detail the notification and approval procedures to be followed in that event. This process applies not only to development at Brisbane Airport but also elsewhere across the city.

The "prescribed airspace" definition details the most critical or restrictive surface of the combined OLS, PANS-OPS and other surfaces.

Proposals are assessed as follows:

- The existing runway system and published procedures are used in assessments of short-term or temporary "controlled activities "(e.g. construction cranes). Brisbane Airport has a delegation from the Department of Infrastructure, Regional Development and Cities (DIRDAC) to assess some of these temporary activities, in consultation with CASA and Airservices Australia.
- The ultimate runway system and intended procedures are used in the assessment of permanent or long-term development and structures. These "controlled activities" must be approved by the DIRDAC.

For these proposals Brisbane Airport makes its own assessment and coordinates consultation with CASA, Airservices Australia and the Brisbane City Council, before lodging with DIRDAC for a decision. DIRDAC may approve the proposal, not approve or approve with conditions.

APPLICATIONS FOR APPROVAL

Brisbane Airport is the first point of contact for a person wishing to apply for approval to conduct a controlled activity. Applications for approval must (as required under regulation 7(2) of the Airports Airspace Regulations) set out:

- the nature of the proposed activity.
- its precise location.
- the proposed maximum height of the controlled activity (be it the proposed building or structure.
- the equipment proposed to be used in its construction/ erection), expressed in metres above the Australian Height Datum (AHD).
- the purpose of the proposed activity.

Upon receipt of an application, Brisbane Airport assesses the proposal and seeks feedback from CASA, Airservices, Brisbane City Council and any relevant airlines or aircraft operators.

The proponent's application and the stakeholder submissions are then sent to DIRDAC for final assessment and approval by their appropriate delegate.

CONSIDERATION OF APPLICATIONS

The Airports Airspace Regulations requires the Secretary of DIRDAC to either approve or refuse an application, or to impose conditions on any approval.

Conditions usually relate to measures to ensure continuing safety of air transport operations, such as lighting or marking of structures penetrating the Obstacle Limitation Surface and giving notice to users of the airspace about the new obstacle.

In considering whether to approve an application, the Secretary must have regard to the effect that the controlled activity may have on the safety, efficiency or regularity of existing or future air transport operations into or out of the airport. In this regard, the opinions of the airport operator company, CASA, Airservices, and the relevant building authority must be taken into account.

Subject to the exceptions set out below, the Secretary must approve an application unless the controlled activity would interfere with the safety, efficiency or regularity of existing or future airport operations out of the airport concerned.

APPLICATIONS FOR INTRUSION OF PANS-OPS SURFACES

Under regulation 14(5) of the Airports Airspace Regulations, an application to conduct a controlled activity (other than a 'short-term' controlled activity) which would result in an intrusion of the PANS-OPS airspace cannot be approved.

Regulation 14(5) of the Airports Airspace Regulations permits a short-term (less than three months) penetration of PANS-OPS surface to be approved if the airport company concerned (Brisbane Airport for approvals concerning Brisbane Airport) supports the approval.

The most common application of this nature is a proposal to use construction cranes that may, for short periods of time, be required to penetrate the airspace to a greater height (above the PANS-OPS surface) than the finished structure (below the PANS-OPS surface).

UNACCEPTABLE EFFECT ON SAFETY

Pursuant to regulation 14(6) of the Airports Airspace Regulations, the Secretary must not approve an application to undertake a controlled activity if CASA has advised the Secretary that carrying out the controlled activity would have an unacceptable effect on the safety of existing or future air transport operations into or out of the airport concerned.

The Secretary has no discretion to grant an approval once such advice is provided by CASA.

AIRSPACE PROTECTION

SHORT-TERM CONTROLLED ACTIVITIES

To ensure continued safety of operations, the regulations regarding the approval of short-term controlled activities state that approval of submissions cannot be given by DIRDAC without support from Brisbane Airport (Reg 14:5). As a result, Brisbane Airport has established a series of qualifying criteria to determine whether support can be given to a short-term controlled activity application.

Factors that need to be assessed include, but are not limited to the following;

- Can safe aircraft operations be assured while the intrusion occurs?
- What changes would need to be made to existing procedures to ensure continued safe operations for the extent of the short-term activity?
- To what extent would the efficiency and regularity of air transport operations be impacted by the proposed penetration? What alternative procedures would need to be used?
- Will temporary changes to procedures impact emergency/ contingency procedures such as aircraft engine-out procedures?
- Would proposed alternative procedures be acceptable to airlines using Brisbane Airport?
- Would any amended procedures result in higher costs for aircraft operators through increased track miles, increased fuel use and associated inefficiencies? Should the applicant for the controlled activity meet these costs?
- Is planning for a short-term (less than three months) penetration a realistic construction timeline?
- Would changes to procedures have any effect on amenity outcomes for communities subjected to increased overflights and/or altered flight patterns. Should the applicant be required to undertake a consultation process to ensure community acceptance?
- What will the cumulative impact of sequential applications be?

RESTRICTIONS ON GRANTING APPROVAL

Where an application for a short-term controlled activity will intrude into the PANS-OPS, Brisbane Airport will generally not support that activity if it will:

- Have any adverse safety or operational implications (as identified through Brisbane Airport's consultation with other stakeholders including CASA, Airservices and airline operators).
- Impose additional cost of operation on airlines, unless the applicant develops and establishes an agreement on an industry compensation response.
- Result in adverse community outcomes unless the applicant negotiates community acceptance of the impacts.
- Appear unlikely to be feasibly completed within the three month short-term criteria accorded such activities under the Airports Airspace Regulations; or
- result in intrusions into the direct approach and departure zones of the OLS and consequently impact runway operational lengths (with the possible exception of activities that can be undertaken in short negotiated periods at night).

Any decision by Brisbane Airport will be made both on the merits of the specific application and in consideration of the overall impact of the controlled activity (and other approved controlled activities) on aircraft operations into and out of Brisbane Airport.

TALL BUILDINGS POLICY

In August 2018, Brisbane Airport developed a Tall Buildings Policy, an advisory document that:

- Outlines legislative requirements, policies and processes used to define, manage and protect the prescribed airspace necessary for the safety, efficiency and regularity of air transport operations into and out of Brisbane Airport.
- Outlines Brisbane Airport's role in responding to applications for short and long-term intrusions into prescribed airspace; and
- Articulates Brisbane Airport's approach to ensuring the prescribed airspace is consistent with the regulatory framework and aviation standards.

The Policy was created to manage challenges arising from the use of construction cranes in the Brisbane CBD. The intention of the Policy is to assist developers and planning authorities alike in understanding necessary airspace protection requirements and the potential implications of comprising airspace.

APPLICATIONS FOR APPROVAL

The Tall Buildings Policy nominates Brisbane Airport as the first point of contact for a person wishing to apply for approval to conduct a controlled activity. As required under regulation 7(2) of the Airports Airspace Regulations, any application must provide:

- Details of the type of proposed activity.
- The precise location of that activity.
- The proposed maximum height of the controlled activity.
- The equipment to be used in its construction/erection), expressed in metres above the Australian Height Datum (AHD); and
- The purpose of the proposed activity.

NOTIFICATION OF DECISIONS

Upon receipt of an application, Brisbane Airport's approach to assessing proposals will include seeking feedback from CASA, Brisbane City Council, Airservices Australia and all relevant airlines or aircraft operators.

The application and all stakeholder submissions are then sent to DIRDAC for assessment. DIRDAC considers Brisbane Airport's opinion on any controlled activities that may impact operations.

DEVELOPMENTS SINCE THE 2014 MASTER PLAN

Since the previous 2014 Master Plan, Brisbane Airport has experienced a significant increase in the volume of Controlled Activity submissions. Additionally, and related to the propensity for developers of CBD high-rise buildings to build to the absolute airspace limits, the facilitation of construction cranes required to complete those buildings has been highly challenging for Brisbane Airport, the construction contractor and the application of the regulatory processes associated with assessing and approving the crane activity.

Brisbane Airport has experienced non-compliance with controlled activity approvals associated with construction cranes operating at unapproved heights, cranes requiring approval iterations due to non-completion within the initial advised timelines and also equipment failures.

All of these experiences have focussed both Brisbane Airport and DIRDAC on the need to ensure that controlled activity assessments for future similar high CBD structures must include careful consideration of construction methodologies and proposed crane operations.

Brisbane Airport has initiated further industry engagement with developers to improve the awareness of airspace constraints and the necessary approval processes and timelines to secure controlled activity approvals, through workshops with the Property Council Queensland Division and major contracting companies.

OBSTACLE AND HAZARD CONSIDERATIONS

OBSTACLE AND HAZARD CONSIDERATIONS

The final approach, take-off and climb phases of flight are the most demanding in terms of pilot workload. Checklists, instruments, radio communications, aircraft configuration and speed changes, weather conditions, other traffic, manipulation of controls, approach monitoring, etc. require intense pilot attention and concentration.

Distractions under the approach and take-off paths may impact on aircraft safety. Issues concerning lighting, navigational aids, visibility and other considerations affect land-use planning beyond the airport boundary.

RESTRICTED LIGHT ZONES

The use of lighting around Brisbane Airport is mainly a concern in close proximity to the airport, where there are two main problems that can arise:

- If bright lights, such as floodlights, emit too much light above the horizontal plane, then there is the possibility that a pilot could be dazzled, and momentarily unable to read cockpit instruments. Those lights could also have an effect on air traffic controllers' ability to clearly see aircraft approaching the airport.
- In addition, lights might create a pattern that looks similar in appearance to approach or runway lighting and this may cause confusion for a pilot. Street lighting, security lighting and illuminated sports fields are examples that require special consideration. The problem will often be able to be corrected by suitable screening or shielding of the light source.

CASA has powers to deal with lights that can be considered hazardous in either of these ways (Regulation 94, Civil Aviation Regulations 1988). It is preferable if the light design can take account of these possibilities in advance rather then look at modification after installation is complete.

Chapter 9.21 of the CASA MOS Part 139 – Aerodromes, entitled 'Lighting in the Vicinity of Aerodromes', will assist in meeting these requirements. The figure opposite shows the restricted lighting zones at Brisbane Airport in accordance with these standards.

INTERFERENCE WITH AIR NAVIGATION AIDS

Aids to aircraft navigation, and to approach and landing manoeuvres, are an essential element of the air transport system. They have to be sited relative to the airport, airspace and aircraft flight paths they serve. Power lines, large buildings, moving vehicles, and the like, can affect the efficiency and reliability of their operation. Therefore, their possible impacts on navigational aids need to be considered.

Facilities in the vicinity of airport navigational systems that have high electromagnetic or radio wave emissions may have the potential to impact on those systems, as well as on aircraft on-board electronic systems. In addition, Brisbane Airport is committed to ensuring developments at the airport will not compromise the efficacy of the existing navigational aids.

Brisbane Airport will continue to work closely with Airservices Australia to ensure relevant equipment and navigational aids remain operational during on-airport construction activities.

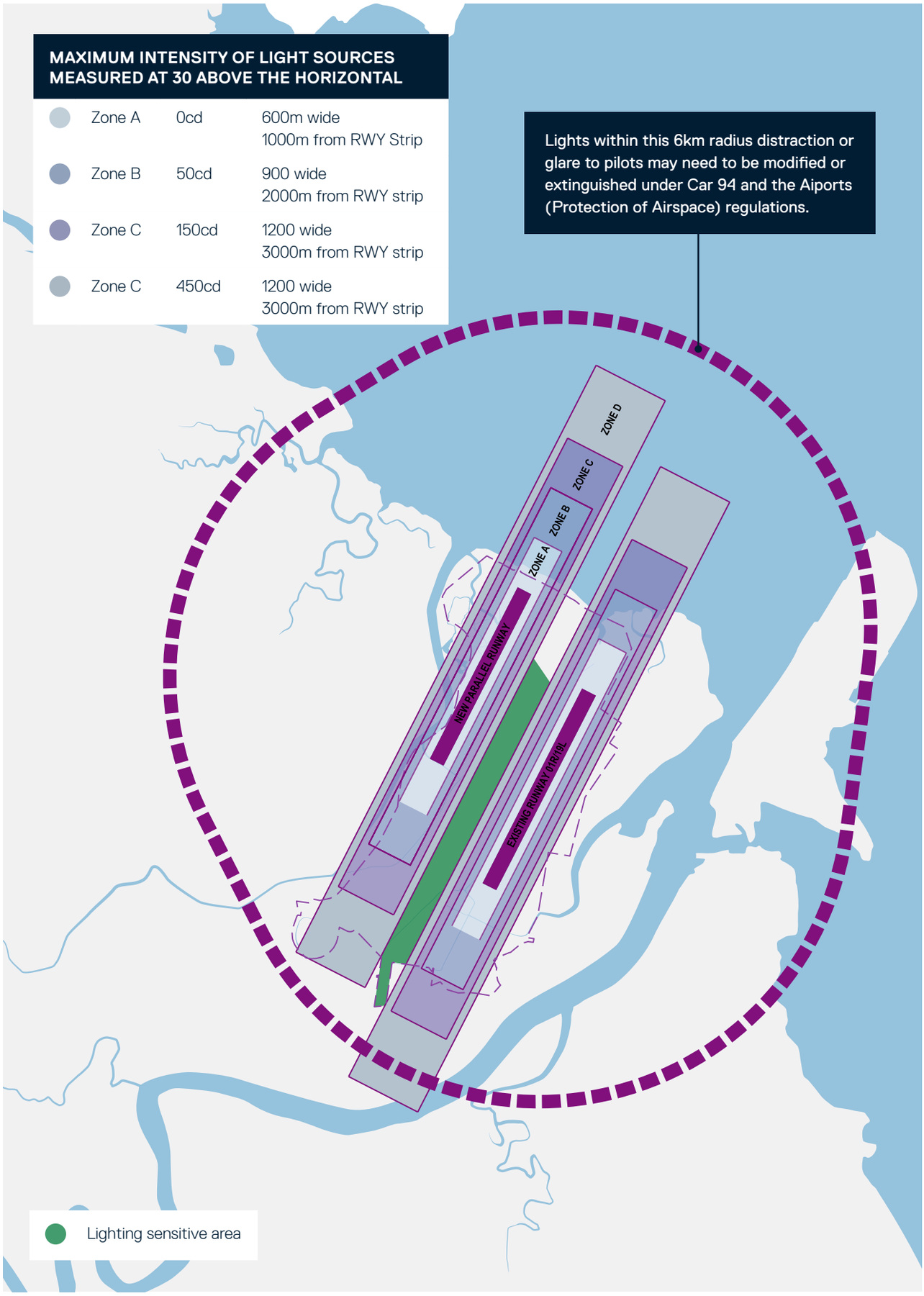
In most cases Brisbane Airport navigational facilities are installed and maintained by Airservices Australia which is a referral organisation on issues of airspace protection requirements.

Brisbane Airport has a direct interest in ensuring the protection of any aids located on or in the vicinity of the airport and works collaboratively with Airservices Australia on the impact assessment of on-airport development proposals, and those off-airport proposals referred to Brisbane Airport.

MAJOR AIRFIELD LIGHTING SYSTEMS

Consistent with best-practice precedent at other Australian major airports, Brisbane Airport has included protection of light plane surfaces associated with major airfield lighting installations such as the High-intensity Approach Lighting arrays at each end of the runways.

ULTIMATE DEVELOPMENT RESTRICTED LIGHT ZONES



AIRSPACE PROTECTION

WILDLIFE HAZARDS

At all airports, wildlife hazards have the potential to cause major damage to aircraft, representing a major risk to safety. Consideration of that risk is critical in land-use planning decisions and in the way that existing land-use is managed in the vicinity of the airport.

Brisbane Airport is surrounded by areas attractive to wildlife, especially birds. The south-west end of the new runway is largely bound by the Kedron Brook. Activities in that area that have the potential to cause hazardous wildlife attraction or activity, including recreational fishing, are discouraged by Brisbane Airport.

The recently installed High Intensity Approach Lights to the north of the new runway have the potential to attract additional wildlife in offering perching options for birds. Brisbane Airport is investigating environmentally friendly options to act as bird deterrents on that installation.

To deter recreational fishing, the installation is elevated above water, reducing opportunities for boats to dock at the structure. CCTV has also been installed, allowing the airport to respond to any issues as they arise.

Other land uses at Brisbane Airport with the potential to attract wildlife will be managed based on proximity, using identified actions for existing and proposed developments within the ICAO guided radius zones.

For example, the development of a new sports facility is identified to have a 'moderate' wildlife attraction risk. Action to minimise that risk will depend on its proximity to the airport, with developments within 3 kilometres mitigated while similar developments within 8 kilometres and/or a 13 kilometres radius will be subject to monitoring.

Brisbane Airport will continue to work with relevant planning authorities to minimise the impact of wildlife hazards at and near Brisbane Airport.

LOW VISIBILITY OPERATIONS

Operations are Brisbane Airport are currently limited during low visibility conditions, such as fog, low cloud or heavy rain. With the forecast increase in passenger demand, minor low visibility events could have a significant impact on operations at Brisbane Airport and across the eastern seaboard of Australia.

To continue to improve safe services to passengers and airlines, Brisbane Airport is investing in infrastructure and aids to improve outcomes of operations during low visibility conditions. The new runway has been designed to accommodate low visibility operations, and existing airfield infrastructure for Runway 01R/19L will be upgraded as required to support low visibility operations.

The investment in new infrastructure and services will increase airfield capacity during low visibility conditions while also improving runway safety and decreasing the risk of runway incursions. Additionally, existing airfield infrastructure will be upgraded to match the facilities of the new runway.

STOP BARS

Runway incursions can take place in all visibility or weather conditions. Several Australian airports have installed stop bar lighting to enhance low visibility operations at the airport. Stop Bars are a row of lights at the entrance to a runway which, when lit, warn pilots that they must not enter the runway.

The installation of stop bars, together with other new facilities, allows landings and take-offs to take place in low visibility conditions where otherwise extensive delays may occur.

Brisbane Airport is currently finalising the Stop Bar design for the existing Runway 01R/19L. The Stop Bars will be in operation when the new runway opens in 2020.

RUNWAY VISUAL RANGE

The term Runway Visual Range (RVR) describes the maximum distance in the direction of take-off or landing at which the runway, or specified lights or markers delineating it, can be seen from a position above a specified point on its centre line at a height corresponding to the average eye level of pilots at touch-down.

RVR equipment provides for electronic calculation of visibility.

New RVR equipment is currently being installed at Brisbane Airport with BOM certification expected by mid-2019. Included in the scope of the RVR project was the installation of pit and duct infrastructure for Stop Bars on the eastern side of the existing runway.

HIGH INTENSITY APPROACH LIGHTING

Brisbane Airport has installed High Intensity Approach Lights (HIAL) to the north and south of Runway 01R/19L and has recently constructed HIAL to the north of the Runway 01L/19R. In conditions of low cloud or reduced visibility, these lights facilitate a smooth transition from instrument to visual flight on a precision instrument approach.

Brisbane Airport plans to install HIAL to the south of Runway 01L/19R in the short-term future. HIAL's will be in operation when the new runway opens.

AIRSPACE PROTECTION

AERONAUTICAL GROUND LIGHTING (AGL) CONTROL AND MONITORING SYSTEM

The new Runway 01L/19R AGL system requires a bespoke control and monitoring system. In order to provide similar controls across the Runway 01R/19L AGL and the existing AGL, a migration to an Integrated Airfield Lighting Control Monitoring System (AGLCMS) will be necessary.

The project has two operational phases:

- Phase One: The migration of the existing airfield AGL.
- Phase 2: Deployment of the AGLCMS in conjunction with the AGL for the new runway.

Upon completion of the new Stop Bar installation, Stop Bars for the existing airfield will be integrated with the AGLCMS. Phase 2 is scheduled for completion at the end of 2019, prior to the opening of the new runway.

TELECOMMUNICATIONS TOWERS

In the digital age, Brisbane Airport is aware that emergent technologies, offering new mobile phone and tablet services, attractive to passengers and stakeholders are likely to continue to emerge in the near future. The airport is committed to providing access to the highest quality of telecommunications infrastructure.

All telecommunications towers and other telecommunications infrastructure, current or planned are required to comply with all airspace protection regulations, including OLS, PANS-OPS and those regulations governing potential interference with navigational aids.

STACK/VENT EFFLUX AND VISIBILITY HAZARDS

Although it is becoming increasingly unlikely with the implementation of strict emission controls, there may still be instances in which industry located in proximity to an airport may create a smoke hazard, which could reduce visibility for visual flight operations. A similar situation may arise in relation to land uses or construction works which generate a severe dust problem.

Of more concern is the potential impact of either high velocity, high volume, high temperature or oxygen depleted discharge from stacks located in aircraft manoeuvring areas. This can interfere in the safe running of the airport.

Development proposals that incorporate these structures therefore require careful assessment on their potential impact on the safety of aircraft operations.

A facility located within the "prescribed airspace" footprint, regardless of its physical height, with an efflux rate of greater than 4.3 metres/second measured at the discharge point will trigger further assessment to determine whether the facility will require approval as a "controlled activity" under the Airports Airspace Regulations.

OTHER CONSIDERATIONS

Other planning considerations with regards to airspace protection include:

- The location on the Boggy Creek and Serpentine Creek wetlands and abutting Moreton Bay, with its associated bird activity increases the potential for aircraft bird strike incidents – a potentially serious safety issue.
- Land-use, developments, and their design and landscaping in the vicinity of the airport should not compound this problem by providing an attraction to bird life (e.g. because of a type of flora planted or new water receptacles created).
- Land-use planning in the vicinity of the airport needs to take account of the risks, however slight, associated with aircraft operations in the siting of:
  - fuel or hazardous material storage facilities.
  - facilities that involve large concentrations of people.
  - major public utility infrastructure.
  - any other activity in the air that may impact on aircraft operations.
  - large structures and building materials utilised in those structures located close to the Brisbane Airport runway systems final approach and take-off areas.
- Wind shear conditions can potentially influence aircraft Ground Proximity Warning Systems, with glare off large reflective surfaces potentially impacting pilot concentration at a critical stage of aircraft manoeuvres.
- Clear line of sight from the Airservices Control Tower cabin to the primary airside manoeuvring areas should be maintained and mitigating technology and procedures need to be developed to address compromised areas.
- Reflectivity can also be an issue for air traffic controllers due to the potential for interference with radar and other navigational aids, with glare potentially affecting air traffic controllers as well as pilots.

BRISBANE'S NEW RUNWAY AIRSPACE DESIGN

This section describes the process that was undertaken to finalise the flight path and airspace design to support the safe and efficient operation of the new parallel runway system at Brisbane Airport.

The development of a complex flight path must have safety as its principle objective. Once the regulatory standards, requirements and approval conditions have been met and safely achieved, minimising environmental impact and maximising operational efficiency must also be incorporated while ensuring equitable access remains for operations at all other airports within the airspace design.

The flight path and airspace design process for Brisbane's New Runway started in the early 2000's with the concept design for the FY2005/06 Environmental Impact Statement (EIS) and Major Development Plan (MDP). The EIS/MDP flight path diagrams and noise contours were extensively documented and consulted with the Brisbane community and airport stakeholders and have continued to be communicated consistently across the Brisbane community in the years since 2006.

In 2015, Brisbane Airport and Airservices Australia initiated a detailed airspace and flight path design process to develop a final design that utilised the latest available technology to meet current safety and regulatory standards and requirements, while optimising efficiency and minimising environmental impacts as much as possible for the opening of the parallel runway in 2020.

BRISBANE'S NEW RUNWAY AIRSPACE DESIGN

EIS/MDP APPROVAL

In 2007, after extensive consultation and consideration of feedback, both the Federal Transport Minister and the Federal Environment Minister granted approval to Brisbane Airport Corporation to construct a parallel runway at Brisbane Airport (designated Runway 01L/19R). Along with many conditions stated in the approval, the Minister provided guidance about flight path design.

The Federal Transport Minister recognised that those flight-paths which were depicted in the EIS/MDP were based on the existing operations (2004) where possible, and also on an analysis of future developments in the aviation industry. However he recognised that between 2004 and the opening of the new runway, (then projected for 2015, but now to open in 2020), there would be considerable introduction of developing technology and an evolution of airspace management practices and regulatory and safety standards.

As a result the Ministers guidance on flight paths was that they should be developed:

- Using existing flight-paths where possible, including those flight-path changes developed and introduced between 2007 and the commissioning of the new runway
- Aligned where possible with the flight-paths presented in the EIS/MDP
- Taking into account the introduction and expected future introduction of new technologies and standards

FLIGHT-PATH DESIGN

The area of airspace required for the new parallel runway system extends a significant distance from Brisbane Airport and interfaces operations associated with Gold Coast, Sunshine Coast, Defence Base Amberley, and several general aviation airports including Archerfield, Redcliffe, Caboolture, Caloundra, and Southport.

Aircraft operations at Brisbane Airport are significantly influenced by the positioning and orientation of the various airport/aerodrome/airfield locations and the orientation of runways at those sites. Providing equitable access to all airspace users and separation with military airspace operations in Amberley's airspace which extends to within 30km to the west of Brisbane Airport, are critical regulatory requirements and constrains the location of fight paths.

These constraints, in addition to the required crossover of departures and arrivals at Brisbane Airport, results in numerous points where flight paths must cross, requiring the application of vertical separation standards (typically a minimum of 1,000 feet) to ensure safe operations.

Flight-path crossover points must be positioned to meet safety standards and must also allow aircraft to operate as efficiently as possible, optimally at reduced throttle settings to minimise fuel burn, emissions and noise.

At the time of the development of the EIS/MDP, while some use of on-board aircraft navigation systems was used to manage crossover points, a large degree of manual intervention by Air Traffic Control (ATC) was required. Management of crossovers by ATC manual intervention results in aircraft having to level off on climb or descent at low level, with resultant extra noise and fuel usage (CO2 emissions) and reduces the operational efficiency of the runway.

Since the EIS/MDP there has been a significant increase in the proportion of aircraft operated by major airlines capable of using sophisticated on-board navigation systems to assist ATC in managing crossovers by flight-path design, rather than relying on manual ATC intervention. One such improvement in systems is the current ability of the jet aircraft fleet to fly flight paths that are designed to meet the International Civil Aviation Organisation (ICAO) Required Navigation Performance (RNP) standards utilising satellite based navigation. This type of navigation is now mandated across Australia by the Civil Aviation Safety Authority (CASA).

RNP standards allow for a flight-path design that incorporates "safety by design" rather than relying on ATC manual intervention. Safety by design allows the pilot to use on-board navigation systems to manage the flight-path over the ground, its speed relative to other aircraft, and most importantly the vertical flight path flown, such that the need for a level-off at low altitude is significantly minimised.

REQUIRED NAVIGATION PERFORMANCE

Part of the introduction of satellite navigation into Brisbane Airport was the use of Required Navigation Performance - Authorisation Required (RNP-AR) approaches, also known as Smart Tracking, with initial implementation on 18 January 2007, providing the improved safety, operational and environmental outcomes associated with this technology.

In accordance with the EIS/MDP approval conditions, these RNP-AR flight-paths have been retained to and from the existing runway (now redesignated as Runway 01R/19L) in the new parallel runway flight-path design.

In 2018, the ICAO issued an updated rule set that permits the application of RNP AR to wide spaced parallel runways for simultaneous use of both runways, removing the need to manually fly aircraft on headings at level altitudes onto final approach to the runway as required in the previous rule set. To provide the safety, efficiency and environmental benefits that this technology provides, the arrival flight-paths to both runways in the new Brisbane airspace design make use of the RNP-AR standards as approved by ICAO. This supports constant descent approaches using minimum power settings and reduced engine noise relative to manual flight of aircraft using headings.

Incorporating RNP-AR to join final approach for parallel runways is the type of technological advancement utilising the latest available safety standards envisaged in the governments response to the EIS/MDP.

POSITIONING OF FLIGHT PATHS

The use of RNP technology and ICAO parallel runway standards to allow simultaneous runway use, together with the need to meet aircraft performance requirements for climb, descent and rate of turn, and standards to separate arriving and departing aircraft, is a key determinate for the positioning of the flight-paths for both arriving and departing aircraft.

Positioning of flight paths requires that all approvals, regulatory standards and rule sets have been applied and "safety by design" is achieved.

BRISBANE'S NEW RUNWAY AIRSPACE DESIGN

STANDARD INSTRUMENT DEPARTURES (SIDS) AND STANDARD ARRIVAL ROUTES (STARS)

Flight paths for arriving and departing aircraft are designed in such a way that they can be digitally coded and loaded into the aircraft and ATC software systems to provide exactly the same information to pilot and ATC. This provides predictability and consistency and reduces the possibility of human error. The flight-paths within 80km of the Airport linking runway arrivals and departures to high level routes are known as Standard Instrument Arrivals (STARS) and Standard Instrument Departures (SIDS).

- STARS connect arriving aircraft to the type of approach required to ensure a safe landing on the runway. The position at which the STAR connects to the approach is determined by regulatory standards. STARS to each runway end connect to three different types of approach:
  - Instrument landing system (ILS)
  - Visual approach
  - Required Navigation Performance Authorisation Required (RNP AR)
- SIDS provide navigation guidance to enable aircraft to safely depart the runway to intercept the outbound route.

The safety standards for simultaneous parallel runway departures have been met by designing a straight ahead flight path from one runway and a turn of 15 degrees or more from the other runway to ensure there is sufficient divergence when aircraft are departing simultaneously.

FINALISATION OF THE AIRSPACE DESIGN

Given the extent and complexity of the airspace over multiple airports, the technical design standards and regulatory requirements, and requirement to meet the Ministerial approvals and conditions, several specialist areas were considered in parallel to achieve a safe and efficient design and to minimise environmental impacts.

Specialist areas included:

- Air Traffic Control (ATC) - safety management, capacity management, human machine interface (HMI) and flight path design specialists, fast time and real time ATC and airfield simulation.
- Environment and Community Engagement Specialists – noise modelling, environmental assessment and advice, community considerations to minimise noise effects including noise abatement procedures.
- Airlines – system performance engineers, flight crew technical experts, flight simulators.
- Flight Standards - ICAO procedures and standards specialists, aircraft performance specialists
- Civil Aviation Safety Authority (CASA) – regulatory requirements and approvals

As well as designing to the required safety standards and approval requirements, and ensuring efficiency of operations, designers were required to consider how to best minimise noise and ensure equity of access for all airspace users. A small change in design for an improvement in one area may impact on the design in another area so the overall benefit was continually assessed as the design progressed.

A fundamental principle achieved was to maximise the use of continuous descent operations and continuous climb operations which reduces aircraft noise, fuel and emissions as aircraft are managed by the aircraft systems and not flown manually on stepped descent or climb segments.

As a result of the complexity associated with all of the requirements and constraints, the finalised airspace design underwent twenty one iterations before reaching a stage that could be presented to CASA for airspace change approval.

FEATURES OF THE PARALLEL RUNWAY AIRSPACE DESIGN

SIMULTANEOUS OPPOSITE DIRECTION OPERATIONS (SODPROPS)

The positioning of the parallel runways adjacent to Moreton Bay and 2km spacing between the runways allows the use of SODPROPS to minimise the overflight of residential areas.

When SODPROPS are in use, all jet operations are confined to over Moreton Bay, with arrivals over water onto the new Runway 19 Right, and departures over water off the existing Runway 01 Right. A small number of turbo propeller aircraft are permitted to depart from the new runway 19R if departure demand is excessive from 5am to 10pm.

SODPROPS has been introduced as the first priority method of operating between 10pm and 6am.

The SIDS and STARS to support this mode have been designed in such a way that the initial climb and final descent phase of the flight of jet aircraft is all over Moreton Bay. The operational technique of using minimal reverse thrust on landing has also been applied to this mode to minimise impacts on communities adjacent to the airport.

BRISBANE'S NEW RUNWAY AIRSPACE DESIGN

FEATURES OF THE PARALLEL RUNWAY AIRSPACE DESIGN

RUNWAY 19 LEFT AND RIGHT OPERATIONS (ARRIVALS AND DEPARTURES IN A SOUTHERLY DIRECTION)

ARRIVALS

Runway 19 Left (19L)

Arriving aircraft from the south and east will generally land on the existing Runway 19L, and will fly STARS that are generally consistent with the existing arrival flight paths.

The later stages of flight have been confined to over water and the principles of constant descent have been employed.

Runway 19 Right (19R)

Arriving aircraft from the north and west will generally land on the new Runway 19R. In the later stages of flight, aircraft from the north and west will continue to use existing over water flight paths but join the final approach for 19R.

To meet the principle objectives of safety by design, facilitate an airspace that allows continuous climb and descent, and meet the geometry required by the design standards, the jet arrival flight paths from the north of Brisbane Airport have been moved further west than the existing flight paths. As a result, the existing flight paths over the north western suburbs around Ferny Grove and Upper Kedron have been moved to less developed areas west of Samford.

While STARS are designed to be flown by the aircraft navigational systems without pilot manual intervention, ATC may require aircraft to be taken off track when separation requirements, excess arrival demand or weather conditions require it.

DEPARTURES

Runway 19 Left (19L)

Departures to southern and eastern destinations will generally depart from the existing Runway 19L. Two jet SIDS currently exist from 19L.

One SID turns left at approximately 2km and 1000' and will continue to be used in the parallel runway system airspace design for southern and eastern departures.

The second SID maintains runway track and turns right once just past the CBD of Brisbane. In the parallel runway operation, this departure track will only be used by aircraft that have a specific operational requirement to depart off 19R or in those periods at night when weather conditions are not suitable for SODPROPS. There have been some minor variations to this departure track as it proceeds west and north after the initial right turn as explained below.

Runway 19 Right (19R)

Departures to northern and western destinations will generally depart from the new Runway 19R.

The jet SIDS for this runway depart straight ahead for the first 10 km. At this distance all of the SIDS commence a right turn and track to a point further west than either the existing SID or that predicated in the EIS. The extension of the SIDS further west is due to separation requirements with both arriving and slower departing aircraft and to maximise the use of overflight of non-populated areas to minimise the impact of noise, such as Enoggera reservoir.

At this further west turning point, the SIDS split to track to northern, north western and western destinations. The extension of the departure flight path further west results in reduced population overflight to the north west by overflying less populated areas around Mt Cootha and Enoggera Reservoir and higher altitudes as aircraft then fly over residential areas further north.

RUNWAY 01 LEFT AND RIGHT OPERATIONS (ARRIVALS AND DEPARTURES IN A NORTHERLY DIRECTION)

ARRIVALS

Runway 01 Right (01R)

An RNP-AR approach was introduced to the existing runway 01R in January 2007 for operations from the south and east and this approach will continue to be used as it meets the applicable international standards.

The current STAR for ILS approaches from the south and east does not meet the international standards for simultaneous operations of parallel runway approaches. The new STAR from the south is further south than both the existing STAR and the flight path predicted in the EIS, and must provide level flight at 3000ft for a short distance to meet the standards.

To join up with both the RNP-AR and ILS approaches and meet the required design geometry and standards, the STAR from the east has been moved further south than both the existing STAR and that predicated in the EIS. In designing this STAR use has been made of less populated areas, such as golf courses, and aircraft will cross the coast line a minimum of 2000' higher than the existing STAR.

Runway 01 Left (01L)

To provide the required design geometry and regulatory standards for simultaneous approaches to both Runway 01L and 01R, all outer arrival paths from the north have been moved further west than the existing paths, to the west of the suburban development spine north of Brisbane CBD.

From the common outer section of the STARS, aircraft flight paths will split and join the final approach, either via a new RNP-AR approach which joins final approach at approximately 7 km from the runway, or via the ILS join at approximately 25 km from the runway.

The STAR for aircraft arriving from the west is positioned to move aircraft south of Amberley's airspace and over the less populated areas to the south west of Brisbane.

DEPARTURES

Runway 01 Right (01R)

There have been minor initial heading changes off the existing runway as required to meet the simultaneous parallel runway departure standards. All jet SIDS to the south continue to track initially over water with aircraft on constant climb, maximising altitudes prior to crossing the coast.

Runway 01 Left (01L)

The SIDS from this runway replicate the existing northern and western SIDS as closely as possible. They are designed for constant climb and the over water path designed for jets allows sufficient room for turbo prop aircraft to remain over water as well generally until above 3000'.

BRISBANE'S NEW RUNWAY AIRSPACE DESIGN

FLIGHT PATHS

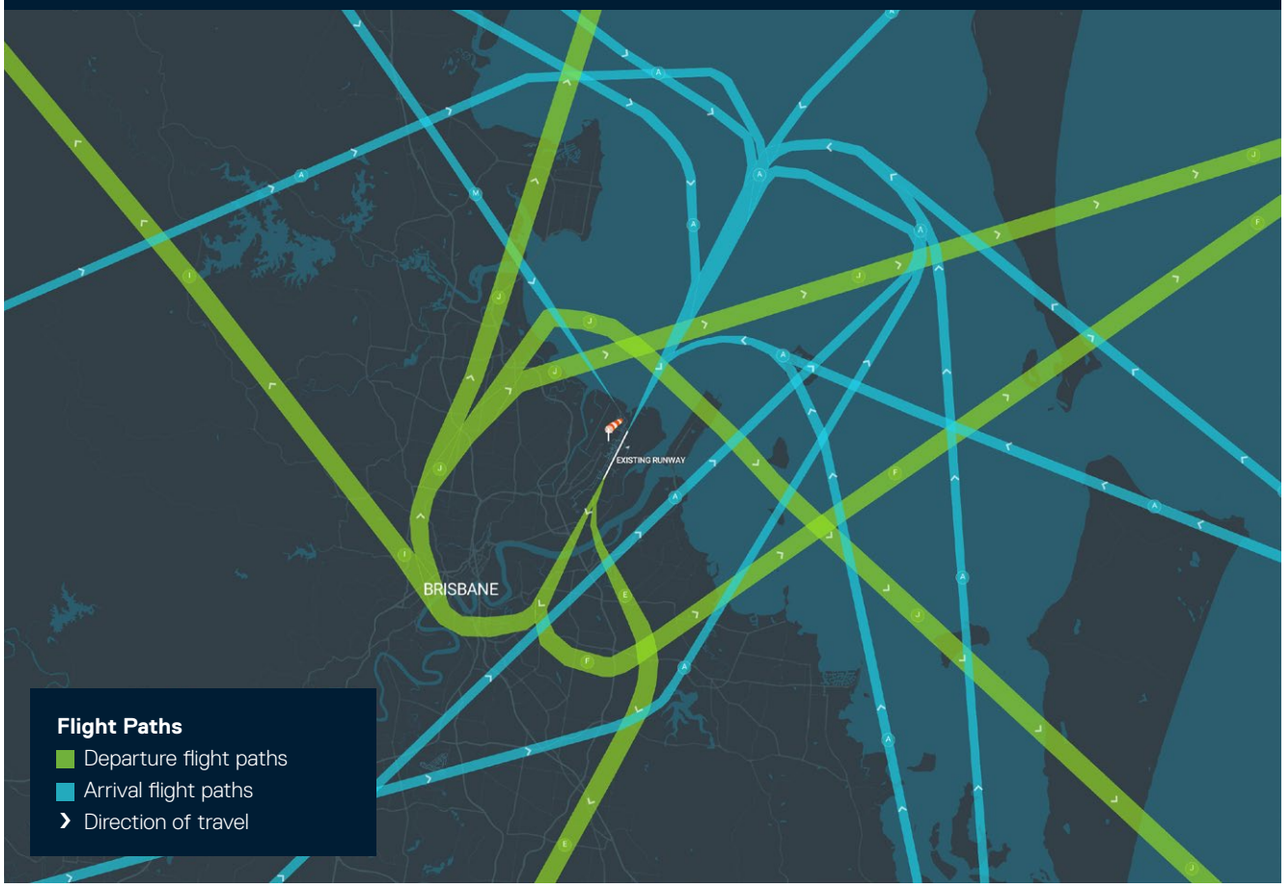
The Brisbane Airport flight path tool shows the jet arrival and departure flight paths from Brisbane Airport, both current and when the new runway opens in mid-2020.

It allows a user to search any address in Brisbane in relation to these flight paths, to understand the impacts on the selected address.

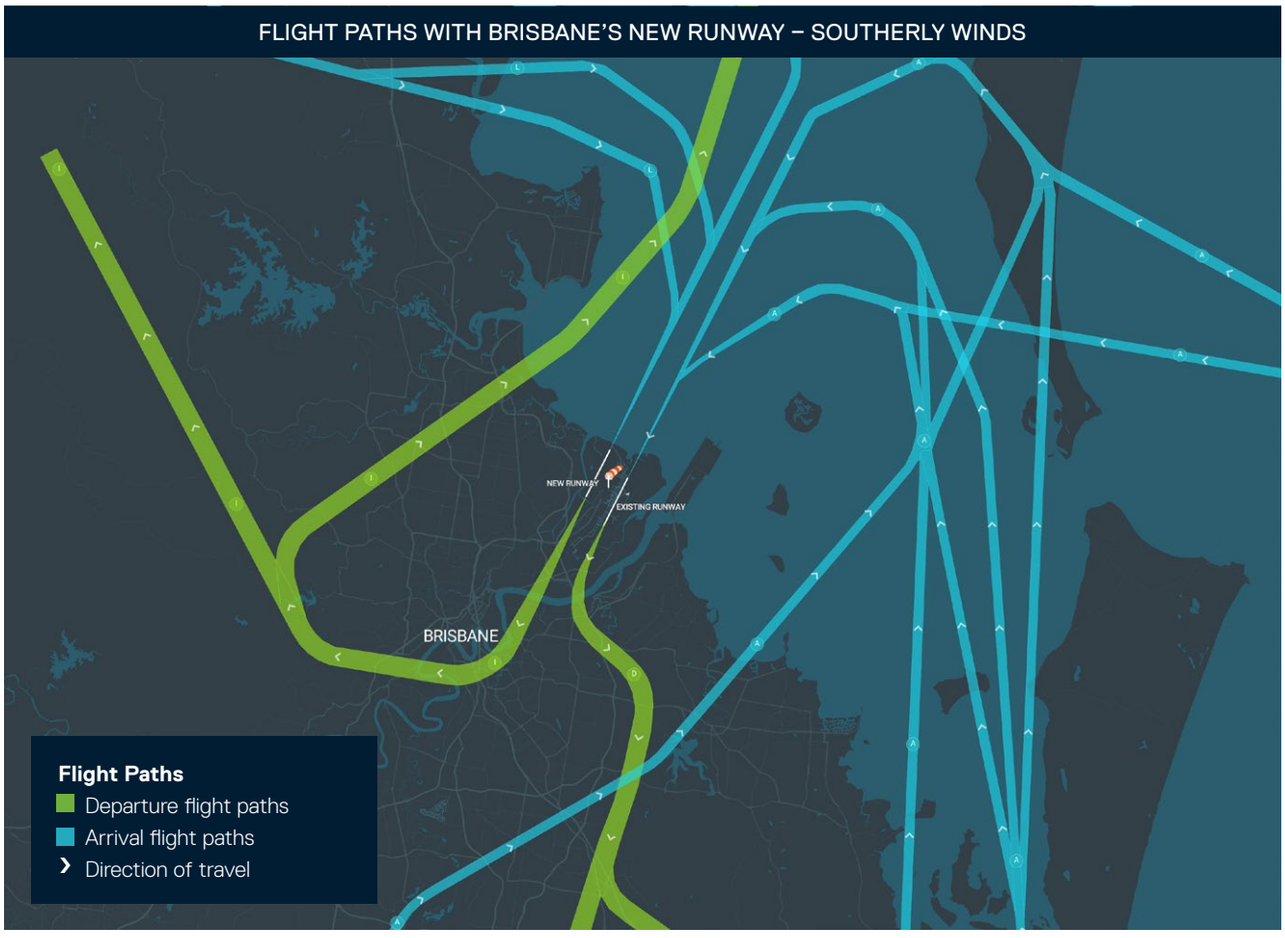
The tool also shows noise mapping, highlighting areas affected by aircraft noise of 70 decibels or more.

FLIGHT PATHS WITH BRISBANE'S NEW RUNWAY PREFERRED NIGHT TIME OPERATIONS (10PM – 6AM)

FLIGHT PATHS PRIOR TO BRISBANE'S NEW RUNWAY – SOUTHERLY WINDS

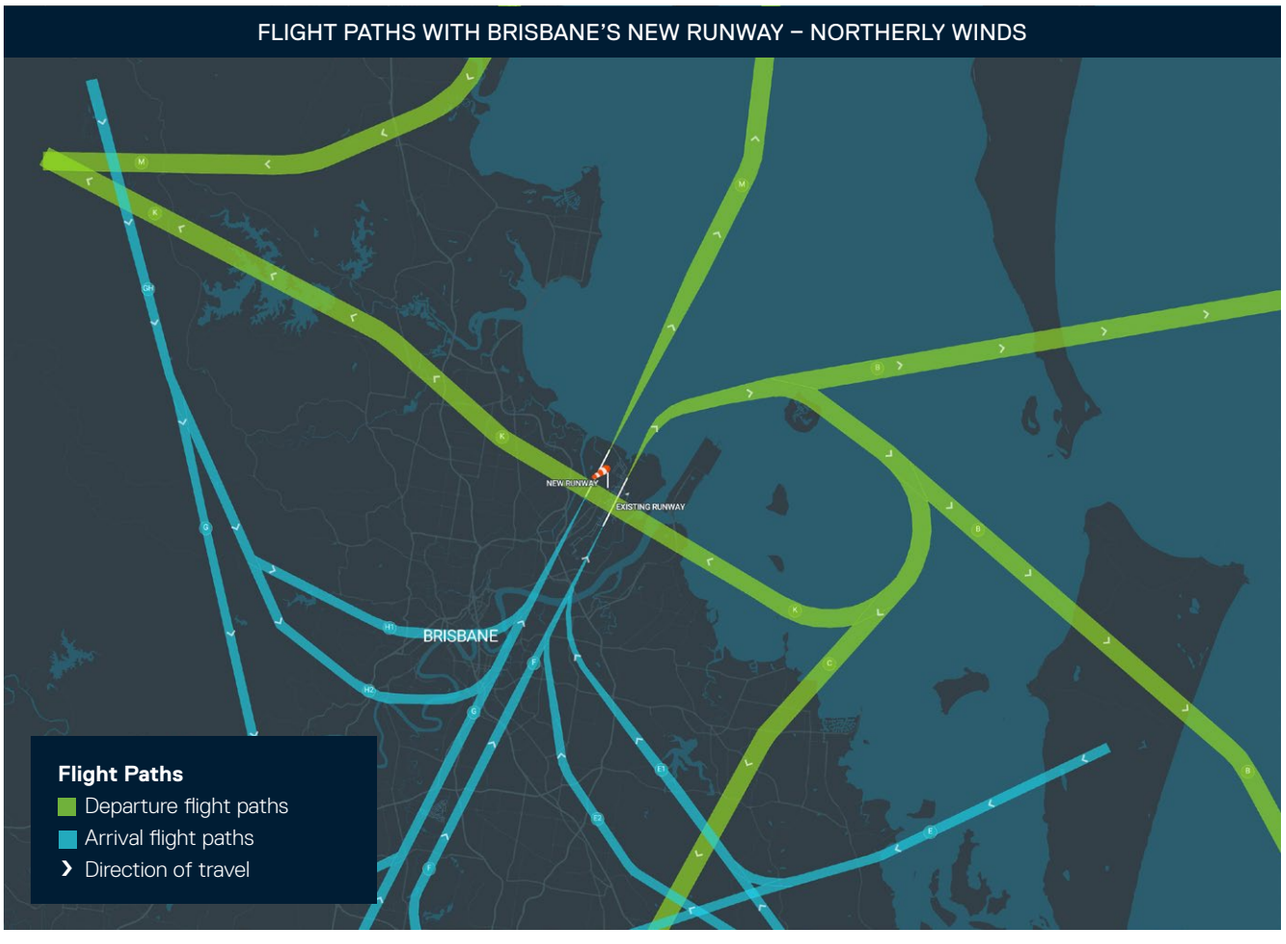


FLIGHT PATHS WITH BRISBANE'S NEW RUNWAY – SOUTHERLY WINDS



FLIGHT PATHS PRIOR TO BRISBANE'S NEW RUNWAY – NORTHERLY WINDS

FLIGHT PATHS WITH BRISBANE'S NEW RUNWAY – NORTHERLY WINDS



HELICOPTER OPERATION FLIGHT PATHS

In order to facilitate helicopter operations (predominantly emergency and medical response), in and out of these areas without disrupting airport runway operations, air traffic controllers use three standard flight path routes:

- Brisbane Airport direct to and from Mount Coot-Tha TV Towers – approximately 1-2 flights a day
- Brisbane Airport direct to and from Manly Boat Harbour – approximately 3 flights a day
- Brisbane Airport direct to and from Bald Hills Radio Mast – approximately 3 flights a day

STANDARD HELICOPTER ROUTES

BRISBANE'S NEW RUNWAY AIRSPACE DESIGN

FLIGHT PATHS AND NOISE ABATEMENT PROCEDURES

Noise abatement procedures are developed during the airspace design process to optimise the use of the noise minimisation built into the design. These procedures are ultimately instructions provided to pilots and ATC.

NOISE ABATEMENT DURING NIGHT TIME

The preferred noise abatement operating mode at night between 10pm and 6am is SODPROPS.

At other times, SODPROPS may be used when aircraft traffic demand levels and weather conditions allow, to minimise overflight of residential areas outside the night hours. This is likely to occur during periods of low demand in the evening during the week, and evening and early morning at the weekend. SODPROPS is only available when visibility is 8km or greater, and the cloud base is 2500' or above. The tailwind must also be 5 knots or less and the runway surface must be dry.

If the cloud and/or visibility conditions are less than those required for SODPROPS, Reciprocal Runway Operations (RRO) will be used, where traffic demand allows, up to 5 knots of tailwind. RRO makes use of both runways for arrivals and departure over the bay with greater spacing required between aircraft, and can only be used during periods of low demand.

At night, when SODPROPS or RRO cannot be used (generally when winds are greater than 5 knots) the preferred operations are Runway 19L/R for landing and Runway 19L for take-off, or Runway 01R for landing and Runway 01L/R for take-off, for noise minimisation.

Runway 01L will not be permitted to be used for landings between 10pm and 6am, except when weather conditions (e.g. thunderstorms, fog, and heavy rain) or temporary infrastructure constraints (e.g. runway or taxiway closure) make it the only runway available for landings.

Runway 19R will not be permitted to be used for take offs between 10pm and 6am, except when weather conditions (e.g. thunderstorms, fog, heavy rain) or infrastructure constraints (e.g. runway or taxiway closure) make it the only runway available for departures. Another exception may be operations between 5am and 6am for a limited number of non-jet aircraft to help reduce the delays to departing jet aircraft on 01R.

In addition to a priority for the use of over water modes during the 10pm and 6am, other operating techniques will be used in this period to limit aircraft noise. These include:

- No intersection departures for jet aircraft will be permitted on the 19L runway between 2200 and 0500 local time.
- Between 10pm and 6am local time when the landing runways are 19R/L, jet aircraft will not be permitted to descend below 5000' and turbo propeller aircraft below 3000' until over water.
- When over bay operations are not available due to weather, and landings are on runway (end) 01R, all aircraft will not be permitted to descend below 3000' until aligned with the runway centreline.
- When aircraft are departing in the 01L/R direction, all aircraft will be contained over water until above 5000'.

It should be noted that in this context the term "all aircraft" applies to all jet aircraft, other aircraft with a maximum take-off weight exceeding 5,700kg, and all other fixed wing aircraft with two or more engines.

Departing aircraft will be issued with a procedural Standard Instrument Departure (SID) all of which have preferred noise abatement procedure flight paths. When compliance with the preferred flight paths is not possible due to prevailing weather conditions, aircraft will be manually flown as closely as possible to the preferred flight paths.

Noise abatement procedures will specify that pilots will be requested to minimise the use of reverse thrust on landing where operational safety allows.

NOISE ABATEMENT DURING DAY TIME

During the day, Runway 19L/R will be preferred to ensure aircraft over residential areas are as high as possible, making maximum use of the buffer between the airport and residential areas. This preferred runway mode during the day will be subject to traffic demand when a runway change is required.

NOISE MANAGEMENT

Brisbane Airport is committed to working closely with the community, Airservices Australia, the airlines, and Commonwealth, State and Local Governments to minimise the effects of noise associated with airport operations on the community as much as possible.

The strategic location of the airport adjacent to Moreton Bay with a 6km buffer zone to the nearest residential areas to the south, as planned in the 1970's, provides the opportunity to further maximise over the bay operations and height of aircraft over residential areas with the introduction of Brisbane's New Runway in 2020.

Brisbane Airport proactively supports management of aircraft noise at the airport through the following activities:

- Works closely with Airservices Australia, who is responsible for the design and use of flight paths, on development and implementation of airspace and flight path design and noise abatement procedures making maximum use of the airport location and the latest available navigation technology to minimise the effect of aircraft noise
- Supports the use of quieter new generation aircraft
- Develops and maintains infrastructure to support efficient and environmentally responsible aircraft operations
- Ensures procedures are in place to control noise generated by engine ground running and reverse thrust and effective responses to ground based noise complaints
- Participates in the Brisbane Airport Community Aviation Consultative Group to properly inform community representatives and respond to community concerns about aircraft operations at the airport
- Works together with federal, state and local government to support the National Airport Safeguarding Framework guidelines, including providing noise metrics and advice to ensure inappropriate development is avoided in areas excessively affected by aircraft noise.

NOISE MANAGEMENT

DESCRIPTION OF AIRCRAFT NOISE

Aircraft noise is created by several different parts of an aircraft, which vary at different stages of flight.

The airframe and engine are a source of noise during arrivals and final approach, the engine creates noise during the flight as well as during departure and climb-out phases of flight.

The airframe of an aircraft refers to the slats, flaps, spoilers, aileron, and elevator components.

The level of noise that can be heard from an aircraft during take-off, landing and during flight can vary depending on a number of different factors, including: the weather, including season, wind and cloud cover, the height of an aircraft, changes in engine thrust, and the type of aircraft.

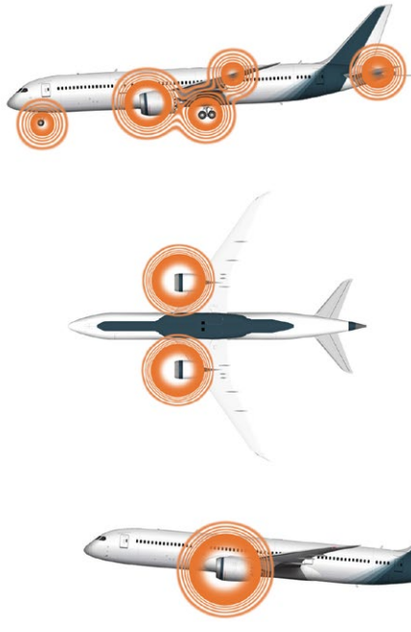
Noise is also subjective person to person and what you hear can be influenced by many different factors including your surroundings and other activities happening in the background.

AIRCRAFT NOISE SOURCES

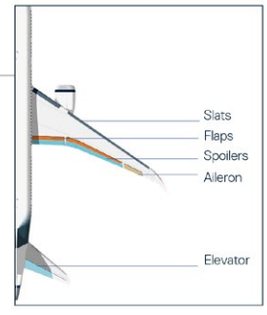
ARRIVALS AND FINAL APPROACH
(Airframe and engine noise)

AIRCRAFT DURING FLIGHT
(Engine noise)

DEPARTURE AND CLIMB OUT
(Engine noise)



ARRIVALS AND FINAL APPROACH
(Airframe noise)



AIRCRAFT NOISE MEASUREMENT

Whilst the experience or impact of noise is dependent on the individual, there are standards used to measure noise. Noise is measured within a scale of decibels (dB) as the unit of measure. The sound level of typical daytime activities can vary between 40 dB and 85 dB. Typical aircraft noise levels are between 65 dB and 95 dB.

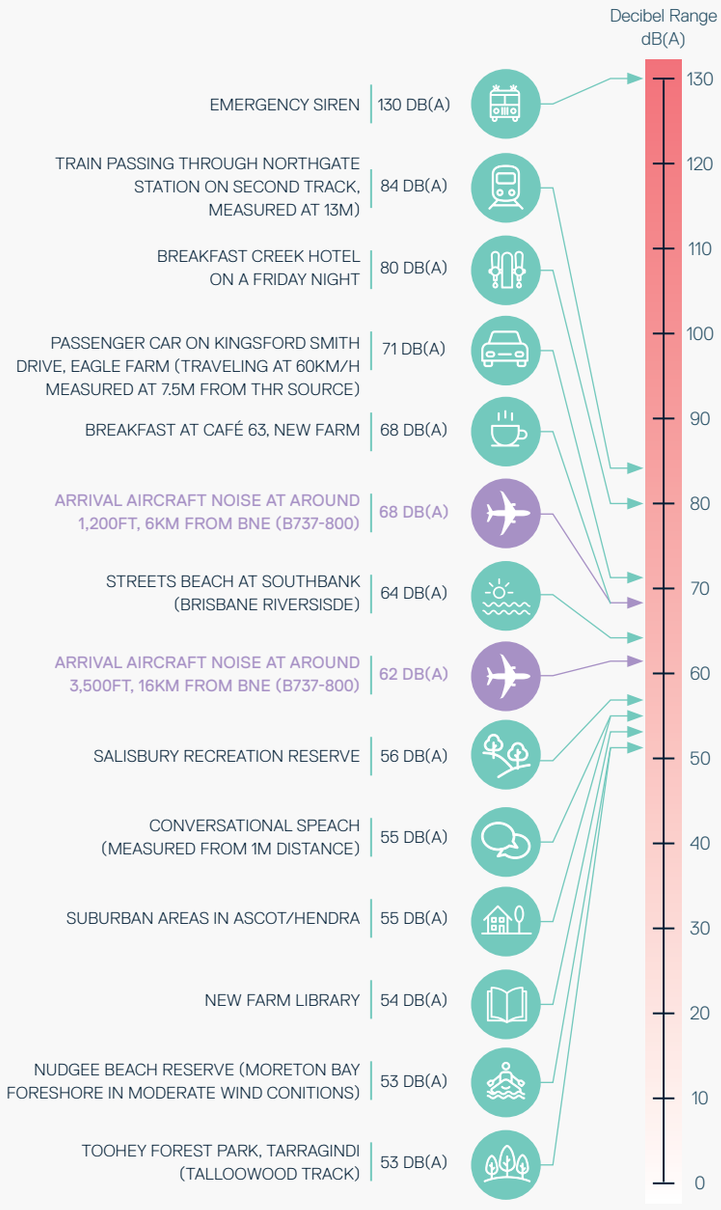
The figure presented here depicts typical sounds experience by residents of Brisbane on a scale of dB, with aircraft activities presented within this for context.

The aviation industry in Australia refers to the "Significance of Change in Environmental Noise Exposure (Department of Transport and Main Roads, 2013)" to determine noticeability in changes to noise levels. The change in subjective loudness and the significance of change is presented in the table below.

INCREASE OVER EXITING NOISE LEVEL DB(A)	CHANGE IN SUBJECTIVE LOUDNESS	SIGNIFICANCE OF CHANGE
3	Nil	Insignificant
3 – 5	Noticeable	Marginal
10	About double	Significant
15 or more	At least triple	Very significant

Source: Queensland Department of Transport and Main Roads, 2013.

BRISBANE SOUND LEVELS



Source: Local noise measures collected by SoundIn, December 2018

NOISE MANAGEMENT

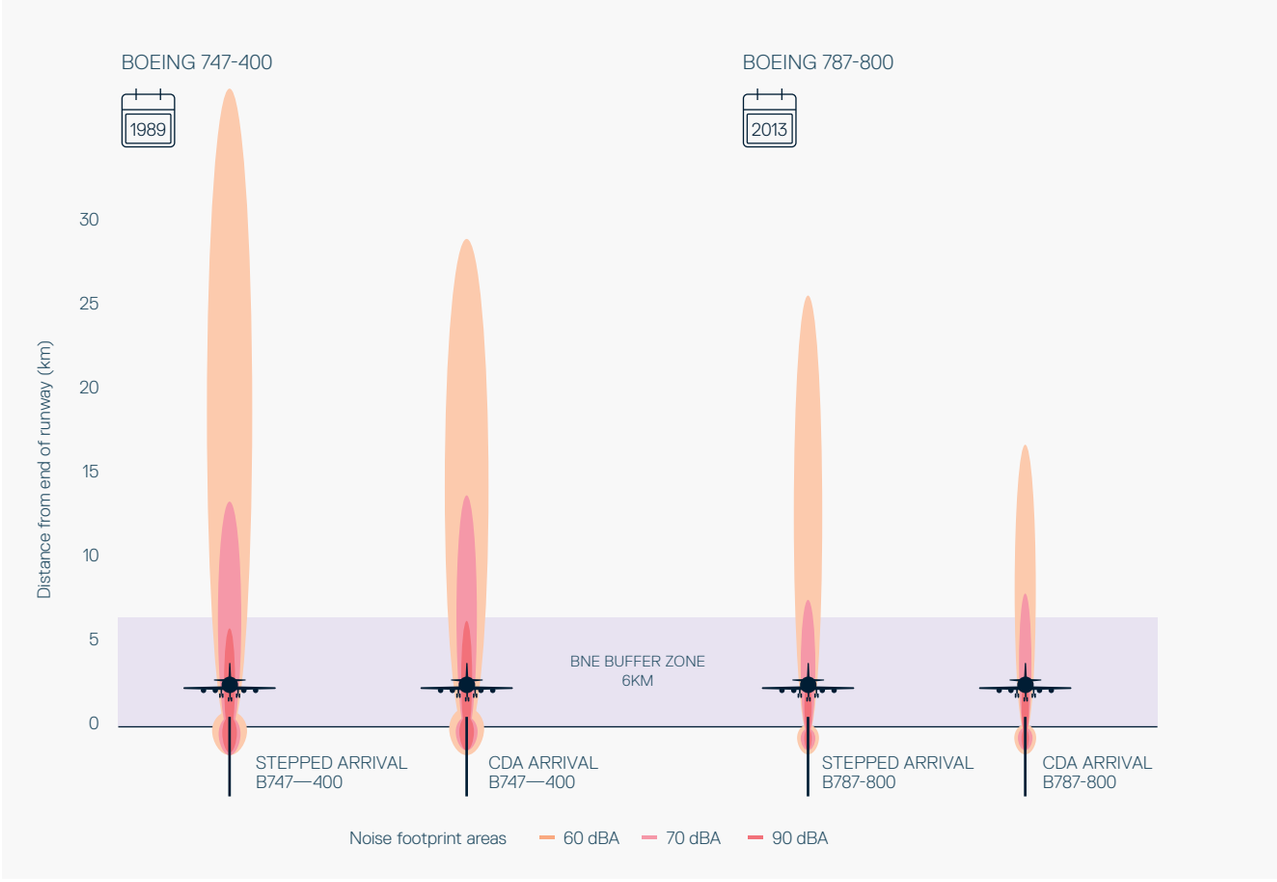
INDUSTRY REGULATORS AND STAKEHOLDERS

Brisbane Airport minimises noise associated with operations at the airport and associated services and facilities. We work closely and proactively with the following industry regulators and stakeholders to minimise noise impacts associated with airport operations and to make sure the community receives accurate and transparent information about aircraft noise.

- International Civil Aviation Organisation (ICAO) – develops global standards, rules and regulations generally implemented by aviation regulators including noise certification standards for new aircraft. Guidance on noise management strategies including the use and application of satellite navigation technology.
- Civil Aviation Safety Authority (CASA) – regulator of civil aviation operations in Australia, responsible for airspace regulation and safety of aviation.
- Department of Infrastructure, Regional Development and Cities (DIRDC) – advises the Commonwealth Government on the policy and regulatory framework for Australian airports and the aviation industry including policy advice to the Minister on the management of aircraft noise. Provides regulatory oversight of the Air Navigation (Aircraft Noise) Regulations 1984 as they apply to aircraft which do not meet Australian aircraft noise standards.
- Airservices Australia – provides Air Traffic Control and Information Services across Australia's airspace and towered airports. Manages and maintains aircraft navigation, surveillance and noise monitoring, responsible for airspace and flight path design, implements noise abatement procedures, noise complaints and information service, provides information on aircraft movements, runway and flight path use and noise impacts, reviews and endorses ANEF's for technical accuracy.
- Aircraft Noise Ombudsmen – conducts independent reviews of Airservices Australia' handling of noise complaints, community consultation and information on aircraft noise and makes recommendations to Airservices Australia for improvement.
- Airlines and aircraft operators– operate and maintain aircraft to meet regulatory noise certification requirements, maximise efficiency and minimise noise through new generation fleet acquisition including use of the latest satellite based navigation technology, comply with noise abatement procedures.
- State and Local Government – develop and implement land use planning frameworks to prevent inappropriate developments in areas excessively effected by aircraft noise

COMBINING AIRCRAFT TECHNOLOGY WITH AIRSPACE DESIGN

The airspace design for Brisbane's New Runway is based on allowing the latest in aircraft systems to manage the flight trajectory of the aircraft which reduces noise levels.



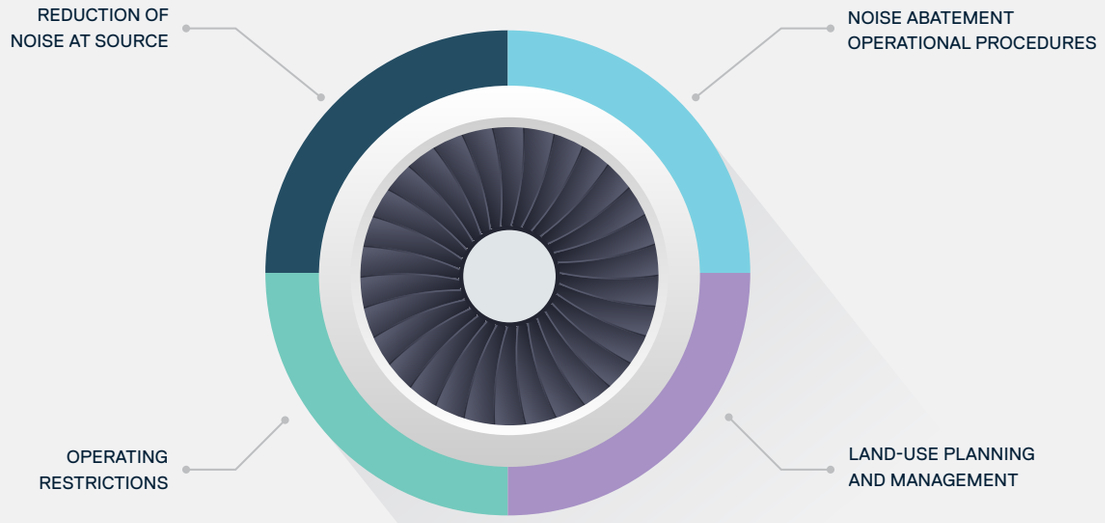
NOISE MANAGEMENT

ICAO'S BALANCED APPROACH

Brisbane Airport supports ICAO's Balanced Approach to Aircraft Noise Management based on:

- Noise reduction at source with quieter aircraft and noise reducing technologies and advancements in airframe design (evident through increased B787 and A350 operations at Brisbane Airport as replacements for noisier legacy fleet such as the B747 and A330 aircraft and implementation of satellite navigation technology at Brisbane Airport).
- Appropriate land use planning and development controls to safeguard and protect local communities from aircraft noise disturbance.
- Noise abatement operational procedures in the air and on the ground.
- Operating restrictions imposed on certain aircraft types and application of noise abatement to specific runway use.

BALANCED APPROACH TO AIRCRAFT NOISE MANAGEMENT



EFFECTIVE ENGAGEMENT

Brisbane Airport uses a range of effective engagement tools applying the following principles to engagement about the new runway to ensure the community clearly understands how they will be affected by aircraft noise after opening of the new runway:

TRUTH

Providing accurate information to the public about the aircraft noise that will result from the new runway.

CLARITY

Providing clear and understandable information to the public about aircraft noise and the changes that will result from the runway.

UNDERSTANDING

Understanding that for some people aircraft noise is a significant annoyance and that they deserve to know that we will do the best we can to minimise that.

Promoting the community benefits of the airport and the runway project.

ADVOCACY

The engagement tools to provide the community with a clear understanding of aircraft operations now and after new runway opening in relation to their address are both in booklet and interactive electronic form.

FLIGHT PATH AND AIRCRAFT NOISE INFORMATION BOOKLET

Brisbane Airport Corporation has prepared a Flight Path and Aircraft Noise Information Booklet to provide the community with useful information on aircraft operations at Brisbane Airport between now and 2035.

The Booklet was created as part of the information included in the EIS/MDP for the new runway project. The booklet includes:

- Flight path maps and data tables
- N70 noise contours overlaid on the flight paths

It provides readers with a greater level of understanding about the creation of aircraft noise, why aircraft take off and land in certain directions, the operating modes of Brisbane Airport now and in the future, Airservices Australia's role in managing aircraft traffic and the factors that will influence runway choice when Brisbane's new runway is in use.

The booklet is provided on the Brisbane Airport website.

FLIGHT PATH TOOL

The interactive flight path tool available on Brisbane Airport's website allows users to input specific address and provides current and future location of flight paths, aircraft altitudes and numbers of flights and noise levels above 70 decibels for a given time of the day and year.

AUSTRALIAN NOISE EXPOSURE FORECAST

The management of aircraft noise has a central place in the day-to-day operation of major airports such as Brisbane Airport.

In line with an ongoing commitment to minimise negative environmental impacts, Brisbane Airport works in close cooperation with aviation partners to minimise aircraft noise over residential areas and to maintain an ongoing dialogue with those communities affected by aircraft noise.

Although Brisbane Airport is not responsible for the operational standards of airlines or how airspace is managed, a proactive approach to monitoring and mitigating noise is consistent with Brisbane Airport's sustainability goals.

As a result, Brisbane Airport liaises and collaborates with the airlines, the Civil Aviation Safety Authority (CASA) who administer the safety of aircraft operations, and with Airservices Australia, who control and manage airspace, in a joint effort to address the issue.

A mandatory legislative requirement in the preparation of an Airport Master Plan is the development of an Australian Noise Exposure Forecast (ANEF) to assist Brisbane City Council (BCC) and state planning agencies to ensure that land-use planning decisions and future land uses, including new residential developments and schools take into account those areas that may be subject to intrusive or nuisance noise levels from current or forecast aircraft operations.

AUSTRALIAN NOISE EXPOSURE FORECAST

BACKGROUND

ANEF charts show contour lines in the vicinity of an airport of forecast daily average noise exposure levels from aircraft landings and take-offs. These contours are displayed as 20, 25, 30, 35 and 40 ANEF levels with higher contour levels representing higher cumulative daily aircraft noise averaged over a year. Each airport Master Plan contains an updated ANEF which is endorsed by Airservices Australia for technical accuracy.

As required for the Brisbane Airport 2020 Master Plan, an updated Ultimate Capacity ANEF has been prepared and endorsed by Airservices Australia.

The Brisbane Airport Ultimate Capacity ANEF that it will replace was similarly endorsed for technical accuracy by Airservices Australia in 2013 as part of the previous Airport Master Plan process, and is currently adopted in relevant State Planning Schemes. For convenience this revised ANEF is referred to as the 2020 ANEF and that which it will replace is called the 2014 ANEF.

The following sections describe an ANEF, and set out the base parameters and assumptions used to prepare the Ultimate Capacity ANEF contours in accordance with the requirements of the current “Manner of Endorsement” for ANEFs approved by the Minister for Infrastructure, Transport and Regional Development.

For Brisbane Airport 'Ultimate Capacity' is nominally expected to be reached in the mid-2050s. This time horizon was calculated through modelling and is regarded as a conservative estimate. In contrast to some major airports applying 20 year horizons, Brisbane Airport has consistently adopted an “Ultimate” horizon for the Brisbane Airport ANEF, as Brisbane Airport considers that residential purchase and land-use decisions involve long-term implications.

The ultimate capacity year may change in future Master Plans depending on variables such as demand, peak spreading, changes in aircraft technology and air traffic management procedures.

THE INTEGRATED NOISE MODEL (INM)

ANEF contours are derived by computer simulation using endorsed Noise Modelling Software. The 2020 ANEF was prepared using the Federal Aviation Administration (FAA) Integrated Noise Model (INM) Software Version 7.0d (including the service update circulated making a correction to the standard departure profiles for Boeing 777-300ER aircraft).

The INM database includes a representative listing of standard aircraft types for use in an INM study, including for example the B737-800 and A320. Where possible these standard INM aircraft are used to model operations. The INM database also contains a number of approved substitutions, which allow these standard INM aircraft to be used to model another aircraft with similar performance and noise characteristics.

Each INM aircraft has a number of standard approach, departure and/or circuit training profiles which define thrust setting, airspeed and altitude related to the distance from the start of take-off or from the runway threshold.

Each INM aircraft has an associated set of noise-power distance (NPD) curves for approach and departure at different thrust settings and defined by 10 noise levels at standard distances from an observer (point).

The INM calculates aircraft noise impacts by applying either standard or user defined aircraft flight profiles, performance data and NPD curves to the runway configuration and flight tracks specific to the study airport. The time of day is also factored in to allow for people being more sensitive to aircraft operations at night. In order to factor this, aircraft movements between 7pm and 7am are weighted by multiplication of four (i.e. 50 additional movements between 7pm and 7am would be the equivalent of 200 additional daytime movements).

The extent and shape of noise contours are influenced by many factors such as airport elevation, runway geometry, aircraft types, movement numbers, runway utilisation, flight track geometry, origins/destinations and subsequent assignment of aircraft to individual flight tracks, and the day/night split in aircraft movements.

Version 7.0d of the INM software (the most recent version) has now been replaced by a similar Aviation Environmental Design Tool (AEDT) model. The AEDT model was only approved by Airservices Australia for use in the preparation of ANEF contours after the update of the Brisbane Airport contours were completed. However, in the future, AEDT will be updated with noise profiles for new aircraft as they are certified and will be used when the ANEF contours are updated for future Master Plans. Brisbane Airport has confirmed a very close consistency between INM and AEDT model outputs through scenario testing and for the same assumptions outlined in this Master Plan, there is not anticipated to be any significant difference in contours prepared by AEDT.

PREVIOUS ANEF STUDIES

Brisbane Airport completed a comprehensive Environmental Impact Statement and Major Development Plan for the new runway at Brisbane Airport (NPR MDP/EIS) in 2005/06. This included extensive noise modelling and a 2035 ANEC as required by the Australian Government's Terms of Reference for the NPR MDP/EIS.

The NPR MDP/EIS was approved on 13 September 2007 by the Australian Government Environment Minister under the Environment Protection and Biodiversity Conservation Act (EPBC), and from the Transport Minister on 18 September 2007 under the Airports Act. In developing an updated ANEF for the 2009 Master Plan, the extensive modelling and noise studies undertaken as part of the NPR MDP/EIS were used as a base and translated into an Ultimate Capacity ANEF using INM Version 7.0a.

The 2014 ANEF built on the assumptions in the ANEF prepared and endorsed in 2009. It included updated forecasts, and confirmation and adjustment, as appropriate, of various other operational assumptions.

The 2014 ANEF used a composite of four ANECs to combine the effects of individual summer and winter scenarios for both Existing Runway System and Parallel Runway scenarios.

This Ultimate Capacity 2014 ANEF was a composite of the following four ANECs:

ANEC 1	Current runway system at capacity (2020)	Summer
ANEC 2	Current runway system at capacity (2020)	Winter
ANEC 3	Future parallel runway system at capacity (nominally 2060)	Summer
ANEC 4	Future parallel runway system at capacity (nominally 2060)	Winter

SEASONAL ANECS

Brisbane Airport experiences different wind patterns between summer and winter months that bias operations in different runway directions. As a result, separate winter and summer ANECs for each runway layout have been prepared to best reflect projected changes in runway and flight path usage at the airport.

This approach also allows the ANEC to account for the difference in the hourly aircraft movement profiles between summer and winter caused by daylight saving in south-eastern states impacting on interstate flight schedules, particularly in early morning operations.

Reviewing both the months when wind patterns start to change, and the dates when domestic schedules change with daylight saving in the southern states, the summer ANECs reflect airport operations in the six-month period October to March, and the winter ANECs are for the six months from April to September.

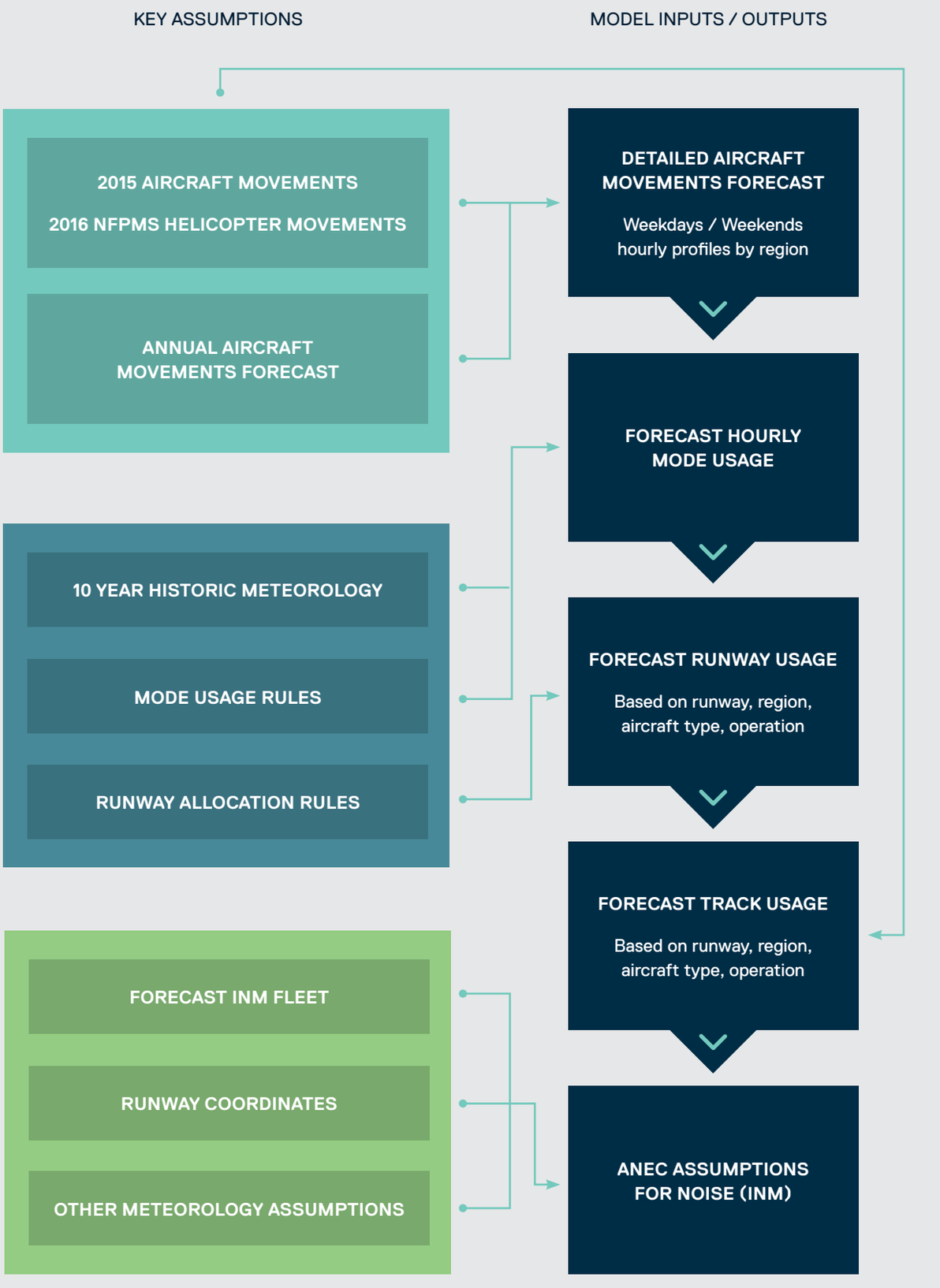
Due to the imminent commissioning of Brisbane's new runway in mid-2020, and the permanent closure of the 14/32 Cross Runway System, the 2020 ANEF is now a composite of only two ANECs:

ANEC 1	Future Parallel Runway System at capacity	Summer
ANEC 2	Future Parallel Runway System at capacity	Winter

Current aviation growth forecasts for Brisbane Airport suggest that ultimate capacity of the Parallel Runway system will be reached around the mid-2050s.

The chart on the following page entitled "Brisbane Airport 2019 Ultimate Capacity Composite ANEF: Overall Methodology" shows diagrammatically the key assumptions feeding into the various functional models and the subsequent outputs.

BRISBANE AIRPORT 2019 ULTIMATE CAPACITY COMPOSITE ANEF: OVERALL METHODOLOGY



AUSTRALIAN NOISE EXPOSURE FORECAST

KEY ANEF INPUT PARAMETERS: AIRFIELD CONFIGURATION

The airfield layout at Brisbane Airport will change from its current converging Main and Cross Runway System to an independent parallel runway system:

THE PARALLEL RUNWAY SYSTEM

Brisbane Airport is completing construction of a new parallel runway and is committed to its operational commissioning by mid-2020. As part of that process and to enhance safety outcomes, the existing Main Runway was renamed to 01R / 19L in November 2018.

The new runway will be designated 01L / 19R.

ULTIMATE CAPACITY ANEF

The Ultimate Capacity ANEF has retained the following Ultimate Capacity Runway System configuration:

- 01R/ 19L – 4,040 metres x 45 metres (extended to the south from its current length of 3,560 metres, incorporating a Displaced Threshold for 01 approaches at the current 01 landing point).
- 01L / 19R – 3,600 metres x 60 metres (extended to the south from its initial build length of 3,300 metres, incorporating a Displaced Threshold for 01 approaches at the initial build 01 landing point).

PARALLEL RUNWAY SYSTEM CONFIGURATION ADOPTED IN THE ANEF MODELLING

DATA TYPE	DESCRIPTION	COORDINATES (LAT)	COORDINATES (LONG)	RUNWAY LENGTH (M) /WIDTH(M)	ELEVATION (M)	LANDING THRESHOLD FROM RWY END (M)
Airport Coordinates	Airport	-27.384159	153.117530	N/A	2.5 (8 ft)	
Ultimate Capacity	**Rwy End**					
Runway Coordinates	Rwy 19L	-27.374677	153.134301	4040 / 45	3.2 (10 ft)	0
Runway Coordinates	Rwy 01R	-27.407146	153.115751	4040 / 45	3.6 (12ft)	540
Runway Coordinates	Rwy 19R	-27.356557	153.121963	3600 / 60	4.066 (13 ft)	0
Runway Coordinates	Rwy 01L	-27.385491	153.105416	3600 / 60	4.066 (13 ft)	300
Runway Coordinates	Rwy 19L_A3	-27.381058	153.130653	N/A	3.6 (11 ft)	0
Runway Coordinates	Rwy 19R_T3	-27.361782	153.118976	N/A	4.066 (13 ft)	0
Runway Coordinates	Rwy 19R_T5	-27.365398	153.116908	N/A	4.066 (13 ft)	0
Helipad	HE	-27.370688	153.124693	N/A	2.4 (8 ft)	0

AUSTRALIAN NOISE EXPOSURE FORECAST

AIRCRAFT NOISE PROFILES

Both ANECs have been modelled using standard profiles and assumptions as laid out in the INM 7.0d model except for the use of user-defined aircraft noise profiles for next generation narrow body jet aircraft. The Boeing 737 MAX and Airbus A320/A321neo jet aircraft are scheduled to progressively enter the market and will supersede completely existing narrowbody fleet by the horizon of the Ultimate Capacity ANEC parallel runway contours (mid-2050s).

The definition of the noise profiles adjustments (Noise Power Distance (NPD curves) for these new generation aircraft as shown in the table below were based on latest EASA (European Union Aviation Safety Agency) Noise Certification information and advice from Airservices Australia.

USER-DEFINED AIRCRAFT NOISE PROFILES

USER-DEFINED AIRCRAFT TYPE	INM BASELINE MODEL	DEPARTURE ADJUSTMENT	ARRIVAL ADJUSTMENT
A320NEO	A320-211	-3.3 dB	-2.4 dB
A321NEO	A321-232	-3.5 dB	-1.1 dB
B737MAX8	737800	-4.2 dB	-2.3 dB

AUSTRALIAN NOISE EXPOSURE FORECAST

AIRCRAFT TYPES AND SUBSTITUTIONS

Annual aircraft movement forecasts were prepared by Tourism Futures International (TFI) and broken down into the generic aircraft categories listed below These were then assigned to specific representative aircraft types for the two ANECs.
The forecast proportions for the parallel runways at Ultimate Capacity (mid-2050s) are compared with those in the 2016 NFPMS data.

The various splits between types of aircraft operations are shown for:

- → the 2015 base demand used to establish schedules for NPR Compliance Modelling and ANEF.
- → the nominal 2054 parallel runway system at capacity.

ANNUAL AIRCRAFT MOVEMENTS 2015 BASE AND 2054 FORECAST BASED ON TYPE OF OPERATION AND CATEGORY

ANNUAL AIRCRAFT MOVEMENTS [1][2]	2015	2054
International	29,000	95,000
Domestic	166,000	425,000
GA Itinerant	28,000	35,000
Helicopters (3)	1,600	7,400
Total	**224,600**	**562,400**

Notes:
(1) Source is TFI
(2) Numbers do not match exactly with other tables and breakdowns because of rounding
(3) Helicopter projection by BAC assuming similar annual growth as fixed wing with an additional of new operator

ANNUAL AIRCRAFT MOVEMENTS (RPT) [1][2]	2015	2054	2015	2054
Widebody Jet	20,100	105,700	10%	20%
Narrowbody Jet	124,500	312,500	64%	60%
Turboprop (non-jet)	50,400	101,800	26%	20%
Total	**195,000**	**520,000**	**100%**	**100%**

(1) Numbers will not necessarily match exactly because of rounding
(2) RPT Aircraft Movements excludes freight and GA and Helicopters (Table above includes freight and GA)

AIRCRAFT CATEGORIES

While there is growth in all aircraft categories, the widebody jets category is growing fastest and there is also up-gauging from turboprop to narrowbody jets over time, as average seats per aircraft increase in line with long-term historic trends.

The forecast proportions of aircraft types used for the runway system at ultimate capacity are compared with NFPMS data from 2015.

FORECAST PROPORTIONS OF AIRCRAFT TYPES COMPARING 2015 WITH ULTIMATE CAPACITY

FLEET MIX RPT - NARROWBODY

AIRCRAFT CLASS	AIRCRAFT TYPE	INM TYPE	2015	UC	COMMENTS
LNB	A321	A321-232	1%	0%	By Ultimate capacity and being 30+ years out and an expected fleet turnover, that all A320/A321/B738 will be replaced by Neo/Max aircraft.
LNB	A321neo	A321-232*	0%	15%	Increase uptake in A321Neos as upgauge to A320neo on domestic routes. The A321neo is represented by A321-232 with adjusted departure and arrival profiles.
LNB	A320	A320-232	24%	0%	By Ultimate capacity and being 30+ years out and an expected fleet turnover, that all A320/A321/B738 will be replaced by Neo/Max aircraft.
LNB	A320neo	A320-232*	0%	5%	Replacement of A320. The A320neo is represented by A320-232 with adjusted departure and arrival profiles.
LNB	B738	737-800	73%	0%	By Ultimate capacity and being 30+ years out and an expected fleet turnover, that all A320/A321/B738 will be replaced by Neo/Max aircraft.
LNB	737 8	737-800*	0%	40%	Replacement of B738. The 737 Max 8 is represented by 737-800 with adjusted departure and arrival profiles.
LNB	737 10	737-800*	0%	40%	Increase uptake in 737 Max 10 as upgauge to 737 8 on domestic routes. The 737 10 is represented by 737-800 with adjusted departure and arrival profiles.
LNB	B733	737-800	2%	0%	

FORECAST PROPORTIONS OF AIRCRAFT TYPES COMPARING 2015 WITH ULTIMATE CAPACITY

FLEET MIX RPT - WIDEBODY

AIRCRAFT CLASS	AIRCRAFT TYPE	INM TYPE	2015	UC	COMMENTS
VLWB	A380	A380-861	63%	100%	Reduced A380s overall and increase in LWB (B777X) by Ultimate Capacity with an expectation that only the Middle Eastern market will be serviced by A380s, and Americas/East Asia/South Asia/India will be replaced by LWB (B777x) and NZ by MWB (B787/A350s).
VLWB	B744	747-400	37%	0%	Both 747s QF and CI are phased out and replaced by B789/A350s.
LWB	B77W	777-3ER	100%	0%	Used by VA, NZ and EK to be phased out and replaced by B777x.
LWB	B777X	777-3ER	0%	100%	777-3ER is the newest in INM 7.0d so best to represent the B777x. Replacing A380s in other markets.
MWB	A359	777-200	0%	25%	Replacement for international A333/2 and B772.
MWB	A339Neo	787-8R	0%	25%	Orders for A339neo includes most from AirAsia X to service short haul international marker into Asia and NZ. Replacement for international A333/2 and B772.
MWB	A333	A330-301	51%	0%	International only in 2020 then replaced by A339neo.
MWB	A332	A330-301	29%	0%	Backbone for QF domestic short-/medium-term replacing B763 then phased out in 2035 to be replaced by A359 and B789.
MWB	B772	777-200	2%	0%	Ultimately replaced by A359 and B789.
MWB	B789	787-8R	6%	50%	Replacement for international A333/2 and B772. Expectation of SWB (MOM) market to increase as replacement of domestic/short international MWB routes. But ultimately the MOM will be represented by B787R for noise modelling purposes, hence no change in the fleet is required.
MWB	B788	787-8R	12%	0%	Ultimately replaced by B789 for upgauge need.
SWB	B763	767-300	100%	0%	B767s are to be phased out and replaced/upgauged to MWB A332/B788 or to the SWB (MOM). But ultimately the MOM will be represented by B787R for noise modelling purposes, hence SWB moved to MWB.

AIRCRAFT CATEGORIES

FORECAST PROPORTIONS OF AIRCRAFT TYPES COMPARING 2015 WITH ULTIMATE CAPACITY

FLEET MIX RPT – REGIONAL JETS AND TURBOPROPS

AIRCRAFT CLASS	AIRCRAFT TYPE	INM TYPE	2015	UC	COMMENTS
RJ	A220	EMB190	0%	50%	A220 as the next gen of Regional Jets (RJ) to be operational by Ultimate Capacity, but to be represented by the EMB190 as the most representative INM type.
RJ	B712	717200	31%	0%	717s are phased out replaced by similar aircraft as E190-E2/A220.
RJ	E190	EMB190	55%	0%	E190 to be replaced by E190-E2 (next gen of EMB190) by Ultimate Capacity.
RJ	E190 – E2	EMB190	0%	50%	E190-E2 (next gen of EMB190) to be operational by Ultimate Capacity, but to be represented by the EMB190 as the most representative INM type.
RJ	E135	EMB190	7%	0%	
RJ	F100	717200	1%	0%	
RJ	F70	717200	1%	0%	
RJ	B463	EMB190	5%	0%	
LTP	AT76	DHC830	4%	80%	Increased uptake in AT76 as opposed to DHC830 but represented by a DHC830 INM type the most representative INM type for the LTP category.
LTP	AT75	DHC830	18%	0%	
LTP	DH8D	DHC830	62%	20%	Backbone LTP for QF.
LTP	DH8C	DHC830	16%	0%	
MTP	DH8B	SF340	45%	45%	Keep same breakdown with SF340 the most representative INM type for the MTP category.
MTP	SF34	SF340	55%	55%	
STP	BE20	DHC6	72%	72%	Keep same breakdown with DHC6 the most representative INM type for the STP category.
STP	SW4	DHC6	28%	28%	

The forecasts were further broken down into generic aircraft categories as shown, from which detailed INM aircraft types were finally derived.

TOTAL EQUIVALENT ANNUAL AIRCRAFT MOVEMENTS BY AIRCRAFT CATEGORY – 2015 BASE AND 2054

AIRCRAFT MOVEMENTS (RPT) [1][2][4]	2015 SUMMER[3]	2015 WINTER[3]	2054 SUMMER[3]	2054 WINTER[3]
VLWB – very large widebody	2,600	2,800	3,000	2,900
LWB – large widebody	2,600	2,100	14,600	15,100
MWB – medium widebody	11,800	11,400	89,100	86,600
SWB – small widebody(5)	3,100	5,400	0	0
LNB – large narrowbody	107,700	105,000	277,000	276,000
RJ – regional jet	17,300	15,800	35,500	36,600
LTP – large turboprop	44,600	46,100	100,100	102,000
MTP – medium turboprop	0	300	0	0
STP – small turboprop	5,300	6,100	700	700
TOTAL	**195,000**	**195,000**	**520,000**	**520,000**

Notes:

(1) Excludes freight, GA and helicopters

(2) Totals are shown for ANEF average daily x 365, although summer and winter seasons are assumed to be six months each

(3) Minor differences in summer and winter due to differences in base from which profiles are grown

(4) Numbers will not necessarily match exactly with other tables and breakdowns because of rounding

(5) Expectation SWB to be represented by the MOM, but for noise modelling purposes those movements allocated to MWB category since the MOM will be represented by the 787-8R.

AUSTRALIAN NOISE EXPOSURE FORECAST

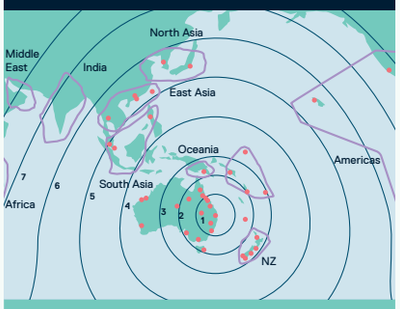
ORIGINS AND DESTINATION

Annual aircraft movement forecasts from TFI were broken down by regions based on markets, distance and direction for international, interstate and intrastate origins and destinations.

This breakdown was then applied on the daily and hourly level, to individual aircraft movements, which are in turn used to define stage length (for departure profile) and direction (for runway and flight allocation).

ORIGIN AND DESTINATION REGIONS – DIRECTION, DISTANCE AND TYPICAL AIRCRAFT

INTERNATIONAL



AC TYPE	EXAMPLE
VLWB	A380, B744
LWB	B773,A340
MWB	A332, A333
SWB	B752, B763
LNB	A321, B738

INTERSTATE (DOMESTIC)

AC TYPE	EXAMPLE
MWB	A332, A333
SWB	B752, B763
LNB	A321, B738
SNB / RJ	F100, E170
LTP	DH4, ATR72
MTP	DH3, F50
STP	DH8A, BEH

INTRASTATE (REGIONAL)

AC TYPE	EXAMPLE
LBN	A321, B738
SNB, RJ	F100, E170
LTP	DH4, ATR72
MTP	DH3, F50
STP	DH8A, BEH

AUSTRALIAN NOISE EXPOSURE FORECAST

CIRCUITS

There are currently no circuit operations at Brisbane Airport, nor are they anticipated in the future and are therefore not included in the ANECs.

RUNWAY ALLOCATION & CONOPS

There is no significant intrinsic difference in the operational capability or capacity of the two parallel runways. A detailed runway allocation rule-set was determined through the airspace finalisation process consistent with the Concept of Operations (CONOPs) presented in the EIS/MDP. This is predominately based on “compass mode” for both arrivals and departures (that is the direction (north, east, south or west) to the destination port or from the last departure port. This eliminates the need for crossing flight paths on arrival or departure.

If during particular busy hours there is a bias of traffic to one runway or the other, some balancing would assumed to be done by Air Traffic Control on a tactical basis.

The fundamental runway allocation principle are:

- Operations to/from south and east destinations/origins will be allocated the existing Main Runway 01R / 19L; and
- Operations to/from north and west destinations/origins will be allocated to Brisbane’s new runway 01L / 19R.

The exception to this allocation principle will be during periods when Noise Abatement Procedures are in operation or in the situation that a pilot in command specifically requests the slightly longer 01R / 19L runway for operational reasons.

There will also be occasions where air traffic control (ATC) must re allocate runways due to weather or for traffic management requirements.

FIXED WING FLIGHT TRACK ALLOCATION AND SPREAD

The flight track allocation and position are based on the finalised airspace design and CONOPS for the parallel runway system provided by Airservices Australia. The table title Arrival Flight Tracks RNP/ILS and Visual Allocations shows the flight tracks RNP/ILS and Visual allocations.

ARRIVAL FLIGHT TRACKS RNP/ILS AND VISUAL ALLOCATIONS

WB JETS	RNP	ILS	VISUAL
2020	15%	85%	0%
2035	70%	30%	0%
Ultimate Capacity	70%	30%	0%
NB JETS	**RNP**	**ILS**	**VISUAL**
2020 (01L/19R Landings)	45%	45%	10%
2020 (01R/19L Landings)	65%	25%	10%
2035	75%	20%	5%
Ultimate Capacity	75%	20%	5%
NON JETS	**RNP**	**ILS**	**VISUAL**
2020	10%	10%	80%
2035	70%	10%	20%
Ultimate Capacity	70%	10%	20%

The track spread was based on 2015 NFPMS data and ANOMS (Aircraft Noise and Operations Management System) track analysis. The table titled Track Spread Assumptions of the Runways shows the spread for both the RWY 19L/01R and the New Runway system.

TRACK SPREAD ASSUMPTIONS OF THE RUNWAYS SYSTEM

	ARR - RNP	ARR – NON RNP	DEP
Jet	0.3nm spread across 3 tracks	0.7nm spread across 5 tracks	0.7nm spread across 5 tracks
Non-Jet	0.3nm spread across 3 tracks	As per NFPMS across 5 tracks (when possible). Otherwise min. 0.7nm spread across 5 tracks	0.7nm at 3nm out 1.7nm at 10nm out across 5 tracks

AUSTRALIAN NOISE EXPOSURE FORECAST

HELICOPTERS

Growth in existing helicopter operations were not specifically forecast for Ultimate Capacity but were conservatively assumed by Brisbane Airport to grow at the same rate as the overall average annual growth rates of fixed wing aircraft movements - around 3 per cent per year.

Based on a review of NFPMS, two helicopters were selected to represent the helicopter operations with 92 per cent of operations to be represented by a twin-engine helicopter, the B430 and 8 per cent by a single-engine helicopter, the EC130, with standard INM profiles adopted.

In addition, Brisbane Airport envisages an increase in helicopter operations associated with a proposed Aeromedical Base, initially with 22 movements/week at 2020, growing at annual growth rate of 5 per cent for 20 years then no growth up to Ultimate Capacity. These operations are represented in the noise modelling by a twin-engine helicopter B430.

Helicopter tracks used in the noise modelling were advised by Airservices Australia and provide for three alternate arrival/departure routes to/from the primary Helipad located in Airport North.

These flight paths are currently used for departures and arrivals and will continue to be applied out to Ultimate Capacity. The noise modelling assumes equal proportional allocation of Helicopter operations across the three routes.

Currently noise from helicopter arrivals and departures makes a negligible contribution to the overall noise footprint outside the airport boundary and to the extent of ANEF contours.

HELIPAD LOCATION	
Data Type	Helipad Coordinates
Description	HE
Coordinates (Lat)	-27.370688
Coordinates (Long)	153.124693
Elevation (m)	2.4 (8 ft)

RUNWAY SYSTEM CAPACITY

The wide-spaced parallel runway system has been designed for independent operations, so that the sustainable peak capacity can be assumed to be at least twice the current single runway capacity.

Three independent methods were used to derive the Ultimate Runway Capacity of between 450,000 and 550,000 scheduled RPT aircraft movements:

- A bespoke analytical model originally developed based on Brisbane Airport runway timing studies.
- A method based on peaking factors and ratios of busy hour to busy day, busy day to annuals from a baseline and adjusted based on assumptions of peak spreading as demand approaches capacity.
- Benchmarking ratios of actual hourly peak runway throughput versus actual annual aircraft movements for several airports currently close to their nominal runway capacity.

The capacity assessments were initially based on a notional parallel runway peak throughput (as per NPR EIS/MDP) of 100+ hourly movements and a scaled-up design day movement profile with some future peak spreading. As noted in the NPR EIS/MDP peak capacities for short periods could be greater than this and up to 108 total movements per hour.

Recent advice from Airservices Australia suggested an expectation of future capacity improvements resulting from new airspace management system implementations and unspecified but expected innovation in coming decades. Brisbane Airport has therefore adopted a nominal increase in maximum peak-hour Runway System Capacity to around 110 movements per hour.

Based on extrapolating a 2040 design day schedule to this peak-hour rate results in annual RPT movements at ultimate capacity of around 520,000 in mid-2050s. General Aviation movements would be in addition to this figure resulting in around 550,000 total annual movements.

AIRCRAFT MOVEMENT AND TYPE FORECASTS

20 year passenger and aircraft movement forecasts to Year 2040 used in this Master Plan were prepared by Tourism Futures International (TFI). The last five years average annual percentage growth for each traffic sector International, Domestic (Interstate and Intrastate) and GA, was used to extrapolate out to Ultimate Capacity year.

The aircraft movement forecasts prepared by TFI are based on econometric modelling for unconstrained growth by various components of traffic – international, interstate (domestic) and intrastate (regional). These forecasts include details at the regional market level (e.g. for the international sector the major markets include Asia, the Middle-East, the Pacific, the Americas and Africa). Passenger demand to/from Europe is assumed to be via Asian or Middle-Eastern hubs. Annual passenger movement projections were converted to aircraft movements based on aggregate fleet mix and load factor assumptions for each individual traffic sector.

The fleet mix was based on consultations with airlines on short to medium-term trends and plans, which were then extrapolated out for the long-term forecast. Based on this and the matching of airplanes (range and capacity) to routes, the long-term aircraft movement forecast provided for use in the preparation of the ANEF included annual projections by region and split by generic aircraft type (for example Very Large Wide-body, Large Wide-body, Medium Wide-body etc).

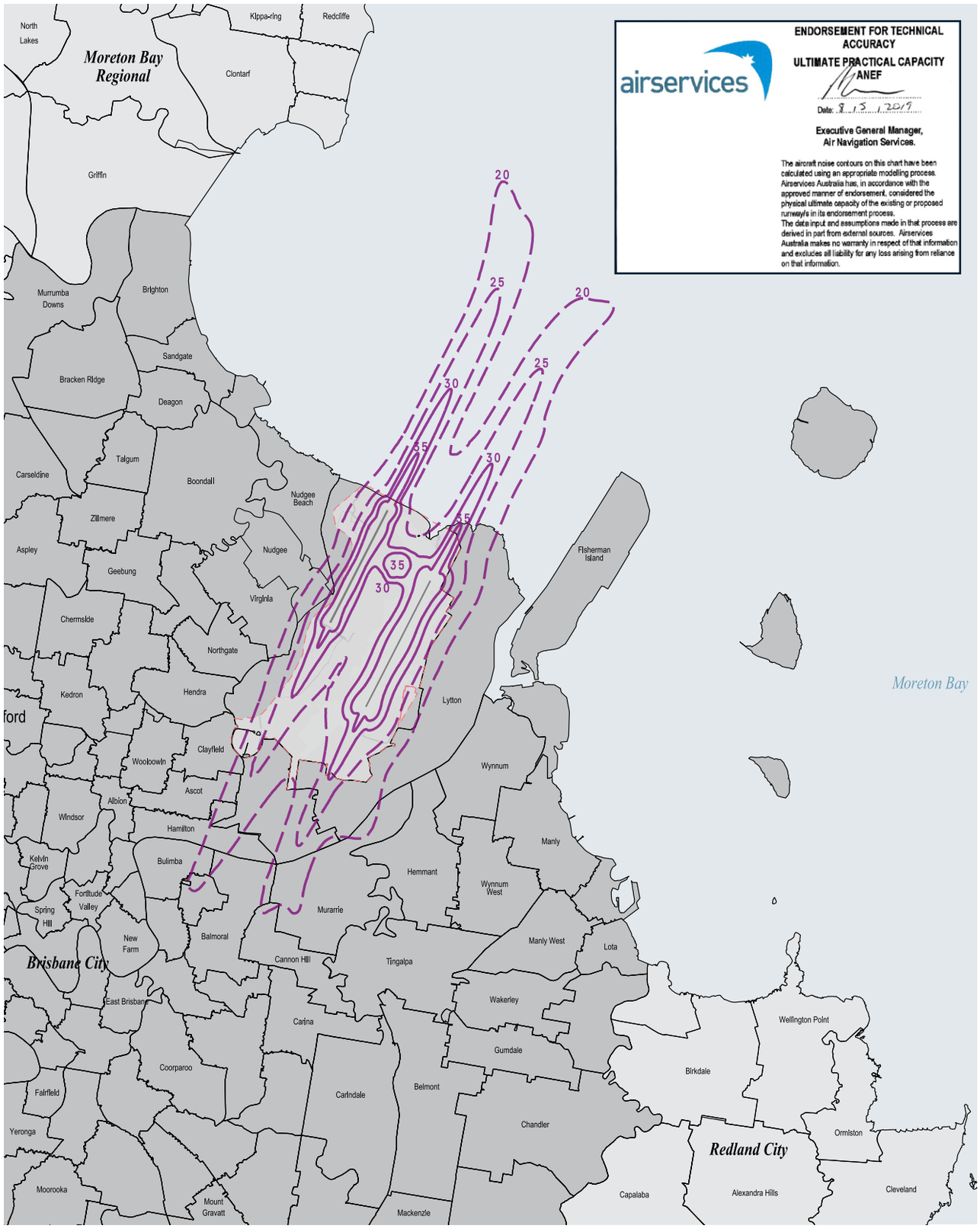
Typical busy day hourly aircraft movement profiles were then created scaling-up and modifying existing schedules. These included details of aircraft type and region based on the annual aircraft forecasts, and where runway capacity calculations were done for the parallel runways, based on hourly overall, arrival and departure capacities for typical busy days as described in the section above - Runway System Capacity.

The nominal long-term forecast year corresponding annual aircraft movement numbers was then used to check the detailed breakdown of the forecast by aircraft fleet and regions.

2020 AUSTRALIAN NOISE EXPOSURE FORECAST

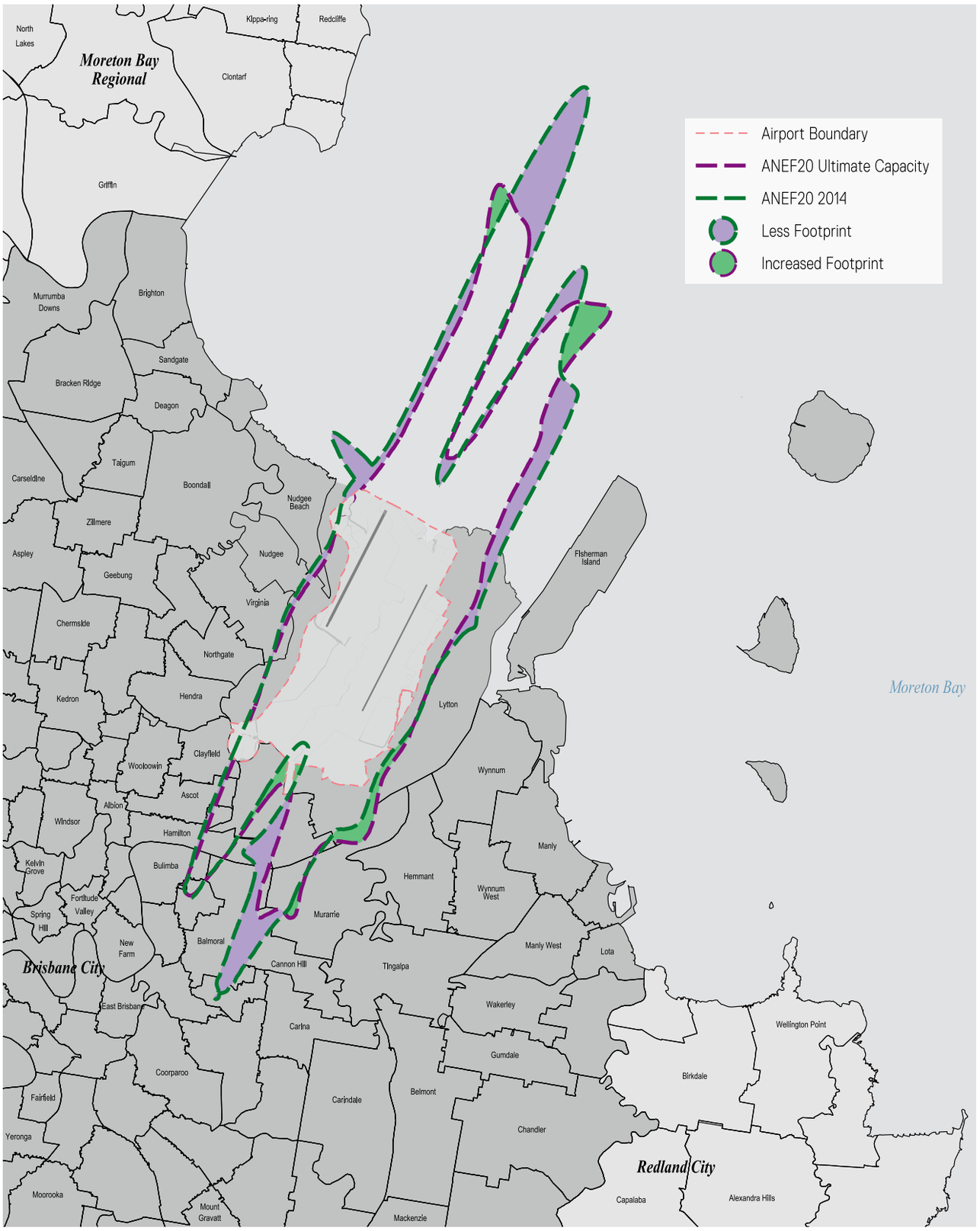
The Ultimate Capacity Australian Noise Exposure Forecast (ANEF) contours for Brisbane Airport are shown on the opposite page. This ANEF and the extensive inputs summarised in the sections of this chapter of the 2020 Master Plan have been endorsed for "technical accuracy" by Airservices in accordance with the "Manner of Endorsement" for ANEFs approved by the Minister for Infrastructure and Transport on 18 April 2017.

The process in developing those inputs included regular engagement with planning agencies at the three levels of government and the major airlines operating at Brisbane Airport. As noted previously, the 2020 ANEF is a series of composite contours (20, 25, 30 and 35 ANEF lines) of the outer extent for two ANECs – Ultimate Capacity Summer and Ultimate Capacity Winter.



This Ultimate Capacity ANEF is a land use planning tool of relevance to state and local planning authorities. The ANEF contours relate to building site acceptability based on ANEF zones table presented following.

ANEF20 CONTOUR COMPARISON BETWEEN 2014 AND 2020



This comparison between the 2014 ANEF20 contour and the Ultimate Capacity ANEF20 contour is a land use planning tool of relevance to state and local planning authorities.

CHANGES TO ANEF CONTOURS

The ANEF20 contour comparison between 2014 and Ultimate Capacity shows changes in the ANEF20 contour footprint between the 2020 and the previous 2014 Brisbane Airport Ultimate Capacity ANEFs. The ANEF contours are an output of the INM. Brisbane Airport Corporation has a responsibility to develop an appropriate suite of input metrics in consultation with industry and agency stakeholders and subjected to close scrutiny through a structured endorsement process. A number of factors have contributed to changes in the extents of the ANEF contours:

- An increase in ultimate capacity total annual aircraft movements from an updated capacity calculation involving a robust methodology in converting mode capacities to annuals A significant decrease in the extent of the 20 ANEF contour to the south of 01R / 19L due to the distribution of aircraft over both runways and ultimate capacity aircraft fleet assumptions not including current day fleet which influenced this contour extent in the 2014 ANEF through the Summer and Winter "Current System at Capacity" ANEC's included as part of that composite ANEF.
- An increase in the proportion of the airline fleet.
- Being capable and using Performance Based Navigation procedures (such as RNP AR approaches). This has resulted in a slightly increased bulge where 01R Arrivals intersect with the extended 01R / 19L centreline at Murarrie.
- Updated fleet mix assumptions and INM data now available for new aircraft models.
- Updated annual forecasts (movement numbers, proportional split with aircraft types and differential growth trends of regions).
- Increasing jet aircraft operations (including wide body jets) in the INM weighted (x 4) period of 7pm to 7am.
- Increasing stage length operations by large wide-body jet aircraft due to increased Middle East hubbing and emerging ultra longhaul services.

AIRCRAFT FLEET UPDATES

The INM aircraft database includes a representative listing of standard aircraft types and approved substitutions, which are applied to the forecasts in the development of the ANEF. With the exception of the deliberate substitution by Brisbane Airport Corporation of a reduced noise characteristic for LNB jet aircraft in the ultimate capacity ANECs, due to the imminent introduction of A320 NEO and B737MAX aircraft, the accepted ANEF process limits speculative application of long-term airline technology improvements (use of "paper-aeroplanes" theoretical noise profiles constructed to represent anticipated characteristics of aircraft types not yet in production).

It is probable that the aircraft industry will undergo at least two iterations of major fleet improvements over the next 50 years to around Year 2060.

THE ANEF AND STATE AND LOCAL GOVERNMENT PLANNING AGENCIES

The Queensland Government has developed an overarching State Planning Policy (SPP), which sets out the state's interest concerning development in the vicinity of those airports and aviation facilities considered essential for the state's transport infrastructure. The SPP applies to land use changes and development occurring off airport that could:

i. Adversely affect the safety and operational efficiency of operational airspace or the functioning of aviation facilities

ii. Increase the number of people that could, amongst other things, work or live within a noise contour of 20 – 25 ANEF

iii. Increase the number of people or the use/storage of hazardous material within public safety areas Under the Sustainable Planning Act 2007 (SPA), the SPP has effect when development applications are assessed, when planning schemes are made or amended, and when land is designated for community infrastructure.

The SPP applies in the vicinity of airports but does not apply to those airports or aviation facilities themselves. The specific areas to which the SPP applies vary with the issue being addressed; for noise purposes it is within areas defined by the ANEF20 contour at and around each airport.

Brisbane Airport Corporation has prepared the ultimate capacity ANEF for Brisbane Airport. The ANEF defines those contour areas to which SPP applies. Brisbane Airport has the largest buffer zone of any major capital city airport in Australia and is the outcome of several decades of determined planning by all levels of government. This buffer is comprised of physical distance, augmented by additional areas of appropriate conservation/green-space and industrial land uses.

Brisbane Airport Corporation will continue to work closely with BCC and the State Government to maintain the substantial buffer zone around Brisbane Airport.

AUSTRALIAN NOISE EXPOSURE FORECAST

MANAGING NOISE BY OFF-AIRPORT LAND USE PLANNING AUTHORITIES

The primary function of an ANEF is as a tool in land-use planning; Brisbane City Council (BCC) and state planning agencies use the ANEF charts to determine the compatibility of different land uses within the ANEF contours – the higher the ANEF contour, the greater the noise exposure. Table 8 details the types of buildings (as established by AS2021-2015) considered acceptable to be located within different ANEF zones.

Brisbane Airport strongly supports the consideration of aircraft noise effects as a relevant factor to consider in land-use planning and residential development assessments, as (future) aircraft noise from increased movements can have a potential impact on residents. Additionally, Brisbane Airport believes that high-rise residential development in the vicinity of Brisbane Airport should be considered carefully. Residents in upper levels of such developments may find aircraft noise more intrusive as there is less other background or ambient noise experienced at higher levels.

Furthermore, Brisbane Airport recommends forms of covenants on title for residents at new developments in the 20 ANEF contours, to ensure awareness and acceptance of the potential amenity impacts from aircraft over-flight.

Brisbane Airport is required to provide, as part of its Master Plan, a strategy to manage the intrusion of inappropriate land uses in areas forecast to have aircraft noise above the "significant" ANEF levels. The Airports Act identifies the 30 ANEF contour as being the “significant" noise level.

The 2020 ANEF developed as part of this master plan, shows that the 30 ANEF contour is generally contained on Brisbane Airport land or over water in Moreton Bay. There is very minor extension beyond the airport boundary to the south of Runway 01L/19R, which is over land-use zoning consistent with its existing general industry use and therefore consistent with the land-use compatibility standards of AS 2021.

BCC's ongoing planning intent within the 30 contour is to maintain industrial land-use zoning. The 30 ANEF contour southern extents associated with Brisbane's new runway is contained well within the airport boundary.

Finally, Brisbane Airport reiterates its belief that the ANEF system, while being the adopted system for land-use zoning around Australian airports, has proved to not adequately address individual's reaction to aircraft noise and aircraft over-flight. Brisbane Airport is committed to working with all levels of government and the industry to continue to explore metrics to improve aircraft noise information and planning mechanisms.

BUILDING SITE ACCEPTABILITY BASED ON ANEF ZONES			
	ANEF ZONE OF SITE		
BUILDING TYPE	**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:

01. The actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variation in aircraft flight paths. Because of this, the procedure of Clause 2.3.2 (AS2021-2015) may be followed for building sites outside but near to the 20 ANEF contour.

02. 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 Figure A1 of Appendix A, AS2021-2015).

03. 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 Table 8 should be used to determine site acceptability, but internal design noise levels within the specific spaces should be determined by Table 3.3 in the AS2021-2015.

04. 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 Clause 3.2, AS2021-2015. For residences, schools, etc., the effect of aircraft noise on outdoor areas associated with the buildings should be considered.

05. In no case should new development take place in greenfield sites deemed unacceptable because such development may impact airport operations.

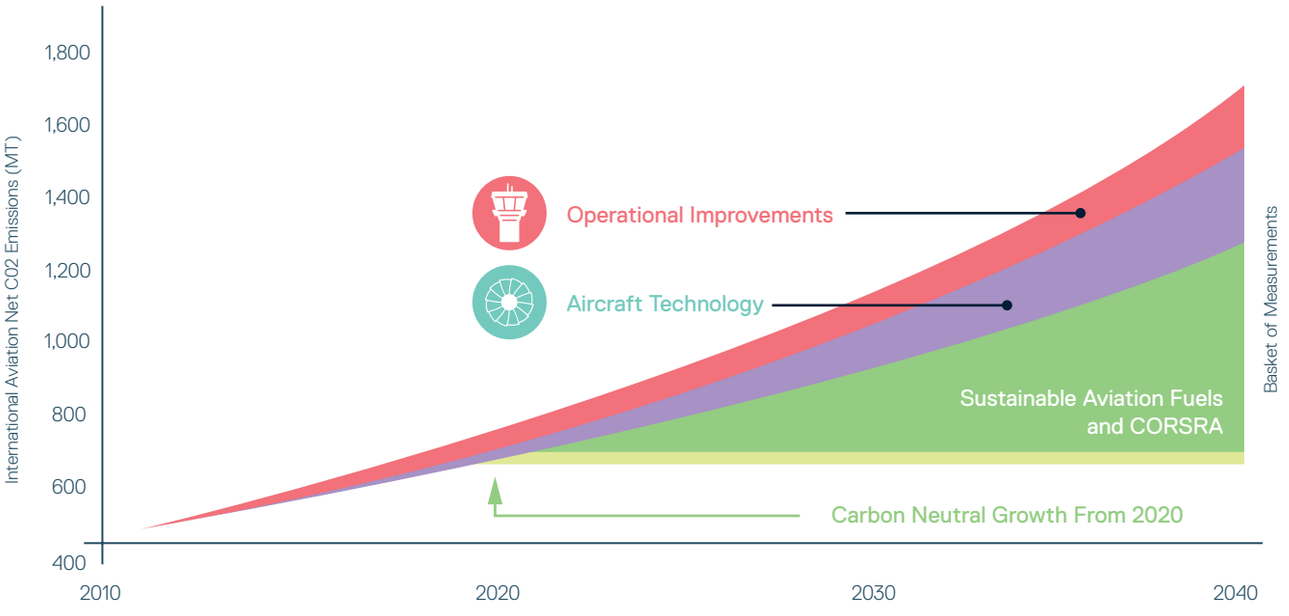
REDUCING FUEL BURN AND EMISSIONS

Aviation contributes to approximately 2 per cent of global CO2 emissions, according to the UN's Intergovernmental Panel on Climate Change.

To manage this impact in the future, a global agreement was reached in 2016 through the ICAO on a Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). This scheme supports ICAO objectives to increase fuel efficiency by 2 per cent per year and achieve carbon neutral growth in international aviation after 2020.

CORSIA is being incorporated into regulatory frameworks around the world, including Australia. Australia joins 70 other countries, representing nearly 90 per cent of total international aviation traffic, committed to CORSIA, with the voluntary phase from 2021 to 2023.

ICAO INITIATIVES TO ACHIEVE CARBON NEUTRAL GROWTH FROM 2020



HOW BRISBANE AIRPORT IS RESPONDING TO CLIMATE CHANGE

Brisbane Airport is working closely with Airservices Australia and the aviation industry to support the targets for reducing CO2 emissions. This includes the development of the finalised airspace design for Brisbane's new runway system, based on Performance Based Navigation including continuous descent and climb principles.

The application of these principles and the latest satellite based navigation technology and standards in the airspace design for Brisbane's New Runway results in optimised use of automated aircraft systems enabling the most fuel efficient flight trajectories, and reduced emissions.

NEXT GENERATION AIRCRAFT DESIGN

As part of the CORSIA initiative, ICAO adopted a new aircraft CO2 standard in 2017 which is the world's first global design certification standard governing CO2 emissions for any industry sector. It will apply to new aircraft type designs from 2020 and to aircraft type designs already in production as of 2023. Those in production aircraft which by 2028 that do not meet the standard will no longer be able to be produced unless their designs are sufficiently modified.

In addition to meeting the ICAO CO2 standards, the focus for research and development for the major aircraft manufactures, Airbus and Boeing, is on greater efficiency and environmental performance.

AIRCRAFT CATEGORY	AIRCRAFT MODEL	EMISSONS (CO_2) REDUCTION %
NARROW BODY JET (2 ENGINES)		
	B737 Max	14% less CO2
	A320neo	15-20% less CO2
MEDIUM TO LARGE WIDE BODY JET (2 ENGINES)		
	B777X	12% less CO2
	A330neo	14% less CO2
	B787	20-30% less CO2
	A350 XWG	25% less CO2
VERY LARGE WIDE BODY JET (4 ENGINES)		
	B747-8	16% less CO2
	A380	30-40% less CO2

09

GROUND TRANSPORT PLAN

OVERVIEW

The Brisbane Airport 2020 Ground Transport Plan outlines planned initiatives for the continued provision of safe, reliable and high quality ground transport services.

Developed in consultation with industry stakeholders, government and airport users, current operations have been reviewed in the light of growth forecasts and identified trends in transport and in customer needs.

The Ground Transport Plan includes details of both short and longer-term initiatives designed to extend and improve the range of transport services offered.

THE IMPORTANCE OF EFFECTIVE PLANNING

As the airport continues to grow, effective planning is an ongoing and essential component of the continued delivery of safe, reliable and high-quality ground transport services. To ensure that every aspect of plans for the various services provided is explained in detail, the 2020 Ground Transport Plan includes individual review of the following key component parts:

- The Brisbane Airport road network plan.
- Facilities for moving people and freight.
- Linkages between those facilities, the road network and public transport systems on and off airport.
- Arrangements for working with state, local and other bodies.
- The capacity of the ground transport system to support airport operations.
- The likely effect of proposed developments on the ground transport system and traffic flows at, and surrounding, the airport.

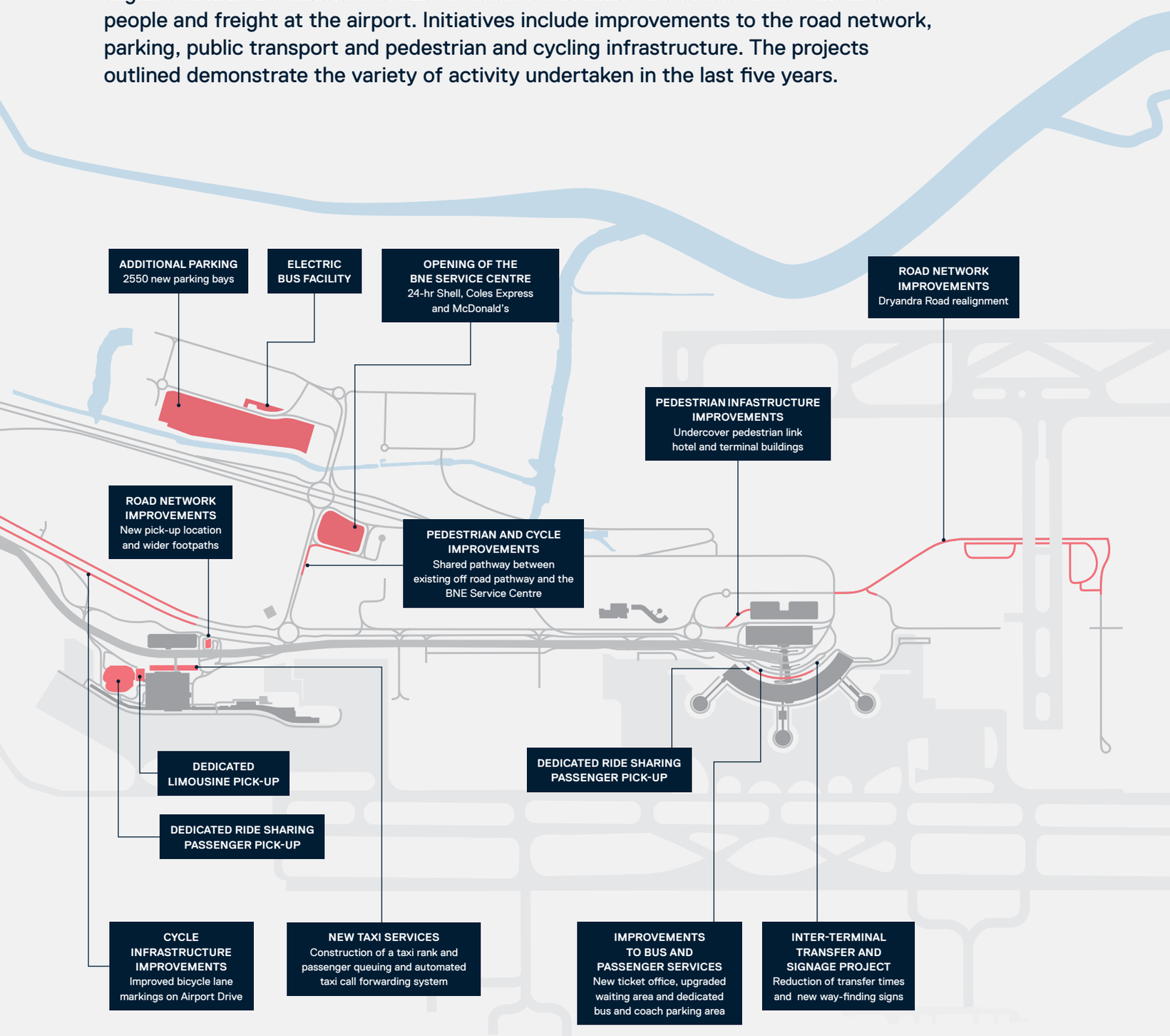
PLANNING FOR THE FUTURE

While the emergence of new technologies and new modes of transport is difficult to confidently predict, the Ground Transport Plan has been designed to continue to be flexible in reacting to new opportunities to improve services.

An important adjunct to the 2020 Master Plan, the initiatives proposed reflect regular and ongoing collaboration and dialogue with key stakeholders, including Brisbane City Council, the Australian and Queensland Governments, the aviation industry and with airport users.

GROUND TRANSPORT IMPROVEMENTS SINCE 2014

Since the publication of the 2014 Ground Transport Plan, Brisbane Airport Corporation has invested in a range of new initiatives to improve ground transport efficiency in alignment with the Master Plan 2014 vision to maximise the efficient movement of people and freight at the airport. Initiatives include improvements to the road network, parking, public transport and pedestrian and cycling infrastructure. The projects outlined demonstrate the variety of activity undertaken in the last five years.



OPENING OF THE BNE SERVICE CENTRE

Supports 2014 initiative to improve airport road network.

First opened to the public in 2014, this $12 million project includes a centrally located petrol station, supporting the 24/7 operation of the airport.

The Centre has created more than 200 new jobs and includes a 24-hr Shell Coles Express and a 24-hr McDonald's restaurant. The development, located between the Domestic and International Terminals, supported the creation of the Moreton Drive off ramp connecting to Nancy Bird Way.

NEW ELECTRIC BUS FLEET

Supports 2014 initiative to improve taxi, bus, coach and shuttle services.

In a $16.5 million contract with Carbridge, 2018 saw the introduction of Brisbane Airport's first fully electric landside bus fleet. the change is estimated to result in a reduction of 250 tonnes of carbon emissions each year.

With zero tail pipe emissions, the electric buses each have a driving range of 600 kilometres on a single battery charge.

A purpose-built facility for the parking, maintenance and charging of the new fleet has been built at a cost of almost $3 million.

The new buses have delivered improved connectivity between precincts and supported the creation of new parking areas and increased frequency of public transport services.

IMPROVED INFORMATION FOR PASSENGERS

Supports 2014 initiatives to improve taxi, bus, coach and shuttle services and improve information and signage for travel to, from and within the airport.

Information about the location of buses is now available through a new Real Time Passenger Information system, with digital signs on terminal bus stops and a 4G display inside the new buses. To ensure information is up-to-date, the fleet carries a GPS tracking system providing real-time updates. Enhancements also include a real-time monitoring system reporting on energy consumption.

Bus passengers are also benefiting from a new Con-x-ion ticket office and upgraded waiting area at the Domestic Terminal, as well as a new dedicated bus and coach parking area at the BNE Service Centre.

The airport partners with the State Government and Brisbane City Council in regular dialogue to consider improvements to airport public transport services. Some of the outcomes are reflected in the pipeline of projects over the next five years.

NEW PEDESTRIAN AND CYCLING INFRASTRUCTURE

Supports 2014 initiatives to improve active transport facilities at the airport and link to the external network and encourage employees to use alternative modes.

Brisbane Airport Corporation continues to invest in pedestrian and cycling infrastructure with more than $3.5 million invested in new paths since 2014. This investment was in addition to a project to improve connectivity between hotels and the Domestic Terminal which also saw significant landscaping enhancements to the Domestic Terminal precinct.

INTER-TERMINAL TRANSFER FACILITY

Supports 2014 initiatives to improve taxi, bus, coach and shuttle services and improve information and signage for travel to, from and within the airport.

With more international travellers using Brisbane Airport as a gateway, the new Inter-terminal Transfer Facility completed in February 2018 has improved the efficiency of transferring between the terminals with increased processing facilities regular door-to-door bus transfers and helpful signage throughout the journey.

The project was designed to reduce minimum connection times between the terminals, providing improved experiences for transfer passengers and facilitating the ability of airlines to manage the entire passenger journey.

Brisbane Airport Corporation invested $7 million in the project which created 50 jobs during construction.

To reduce the minimum transfer times between terminals, this $7 million project included a wide range of measures, including:

- Increased processing capability at International Terminal Level 2 bag drop area.
- Redevelopment and upgrade of existing baggage handling systems at the International Terminal.
- New Transfer Check-in area on International Terminal Level 2 Arrivals.
- Location of bus stops at International Terminal Level 2.
- New passenger way finding.
- More bus services during peak periods.
- New check-in area.

These initiatives are complemented by the installation of weather protection along key pedestrian paths at a cost of $1.5 million and new digital way-finding signs in the forecourt area of the Domestic Terminal.

DEDICATED RIDE SHARING, AND PASSENGER PICK UP POINTS

Supports 2014 initiative encouraging use of alternative modes.

In 2016 Brisbane Airport introduced a dedicated location for ride-sharing pick up at both terminals, with dedicated waiting areas provided for vehicles collecting passengers.

At the International Terminal, public pick-up was relocated from Level 2 to Level 1, providing an increase in the kerbside area of more than 300 per cent to better accommodate baggage trolleys and other bulky passenger luggage, releasing capacity on the terminal ramps.

IMPROVED PARKING BAYS

Supports 2014 to encourage passengers to use alternative modes.

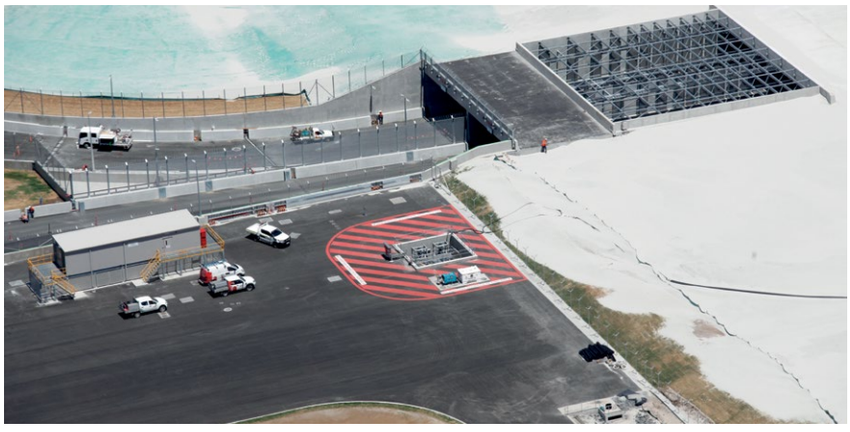
To meet growing demand and in response to feedback about capacity, the number of parking bays at the International Terminal for ground transport operators was increased by 100 per cent by optimising the use of the existing space.

IMPROVED TAXI SERVICES

Supports 2014 initiatives to improve taxi, bus, coach and shuttle services.

To benefit passengers new to Brisbane, in 2018, new display screens were added to display advance estimates of taxi fares from the Domestic Terminal. Additonally, a new 'short fare system' now allows taxi drivers to skip the main queue and collect short trip and lower fare passengers.

2018 saw the installation of a $1.2 million automated taxi call forwarding system. In addition, Brisbane Airport has recently invested in a system that allows real-time monitoring of all zones, with the capacity to monitor wait and transit times, with text messaging allowing front line staff to respond quickly as problems arise.



REALIGNMENT OF DRYANDRA ROAD

Supports 2014 initiative to improve the on-airport road network

This project allows vehicles to travel under the taxiways for the new runway.

As part of a project with a construction value of $120 million, the new road services the General Aviation Zone, which includes the Royal Flying Doctor Service and Brisbane Airport's best viewing area for plane spotting.


Brisbane
Airport

BRISBANE AIRPORT GROUND TRANSPORT PLAN

As the airport grows, the ongoing provision of a choice of, reliable, safe and efficient ground transport services making people's journeys to and from the airport easy and enjoyable is central to successful operations.

Brisbane Airport endeavours to provide all airport visitors with a choice of ways of accessing the airport and constantly strives to make use of each mode of transport as streamlined and simple as possible.

The Ground Transport Plan shows that currently, the largest percentage of airport visitors choose to use their own vehicles, either using the different parking options at the airport or taking advantage of the passenger friendly pick up and drop-off facilities at the terminals.

The airport is also served by a rail service, the AirTrain, with stations at the International and Domestic Terminals and a range of taxi and ride-share services.

RESPONDING TO CUSTOMER NEEDS

Understanding that the needs of customers may change in future, an ongoing program of review and consultation with stakeholders including state and local government, industry groups and members of the public has been established to ensure that services continue to meet requirements and also to consider and respond to identified changes in demand.

For each transport option, this Ground Transport Plan outlines an overview of current usage and operations; details of initiatives proposed in the next five years and an assessment of potential issues and opportunities arising over the longer term.

RESPONDING TO NEW OPPORTUNITIES

It is recognised that technological advancements may continue to drive changes in passenger needs. In a changing world, BAC will continue to monitor and review all emerging opportunities to improve and extend the range of services offered with the goal of continuing to deliver the highest levels of customer satisfaction.

TRAVELLING TO THE AIRPORT

GROWTH IN PASSENGERS

Brisbane Airport has seen continued growth in passenger numbers over the last decade, with domestic passengers growing by an annual average of 2.4 per cent and international passengers by 3.7 per cent. In total, in 2018, 23.4 million passengers used Brisbane Airport. It is estimated that on average 115,000 vehicles access the airport each day, a number forecast to double by 2040.

PREFERRED MODE OF TRAVEL

The popularity of different modes of transport varies according to location, time of day and day of the week. The chart opposite shows that the most commonly used services on an average day are to be the dedicated pick up and drop off facilities, followed by just over a quarter of all visitors taking advantage of the various parking options.

PEDESTRIAN AND CYCLE ACCESS

While there is currently a relatively low number pedestrians and cyclists accessing the airport, Brisbane Airport has an cycling access map to assist people planning their journey to and from the airport.

Brisbane Airport is committed to working with advocacy groups including Bicycle Queensland, Queensland Walks and Airport Bicycle User Group to improve pedestrian and cycle access on airport. Access to the airport has recently been significantly improved by the completion of the new River Walk structure including a riverside promenade and dedicated cycling path delivered as part of the Kingsford Smith Drive upgrade.

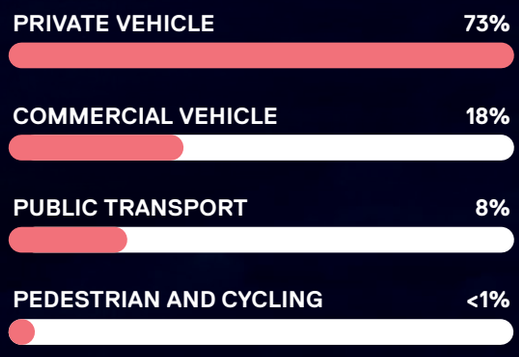
The Schneider Road to Viola Place connection, funded in the 2018/19 Brisbane City Council budget, will complete the missing link accessing the airport from the Gateway Bridge shared pathway and the River Walk network.

The chart above shows that the most commonly used services on an average day are the dedicated pick up and drop off facilities, followed by just over a quarter of all visitors taking advantage of the various parking options.

CHOSEN MODE OF TRAVEL (EMPLOYEES AND VISITORS)

This chart shows the mode of transport used to access areas of the airport other than the terminals.

The high percentage of private vehicle use is a consequence in part of limited public transport choices for employees travelling to the airport from home. Some airport precincts are served by public transport however costs and travel times are not generally competitive.



AIRPORT CAPACITY

	5am – 10pm			10pm – 5am
	CARS*	BUSES & COACHES	AIRTRAIN	CARS*
Person carry capacity*	612,000	11,000	50,000	252,000
Total passenger demands	139,100	5,800	4,200	13,500

The chart above shows that ample capacity currently exists in the airport network to meet demand, with well over double the capacity currently available in every segment and significantly larger levels of availability in others.

** based on a typical occupancy of 1.2; includes rentals, taxis and ride-share*

FUTURE PLANNING

Brisbane Airport Corporation is committed to continued investment in enhancing the experience of visitors using airport facilities and services. This Ground Transport Plan considers opportunities to further improve and broaden the range and frequency of services offered, to drive connectivity, improve efficiency and increase user satisfaction.

FUTURE PLANNING: THREE GUIDING PRINCIPLES

All planning decisions on future investments in ground transport facilities and infrastructure at Brisbane Airport will be governed by three guiding principles.

- **MEETING CUSTOMER NEEDS**
- **VISION AND RESILIENCE**
- **PERFORMANCE AND PARTNERSHIP**

Each of the three principles are designed to align with and complement the strategic directions and intent of relevant national, state and local government policies.

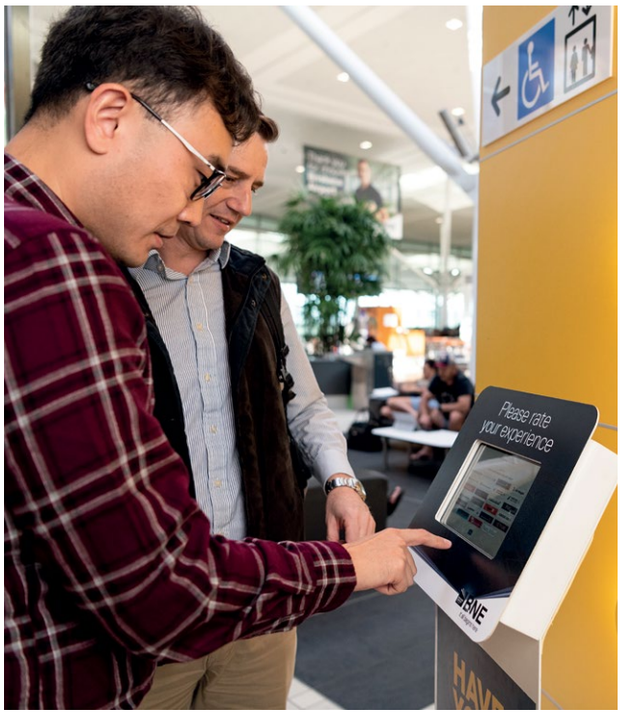
MEETING CUSTOMER NEEDS

As Queensland's leading hub for travellers both arriving into and departing from the state, BAC plays a key role in meeting the needs of both the residents of Queensland and visitors to the state.

In line with Brisbane City Council's Brisbane Vision 2031 and Brisbane Transport Plan, a primary driver of all activities at the airport is to provide the highest level of satisfaction to all passengers, employees and visitors.

As part of a series of initiatives to ensure safe access for all, the airport has recently launched a program to support passengers travelling with a hidden disability.

A focus on accessibility for all remains paramount in all future investment decisions.



VISION AND RESILIENCE

Over time, new technologies and services including digitally connected smart infrastructure have the potential to significantly change the transport industry.

Recognising the likely pace of change and in line with the Queensland Government's State Infrastructure Plan, BAC will continue to explore solutions that address the emerging needs of the community while anticipating possible longer-term limitations.

Retaining a focus on customers, BAC will seek to address the needs of visitors and all members of the airport community when planning, designing and delivering future ground transport solutions.

PERFORMANCE AND PARTNERSHIP

The liveability and economic prosperity of any city is enhanced by a connected, flexible and sustainable transport network able to respond to changing needs.

The Australian Government's Smart Cities Plan and the Queensland Government's Shaping SEQ plan both promote the concept of the '30 minute city'.

Taking into account the location of schools, shopping and places of work, the key notion of the 30 minute city is that all services are available within 30 minutes of home.

In planning future ground transport services, BAC will work in continued partnership with Government bodies to advance the 30 minute city concept, discussed more fully at the end of this chapter.

BRISBANE AIRPORT ROAD NETWORK

Brisbane Airport benefits from relatively new road infrastructure both on and off airport. Analysis shows that the airport benefits from free flowing traffic connections even during peak periods.

The network of roads surrounding the airport is planned and controlled by the Queensland Department of Transport and Main Roads and by Brisbane City Council. Brisbane Airport is responsible for developing, operating and maintaining on-airport roads.

Access to and from the airport is provided by a modern road network which comprises:

- The Gateway Motorway
- Southern Cross Way
- East-West Arterial
- AirportlinkM7
- Kingsford Smith Drive
- Nudgee Road

The on-airport road network is built around Moreton Drive and Airport Drive, which directly services the Domestic and International Terminals. These roads provide a seamless connection to the external road network.

The other significant road corridor on-airport is Lomandra Drive, which connects to and from the south of Brisbane Airport and the future site of the Brisbane International Cruise Terminal at Luggage Point.

The convenient access provided by the road infrastructure encourages Brisbane Airport's passengers to use the kerbside areas at the International and Domestic Terminals.

The majority of trips to and from the airport use these kerbside areas which include facilities for taxi and ride-booking, buses and limousines, as well as people being dropped-off or picked-up by friends and family.

Easy access and an abundance of parking choices encourages the use of private vehicles for passengers and people travelling to and from places of employment and retailing centres at Brisbane Airport.

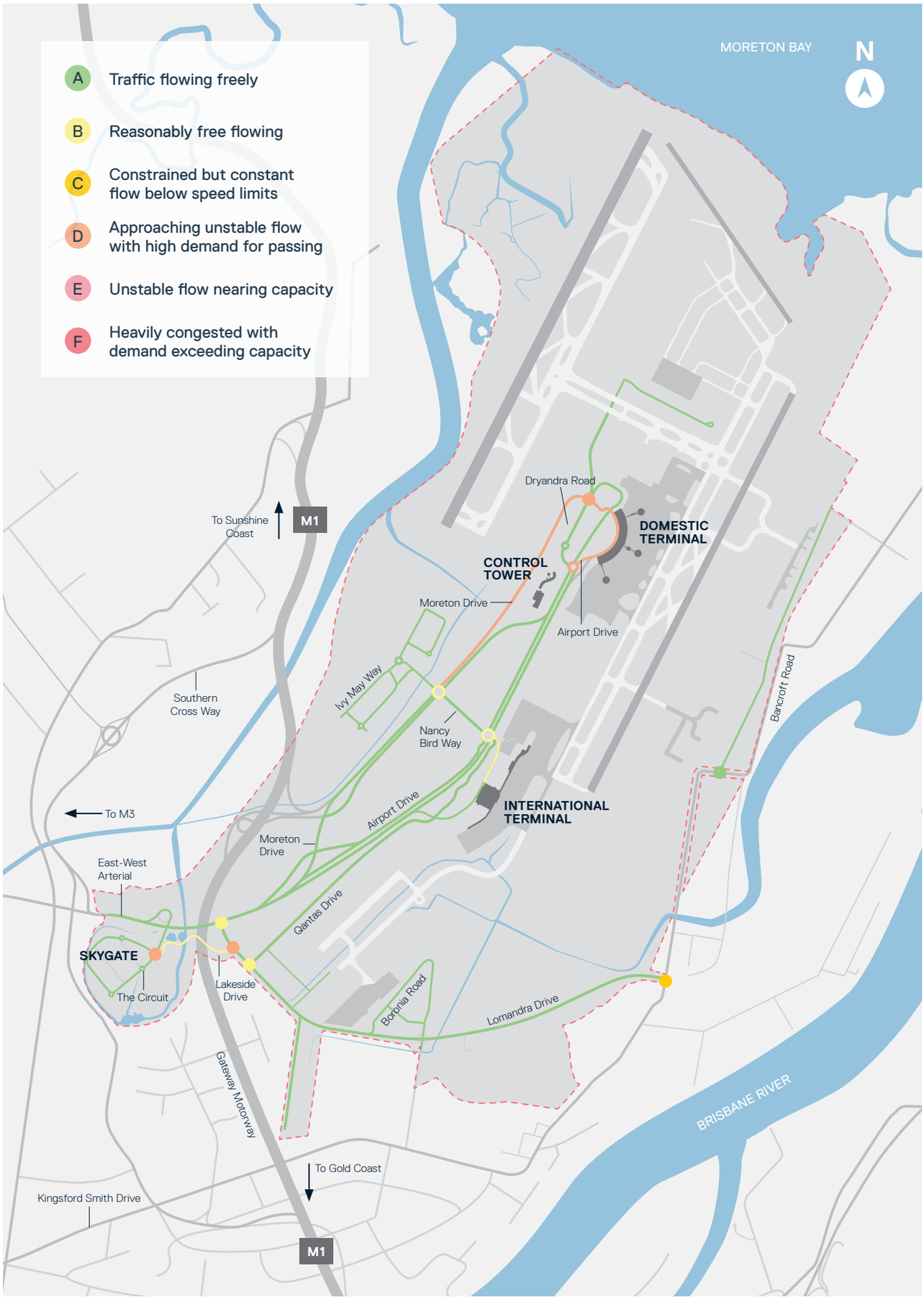
PEAK HOUR TRAFFIC FLOWS

The illustrated map opposite shows the flow of peak hour traffic on the airport. Traffic flow is measured using a six point scale, where flow illustrated in green denotes areas where traffic is flowing freely.

The illustration demonstrates that the highest areas of traffic flow, shown in orange, are the section of Airport Drive directly in front of the Domestic Terminal and the section of Moreton Drive close to the parking areas, plus two interchanges in the Skygate neighbourhood.

Despite higher demand at peak times, capacity still exists in these areas. Traffic around the International Terminal and all other roads on the airport are demonstrated to be largely free flowing during peak hours.

PEAK HOUR TRAFFIC ON BRISBANE AIRPORT ROADS



FORECASTS OF FUTURE ROAD USE

As part of the preparation of the Ground Transport Plan and in consultation with State and Local Government, Brisbane Airport carried out a performance assessment of existing and future internal and external road networks.

To forecast the potential impacts of increased airport traffic on the broader network, Brisbane Airport Corporation used the Brisbane Strategic Transport Model – Multi Modal, a transport trip demand model of the greater Brisbane area managed by the Queensland Department of Transport and Main Roads.

To assess the likely future impact of airport traffic on key intersections and facilities, Brisbane Airport Corporation used a combination of transport modelling platforms designed to aid in the evaluation of intersections and facilities by considering, amongst other things, the road environment, vehicle numbers, origin and destination statistics, driver behaviour, future land uses and other forecasts.

The results are shown in the tables opposite which lists the forecast daily volumes and volume to capacity ratios for key roads within and surrounding Brisbane Airport. NB: Volume to capacity ratios of under 75 per cent are regarded as operating satisfactorily under this modelling approach.

KEY ROADS OPERATING UNDER CAPACITY

Table two (opposite) summarises the peak volume to capacity ratios for the key roads. Roads with volume to capacity ratios of less than 75 per cent are regarded as operating satisfactorily, as this allows for variances within the transport models. Brisbane Airport will continue to work with government and key stakeholders on future plans to ensure there is adequate connectivity is maintained.

FUTURE CHALLENGES TO CAPACITY

The forecast model indicated that the Gateway Motorway and Southern Cross Way are likely to reach capacity by 2025, while Kingsford Smith Drive and the East West Arterial are forecast to reach capacity by 2040.

Brisbane Airport Corporation will continue to work with State and Local Government to ensure that the external road network and other viable transport alternatives continues to support the efficient operation of the airport.

INITIATIVES PROPOSED TO MANAGE INCREASED DEMAND:

Although airport roads are operating within appropriate capacity limits, some facilities and intersections are likely to require improvement within the next five years.

Initiatives proposed to manage demand include:

- New roads and intersections to service Airport Central and Airport Industrial Park
- New intersection to service the proposed International P2 Multi-Level Car Park
- Localised widening and improvements to Lomandra Drive
- Upgrade kerbside infrastructure at the Domestic and International Terminals
- Additionally, Brisbane City Council plans to undertake widening and intersection improvements, improved flood immunity and resurfacing of roads in Pinkenba to support the Brisbane International Cruise Terminal project
- Work with the Queensland Government on connected and autonomous vehicle opportunities at Brisbane Airport.

TABLE ONE: FORECAST DAILY VEHICLE DEMAND

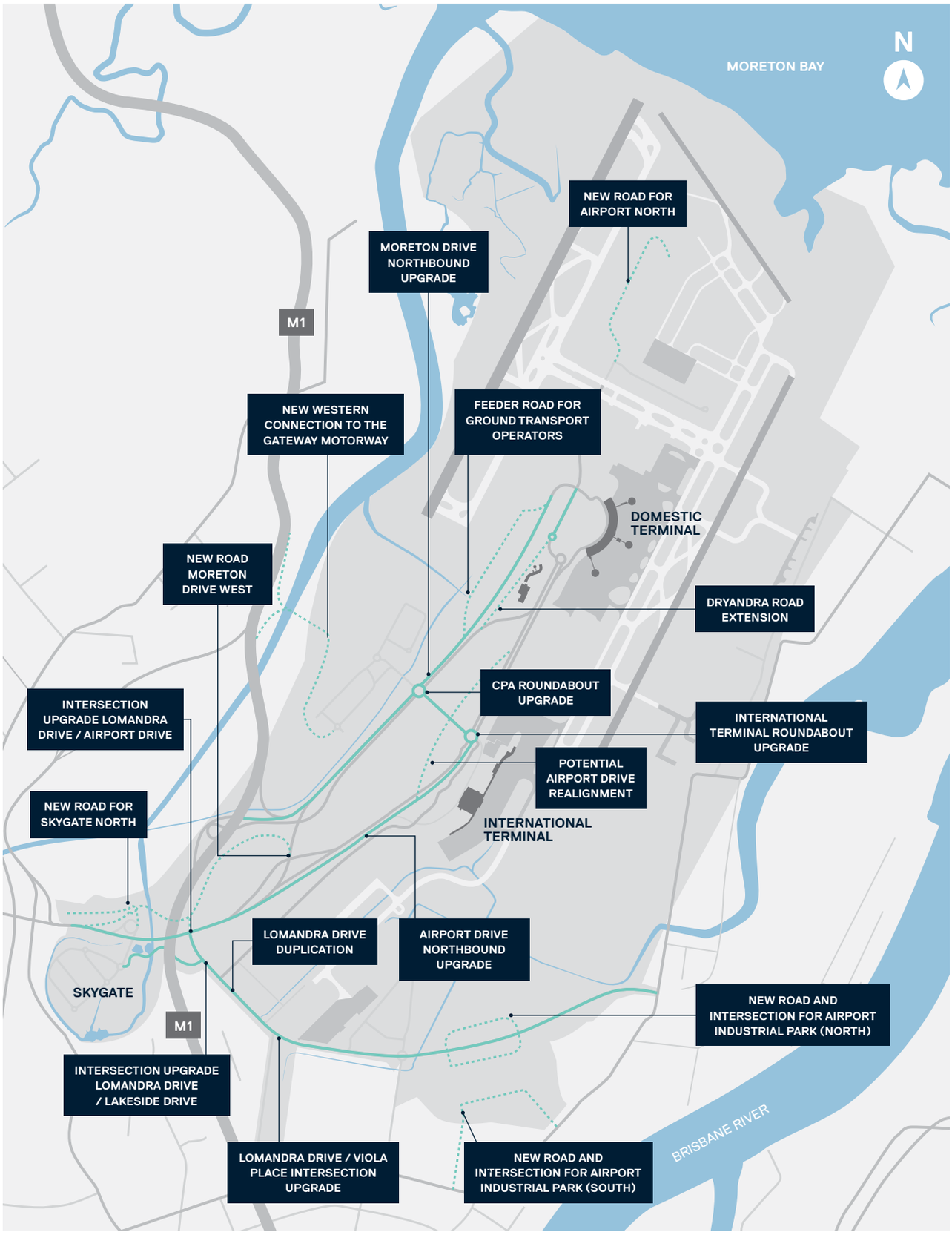
		DAILY VEHICLE DEMAND			
ROAD	LOCATION	2016	2020	2025	2040
Moreton Drive	West of Nancy Bird Way	61,000	64,000	78,000	85,000
Airport Drive	East of Lomandra Drive	35,000	37,000	45,000	69,000
Lomandra Drive	Between Qantas Drive and Airport Drive	19,000	22,000	26,000	29,000
Gateway Motorway	Brisbane River	119,000	141,000	162,000	196,000
Gateway Motorway	North of Southern Cross Way	76,000	97,000	112,000	112,000
Southern Cross Way	South of Airport Drive Interchange	55,000	60,000	66,000	74,000
Kingsford Smith Drive	West of Southern Cross Way	43,000	48,000	55,000	62,000
East-West Arterial	West of Airport Roundabout Flyover	54,000	65,000	81,000	113,000

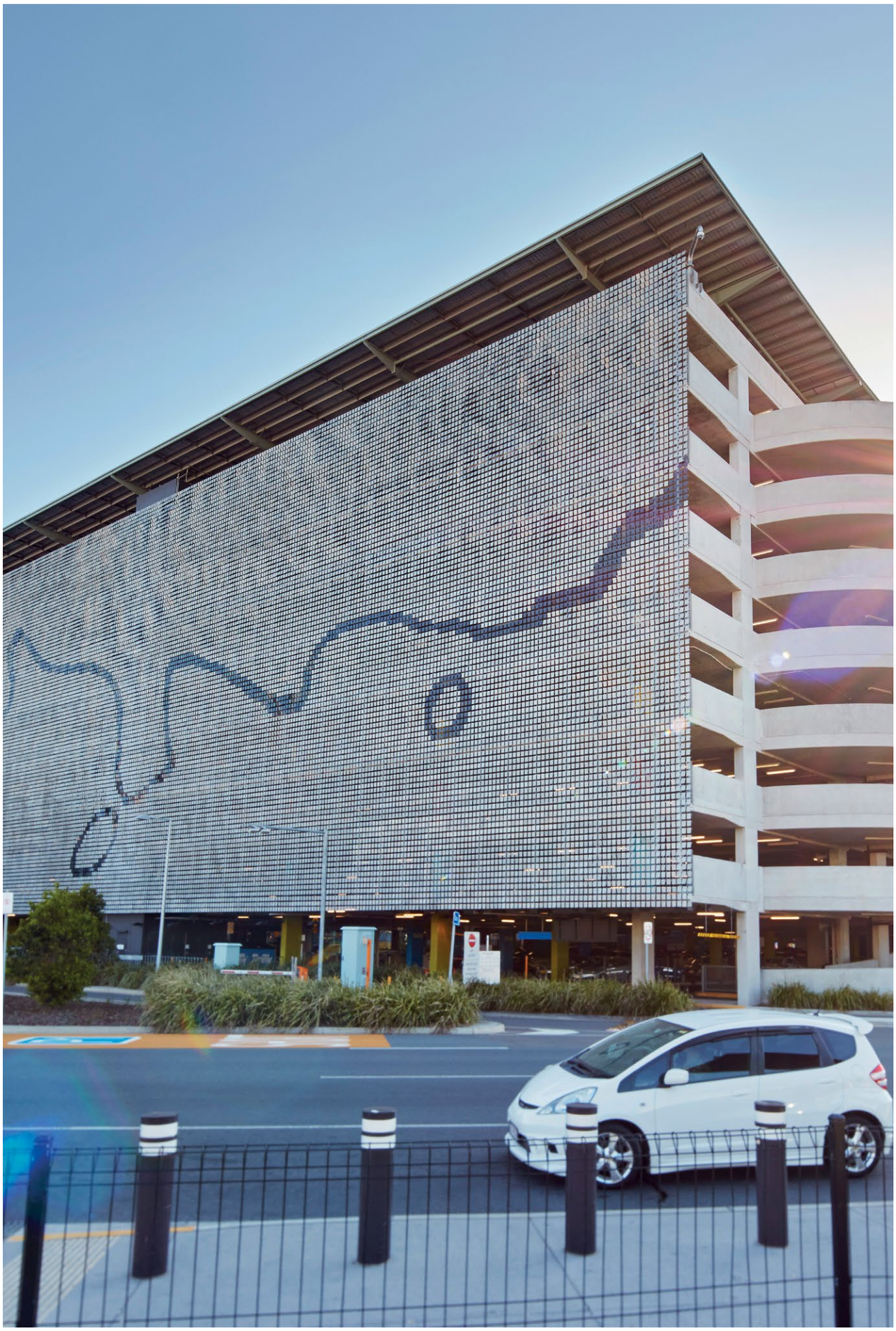
TABLE TWO: PEAK VOLUME TO CAPACITY RATIOS ONROADS

		PEAK VOLUME / CAPACITY RATIO			
ROAD	LOCATION	2016	2020	2025	2040
Moreton Drive	West of Nancy Bird Way	25%	27%	33%	37%
Airport Drive	East of Lomandra Drive	26%	28%	36%	56%
Lomandra Drive	Between Qantas Drive and Airport Drive	61%	65%	71%	76%
Gateway Motorway	Brisbane River	57%	65%	75%	91%
Gateway Motorway	North of Southern Cross Way	67%	99%	101%	102%
Southern Cross Way	South of Airport Drive Interchange	83%	80%	90%	100%
Kingsford Smith Drive	West of Southern Cross Way	57%	69%	81%	96%
East-West Arterial	West of Airport Roundabout Flyover	62%	68%	82%	108%

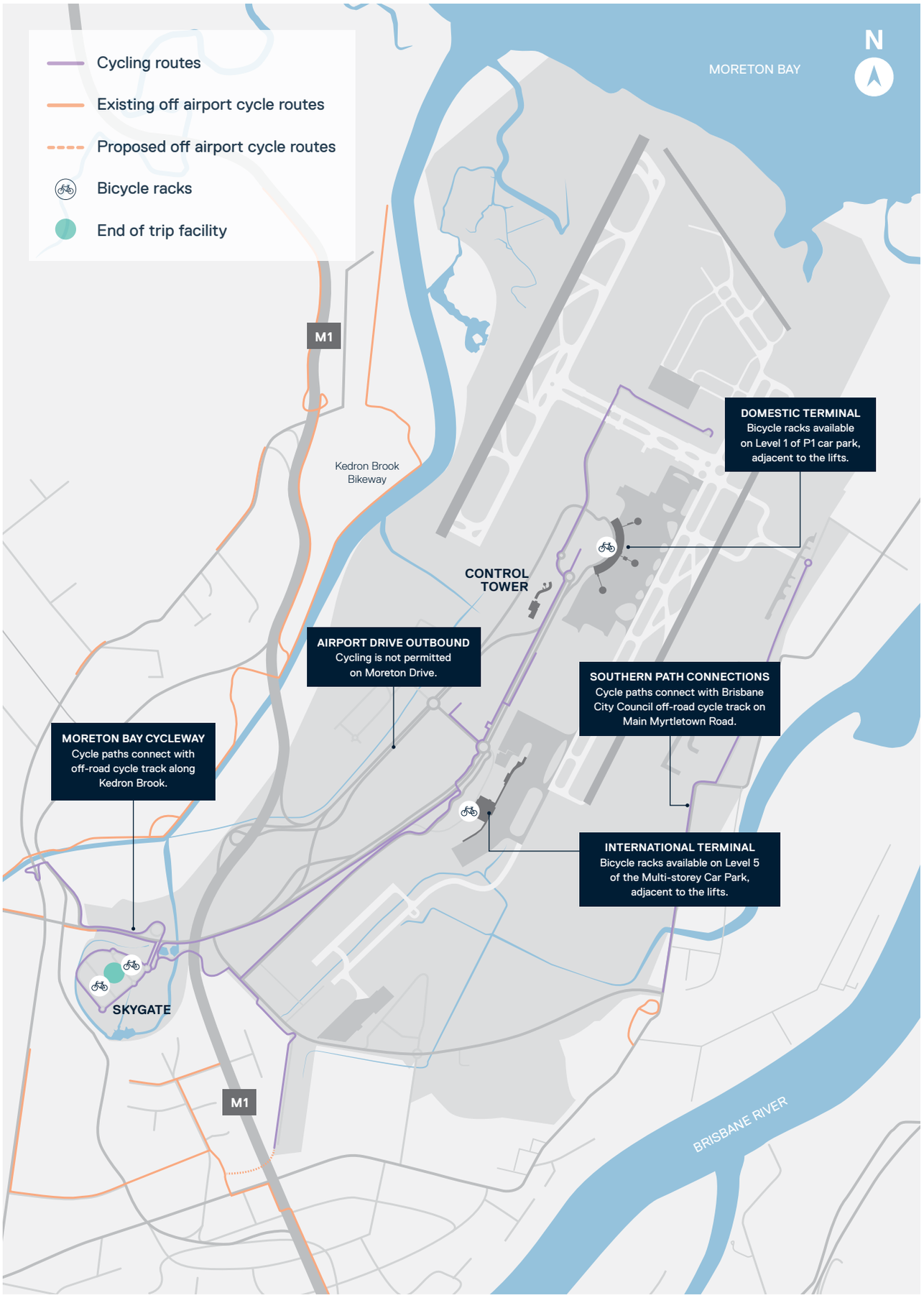
BRISBANE AIRPORT GROUND TRANSPORT PLAN FUTURE INITIATIVES

Beyond 2025, new roads and intersection upgrades will be delivered to support property development and terminal expansion projects. These upgrades will improve network resilience, safety and capacity. The plan illustrates some of the future projects under consideration.





BICYCLE ACCESS AT BRISBANE AIRPORT



BRISBANE AIRPORT PEDESTRIAN AND CYCLING NETWORK

A defining characteristic of Brisbane Airport is its scale. Responding to feedback from the cycling community and in response to increased demand, the last five years has seen Brisbane Airport Corporation invest in developing on-road and off-road cycle paths, and end of trip facilities for cyclists and pedestrians.

The map on the facing page shows the location of the most recently added initiatives. An overarching focus in the planning of these facilities has been to enhance the ease of connection between key services and each of the primary employment areas on the airport.

Brisbane Airport's pedestrian and cycling network now includes:

- Off-road facilities connecting the Kedron Brook Bikeway within the Skygate precinct.
- Off-road facilities connecting the BNE Service Centre, the International Terminal and Central Parking Area with off and on-road facilities.
- Off-road facilities along sections of Pandanus Avenue.
- On-road facilities on sections of Airport Drive and Qantas Drive.
- Off-road facilities along Lomandra Drive.

Visitors can now travel to the terminals from the northern suburbs of Brisbane on a combination of on-road and dedicated bike paths. As previously mentioned, it is likely that a key missing link to the south of the airport new connections will soon be added addressed by Brisbane City Council in line with their investments in cycle networks.

Recognising the increasing popularity of cycling, Brisbane Airport is exploring opportunities to enhance experiences through the provision of supporting infrastructure such as signage, shade, water, bicycle parking, end of trip facilities and bicycle assembly areas for airline passengers.

FUTURE VISION

As part of building a safe, relaible and efficient transport system Brisbane Airport supports sustainable forms of transport include walking and cycling.

The emergence of new automated forms of cycling including e-bikes and other rideables is seeing cyclists riding further, at higher speeds, over steeper gradients. These and other emergent innovations will be considered in designing and building paths for pedestrians and cyclists.

Further, Brisbane Airport will continue to stay abreast of best practice in pedestrian and cycling infrastructure design in order to ensure investments have a positive impact on the Brisbane Airport transport system and its users.

Ultimately, Brisbane Airport Corporation aspires to have a combined on and off-road cycling network, with high quality and accessible end of trip facilities and well connected pedestrian infrastructure.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS INCLUDE:

- **Work with the Queensland Government to investigate the feasibility of electric bicycle or scooter shared schemes at Brisbane Airport.**
- **New cycle paths between Viola Place and Kingsford Smith Drive (BCC initiative) and Viola Place and Sugarmill Road.**
- **A pedestrian and on-road cycle network at the BNE Auto Mall.**
- **Investigation of future improvements in consultation with user groups including Bicycle Queensland and the Airport Bicycle User Group.**

BRISBANE AIRPORT GROUND TRANSPORT OPERATIONS

As part of a commitment to providing a range of accessible and reliable ground transport choices, BAC supports the operations of a growing range of ground transport operators.

These operations are supported by extensive infrastructure across airport, including remote holding areas to enable passenger collection, driver rest and refreshment areas and generous dedicated kerbside areas close to the terminals to enable convenient passenger pick-up and drop-off.

FUTURE VISION

BAC has a proven history in responding promptly to changes in kerbside demand. In 2016, within a month of Uber being legalised in Queensland, a dedicated pick-up zone and waiting area had been created and exclusively earmarked for use by ride-share companies.

While the future of technology driven change is hard to reliably forecast, it is reasonable to assume that improved services may emerge in the next five years with a similarly disruptive effect on the transport industry, particularly in relation to the ride share economy.

BAC will continue to work with government and key stakeholders in monitoring and assessing changes to car usage, including the emergence of automated vehicles and the growth of the ride-share segment.

Irrespective of the nature and impact of future changes, BAC will continue to work with partners and stakeholders to monitor travel demand and performance.

The most recent performance assessments for ground transport operators concluded that infrastructure is performing adequately, even in the morning and afternoon peaks.

With a steady growth in passenger numbers forecast, the airport will continue to review performance in all areas and consider initiatives to maintain the current high quality of services.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS INCLUDE:

- Upgrade kerbside infrastructure at the Domestic and International Terminals.
- Improve the capacity of holding areas at the Central Parking Area.
- Monitor the performance of the ground transport operators' area at the International Terminal.

BRISBANE AIRPORT PARKING

Part of a $250 million investment over the last decade, Brisbane Airport offers a range of parking facilities at the Domestic and International Terminals and in the Central Parking Area, with in excess of 17,000 car parking spaces available.

NEW BUDGET PARKING SERVICE

Brisbane Airport's newest car park, Airpark, the subject of a $41 million investment was built to answer a demand for budget long-term parking. 2,550 parking bays are linked to a free shuttle bus service that takes passengers to the terminal doors.

DEMAND MANAGEMENT

Demand for parking at Brisbane Airport continues to increase.

During peak travel periods, the International P1 multi-level and outdoor car parks experience high demand, sometimes in excess of capacity. As a result, a Major Development Plan was developed, proposing to build a second Multi-level Car Park at the International Terminal, to be operational in 2020.

New facilities and products are continually being trialled and tested with the public. Airport parking utilisation is monitored to provide facilities that reflect factors including price and duration of stay.

It is likely, and following consultation with stakeholders, that the next five years may see continued infrastructure investment to continue to deliver high-quality services to passengers and visitors to the airport.

FUTURE VISION

Brisbane Airport Corporation, in partnership with key stakeholders, will continue to develop data collection and analytics techniques to inform planning and to maintain the highest levels of efficiency in the transport system.

The future provision of parking facilities will be developed in line with customer demand and will be cognisant of emerging trends and technologies, including the accommodation of electric and automated vehicles.

Complimentary electric vehicle charging points have already been installed in both terminal car parks and in the Multi-level Car Park at Skygate.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS INCLUDE:

- **Development of International P2 Multi-Level Car Park.**
- **Development of new parking facilities around the Domestic Terminal.**
- **Development of additional bays at the Central Parking Area.**

BRISBANE AIRPORT FREIGHT NETWORK

Brisbane Airport's road network supports the quick and efficient movement of freight within, to and from the airport.

Freight warehousing and distribution centres within Airport South, Export Park and Da Vinci neighbourhoods are primarily serviced by Lomandra Drive.

Heavy vehicles accessing these centres generally use the Gateway Motorway, either via Airport Drive, or via Sugarmill Road and Kingsford Smith Drive. The Gateway Motorway is the only Priority 1 Freight Route through Northern Brisbane.

The map on the facing page shows details of current freight transport access routes to, from and within Brisbane Airport.

FUTURE VISION

AUTONOMOUS TRUCKS AND ON DEMAND SERVICES

Brisbane Airport is aware of the disruption to overseas logistics markets emerging from the increased use of autonomous trucks and on-demand freight services. Brisbane Airport will continue to work with the Queensland Government and the National Heavy Vehicle Regulator to plan for the efficient and safe movement of freight at Brisbane Airport, noting the potential implications for future infrastructure.

USE OF DRONES

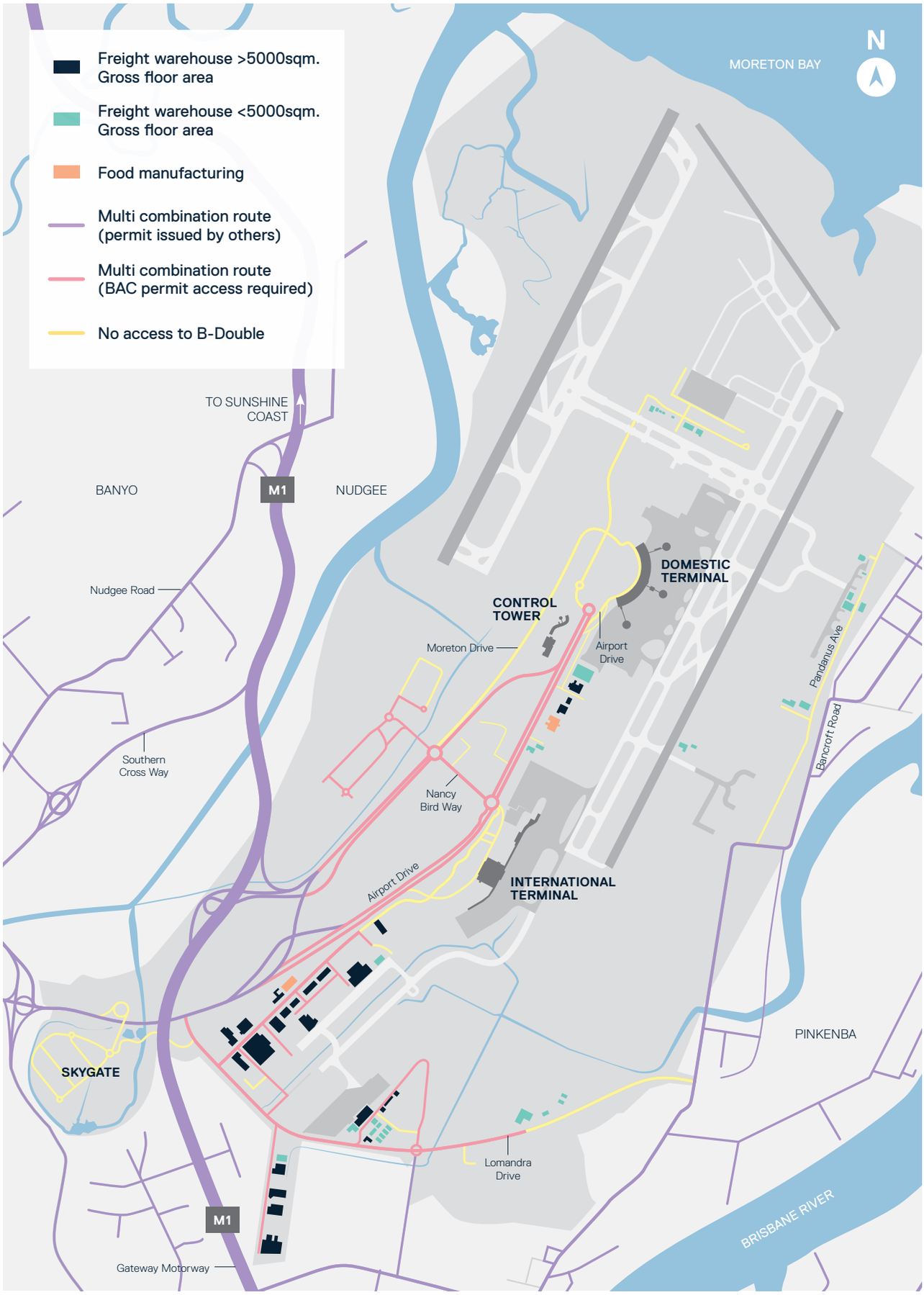
The increased use of drones in the distribution and logistics market presents challenges for Brisbane Airport where the safety of passengers and the protection of airspace for commercial aircraft is paramount.

Brisbane Airport is committed to working with regulators to seek long term solutions to permitting the use of drones.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS:

- Partner with Queensland Department of Transport and Main Roads and Brisbane City Council on strategic freight initiatives.
- Continue to review applications on pre-approved B double and consignment routes.
- Upgrade the Lomandra Drive and Main Myrtletown intersection to facilitate B-double movements.

GROUND TRANSPORT PLAN - FREIGHT



BRISBANE AIRPORT PUBLIC TRANSPORT NETWORK

Public transport options at Brisbane Airport include the Airtrain, with railway stations at both terminal's and a range of different bus services.

AIRTRAIN SERVICES

Airtrain connects to the Brisbane CBD and to the Gold Coast line via Eagle Junction. Weekday services commence at 5am, running every 15 minutes during peak morning and afternoon. times and every 30 minutes for the remainder of the day.

Airtrain is managed through an agreement between the Queensland Government and Airtrain extending to the year 2036. The agreement includes contract conditions that restrict the introduction of competitive public transport services.

Government and key industry stakeholders agree that the development of a new Airtrain station at Skygate would be likely to increase the attractiveness of catching public transport to commercial and industrial areas at the airport.

More information, including details of modelling work demonstrating the potential extra public transport catchment area of a new station can be found later in this chapter.

BUS AND TRANSFER SERVICES

Translink bus services also access the airport and its environs. On some weekdays, the 590 service caters for more than 650 passengers. While patronage on the 303 service is lower, it is the only service to cover the Australia Trade Coast area, a major location of employment.

On the airport, there are a number of complimentary transfer services servicing the terminals, Skygate and Airpark. The terminal transfer bus service commences at 4 am, the Skygate loop commences at 6.20am with services every 30 minutes and the Airpark transfer bus service runs on a 24 hour basis.

Eleven electric buses offer free transport between the terminals, Skygate and Airpark.

Brisbane Airport will continue to partner with government and industry stakeholders to improve public transport access and services. Research continues to show that any new public transport offerings need to have comparable speed, convenience and overall cost to be a viable alternative to private vehicle access.

FUTURE VISION

With technological innovation continuing to drive changes in transport options and passenger preferences, Brisbane Airport will maintain a flexible approach to the provision of services, designed to adapt and augment current operations as demand increases or new opportunities emerge.

As an early adopter of electric buses and currently managing the largest electric bus airport fleet in Australia, Brisbane Airport continues to review emerging developments in ground transport including automated mass transit.

Additionally, it remains a clear planning goal to provide safe, resilient and adaptable transport systems across the airport made up of frequent high-quality public transport services connecting the terminals, Skygate and the Central Parking Area.

Supporting Brisbane Airport Corporation's mass transit aspirations, the Queensland Government and Brisbane City Council have advanced plans to develop Cross River Rail and Brisbane Metro. These modern, high-frequency mass transit systems will further facilitate the efficient movement of people throughout the region, supporting economic and population growth.

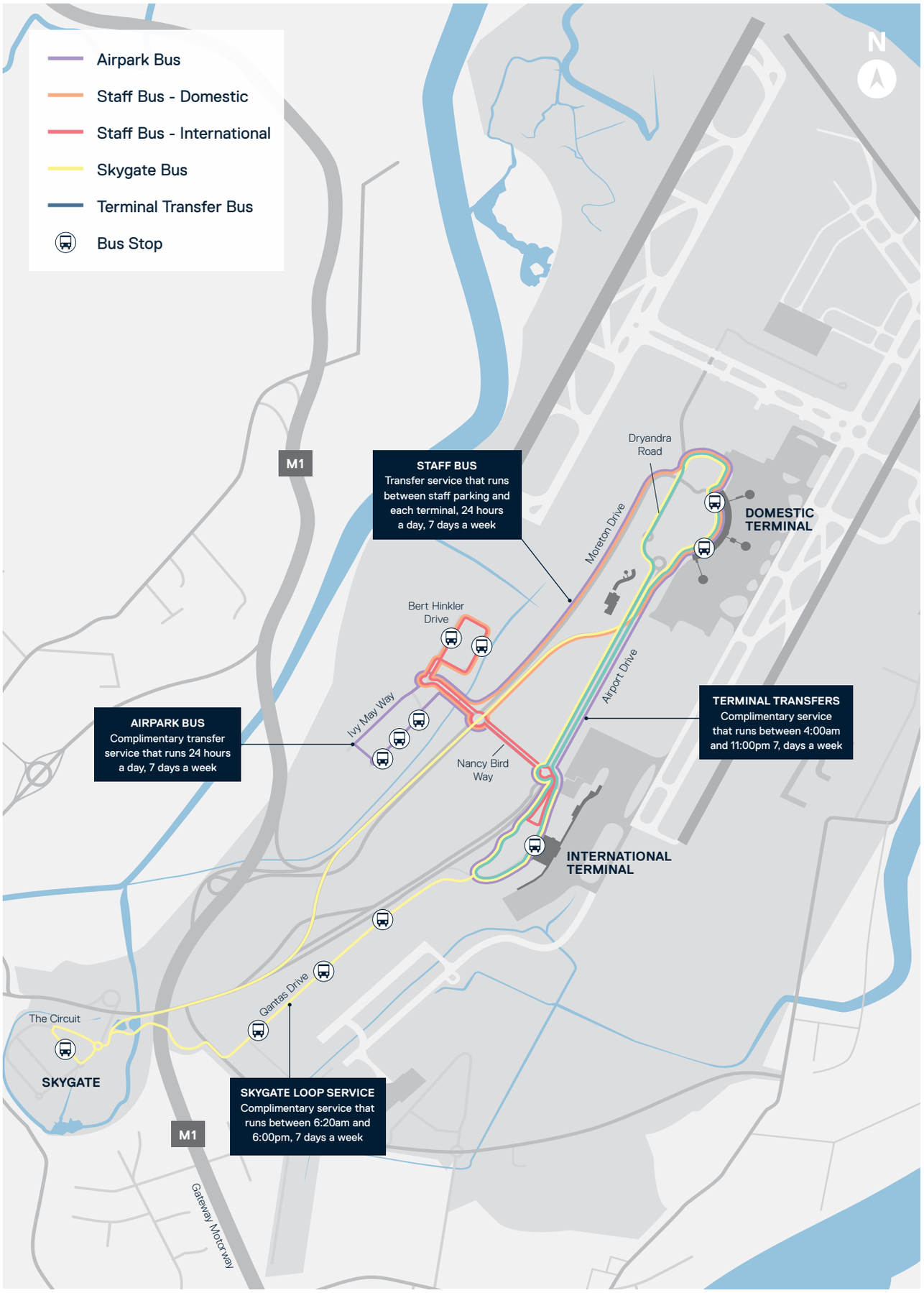
Brisbane Airport will continue to partner with key stakeholders, including the Queensland Government, Brisbane City Council and Airtrain to support innovation in public transport access to the airport and its precincts.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS INCLUDE:

- Progress planning for a new rail station at Skygate, in partnership with the Queensland Government and Airtrain.
- Ongoing review of potential improvements in consultation with the Brisbane City Council and the Queensland Department of Transport and Main Roads (DTMR).
- Improve passenger awareness of the existing transport options available between Skygate and the Brisbane CBD (DTMR initiative).

BRISBANE AIRPORT PUBLIC TRANSPORT NETWORK

ON AIRPORT BUS SERVICES PROVIDED BY BRISBANE AIRPORT




AIRPARK
PARK, RIDE AND SAVE
AIRPARK
PARK, RIDE AND SAVE
AIRPARK TO DOMESTIC AND INTERNATIONAL TERMINAL
The AIRPARK Bus runs:
Every 15 minutes
between 5AM and 9:30AM
Every 20 minutes
between 9:30AM and 5AM
22
75
BRISBANE AIRPORT
AUSTRALIA

GROWING THE USE OF PUBLIC TRANSPORT

The liveability and economic prosperity of a modern city can be dramatically enhanced by a connected and sustainable transport network that has the flexibility to respond to the changing needs of the community.

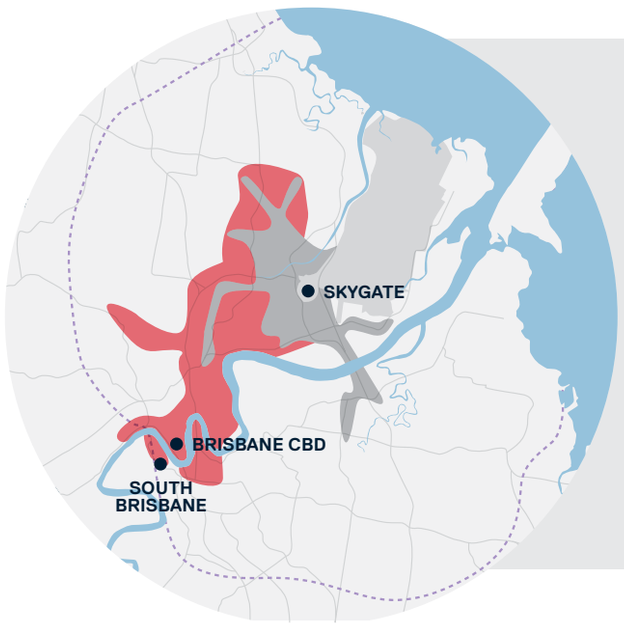
BAC is committed to providing facilties that reduce vehicle traffic and encourage the use of public transport. Recent years have seen the emergence of the notion of the "30 minute city". Described in both the Australian Government's Smart Cities Plan and the Queensland Government's Shaping SEQ plan, The core idea of a '30 minute city' concept is that people have ready access to jobs within a 30-minute commute of where they live and access services.

City and town planners increasingly advocate building cities where residents can easily find jobs, schools, shopping and recreation facilities within 30 minutes of their homes.

BAC will work with partners to explore opportunities for advancing the '30 minute city' concept for Brisbane, by facilitating widespread access to the airport by public transport without inconvenient or lengthy waiting times. Consideration will also need to be given to ensuring that services are affordable and user friendly, with appropriate levels of capacity within the transport network,

A potential example of the type of initative that could drive this change is the addition of a new rail station at Skygate. Modelling indicates significant potential benefits.

The map below illustrates the ways in which a new station, combined with the development of the Brisbane Metro and Cross River Rail projects, could allow passengers to reach suburbs including Woolloongabba and South Brisbane and large parts of the Brisbane CBD within half and hour of leaving Skygate, removing their dependency on motor vehicles and avoiding peak hour traffic.



SKYGATE BY PUBLIC TRANSPORT

(Future Zone of 30 minutes travel time to/from Skygate)

Existing 30 Minute Catchment

Future 30 Minute Catchment
(includes combination of travel on Airtrain to new Skygate Station, and potential travel times through Brisbane CBD via Brisbane Metro and Cross River Rail)

By Car

A TRAIN STATION FOR SKYGATE

THE OPPORTUNITY

The addition of a new train station serving the Skygate precinct has the potential to be a key catalyst in the future growth of Brisbane Airport. The addition of a station with connections to the existing rail network has the potential, not only to offer new ways to access the popular retail precinct, but also to extend access to connected parts of the precinct including the childcare centre, offices, golf central and the Novotel hotel.

Already a popular shopping destination, the delivery of improved public transport access to a wider catchment area is likely to drive further investment in the Skygate precinct and lead to the creation of new jobs and greater prosperity for the people of Brisbane and South east Queensland.

The provision of viable transit options, beyond the use private vehicles, will enable Skygate Precinct to realise its full potential.

THE SKYGATE PRECINCT

The Skygate precinct is a recognisable multi-use destination serving a higher order economic function within the region. It is a 24/7, multi-use centre integrating a range of activity generating uses comprising commercial, retail, government, service, entertainment, leisure and community and cultural activities.

The density, scale and diversity of services located within the precinct provides opportunities for improved connectivity.

Feedback from potential Skygate tenants indicates that public transport connections can be a major consideration when selecting a location for their commercial or retail activities.

As a result, the Skygate precinct could be seen to be currently hindered in terms of its potential to contribute to economic activity and to provide additional employment opportunities in the region.

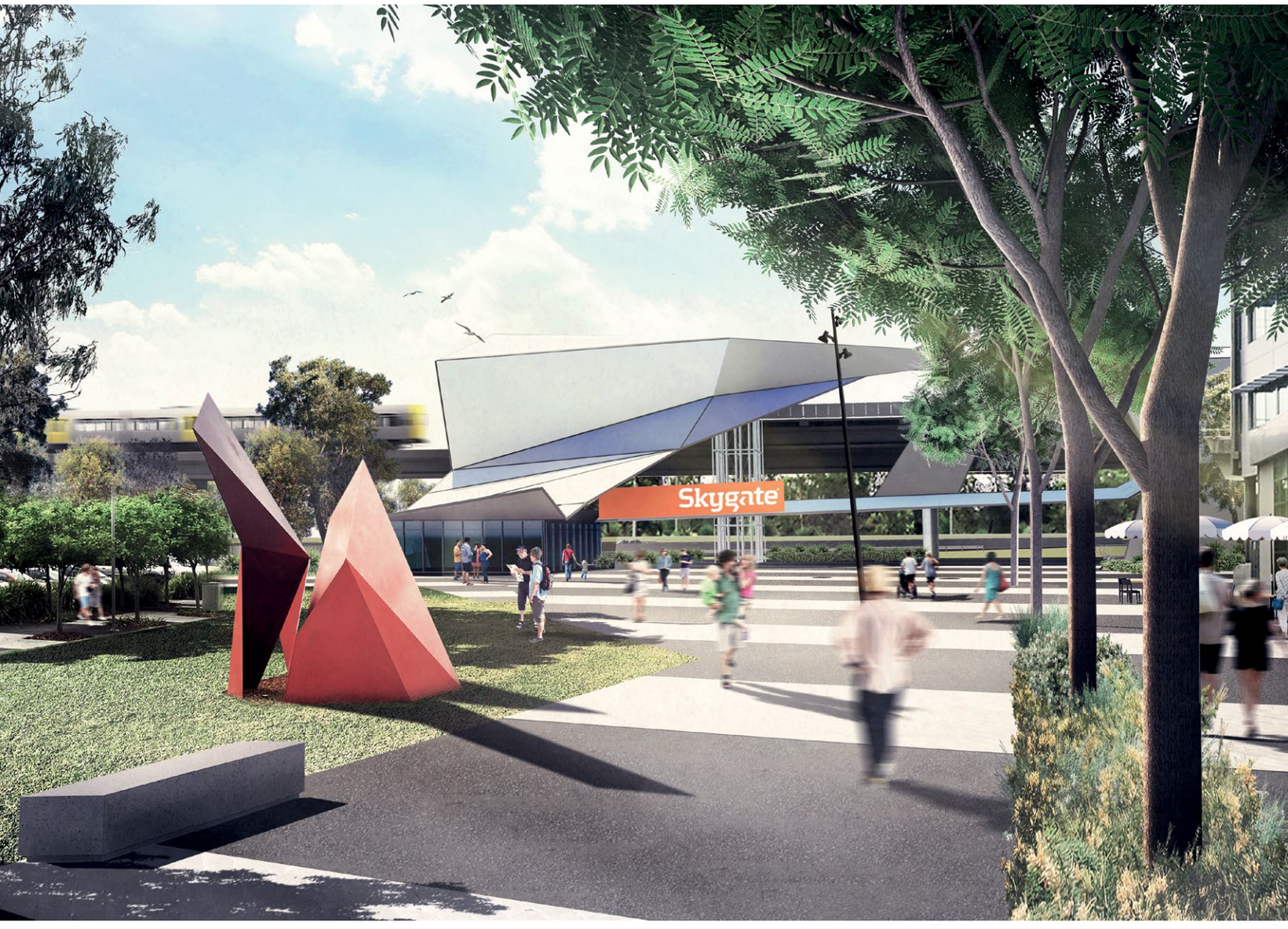
80%

of visitors and employees said a Skygate train station would be appealing

61%

of visitors and employees said they would likely to use the proposed Skygate train service.

* *Colmar Brunton 2016*



A TRAIN STATION FOR SKYGATE

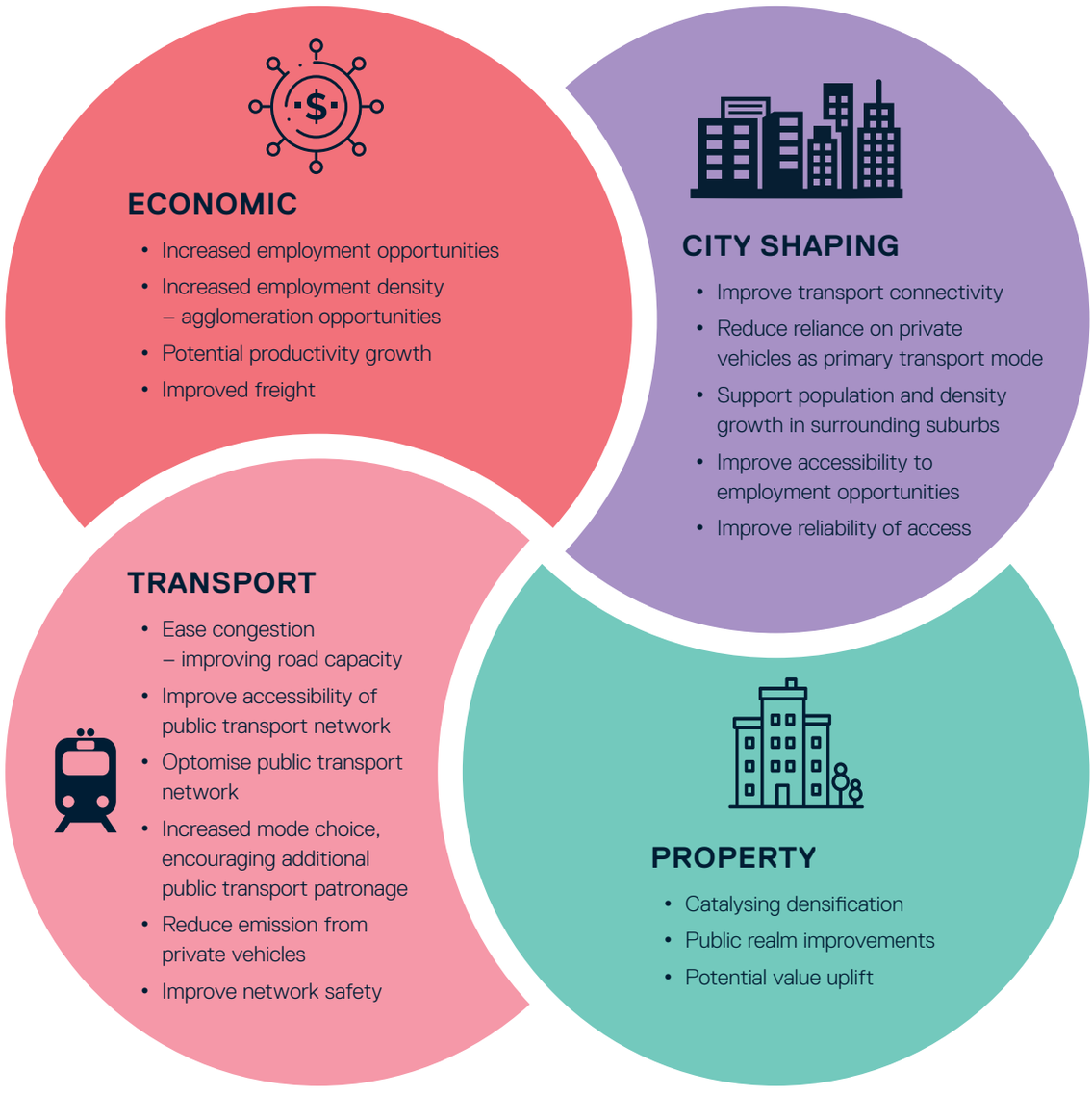
Public transport plays a vital role in facilitating the sustainable growth of cities, and has the potential to shape urban land use patterns. Accessibility to transport links is a contributing factor influencing the location decisions of both firms and individuals.

Similarly, public transport underpins the efficient and timely movement of employees to and from their place of work, and provides accessibility to employment opportunities for many disadvantaged people who do not have or cannot use a car.

Survey results indicate of those employees and visitors currently travelling to the Skygate Precinct by bus, 27% do not have access to a car or are not driving. (source: Colmar Brunton research: 2016). An improvement in the choice of transport options available to the community, acts as an enabler for additional labour force participation amongst the most vulnerable members of society, providing accessibility to employment opportunities that they otherwise would not have access to. This has the potential to improve employment outcomes amongst disadvantaged cohorts and contribute to improvements in broader social inclusion and cohesion.

The enhancement to SEQ's existing public transport network offered by the new train station has the potential to support future growth in the region, and improve accessibility to the employment opportunities Skygate can offer. Building a new station not only provides this key transport link, but offers an efficient and sustainable transport option with broader benefits to society and the economy.

BENEFITS OF A TRAIN STATION AT SKYGATE



BAC sees great potential in the establishment of a new train station at Skygate, adding to and complementing existing services, providing a wider choice of travel options for visitors, shoppers, passengers and people who work in or nearby the precinct to leave their cars at home and enjoy the benefits of the connected rail networks to reach suburbs in Brisbane and further afield.

To achieve the best outcome for customers and for the region of South East Queensland, BAC is actively seeking support from the Queensland Government and Airtrain to progress to the next stage of investigation for delivery.

The project to build a new train station at Skygate presents an opportunity for true partnership in delivery, with each of the three parties able to separately meet their key priorities.

Together the 'sum of the parts" is a unique and landmark opportunity for creating a significant and bold investment in infrastructure likely to deliver value to all for decades to come.

THE EVOLUTION OF MASS TRANSIT AT BRISBANE AIRPORT

OVERVIEW

In the 2014 Master Plan, BAC recognised that the increasing demand for flexible ground transport choices would require development of a new range of efficient and accessible future solutions.

The addition of an electric bus fleet and expanded inter-terminal transfer services, plus incremental changes in the services offered to ride share users in the succeeding years demonstrates BAC's intention to retain the flexibility to add services as demand continues to grow.

A key challenge faced in the future will be managing growing the demands on access to and between the precincts. As part of the creation of the 2014 Master Plan, the airport reviewed a number of local and international people mover systems including heavy gauge rail, light rail, monorail, guided and pneumatic tyre track options, this resulted in the identification of a future Mass Transit System (MTS) corridor.

As BAC investigates potential mass transit options that represent the next evolution after electric buses, a key consideration in choosing between options is carrying capacity.

Of the options considered, guided and pneumatic tyre track systems were judged to be the most appropriate choice beyond buses based on their constructibility and passenger carrying capacity.

CHANGES SINCE 2014

The potential MTS outlined in the 2014 Master Plan considered options for transporting people between terminals and major parking facilities and considered the following criteria:

- The ability to carry a large number of passengers,
- The level of automation
- Passenger comfort on the journey
- Passenger comfort at stations
- Journey times

Additionally, it recognised the option where the MTS could be expanded to connect the Airport Central neighbourhood to other parts of the airport, catering for the demands for transportation from, terminals and remote parking facilities to the retail, entertainment and commercial centres.

The 2020 Master Plan has further tested and benchmarked the position taken in the 2014 plan to consider the implications of changes in mode share use, customer needs, airport development and technology driven changes, plus the emergence of new modes of transport including rideshare.

In 2018, Brisbane Airport undertook a benchmarking study of MTS solutions used by a range of global airports equivalent in terms of passenger profile and growth, split terminal operations, and spatial considerations to Brisbane Airport.

Based on that case study assessment a summary of typical airport MTS commitment rationale and results of MTS implementation can be seen in the table below.

TYPICAL AIRPORT MTS COMMITMENT RATIONALE	TYPICAL RESULTS OF MTS IMPLEMENTATION
Vital part of terminal complex concept to provide reasonable walking distances and travel times	Most MTS successfully provided intended services
Addition of new terminal(s) with significant inter-terminal volumes, such as international/domestic transfers	Reduction in trip times and walking distances
Expansion of key airlines into multiple terminals needing quick, secure on-line transfers	Addressed passenger separation issues
Addition of remote gate concourses with significant origin and destination and transfer volumes	Offered continuous secure environment among terminals for both origin and destination and transfer passengers and staff
Addition or expansion of remote landside facilities with high volumes to/from terminal(s)	Extended useful land use beyond immediate terminal areas
Need to reduce kerbside congestion to buses	Enabled reduction of road and kerb traffic near terminals

MASS TRANSIT MODELS

The 2018 benchmarking study compared four systems:

- Typical rubber tyred automatic people mover. This system had the highest passenger capacity.
- Cable drawn shuttle. This system was not considered a viable solution at Brisbane Airport, as it would not provide adequate capacity for the alignment with two stations at the Domestic Terminal in future.
- Personal rapid transport. This system could be appropriate for first and last mile movements, supporting a higher capacity model.
- Bus systems. This is the current MTS for Brisbane Airport, which is supported by the train line.

CASE STUDY: CALGARY AIRPORT'S YYC LINK PASSENGER SHUTTLE

Calgary Airport's YYC LINK Passenger Shuttle is an example of personal rapid transport. The YYC LINK Passenger Shuttle connects four stations on a dedicated route, each seating 10 passengers.

Personal rapid transport features small automated vehicles operating on a network of specifically built guideways. The range of potential vehicles using the system varies from larger vehicles for large groups to smaller, more individual systems.

Brisbane Airport Corporation will continue to keep abreast of personal rapid transport technological advancements and consider application on airport where feasible.

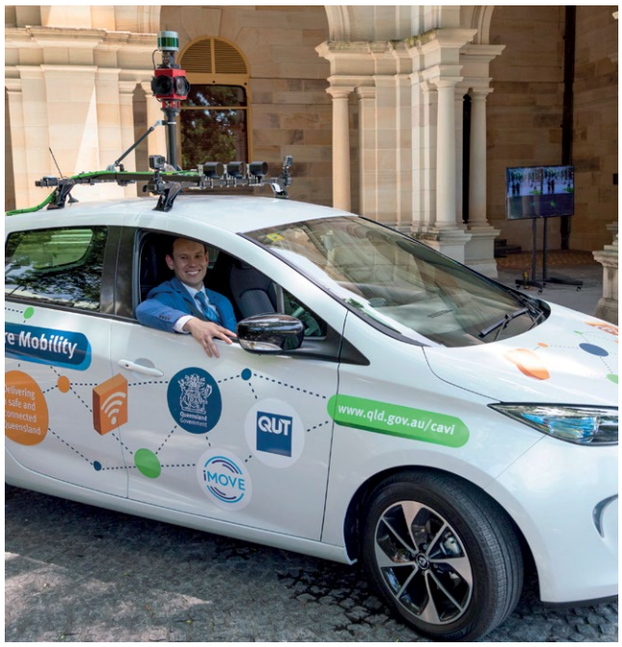
CASE STUDY: BRISBANE METRO

Brisbane City Council's Brisbane Metro will deliver a 'turn-up-and-go' MTS with Metro services every three minutes in peak periods. As part of Brisbane Metro, a new fleet of 60 bi-articulated Metro vehicles will be introduced, each able to carry up to 150 customers, boosting the capacity of the busway by up to 22,000 people per hour.

Brisbane Metro will evolve the bus network from a largely direct service model to a hybrid model, meaning Metro services will operate as the primary service along the existing busway and will be supported by numerous feeder routes. Following the introduction of Brisbane Metro, some high-frequency bus routes will continue to operate on the busway, providing a network of reliable city-to-suburbs services for residents across Brisbane. Other bus services will provide regular, frequent connections from the suburbs to high-frequency Metro services at busway stations.

Over time, as technology advances, similar bi-articulated vehicles could become autonomous and combined with a signalling system that would provide a flexible, efficient and reliable transportation solution. The model would be suited to a wide variety of applications at Brisbane Airport.

Image courtesy of Brisbane City Council. Artist's impression only.



CASE STUDY: CONNECTED AND AUTOMATED VEHICLES

The Queensland Government, in collaboration with iMOVE Cooperative Research Centre and Queensland University of Technology, are currently undertaking connected and automated vehicle research to help prepare for the arrival of new vehicle technologies with safety, mobility and environmental benefits on Queensland roads. A current trial is ZOE1, which although not an automated vehicle, is fitted with a range of sensors and radars likely to be found on automated vehicles. The vehicle trial will look at how the vehicles adapt to Australian road conditions in four main areas – lane markings, traffic lights, street signage, and overcoming the limitations of GPS systems in built-up areas and tunnel for vehicle positioning.

Connected and automated vehicles are expected to form a large part of future urban ground transport, including at airports. IATA has identified more than 40 potential uses for connected and automated vehicles at airports including aircraft pushback tugs, passenger loading bridges and baggage vehicles.

Brisbane Airport will work with the Queensland Government and industry on connected and autonomous vehicle opportunities at Brisbane Airport.

Image courtesy of the Queensland Department of Transport and Main Roads

POTENTIAL FUTURE MASS TRANSIT CONCEPT AT BRISBANE AIRPORT

A potential ultimate airport precinct development option could be a transport system comprising of:

- An airside MTS connecting the Terminals
- A new rail station at Skygate to link to the existing rail line connecting the terminals to the Brisbane CBD
- A feeder bus shuttle service to ancillary airport precinct locations to provide onward connectivity to car parks and car rental centres, the Auto Mall and Skygate.

In this option, the Brisbane Airport Rail Link is utilised to provide an efficient landside transfer between the key origins and destinations within the airport precinct (both airport terminals, the Auto Mall development, and the Skygate precinct). This also provides a direct, seamless onward public transport connection to the city of Brisbane and beyond.

An airside MTS provides the necessary connectivity for passengers interchanging between international and domestic flights and potential multiple stops throughout the new terminal developments. Initially, this may be provided by way of a redeployed landside bus fleet to the new airside route. IATA recommends that the use of connected and automated vehicle systems, such as light rail, should be considered when more than 3,000 passengers per hour need to be transported across a distance of more than 0.75km.

BAC has preserved a MTS corridor to enable connection between all terminals in future once this threshold has been reached. The ultimate layout plan will connect the existing international and domestic terminals to the future northern and western terminals, with stations for each terminal to assist with the efficient movement of passengers both airside and landside between each location.

Further, the ultimate layout also includes a landside connection between the terminals and the Central Parking Area, which will enable the efficient movement of passengers and staff whilst distributing the demand on ground transport facilities.

When an airside MTS is implemented the airside bus could be redeployed to focus on providing more reliable and potentially on-demand services linking airport precinct hubs such as remote parking the passenger and General Aviation terminals, Auto Mall development and the Skygate precinct).

OPERATIONAL CHARACTERISTICS AT BRISBANE AIRPORT

Typically a connected and automated vehicle based MTS uses exclusive guide ways, whether elevated, at-grade, or in cuttings and tunnels, so the capacities are not affected by the alignment. However, a connected and automated vehicle based MTS may also operate in either a dedicated or undedicated road lane.

Systems that mix with surface traffic in an undedicated environment can have significant capacity impacts due to delays from conflicting road and pedestrian traffic, if not properly managed.

At Brisbane Airport, most of the length of an alignment between the terminals would be at grade along the line between airside and landside, with appropriate fencing to ensure a safe, exclusive right-of-way. It could be elevated as needed, at stations and airside access points, with vertical transitions back to grade where possible.

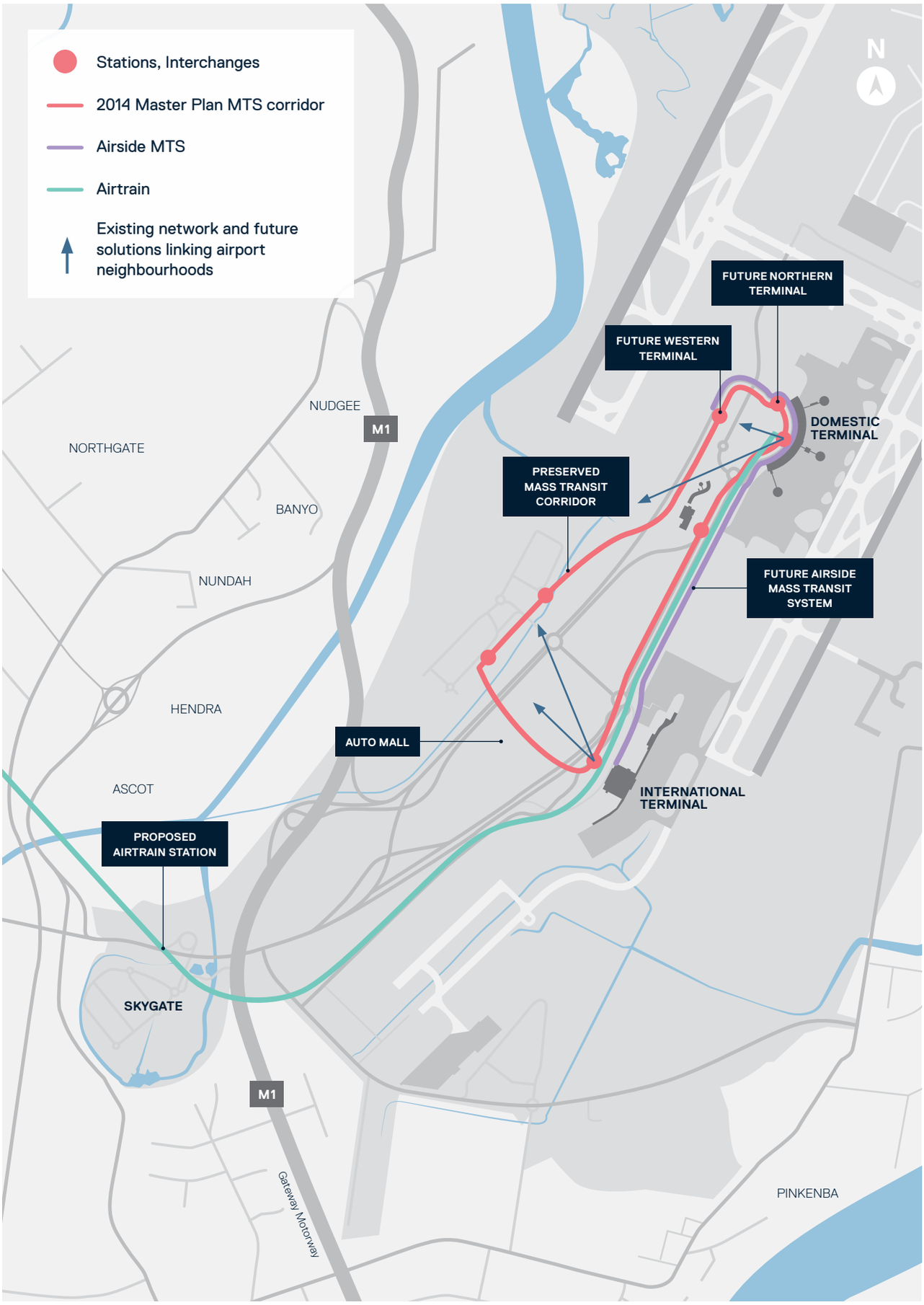
IN SUMMARY

In order to provide flexibility for future development, BAC will preserve an MTS corridor connecting the passenger terminals and key landside precinct hubs.

The MTS corridor identified in the 2014 Master plan will be retained to provide optionality in the future however Brisbane Airport recognises that a new rail station at Skygate could also facilitate movement of passengers and airport staff/employees between the Terminals, Skygate, and the Brisbane CBD, allowing feeder shuttle buses at the rail stations that can then provide access to ancillary locations such as car parks, car rental centres, Skygate, and Auto Mall.

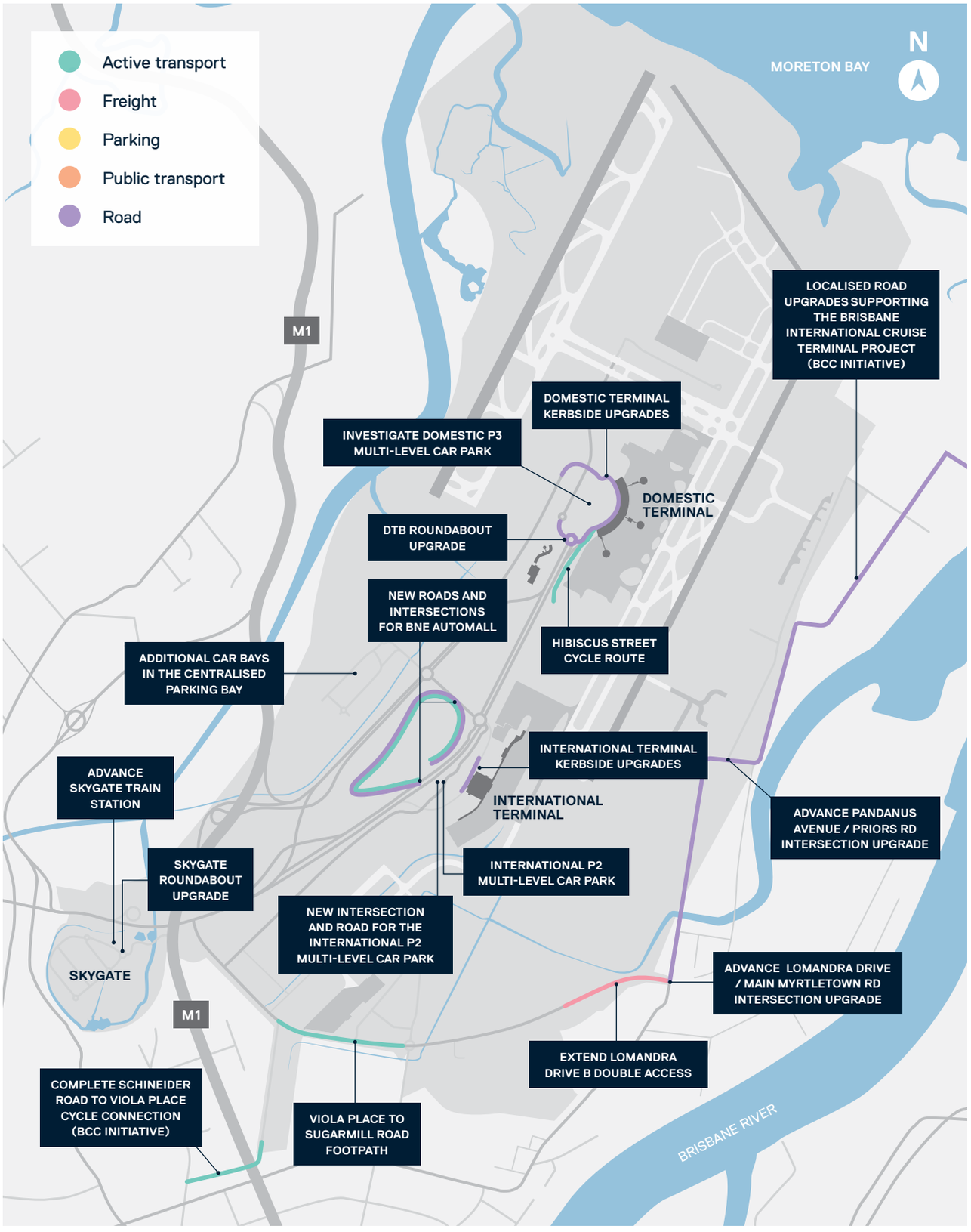
Connected and automated vehicle technology for the MTS and/or shuttle buses can potentially provide further efficiencies and enhance the passenger experience.

FUTURE MASS TRANSIT OPPORTUNITIES



BRISBANE AIRPORT GROUND TRANSPORT PLAN INITIATIVES 2020–2025

Over the next five years, Brisbane Airport Corporation will expand and enhance the network to support terminal activities and new developments, such as BNE Auto Mall and the International P2 Multi-Level Car Park. Providing a network that meets the needs of all stakeholders is paramount to the initiatives identified in the plan below.



COLLABORATIVE PARTNERSHIPS

Strong collaborative partnership arrangements with the aviation industry and government at all levels are essential in the long term provision of effective, safe and reliable services.

BAC seeks to be a major catalyst in the formation of strong collaborative partnerships to develop a co-ordinated and pragmatic approach to ground transport planning,on and off the airport. In line with commitments in the 2014 Ground Transport Plan, BAC has chaired the Brisbane Airport Ground Transport Working Group, containing representatives from Brisbane City Council, the Queensland Department of Transport and Main Roads and Translink since 2015.

The Working Group has shared ideas, engaged on collaborative projects and advanced a series of key initiatives from the previous Ground Transport Plan. This ongoing engagement has also informed the commentary and commitments in this plan.

Going forward, BAC will continue to engage with government stakeholders through regular working group meetings. These forums will be used as a platform to explore opportunities for data sharing and future investigations of potential projects such as the new rail station for Skygate, potential new bus routes and interchange points and the next iteration of BAC's new passenger transport initiatives.

BAC also recognises the role of interested parties including Airtrain, Queensland Rail, Transurban and the Bicycle User Group on-airport and will continue to liaise with these groups.

AGILITY FOR FUTURE GROWTH

Technology driven changes in the way people live, work and travel are disrupting traditional planning practices across all industries and business.

In the transport sector, the emergence of new services including ride sharing and continued advances in the development of autonomous vehicles, combined with the increased use of mobile devices by passengers to access real time information are all factors influencing decisions on future ground transport service provision.

BAC has a strong track record of being agile in decision making and planning, quickly adapting to changes in demand and the introduction of new services.

It is likely that over the period of this Master Plan, technology or innovation driven events or circumstances may require BAC to consider unforeseen additional investments in services and infrastructure to support the efficient operation of the ground transport network.

Where those investments have not been specifically prescribed in the 2020 Ground Transport Plan, they will be guided by the same overarching goals outlined in this plan, to ensure that services are co-ordinated, resilient and created with the needs of the customer in mind.

10

AIRPORT ENVIRONMENT STRATEGY

OVERVIEW

The 2020 Environment Strategy outlines Brisbane Airport Corporation's (BAC) continuing commitment to world best practice in environmental compliance and sustainability and includes details of affirmative measures and actions to be implemented over the next five years at Brisbane Airport to ensure continuous improvement in all aspects of environmental management.

BACs commitment to environmental responsibility extends beyond ensuring rigid compliance with regulatory standards and controls. Maintaining long-term environmental sustainability is a fundamental tenet of the Corporation's operating philosophy.

This Strategy includes twelve separate areas of focus and details of monitoring, audit and reporting programmes undertaken to ensure continued compliance with all legislative requirements.

For each area of focus, it details objectives, action plans and key achievements since the publication of the 2014 Master Plan.

The last five years have seen a range of new initiatives deployed across the airport, including a new electric bus fleet, a food recovery program and the installation of cardboard compactors that doubled the amount of cardboard recycled each year.

Brisbane Airport Corporation's carbon emissions continue to decline and for the new runway, a new recycled water pipeline saved the equivalent of 500 Olympic-sized swimming pools of potable water, with the construction project overall passing all environmental compliance tests over an eight year period.

The Environment Strategy plays an important role in making the airport a better place to work and visit. It continues to evolve to meet the challenges of the expansive version for the airport and the surrounding precinct.

BACKGROUND

The 2020 Brisbane Airport Environment Strategy meets the regulatory requirements of the Airports Act 1996 and has been developed in consultation with stakeholders from industry, Government and the local community.

Maintaining long-term environmental sustainability is a fundamental tenet of the airport's operating philosophy and intrinsically linked to the successful attainment of its economic, operational and social objectives

This Airport Environment Strategy has been prepared to meet the requirements of the Airports Act. In accordance with section 71(2)(h) of the Act it;

- Details objectives for the environmental management of Brisbane Airport.
- Identifies those areas considered to be environmentally significant.
- Includes a framework for effective environmental management at the airport.
- Lists achievements from the previous strategy that demonstrate the continual improvement of environmental management at the airport.
- Establishes five year action plans and active measures to be undertaken

The Strategy also addresses the assessment and management of potential environmental issues associated with the implementation of initiatives outlined in this Master Plan (Airport Act section 71(2)(f) and section 71(2)(g).

Tenants and contractors operating on Brisbane Airport are required to complete an Environmental Management Plan subject to regular inspection, based on the environmental risk of their activities.

This Strategy was developed through ongoing engagement with stakeholders including government agencies, airport tenants, Traditional Owners and members of the local community through meetings, workshops and other forms of community engagement.

Informal meetings were held with the Airport Environment Officer and representatives of the Department of Infrastructure, Development and Cities, with outcomes incorporated into the final strategy.

Feedback was also recorded from meetings with Government agencies through the Brisbane Airport Area Round Table and with the local community via the Brisbane Airport Consultation and Advisory Group. Areas of interest were aircraft noise, local area drainage and natural asset management.

A formal workshop and informal meetings were held with airport tenants. Discussion points included requirements for use of firefighting foam, solar power generation, electric charging infrastructure, sustainable aviation fuels, climate change resilience, and waste management.

Consultation was undertaken with Traditional Owners as part of annual heritage compliance meetings with no matters of concern raised. Additional feedback was collected from community information exchanges, including fairs and festivals and via social media. Main areas of interest were regarding the reducing of waste and construction projects.

Information captured from each of these exchanges was used to develop actions across a range of environmental matters. The objectives and priorities outlined in the Strategy reflect the findings of those meetings and consultation.


N
MORETON BAY
TO SUNSHINE COAST
1
2
3
4
M1
NUDGEE
BANYO
CONTROL TOWER
DOMESTIC TERMINAL
INTERNATIONAL TERMINAL
NUNDAH
SKYGATE
5
LYTTON
HENDRA
BRISBANE RIVER
BRISBANE CBD
Gateway Motorway
HEMMANT
M1
TO GOLD COAST

LOCATION

Brisbane Airport is situated on a reclaimed portion of a river delta at the mouth of the Brisbane River. The area surrounding Brisbane Airport is largely industrialised. With a coastal location the airport also contains and is adjacent to some areas of environmental importance.

More than 10 per cent of the 2,700 hectare Brisbane Airport site is dedicated to biodiversity conservation, including the foreshore, mangrove and saltmarsh communities, casuarina plantations and Phragmites wetlands/unmanaged grasslands that are home to locally significant bird species, the Lewin's Rail, Eastern Grass Owl and King Quail.

Areas of environmental value within and adjacent to the airport include:

1. Moreton Bay Marine Park – a Wetland of international importance under the Ramsar Convention on Wetlands.
2. The Brisbane Airport foreshore – feeding grounds for international migratory shorebirds.
3. Mangrove and saltmarsh communities around Serpentine Inlet, Jackson's Creek, Jubilee Creek and Pinkenba.
4. The Boondall Wetlands – listed under the Ramsar Convention as an internationally important wetland for international migratory shorebirds.
5. Bulwer Island and Boggy Creek wetlands.

The airport site is also seen as culturally and spiritually significant to the Traditional Owners of the land and has European historic heritage significance.

Aboriginal cultural and spiritual significance within and adjacent to the site include Dreaming Tracks and Dreaming Sites (an integral part of Aboriginal people's connection to country), the Nudgee to Eagle Farm Pathway (which connected ceremonial sites, hunting grounds and camp sites in the local area), ceremonial grounds, food and water resources, temporary campsites, isolated archaeological finds and a former burial site.

European historic heritage sites at Brisbane Airport include remnants of the former Cribb Island residential community, the former Cribb Island school site, the Kingsford Smith Memorial, Southern Cross aircraft, a memorial to the 460 bomber squadron from WWII, and an unofficial memorial garden for the scattering of ashes.

Significant industrial neighbours include the Port of Brisbane, the Luggage Point Wastewater Treatment Plant, the BP jet fuel import terminal at Bulwer Island, the Viva Energy fuel storage and distribution terminal at Pinkenba, Caltex oil refinery at Lytton and heavy industries including fertilizer and concrete manufacturing plants.

ENVIRONMENTAL MANAGEMENT FRAMEWORK

The regulatory framework for environmental management at Brisbane Airport consists of:

- The Airport Legislation and other relevant legislation
- The Brisbane Airport Master Plan which includes the Airport Environment Strategy
- Regulatory representatives of the Commonwealth Department of Infrastructure, Regional Development and Cities including the Airport Environment Officer and Airport Building Controller

THE BRISBANE AIRPORT ENVIRONMENTAL MANAGEMENT FRAMEWORK

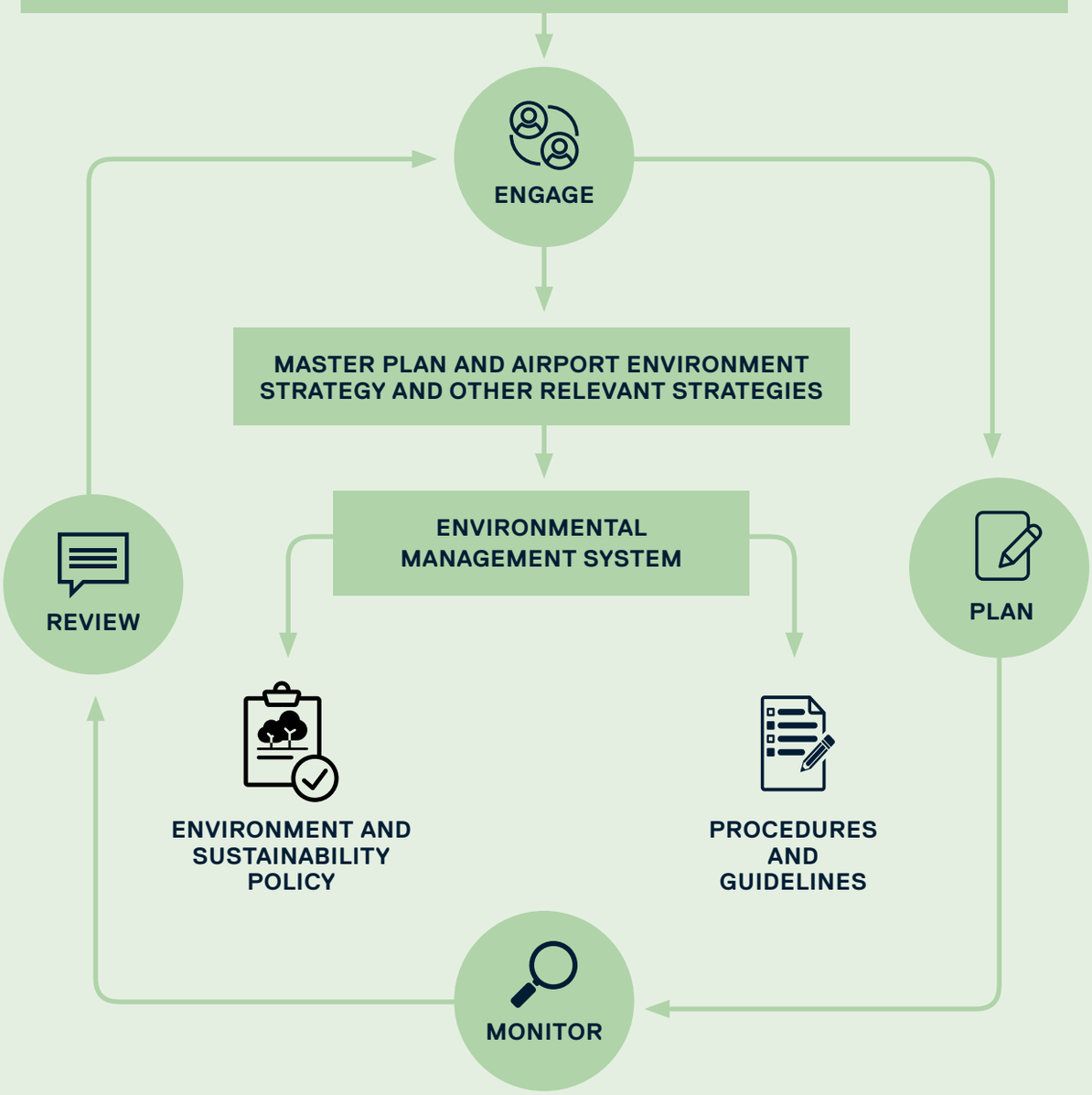
This chart is a representation of the structure that Brisbane Airport Corporation, its tenants and contractors follow to ensure best-practice environmental management is undertaken at Brisbane Airport.

AIRPORT LEGISLATION

- Airports Act 1996
- Airports Regulations 1997
- Airports (Environment Protection) Regulations 1997
- Airports (Building Control) Regulations 1996

OTHER RELEVANT ENVIRONMENTAL LEGISLATION, POLICIES AND NATIONAL GUIDELINES

- Environment Protection and Biodiversity Conservation Act 1999 (Cth)
- National Greenhouse and Energy Reporting Act 2007 (Cth)
- Biosecurity Act 2015 (Cth)
- Environmental Protection Act 1994 (Qld)
- Environment Protection Regulations 2008 (Qld)
- Biosecurity Act 2014 (Qld)
- National Environmental Protection Measures
- PFAS National Environmental Management Plan (PFAS NEMP)
- Operational Policy Environmental Management of Firefighting Foam (Qld)
- State Planning Policy (Qld)
- Code for Self-Assessable Development - MP02 (Qld)



ENVIRONMENT AND SUSTAINABILITY POLICY

Brisbane Airport Corporation's Environment and Sustainability Policy is the foundation of an approach to ensuring long-term environmental sustainability. The policy represents a formal public undertaking to consider the potential environmental impacts and opportunities of all future activities and operations.

ENVIRONMENT AND SUSTAINABILITY POLICY

Brisbane Airport is one of the busiest airports in Australia and is continuing to grow. It is located 13 km by road from the Brisbane CBD and in close proximity to Moreton Bay, industrial and residential areas, and the Gateway Motorway. Brisbane Airport Corporation (BAC) acquired the long-term lease in 1997 to manage, operate and develop Brisbane Airport.

BAC has an overall environmental responsibility for activities and operations undertaken at the airport, including airport operations and security, asset management, tenancy management and development projects. All other airport users have a responsibility for the environmental management of their activities.

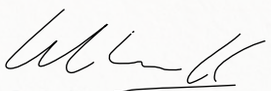
BAC is committed to:

- Operating, managing and developing Brisbane Airport in an environmentally responsible manner;
- Complying with the applicable environmental laws, policies and other legal requirements which pertain to its operation, and striving to meet and/or exceed these requirements;
- Fostering an environmentally responsible culture amongst BAC's employees;
- Minimizing adverse impacts on the environment caused by BAC's operations;
- Continually striving to reduce natural resource consumption, waste generation and prevent pollution;
- Working with government departments, agencies and airlines to manage impacts of aircraft noise and the impacts of aviation on the community;
- Constantly striving to achieve continual improvement in environmental and sustainability performance by implementation of an Environmental Management System (EMS) consistent with the international standard ISO14001:2015 and sustainability benchmarking evaluations.

In fulfilling this commitment, BAC will:

- Take action to address potentially adverse environmental impacts;
- Communicate the Brisbane Airport Environment Strategy, policies and performance to employees, regulators, tenants and the wider community;
- Establish, implement and maintain an Environmental Management System which includes the setting and reviewing of environmental objectives and targets;
- Periodically review the effectiveness of the Environmental Management System, and identify opportunities for environmental, social, economic and operational sustainability performance improvements;
- Maximize energy, water and waste efficiencies;
- Manage noise impacts, pollutant emissions and the impacts of climate change on airport;
- Identify and seek to conserve objects and matters at the airport that have natural, Indigenous or historic heritage value;
- Achieve best practice in sustainable property development;
- Provide appropriate environmental training to BAC employees, and encourage our tenants and contractors to do the same;
- Build strong and active relationships with the wider community through engagement and sponsorship programs; and
- Provide the staff and resources necessary to meet these policy objectives.

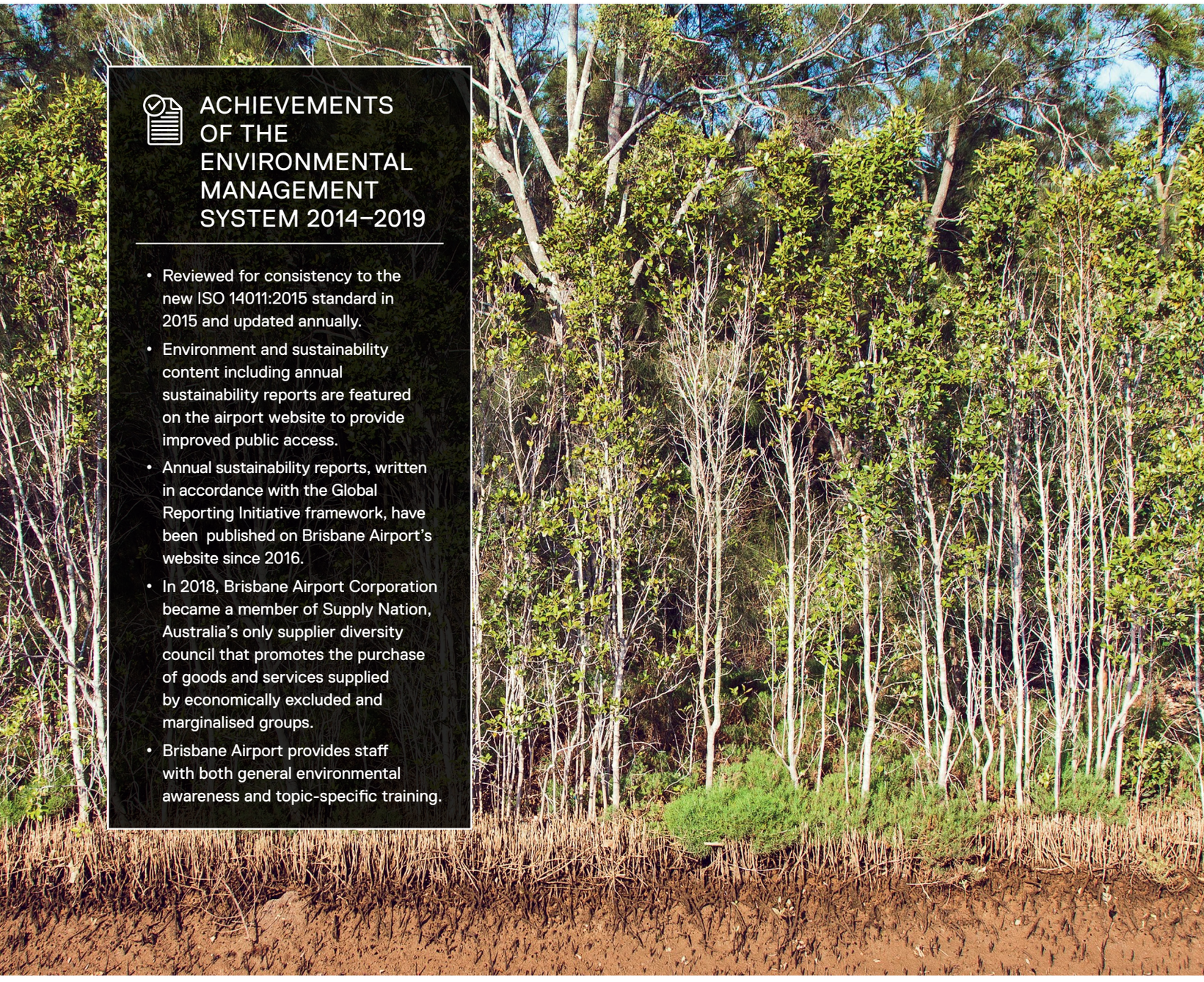
All BAC managers are accountable to the CEO for ensuring that this policy is implemented.



Gert-Jan de Graaff

CEO, Brisbane Airport Corporation

ENVIRONMENTAL MANAGEMENT SYSTEM



ACHIEVEMENTS OF THE ENVIRONMENTAL MANAGEMENT SYSTEM 2014–2019

- Reviewed for consistency to the new ISO 14011:2015 standard in 2015 and updated annually.
- Environment and sustainability content including annual sustainability reports are featured on the airport website to provide improved public access.
- Annual sustainability reports, written in accordance with the Global Reporting Initiative framework, have been published on Brisbane Airport's website since 2016.
- In 2018, Brisbane Airport Corporation became a member of Supply Nation, Australia's only supplier diversity council that promotes the purchase of goods and services supplied by economically excluded and marginalised groups.
- Brisbane Airport provides staff with both general environmental awareness and topic-specific training.

KEY OBJECTIVES 2020-2025

- Maintain an Environmental Management System consistent with the International Standard AS/NZS ISO 14001:2015.
- Review environmental performance indicators to benchmark and demonstrate continuous improvement.
- Maintain an ongoing program to identify and conserve objects and matters at the airport with natural Aboriginal, cultural or historic heritage value.

OVERVIEW

The Brisbane Airport Corporation Environmental Management System (EMS) has been developed to be consistent with the internationally recognised EMS standard ISO 14001:2015 as a systematic approach to manage environmental issues across the business. Procedures and guidelines have been developed in alignment with specific aspects of the standard including:

- Risk and opportunities assessment
- Compliance obligations.
- Training.
- Internal and external communications.
- Environmental auditing and document control.
- Incident and emergency preparedness.
- Sustainable procurement.

ISO 14001 outlines the requirement to manage risks identified as 'significant'. Following this, an audit protocol and review process is implemented to allow for future amendments to the system and to ensure continuous improvement.

ENVIRONMENTAL TRAINING AND PROFESSIONAL DEVELOPMENT

With dedicated resources looking after the management and implementation of the Environmental Management System, the highest level of environmental practices are maintained at Brisbane Airport.

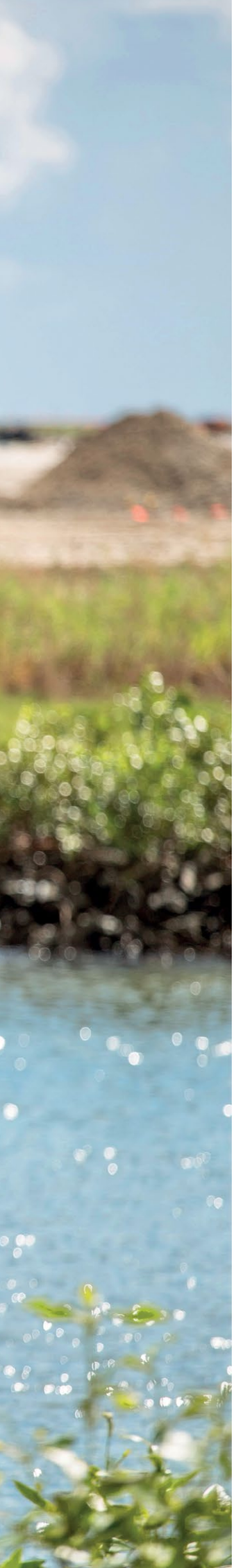
All airport environment and sustainability staff are required to have appropriate qualifications and to undertake environmental training and professional development.

Other airport staff and contractors are also expected to participate in environmental training as required. Types of training include staff inductions and topic specific training covering spills clean up and departmental specific environmental awareness training.

The training program is administrated by Brisbane Airport Corporation's HR group with environment specific training administered by the airport's Environment and Sustainability Division.

ACTIVE MEASURES FOR THE ENVIRONMENTAL MANAGEMENT SYSTEM
Undertake annual internal audits, maintain a register of follow-up actions, and ensure corrective actions are implemented.
Annually review and update the environmental induction for employees.
Brisbane Airport will submit and Annual Environment Report to DIRDAC, including details of any issues/incidents and progress of action items.
Quarterly or as required, Brisbane Airport will conduct regular meetings with the Airport Environment Officer to review progress of the Environmental Strategy.

ACTION PLAN FOR THE ENVIRONMENTAL MANAGEMENT SYSTEM	TIMEFRAME
Implement the sustainable procurement policy.	2020
Develop and implement a supplier diversity strategy.	2020
Investigate opportunities to improve environmental and sustainability performance of contractors and suppliers.	2021
Undertake an external audit of the Environmental Management System.	2020, 2024



MONITORING AND REPORTING

At Brisbane Airport, a program of compliance monitoring collects,records and reports data and results on the effectiveness of the Environmental Management System and the management of significant environmental impacts.

Key environmental performance indicators are developed for each objective and target to measure and monitor for ongoing performance improvement.

Environmental monitoring is undertaken by qualified professionals with relevant experience. Monitoring programmes are generally consistent with best practice and industry standards and reviewed in conjunction with the Airport Environment Officer and representatives of the Department of Infrastructure, Regional Development and Cities.

The purpose of compliance (and other) monitoring is to collect, record and report on the effectiveness of the Environmental Management System and the airport's management of significant environmental impacts.

Brisbane Airport Corporation also measures performance to assess whether continuous improvement is occurring across the organisation.

Key performance indicators are developed for each objective and target to measure and monitor for ongoing performance improvement. Environmental monitoring is undertaken by qualified professionals with relevant experience.

In addition, pollution incidents, environment related complaints and management of contaminated sites are reported to the Airport Environment Officer through regular meetings, and as required under legislation.

Monitoring programs at Brisbane Airport are governed by multiple documents detailing the types and frequency of monitoring and reporting with ongoing review of key performance indicators. The tables on the following pages list the Governing Documents for each aspect of Environmental Monitoring.

Detailed written reporting against all objectives and management actions in the Airport Environment Strategy is provided regularly to the airport management team with a comprehensive report demonstrating progress against all objectives, management actions and monitoring activities provided annually to the Australian Government.

ENVIRONMENTAL MONITORING AND REPORTING

ENVIRONMENTAL ASPECT	ACTIVITY	GOVERNING DOCUMENT	MONITORING FREQUENCY	KPI	MITIGATION MEASURE
GROUND-BASED NOISE	Engine ground running	Airside Operations Manual	As required	Zero complaints	Location and timing approved as per Engine Ground Run Procedure
	Construction activities	Construction Environmental Management Plans (CEMP) Noise Management Plans	Baseline monitoring for major projects with further monitoring complaint based	Zero complaints	Stakeholder engagement; correct maintenance and operation of plant and equipment; suitable working hours
	Performance track operations and major events	Auto Mall Operational Noise Management Plan; Tenant/ contractor OEMPs	Annually or as required	Zero complaints	Engineering design mitigation measures as needed; Operations limited from 9am to 10pm, Major events limited to twice/ year; Stakeholder engagement with affected receptors.
WATER QUALITY	Stormwater	CEMP – Water Quality Management Plans	Post rain events for major projects	No sedimentation of local waterways	Implementation of the Erosion and Sediment Control Plan
		Water Quality Monitoring Program	Automatic samplers collect seasonal data from apron run off	Understanding first flush impacts on local waterways	
SOIL AND GROUNDWATER QUALITY	Contaminated site management	Contaminated Site Register	Underground storage tanks every 2 years with integrity testing in between High risk sites - based on risk profile	Ecological and human health risks minimised	Remediation if required on a risk basis
	Construction activities	CEMP - Surface and Groundwater, and Soil Management Plans	Monthly during the duration of the project once activities commence	No offsite discharge or transport of unmitigated soil or waters	Implementation of Erosion & Sediment Control Plan; Acid Sulphate Soil Management Plan; Dewatering Management Plan

ENVIRONMENTAL ASPECT	ACTIVITY	GOVERNING DOCUMENT	MONITORING FREQUENCY	KPI	MITIGATION MEASURE
LOCAL AIR QUALITY	Construction activities	CEMP – air quality management planst	Monthly dust deposition monitoring during major earthworks	No visible emissions at site boundary	Onsite watering; speed reduction for plant movement; plant fitted with emission control devices
CARBON EMISSIONS	Consumption of energy	NGERs, NPI and ACA reporting procedure	Annually	Accurate and timely reporting of emissions	Energy efficiency and renewable energy programs; electric vehicles; correct maintenance and operation of plant and equipment
WASTE	Operation of terminals and buildings	Zero Waste Strategy	Monthly waste data	Minimisation of waste to landfill	Comingled and cardboard recycling bins and other waste reduction trials
	Construction activities	CEMP – Waste Management Plans	Monthly project reports including waste data	No waste impacting surrounding environment	Bin lids in place; waste disposal by a licensed contractor; implementation of the waste hierarchy
BIODIVERSITY	Management of Biodiversity Zone and Environmentally Sensitive Areas	Biodiversity Management Strategy	Annually (migratory shorebirds; Lewin's Rail; estuarine health)	No decline in habitat values or species presence	Woody weed removal in Lewin's Rail ESA; drainage maintenance; groundsel bush spraying as required
	Construction activities	CEMP – flora and fauna management plan	Daily during vegetation disturbance	No fauna mortality	Spotter/catcher assessment prior to disturbance
	Construction and landscaping activities	CEMP – fire ant management plan	Upon discovery	No import or export of fire ants	Assessment of materials prior to importation; engagement of Biosecurity Queensland if fire ants observed
HERITAGE	Construction activities	Heritage Management Plan and CEMPs	Upon discovery	No loss of heritage values	Implementation of stop works procedure

OVERVIEW OF ENVIRONMENTAL INITIATIVES FROM THE LAST FIVE YEARS

At Brisbane Airport, maintaining long term environmental sustainability is a fundamental tenet of operating philosophy and intrinsically linked to the successful attainment of economic, operational and social objectives. The eight initiatives featured here represent the range and diversity of activities designed to meet those goals.

To date, Brisbane Airport Corporation's new runway project has successfully met in excess of eight hundred environmental approval conditions throughout the eight years of the construction program.

A range of proactive measures have seen Brisbane Airport Corporation's carbon emissions continue to decline since reaching a peak in 2013.

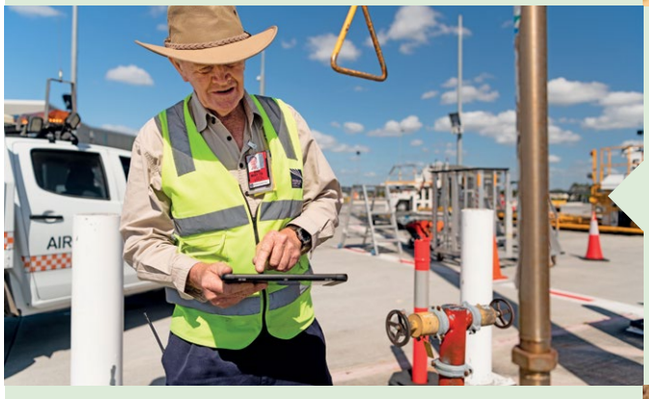
Projects include a combination of energy efficiency projects, onsite renewable energy generation, and carbon offsetting. As a result, airport growth has been effectively de-coupled from emissions growth.

Brisbane Airport's electric bus fleet commenced operations in 2018, reducing airport carbon emissions by 250 tonnes a year. At the time, Brisbane Airport's fleet was Queensland's first, and Australia's largest, electric bus fleet, with 11 electric buses in operation.

Brisbane's new runway will be the first runway system in the Southern hemisphere and Asia Pacific region with a 100 per cent fully addressable LED lighting solution on all CAT I Runway, Approach and Taxiway systems, saving 460 tonnes of carbon emissions each year, in comparison to a traditional incandescent system. Addressable airport lighting allows each individual airport navigation light to be remotely controlled and monitored for correct operation, maximising pilot safety.

A food recovery program introduced in 2014 has resulted in over 50 tonnes of food being redistributed to the community each year. This program is a voluntary initiative between OzHarvest, airport food catering companies and the Airport's Ambassador Program.

The installation of cardboard compactors at the Domestic Terminal in 2017 saw the volumes of recycled cardboard double from 150 tonnes per year to 300 tonnes. This saves waste to landfill and the reduces consumption of natural resources.



The installation of a new recycled water pipeline built during Brisbane's new runway project is estimated to have saved 1.125 gigalitres of potable water, the equivalent of 500 Olympic-sized swimming pools. This water was used in the concrete batching and landscaping of the new runway system and airfield.

Over 100 isolated archaeological finds were discovered during the construction of Brisbane's new runway and kept In Country within the protected Brisbane Airport Biodiversity Zone, in consultation with Traditional Owners.

AREAS OF FOCUS

Brisbane Airport Corporation's commitment to environmental responsibility includes specific and detailed plans of action across twelve separate categories:

01. CLEANER AIR

Reducing the sources of ground-based air quality emissions and supporting sustainable transport and active living options.

02. BEST PRACTICE WATER QUALITY MANAGEMENT

Protecting surrounding waterways and ecosystems from adverse stormwater run-off and pollution.

03. SOIL AND GROUNDWATER MANAGEMENT

Driving improvements in soil and groundwater quality through research, tenant engagement and risk management.

04. MINIMISING GROUND-BASED NOISE

Ensuring sources of ground-based noise have minimal impact on airport workers, the local community and the environment through appropriate planning, design and operations.

05. SUSTAINABLE DEVELOPMENT

Minimising the impact on the environment, local community and airport workers from airport development through responsible planning, construction and procurement practices.

06. REDUCING GREENHOUSE GAS EMISSIONS

Reducing carbon emissions and taking steps to manage related issues across all airport operations.

07. CLIMATE CHANGE ADAPTATION

Addressing climate change impacts across all levels of normal airport operations and development activities.

08. WATER CONSERVATION

Ensuring the reduction and efficient use of potable water and increased use of recycled water on airport.

09. REDUCING WASTE

Reducing waste to landfill by encouraging recycling and the reuse of resources.

10. PROTECTING BIODIVERSITY

Maintaining the airport's biodiversity values and contributing to Brisbane's biodiversity.

11. PRESERVING AND PROMOTING OUR HERITAGE

Ensuring that the airport's heritage values are maintained and promoted.

12. TENANT AND CONTRACTOR OBLIGATIONS

Ensuring airport tenants and contractors are aware of their obligations to develop and implement Operational Environment Management Plans.

AREAS OF FOCUS

01. CLEANER AIR

ACHIEVEMENTS IN AIR QUALITY MANAGEMENT 2014–2019

- 11 electric buses commenced operation on airport in 2018, resulting in zero tail pipe emissions.
- In phasing out of the use of diesel equipment, in 2018 three electric charging stations were installed on the International Terminal apron.
- New cycle paths and pedestrian links.
- Air quality monitoring was undertaken in 2018, as a result of aircaft auxilary power usage on aircraft bays at the International terminal.
- Odour investigations undertaken on all sewer pump stations in 2017, prompting the installation of filter systems and permanent odour monitoring.
- An ultrafine particle study was undertaken in 2018 to understand concentrations and particle sizes emanating from terminal aprons and baggage make-up areas.
- In 2017, fuel tank dip recording procedures were amended to improve the accuracy of emergency generator emissions calculations.
- Two electric cars added to airport fleet.

KEY OBJECTIVES 2020-2025

- Reducing the sources of ground-based air quality emissions.
- Supporting sustainable transport and active living options.

CLEANER AIR QUALITY MANAGEMENT

Understanding and mitigating the sources and concentrations of air quality emissions is crucial to local air quality management. At Brisbane Airport, emission control has largely been undertaken through oversight of construction activities, but advances in electrification of vehicles and equipment will also become a contributor to improvements in air quality.

The airport is surrounded by heavy industry including the Port of Brisbane, a Viva Energy fuel storage and distribution terminal at Pinkenba, the Caltex oil refinery and and an Advanced Wastewater Treatment Plant at Luggage Point. Major roadways also border the site, impacting the local air quality.

Within the boundary, local air quality impacts associated with ground-based operations are regulated by the Airports (Environment Protection) Regulations 1997. Air quality associated with emissions from aircraft (excluding aircraft ground-running and idling on aprons) is regulated under the Air Navigation (Aircraft Engine Emissions) Regulations 1995.

Air quality outside the boundary is regulated by the Queensland Government in accordance with the National Environment Protection (Ambient Air Quality) Measure with with the nearest air quality monitoring stations located in the Wynnum area (including Lytton).

Air quality monitoring parameters include meteorological data, nitrogen oxides (one site only), sulfur dioxide, and particulate matter (PM10 and PM2.5).

Results of regional air quality monitoring are reviewed annually by Brisbane Airport with assessment undertaken in accordance with the regulations. There has been no recent exceedences of Schedule 1 of the AEPR limits from nearby monitoring stations.

CAUSES OF ADVERSE AIR QUALITY

Operational activities that can generate adverse air quality:

- Aircraft operations (including ground-based movement, refuelling and electricity generation).
- Industrial and commercial processes, including construction and demolition.
- Plant, equipment and vehicles (including storage tanks for fuel and chemicals).
- Aircraft and airfield maintenance (including painting, cleaning and fire training exercises).

The potential environmental impacts of adverse air quality include the release of air pollutants, greenhouse gas emissions and ozone depleting substances, dust and smoke generation, reducing visibility, smothering ecological systems and infrastructure and offensive odours.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

- Increased use of electrical charging facilities.
- Regular compliance inspections, including mandatory CEMP's for operation and construction.
- Project specific CEMP's to include erosion and sediment control measures as well as dust suppression techniques and earthworks stabilisation.
- Increased dust monitoring on large earthworks projects
- The requirement for odour management plans for relevant development projects, including the modelling of potential odour producing activities.

ACTIVE MEASURES FOR CLEANER AIR
Ensure all dust management measures and techniques identified within Construction Environmental Management plans are implemented.
Odour dispersion modelling will be undertaken for new developments with the potential to produce odour
Investigate odour and air quality emissions from aircraft auxiliary power units for higher risk areas.
Support the phase out of diesel vehicles and equipment at the airport.
Encourage active living concepts at the airport.

ACTION PLAN FOR CLEANER AIR	TIMEFRAME
Investigate the installation of a fixed air quality monitoring station at the airport.	2023

AREAS OF FOCUS

02. BEST PRACTICE WATER QUALITY MANAGEMENT

ACHIEVEMENTS IN WATER QUALITY MANAGEMENT 2014–2019

- In the lifetime of the construction of the new runway to date, Brisbane Airport Corporation has achieved full compliance with all water quality limits including the dredge site at Middle Banks, Moreton Bay.
- The construction of the runway to date has been delivered with no environmental issues raised.
- Across all airport construction activities, best practice erosion and sediment control techniques have been implemented and are regularly monitored under the Environmental Strategy as part of normal operating processes.
- Airport construction activities have also been subject to increased rain monitoring activities.
- Automatic water samplers have been installed at the International and Domestic Terminal aprons.
- To improve trade waste water quality, increased monitoring and improvement works have been implemented since 2014 in Airport North.

KEY OBJECTIVES 2020-2025

- **To achieve best practice in water quality management by protecting surrounding waterways and ecosystems from adverse stormwater runoff and pollution.**

MANAGING WATER QUALITY

Brisbane Airport is located beside Moreton Bay, a wetland of international importance. Moreton Bay is one of the largest estuarine bays in Australia and sits in an 'overlap zone' where both tropical and temperate species occur.

It supports extensive intertidal areas of seagrass, mangroves and saltmarsh that provide vital habitat for waterbirds, including significant populations of migratory shorebirds.

Brisbane Airport is situated in the lower Brisbane River and Kedron Brook catchments. Both catchments have been highly modified due to urban and commercial development although ultimately discharge into Moreton Bay.

CAUSES OF ADVERSE WATER QUALITY

Activities at Brisbane Airport which have the potential to adversely impact the water quality of surrounding waterways and ecosystems include:

- Construction and bulk earthworks activities.
- Run-off and pulse loads from an increase of impermeable surfaces associated with airport development.
- Spills from maintenance and refuelling activities and operation of ground support equipment.
- Drainage maintenance works.
- Landscape maintenance activities.
- Fire training exercises.
- Aircraft hangar firefighting foam discharges.
- Sewer and trade waste discharges.

The ongoing management of water quality at the source is vital to helping improve catchments flowing into Moreton Bay.

POTENTIAL ENVIRONMENTAL IMPACTS

Potential impacts associated with stormwater runoff include:

- A reduction in water quality including sedimentation of benthic environments.
- Eutrophication of water bodies from increased nutrient availability.
- Chemical pollution impacting aquatic organisms and beneficial reuse of biosolids from sewage treatment plants.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

Potential environmental impacts are managed through:

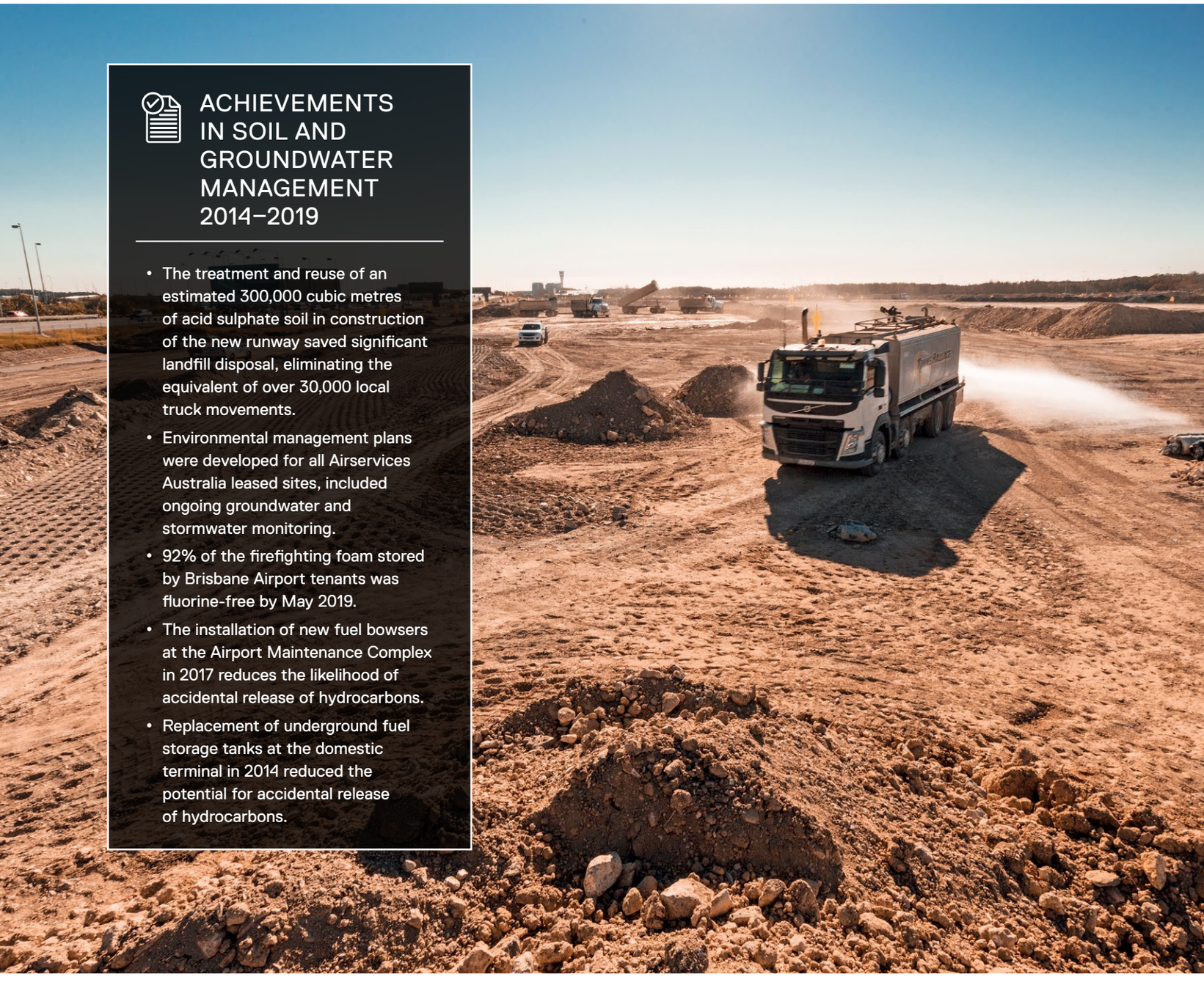
- Implementation of the Stormwater Quality Management Strategy (including pollutant modelling) for new developments.
- Implementation of the Water Quality Monitoring Program.
- Implementation of best practice erosion and sediment control guidelines and project-specific inspections.
- Implementation of the drain maintenance guidelines.
- Establishment of an airport-wide site register for hazardous chemicals (including dangerous goods storage).
- Implementation of the Environmental Incidents and Emergency Response Procedure.
- Maintenance of water sensitive urban design infrastructure and pollution control devices.
- Monitoring of trade waste discharges from both Brisbane Airport and tenant controlled facilities.
- Implementation of trade waste environmental improvement plans if required.

ACTIVE MEASURES FOR WATER QUALITY MANAGEMENT
Implement the Stormwater Quality Management Strategy and incorporate water sensitive urban design principles for new projects.
Implement best practice erosion and sediment controls during airport construction activities.
Seasonally, and as required, Brisbane Airport will implement the Water Quality Monitoring Program.

ACTION PLAN FOR WATER QUALITY MANAGEMENT	TIMEFRAME
Review effectiveness of automatic water sampling locations.	2020
Review existing trade waste obligations and monitoring requirements on airport.	2020
Review Water Quality Monitoring Program.	2022

AREAS OF FOCUS

03. SOIL & GROUNDWATER MANAGEMENT



ACHIEVEMENTS IN SOIL AND GROUNDWATER MANAGEMENT 2014–2019

- The treatment and reuse of an estimated 300,000 cubic metres of acid sulphate soil in construction of the new runway saved significant landfill disposal, eliminating the equivalent of over 30,000 local truck movements.
- Environmental management plans were developed for all Airservices Australia leased sites, included ongoing groundwater and stormwater monitoring.
- 92% of the firefighting foam stored by Brisbane Airport tenants was fluorine-free by May 2019.
- The installation of new fuel bowsers at the Airport Maintenance Complex in 2017 reduces the likelihood of accidental release of hydrocarbons.
- Replacement of underground fuel storage tanks at the domestic terminal in 2014 reduced the potential for accidental release of hydrocarbons.

KEY OBJECTIVES 2020-2025

- Manage known contaminated sites in accordance with relevant National and State guidelines.
- Ensure all maintenance and construction activities undertake risk assessments consistent to the requirements of national guidelines
- To minimise the risk of soil and groundwater pollution through adherence to Brisbane Airport's Importation of Fill and Recycled Materials Policy and incorporation of best practice design principles.

MANAGEMENT APPROACH

Brisbane Airport Corporation takes its general environmental duty of care seriously ensuring that all soil and groundwater investigations are meaningful through strict adherence to national guidance for the assessment of contamination. The duty of care also extends to the investment of time and resources to understand emerging contamination issues.

Maintenance and construction activities are required to comply with relevant national guidelines when needed, e.g. the PFAS National Environmental Management Plan (NEMP). NB: PFAS refers to a group of manufactured chemicals known as per-and poly-fluoroalkyl substances, explained in more detail in this chapter.

The Corporation recognises the benefits of responsible soil management and uses comprehensive planning, monitoring and management tools to avoid soil degradation, contamination or loss.

Soil management on Brisbane Airport has three main areas of focus, potential acid sulphate soils (PASS), spills, and historically contaminated sites.

CAUSES OF CONTAMINATION

The airport is situated on a low-lying coastal plain, and PASS conditions exist across the airport site. Actual acid sulphate soils (AASS) occur when sulphide in PASS is exposed to oxygen in the atmosphere. Consequently, it is imperative that PASS/AASS conditions are identified at the preliminary stages of a development and managed accordingly.

In the daily operation of the airport, soil and groundwater pollution is mainly attributed to fuel and oil leaks or spills. A Contaminated Site Register (see next page) is maintained as an operational tool for the management of all suspected, confirmed and potentially contaminated sites on airport.

Sources of historical pollution at Brisbane Airport are varied with most relating to activities such as waste disposal, rubbish dumping, old underground fuel storage tanks, fire training activities or spills involving aqueous film forming foam (AFFF) and the burial of materials containing asbestos, which occurred prior to the development of the airport.

POTENTIAL ENVIRONMENTAL IMPACTS

- Migration of existing pollution through rainwater, groundwater and significant storm events.
- Pollution from leaks, spills and associated stormwater run-off.
- Soil and sediment erosion from construction activities.
- Construction related disturbance of acid sulphate soil materials.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

- Tenants are required to develop OEMPs for their activities
- Activities are undertaken in accordance with risk assessments
- Management of the Contaminated Site Register and site-specific management plans.
- Training for emergency spill response.

PFAS AND FIREFIGHTING FOAM

A contamination issue being managed on Brisbane Airport relates to a range of manufactured chemicals known as per- and poly-fluoroalkyl substances (PFAS), in particular, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

The predominant known source of PFAS on Brisbane Airport is historic use of certain firefighting foams used by firefighting service providers during fire training and fire suppression exercises.

Other sources of PFAS on airport include fire suppression systems in airline operated aircraft hangars and fuel tank farms as well as self-contained portable hand-held fire extinguishers, and sites which have used/maintained such equipment.

Due to the widespread use of PFAS within a number of industrial, commercial and residential applications, there is potential that PFAS found on the airport site are from other sources, including those originating from off-site.

As PFAS is considered an emerging contaminant, Brisbane Airport's strategy will continue to evolve as relevant government guidelines continue to evolve.

AREAS OF FOCUS

OBLIGATIONS OF BRISBANE AIRPORT TENANTS

The Queensland Department of Environment and Science (DES) developed an Operational Policy for the Environmental Management of Fire Fighting Foams (2016) which establishes a framework for the environmental assessment of firefighting foam use in Queensland.

Brisbane Airport Corporation has determined, based on currently available evidence and consistent with the DES Operational Policy, that airport tenants must only use fluorine free firefighting foams at Brisbane Airport and in relation to those tenants with existing firefighting foam systems containing chemicals persistent in the environment long-term (e.g. PFAS), requires that they take steps to promptly transition to a fluorine-free system.

Full details of the obligations of tenants at Brisbane Airport are detailed at the end of this chapter.

PROACTIVE MEASURES AT BRISBANE AIRPORT

From an operational and environmental perspective, Brisbane Airport Corporation has a vision for the airport to be PFAS product free.

As such proactive measures taken to not only identify and mitigate PFAS contamination present as a result of tenant activities, but also to actively encourage all Brisbane Airport tenants to phase out their use of PFAS products include the following activities;

- Determining where pollution is likely to be present.
- Working to identify the source/polluter.
- Developing human health and ecological risk assessments, conceptual site models and cost-benefit analyses consistent with the National Environmental Protection Measure and the PFAS National Environmental Management Plan on a site-specific basis for relevant construction and maintenance projects.
- Engaging with Brisbane Airport tenants to reduce and remove known PFAS containing products such as firefighting foams containing PFAS from the airport.
- Developing improvement plans to monitor, mitigate and remediate existing contamination in airport infrastructure resulting from historical use of PFAS products if needed.

CONTAMINATED SITE REGISTER

Brisbane Airport manages the contaminated sites listed in the Contaminated Site Register on a risk basis.

The Register uses a tiered risk approach to identify known existing contaminated sites as being of either low, moderate or high risk.

The risk assessment in the Contaminated Site Register considers both ecological and human health risks.

The Contaminated Site Register (shown below) is regularly reviewed to address new legislation and new guidelines and to monitor emerging contaminants, with new contaminated sites added to the register as required.

Changes to the Contaminated Site Register are reflected in any site management plans for individual sites.

CONTAMINATED SITE REGISTER

Potential Higher Risk Sites

ACTIVE MEASURES FOR SOIL AND GROUNDWATER MANAGEMENT
Manage known contaminated sites as required by relevant guidelines/legislation.
Annually review Construction Environmental Management Plan Guidelines to ensure industry best practice and consistency with the PFAS National Environmental Management Plan.
As required, undertake PFAS risk assessments consistent to the requirements of the PFAS National Environmental Management Plan for all relevant maintenance and construction activities.
Ensure the importation of fill and recycled materials adheres to existing policy.

ACTION PLAN FOR SOIL AND GROUNDWATER MANAGEMENT	TIMEFRAME
Develop an inventory of PFAS and other persistent organic pollutants used by tenants to inform an airport-wide phase out plan.	2020
Finalise the Contaminated Site Register review consistent with current guidelines/legislation.	2020
Develop an airport-wide PFAS management plan in consultation with DIRDC in accordance with the PFAS NEMP	2020
Phase out end of life underground fuel storage tanks for Brisbane Airport and tenants.	2025

AREAS OF FOCUS

04. MINIMISING GROUND -BASED NOISE

ACHIEVEMENTS IN MINIMISING GROUND-BASED NOISE 2014–2019

Achievements in the five years since the last Master Plan include:

- Brisbane Airport Corporation embarked on a continuous program of noise monitoring including ongoing measurement of significant construction projects across the airport site to monitor and report on all potential future noise impacts.
- A significant achievement was that as a result of the deployment of this program, combined with the systematic implementation of a series of dedicated measures to limit ground based noise during the period, no complaints were received by the airport from local communities or residents, regarding noise from construction projects.
- In addition, detailed review of engine ground-run approvals and noise complaints allowed the removal of 'idle' testing from the ground-running procedure in 2018 due to an absence of stakeholder, industry or community complaints.

KEY OBJECTIVES 2020-2025

- To manage ground-based noise emissions to ensure low to nil impact on airport tenants, the local community and environment.

APPROACH TO NOISE MANAGEMENT

Good planning and inter-government cooperation means Brisbane Airport enjoys the best aircraft noise buffer zone in Australia, enabling the airport to operate 24 hours a day.

Under the Airports Act and AEPR, issues related to ground-based noise are the responsibilities of the airport operator.

Noise generated by aircraft while flying, landing, taking off or taxiing is governed by the Air Services Act 1995, Air Navigation Act 1920, and Air Navigation (Aircraft Engine Emissions) Regulations 1995.

POTENTIAL ENVIRONMENTAL IMPACTS

While the majority of noise issues relate to aircraft in the air, ground-based noise, if unmanaged, can potentially have an impact on the local community, airport tenants and the environment.

Examples of on airport activities which contribute to the level of ground-based noise include:

- Rail and road traffic.
- Construction and demolition activities.
- Operation of plant and machinery.
- Operation of alarms or warning systems.
- Performance track operations and major events.
- Ground-based aircraft operations which can include;
  - Operation of auxiliary power units
  - Ground based aircraft engine running,
  - Test-bed running of aircraft engines on ground.

Localised impacts from ground-based noise can include:

- Nuisance complaints from local community and businesses
- Damage to local ecology due to engine runs over blast pressure.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

All new developments on Brisbane Airport are assessed to determine whether noise sensitive design and attenuation measures are required.

Complaints associated with engine ground-running or complaints from Auto Mall performance track operations and major events will be investigated in a timely manner.

Noise generated from aircraft ground-running is managed in accordance with the Brisbane Airport Aerodrome Manual.

Noise generated from operation of the Auto Mall performance track and major events will be managed in accordance with the Auto Mall Operational Noise Management Plan.

ACTIVE MEASURES FOR MINIMISING GROUND-BASED NOISE
Monitor and mitigate noise impacts from higher risk construction projects.
Timely investigation of any complaint associated with engine ground-running or other ground noise generating activities.
Review engine ground-running procedure with regards to received complaints.

ACTION PLAN FOR MINIMISING GROUND-BASED NOISE	TIMEFRAME
Implement the Auto Mall Operational Noise Management Plan 2021.	2021
Annual ground-based noise monitoring in accordance with the Automall Operational Noise Management Plan.	Annually

AREAS OF FOCUS

05. SUSTAINABLE DEVELOPMENT

ACHIEVEMENTS IN SUSTAINABLE DEVELOPMENT 2014–2019

- In addition to the new runway, Brisbane Airport also successfully managed the environmental aspects of over $500 million worth of additional construction projects.
- Brisbane Airport was awarded a 4-star (best practice) rating under the Green Building Council of Australia Communities PILOT rating tool for sustainable precinct planning.
- All vegetation cleared during construction of the new runway and Auto Mall was mulched and turned into topsoil to meet the majority of their landscaping requirements.
- The Airport Industrial Park and Auto Mall bulk earthworks project sites used 20,000 cubic metres of recycled concrete saving the equivalent amount in raw materials that would have been needed in construction.
- Approximately 110,000 cubic metres of acid sulfate soils was treated and re-used on the Auto Mall project.
- The Hotel taxiway upgrade project deployed an innovative asphalt product to reduce the amount of subgrade material required in the asphalt.

KEY OBJECTIVES 2020-2025

- **Consider environmental, economic and social costs and benefits in the development and use of resources, products and services.**
- **Promote responsible stewardship to ensure equitable use of natural and environmental resources to meet essential needs of present and future operations.**

SUSTAINABLE DESIGN PRINCIPLES

Brisbane Airport is one of South-East Queensland's largest single-owner sites with approximately 500 hectares of land for development.

Ecologically sustainable design considerations are embedded through all design and construction projects with the goal of building the Brisbane Airport of the future as a place that continues to reflect the best attributes of our city, state and country.

POTENTIAL ENVIRONMENTAL IMPACTS

Geological conditions at Brisbane Airport can require the importation of fill materials to raise the land to a suitable height for development. Some areas of the airport require up to several metres of fill, which can have a significant impact on local natural resources.

Potential impacts from unsustainable development include:

- Vegetation loss and increased land degradation due to increased need for fill material;
- Increased vehicle movements increasing vehicle emissions;
- Unintentional release of contamination from polluted soils;
- Decline in water quality in urban catchments from increasing sedimentation and nutrient runoff.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

Initiatives in sustainable design include:

- Membership of the Infrastructure Sustainability Council of Australia (ISCA) to advance sustainability outcomes for Brisbane Airport infrastructure projects.
- Developing and implementing ecologically sustainable development guidelines to ensure buildings and other projects are constructed sustainably. This includes initiatives that aim to:
  - Maximise effective use of electricity, gas and water, Reduce local ecological impacts of development;
  - Reduce emissions including greenhouse gases and stormwater run-off;
  - Ensure future impacts from climate change are mitigated through design.
- Building above forecast sea level rise heights to ensure resilience of infrastructure over time.
- Assessing projects for potential registration with sustainability rating schemes.
- Sourcing fill material from existing projects within the local area reducing the cost and the impact construction projects have on the environment.

ACTIVE MEASURES FOR SUSTAINABLE DEVELOPMENT
Investigate opportunities for construction projects to incorporate ecologically sustainable design and construction measures.
Annually review the implementation of ecological sustainable development guidelines to ensure buildings and other projects are constructed sustainably.
Support the use of recycled materials in construction projects.
Investigate the opportunities for sustainable procurement within development projects.
Investigate the feasibility of achieving sustainability ratings for projects through sustainability rating schemes.

ACTION PLAN FOR SUSTAINABLE DEVELOPMENT	TIMEFRAME
Investigate the feasibility of upgrading to a 5-star rating under the GBCA Communities rating tool for sustainable precinct design.	2020
Review sustainability performance of airport buildings and terminals against sustainability rating schemes.	2022

AREAS OF FOCUS

06. REDUCING GREENHOUSE GAS EMISSIONS

ACHIEVEMENTS IN REDUCING GREENHOUSE GAS EMISSIONS 2014–2019

- Brisbane Airport achieved carbon neutral growth from 2013 onwards through a combination of energy efficiency projects, onsite renewable energy generation and purchase of verified carbon offsets if needed.
- Maintained Level 3 (Optimisation) under the Airports Council International Airport Carbon Accreditation Program since 2015.
- Four electric vehicle charging stations installed plus two electric vehicles added to the airport car fleet.
- The new runway will be the first in the southern hemisphere with a 100% fully addressable LED lighting solution saving 460 tonnes of CO2/year.
- An electric bus fleet commenced operation in 2018, enabling a reduction of 250 tonnes of carbon emissions each year.
- Supported a Virgin Australia initiative to trial the importation of sustainable aviation fuels into Brisbane Airport's fuel hydrant installation system throughout 2018 and 2019.

KEY OBJECTIVES 2020-2025

- Mitigate the airport's energy demand through energy efficiency projects that reduce base load, and through the generation of alternative methods of electrical energy to reduce peak demand.
- Manage and reduce carbon emissions from airport operations and engage airport partners to reduce their carbon emissions.
- 25% reduction of 2017 carbon emissions by 2025 (BAC's scope 1 and 2 emissions).

IMPROVING ENERGY EFFICIENCY

Forecasts predict continued increases in energy demand. Understanding links between energy consumption and generation of greenhouse gases, energy efficiency management puts improving efficiency first with substitution of alternate energy supplies as appropriate.

94–98% of BAC's energy consumption is from scope 2 emissions. In 2015, BAC achieved Level 3 "Optimisation" in the Airports Council International Airport Carbon Accreditation program with engagement with airport stakeholders contributing to a reduction in emissions. 18 per cent of BAC's annual energy consumption is generated by solar photo-voltaic systems. An Energy Management Strategy developed in 2018 outlines the preferred mix of grid electricity and renewables to ensure energy security and quality while meeting emissions reduction commitments. An Emissions Reduction Strategy outlines a commitment to emission reduction through a low carbon sets a blueprint for continued improvement in performance.

POTENTIAL ENVIRONMENTAL IMPACTS

Activities contributing to the potential environmental impacts of energy consumption and carbon emissions include:

- Aircraft operations and operation of buildings and terminals;
- Operation of vehicle fleets, maintenance and ground support equipment;
- Back-up energy generators and refrigeration/air conditioning.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

Energy demand forecasting considers one and five year horizons to identify the optimal mix, and ensure energy security, between grid-based and on-site renewable energy. Measures to prevent, control or reduce environmental impacts include:

- Ongoing upgrades to energy efficient fittings;
- Effective asset management programmes;
- Encouraging use of fixed or mobile ground power;
- Compliance with the energy requirements of Section J in the Building Code of Australia;
- Installation of solar PV to reduce grid electricity usage.

SUSTAINABLE AVIATION FUELS

The largest source of carbon emissions come from the burning of fossil fuels in aircraft landing/take off cycles and aircraft auxiliary power units. Opportunities exist for progressing the supply of sustainable aviation fuels at Brisbane Airport given the airport's location and the access and proximity to the relevant supply chain.

Airlines can reduce fuel consumption by transitioning to newer, more efficient aircraft and further reduce their emissions from offtake agreements with sustainable aviation fuel suppliers. Brisbane Airport supports the supply and use of sustainable aviation fuels and encourages partners in their emission reduction efforts.

ACTIVE MEASURES FOR REDUCING GREENHOUSE GAS EMISSIONS
Identify tenant and retail opportunities for energy-saving measures and/or solar PV installation where eligible.
Support the production, supply and delivery of sustainable aviation fuels at Brisbane Airport.
Ongoing upgrades to energy efficient fittings.
Maintain Level 3 (Optimisation) Airport Carbon Accreditation under the Airports Council International program.
Maintain compliance monitoring and reporting for the National Greenhouse and Energy Report (NGER) and National Pollutant Inventory (NPI) and records of ozone depleting substances in use.

ACTION PLAN FOR REDUCING GREENHOUSE GAS EMISSIONS	TIMEFRAME
Review Brisbane Airport Corporation's emissions reduction targets.	2020, 2025
Review the Brisbane Airport emissions reduction strategy.	2023
Install up to 10MW of solar photo-voltaic panels on airport.	2025

AREAS OF FOCUS

07. CLIMATE CHANGE ADAPTATION

ACHIEVEMENTS IN CLIMATE CHANGE ADAPTATION 2014-2019

- Brisbane's new runway project was an early adopter in the incorporation of climate change adaptation measures in design and is frequently used as an infrastructure case study.
- Construction of the Moreton Bay seawall along the Brisbane Airport foreshore was undertaken in 2017 in order to protect airport infrastructure from the impacts of tidal storm surge.
- The 51 hectare Auto Mall development is another case study for climate change adaptation. The project adopted a value engineering approach to improve the project's viability whilst incorporating climate change adaptation measures to reduce the impact of forecast sea level rise.
- Maintenance of the tidal drainage system is undertaken as necessary to reduce risks of flooding during storm surge and high intensity rain events.
- A Landscape Setting Strategy details each precinct's landscaping requirements, reducing the impacts of the heat island effect.

KEY OBJECTIVES 2020-2025

- **Identify and assess the risks that a changing climate may pose to current and future developments at Brisbane Airport.**
- **Determine appropriate climate change adaptation planning responses to manage the risks.**

Brisbane Airport recognises that actions and decisions today need to account for the predicted impacts of climate change. A Climate Change Adaptation Plan (CCAP) details potential risks and impacts and outlines actions needed to develop resilience against these risks.

POTENTIAL ENVIRONMENTAL IMPACTS

Climate change adaptation planning at Brisbane Airport commenced in the 2000's, largely addressing sea level rise. The CCAP, updated since the 2014 Master Plan addresses all significant climate stressors and impacts. The latest version incorporates the Intergovernmental Panel on Climate Change (IPCC) Assessment Report 5 (AR5) and Special Report (SR15) recommendations and CSIRO and Bureau of Meteorology 2016 observations.

Emissions scenarios and their impacts on climate considered in the modelling are examples of a 'low' representative concentration pathway (RCP 4.5) and 'high' (RCP 8.5) case in the short term (2030) and long term (2090).

The 'low' case represents the pathway that current global agreements appear to be capable of achieving, whilst the 'high' case is based on business as usual. The more extreme scenarios are not considered relevant at this stage, although projections may be included where relevant for comparison.

a) RCP 4.5 – Second lowest emissions scenario <3 degrees Celsius above pre-industrial global mean temperatures by 2100.

b) RCP 8.5 – High emissions scenario and >4 degrees Celsius above pre-industrial global mean temperatures by 2100.

At Brisbane Airport, both scenarios are forecast to result in the following physical risks and impacts, with various levels of severity.

Precipitation change
Airfield flooding, ground subsidence, reduction in airport throughput, inundation of underground infrastructure, inundation of ground transport access, loss of local utilities to airport surfaces, increased cooling loads, pressure on utilities providers (power and water), limitations for freight capacity.

Changes in wind
Flight paths, route extensions due to convective weather, jet stream can increase en-route turbulence, changes to distribution of noise impact to surrounding areas.

Sea-level rise
Loss of capacity, infrastructure and ground transport access.

Extreme events
Disruption to operations, route extensions, disruption to ground transport access and supply of utilities. Specifically, potential impacts could include increased natural resource consumption, loss of flora and fauna, increased fire hazard or changes to aircraft noise impacts.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

Actions taken to reduce the impact of climate change include: Adaptation measures incorporated into new infrastructure and precinct planning design with the application of minimum design levels for resilience to sea level rise and storm surge.

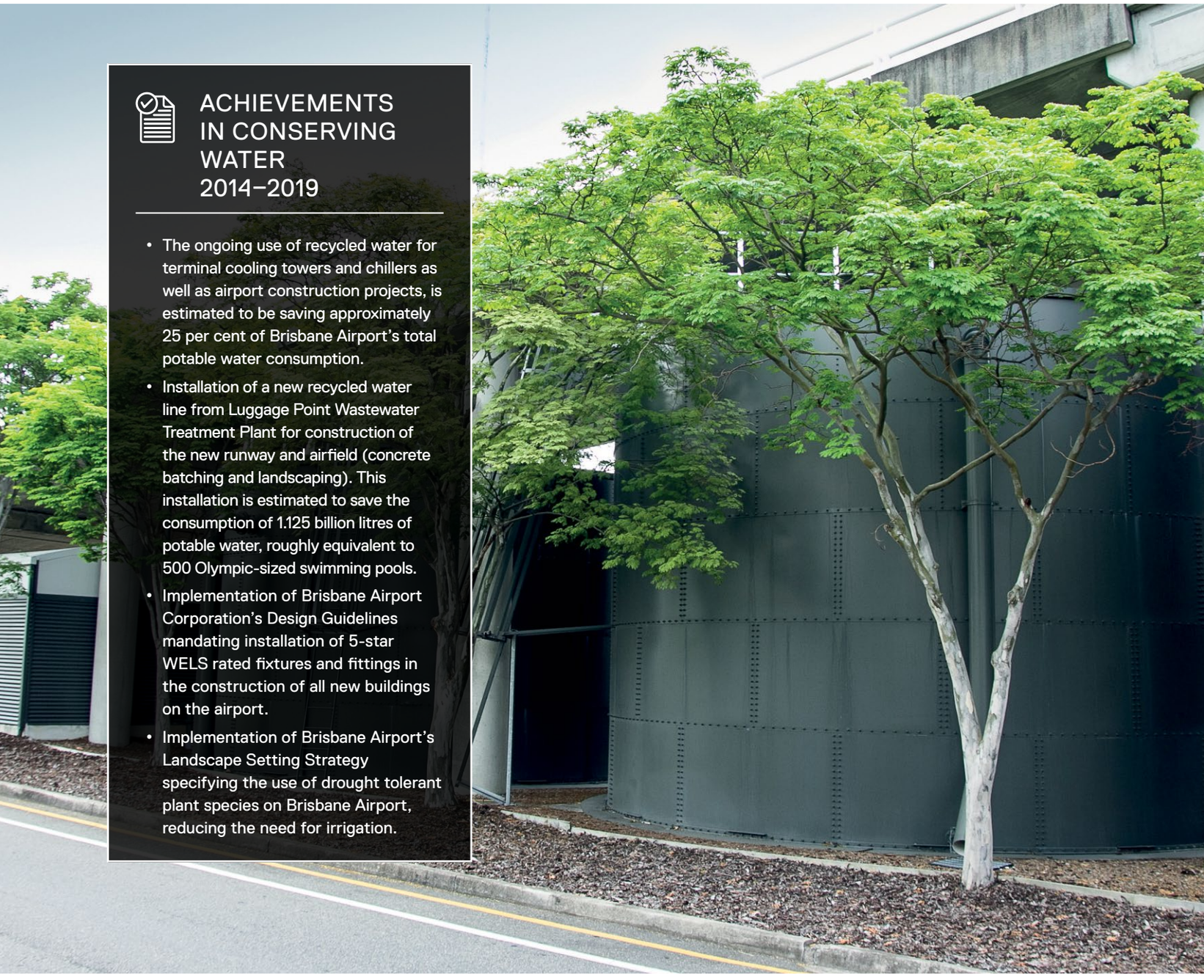
Working with airport operators to develop efficient and appropriate management plans for airside operators to action in severe weather events, including a technical standards review to ensure materials and designs consider future environmental factors.

ACTIVE MEASURES FOR CLIMATE CHANGE ADAPTATION
Ensure planning and design incorporates the impacts of climate change e.g. minimum design levels for sea level rise and storm surge.
Ensure airside operators develop efficient management plans for severe weather events.

ACTION PLAN FOR CLIMATE CHANGE ADAPTATION	TIMEFRAME
Identify potential climate change risks and opportunities under 1.5 and 2 degree warming scenarios.	2020
Review the Brisbane Airport Climate Change Adaptation Plan against the 6th Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC).	2022
Implement actions to reduce high risk impacts outlined in the Climate Change Adaptation Plan.	2023

AREAS OF FOCUS

08. WATER CONSERVATION



ACHIEVEMENTS IN CONSERVING WATER 2014–2019

- The ongoing use of recycled water for terminal cooling towers and chillers as well as airport construction projects, is estimated to be saving approximately 25 per cent of Brisbane Airport's total potable water consumption.
- Installation of a new recycled water line from Luggage Point Wastewater Treatment Plant for construction of the new runway and airfield (concrete batching and landscaping). This installation is estimated to save the consumption of 1.125 billion litres of potable water, roughly equivalent to 500 Olympic-sized swimming pools.
- Implementation of Brisbane Airport Corporation's Design Guidelines mandating installation of 5-star WELS rated fixtures and fittings in the construction of all new buildings on the airport.
- Implementation of Brisbane Airport's Landscape Setting Strategy specifying the use of drought tolerant plant species on Brisbane Airport, reducing the need for irrigation.

KEY OBJECTIVES 2020-2025

- Ensuring the reduction and efficient use of potable water and increased use of recycled water on airport
- 50% of water used on airport to be sourced from recycled water by 2030.

WATER MANAGEMENT AT BRISBANE AIRPORT

From 2020, Brisbane Airport is forecast to be consuming more than 950 million litres of water a year. Policies to properly conserve and reduce excessive use of potable water are an organisational priority.

Brisbane Airport has both a potable water and recycled water network. The recycled water network consists of;

- Class A water sourced from Queensland Urban Utilities (QUU) Gibson Island Wastewater Treatment Plant, and
- Class A+ equivalent water sourced from the QUU Luggage Point Wastewater Treatment Plant.

Stormwater is also captured for on-site reuse.

POTENTIAL ENVIRONMENTAL IMPACTS

A high volumes of potable and recycled water is used by

- Cooling towers/chillers.
- Construction activities.
- Irrigation.
- Toilets and bathrooms.
- Cooking.
- Drinking fountains.

Environmental impacts include depletion of local natural resources, particularly during drought conditions.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

Water Efficiency in operations and construction.
Where recycled water cannot be substituted for potable water, efficient water use is essential.

Construction and design guidelines for buildings and other processes have been developed to ensure water is used efficiently.

Potable Water
Management of water consumption remains a priority at Brisbane Airport with a strong focus on the increased use of recycled water and ongoing investigation of new opportunities and technologies to reduce potable water consumption.

Where use of recycled water is not possible, building design and planning guidelines are implemented to ensure fixtures and fittings are of the highest water efficiency standard possible.

Recycled Water
Brisbane Airport benefits from the availability of recycled water from the local utilities supplier. In the mid-2000s, the airport installed infrastructure between Sugarmill Road and the Domestic Terminal to transport Class A water for irrigation and construction, with water then fed into a Nano-Filtration plant and treated for use in cooling towers.

Stormwater from the onsite lakes in Skygate was also connected to this network but discontinued due to operational inefficiencies to the Nano-Filtration plant.

In 2018, a new recycled water line from the Luggage Point Wastewater Treatment Plant was constructed with the primary purpose of providing water for the development of the new runway project.

Once completed it will be directed to the Domestic Terminal and International Terminal precincts, increasing the use of recycled water and reducing consumption of potable water.

It is envisaged that once this supply of recycled water is provided to the terminals, Brisbane Airport will decommission the Nano-Filtration plant.

ACTIVE MEASURES FOR CONSERVING WATER
Investigate the upgrade of existing, less efficient cooling towers/chillers, wherever feasible

ACTION PLAN FOR CONSERVING WATER	TIMEFRAME
Investigate the upgrade of existing, less efficient cooling towers/chillers, where feasible	2020
Investigate the expansion of the recycled water network to incorporate other areas of the airport.	2022
Review the Brisbane Airport Recycled Water Management Plan	2021
Extend the Class A+ recycled water pipeline to the Domestic Terminal for supply of Class A+ recycled water	2022
Review and update planning and design guidelines to ensure all latest water efficiency technology is considered	2023

AREAS OF FOCUS

09. REDUCING WASTE

ACHIEVEMENTS IN REDUCING WASTE 2014–2019

- The Brisbane Airport 2018 Zero Waste Strategy was developed to focus on reducing food waste and coffee cup waste with an increase in co-mingled recycling rates including glass and plastic bottles.
- Oz Harvest now undertakes daily collections from Airport caterers, collecting and redistributing quality excess food.Food donations have increased five-fold since 2014 and now represent more than 50,000 kilograms a year.
- 1,000 aerosols donated by international passengers unable to take them on board are redistributed to women's and homeless shelters every year.
- A new cardboard compactor saw a doubling in recycling volumes from 150 tonnes to 300 tonnes in 2017.
- Dedicated coffee cup bins installed in the International Terminal in 2017 prompt coffee drinkers to separate the lids, cups and liquids.

KEY OBJECTIVES 2020-2025

- Reducing waste to landfill by encouraging recycling and the reuse of resources.
- Supporting Government policies on sustainable waste management.
- Progress towards zero waste and circular economy operations.

WASTE MANAGEMENT RESPONSIBILITIES

Changing patterns of consumption and recycling practices and continued passenger growth will see a steady increase in waste, requiring active management. Food waste, take-away coffee cups, PET bottles and single use plastics are under the public spotlight due to the wide-reaching environmental impacts they are causing.

BAC has historically adopted a traditional waste management hierarchy focusing on resource conservation and prioritises practices from waste prevention to waste disposal.

In the 2017 Annual Sustainability Report, it committed to zero waste to landfill from its offices by 2025 and from all operations by 2030, encouraging a transition from a linear, waste hierarchy to a more circular, zero waste hierarchy.

The zero waste hierarchy was adopted to provide a more in-depth approach to the original waste management hierarchy. It provides a guide for businesses and individuals to move closer towards zero or minimal waste. Circular economy thinking and practices will be integral to the success of this goal.

BAC manages all waste generated in the terminals, Skygate Dining and Home and Life Centres, the Airport Service Centre, airport offices and maintenance areas.

Waste types generated and managed at Brisbane Airport Include: general waste, cardboard/paper for recycling, co-mingled recycling, quarantine waste, hazardous/regulated waste, trade waste, sharps/clinical waste, sanitary waste and construction and demolition waste.

POTENTIAL ENVIRONMENTAL IMPACTS

Activities at Brisbane Airport which generate solid, non hazardous waste include:

- Waste from aircraft cabins and quarantine.
- Waste from construction and demolition activities.
- Waste from retail, outlets, public areas and office activities.

Environmental impacts associated with waste include:

- Land degradation.
- Biodiversity loss.
- Air, surface and groundwater emissions.

BEST PRACTICE RESOURCE MANAGEMENT

Best practice resource management actions fall into three areas; Airport controlled areas; tenant controlled areas and public areas.In airport controlled areas, staff and contractors are provided with the information to ensure appropriate segregation and minimisation activities are undertaken.

For the Oz Harvest waste reduction programme, Airport Ambassadors help sort unused food from the Q Catering facility enabling almost 50 per cent of annual food donations. Waste and procurement guidelines are available for retail tenants, and contractors have waste targets clearly outlined in leases and other management documents. In public areas, Brisbane Airport promotes Queensland Government's waste initiatives and actively seeks ways for reducing waste streams and identifying circularity projects.

ACTIVE MEASURES FOR REDUCING WASTE
Improve recycling rates from BAC controlled areas and public areas.
Actively seek recycling and reuse opportunities that support the local community.
Identify additional food recovery sources for the OzHarvest food donation program across Brisbane Airport.

ACTION PLAN FOR REDUCING WASTE	TIMEFRAME
Investigate the implementation of circular economy principles in terminal operations.	2021
Engage with food and beverage retailers to manage and reduce back-of-house waste, particularly food waste.	2022
Investigate methods to reduce quarantine waste.	2023
Develop and implement initiatives to achieve zero waste to landfill from BAC offices.	2025

AREAS OF FOCUS

10. PROTECTING BIODIVERSITY

ACHIEVEMENTS IN PROTECTING BIODIVERSITY 2014–2019

- 10 hectares of purpose designed mangrove benches installed in the new runway drainage systems to enable natural colonisation by the Grey Mangrove, with vegetation cleared and mulched and made into topsoil for re-use, saving 23,000 truck movements.
- A $300,000 grant to the Nudgee Beach Environmental Education Centre enabled significant upgrades to their facilities.
- Seagrass coverage and density recovered in Middle Banks post sand dredging for the new runway.
- Terrestrial and aquatic fauna benchmarking surveys showed key biodiversity indicators on airport to be largely stable or improving.
- An annual woody weed control program has resulted in a full recovery in the relative abundance of Lewin's Rail onsite over time.
- A hive of native, stingless bees was established in the staff garden to raise awareness about the pollinators.

KEY OBJECTIVES 2020-2025

- To protect and maintain biodiversity values on the airport.
- To minimise habitat for wildlife species that pose a risk to aircraft operations.

MAINTAINING BIODIVERSITY VALUES

Environmentally Significant Areas (ESA) identified at Brisbane Airport in line with Airport Legislation, include

- Jubilee Creek/Serpentine Inlet ESA.
- Jackson's Creek ESA.
- Pinkenba ESA.
- Lewin's Rail ESA.

These areas are managed as part of a broader Airport Biodiversity Zone, comprising over 10 per cent of the 2,700 hectare site, designated in the 2009 Master Plan to maintain sites of high biodiversity conservation value. In addition, a 40 metre buffer zone occurs around key areas of the biodiversity zone to contain commercial development and conserve biodiversity features. A variety of terrestrial vertebrate species occur within or near the airport, with various degrees of conservation significance. BAC ensures that the management of airport biodiversity zone is at least consistent with the management of adjacent (off airport) conservation areas.

FLORA

Conservation values of vegetation communities at the airport are low overall, with man-made habitats (mown grasslands, casuarina plantations and landscaped areas) having the lowest conservation value. Areas of higher conservation value include mangrove and saltmarsh communities and intertidal sandflats adjacent to the foreshore. There are, however no plant species of conservation significance at Brisbane Airport.

Mangroves

With the exception of some remnant mangrove communities at Serpentine Creek Inlet and Jubilee Creek, mangroves on the airport are largely regrowth.

Consistent with other estuaries on the South-East Queensland coast, remnant and regenerating mangroves species at the airport are dominated by Grey Mangrove. (Avicennia marina)

Saltmarsh mudflats

Saltmarsh and saltpan communities occur adjacent to mangrove communities and other areas associated with a saline environment. Typical species include Salt Couch (Sporobolus virginicus), Sea Purslane (Sesuvium portulacastrum), Ruby Saltbush (Enchylaena tomentosa), and Seablite (Suaeda australis).

Phragmites wetlands / unmanaged grasslands

This vegetation community is dominated by the Common Reed (Phragmites australis), with a height of up to 2.5m. Other species include Juncus continuus, Fimbrisylis sp., Bunchy Sedge (Cyperus polystachyos) and pennywort (Centella asiatica), bindweed (Convolvulus erubescens) and kidney grass (Dichondra repens), with different height grasses/sedges including carpet grass (Axonopus fissifolius) and dianella (Dianella longolfolia)) and large grasses e.g. Brachiaria mutica, Bromus catharticus, Chloris gayana, and Holcus lanatus. Woody weeds are also present and are slashed periodically to maintain a wetland habitat.

Casuarina plantations

These plantations consist of a planted monoculture of Swamp Oak (Casuarina glauca) chosen for its relatively poor fauna habitat potential and ability to exist within saline soils. Plantation understorey varies from non-existent, to weed infested, with the extent of weed infestation dependent upon Swamp Oak maturity, soil type, and salt water inundation. Casuarina plantations are not representative of regrowth or remnant vegetation communities.

Mown grasslands

Regularly maintained mown grasslands surround the runway and taxiway systems with landscaped sections in built up areas.

VEGETATION COMMUNITIES

FAUNA

A variety of terrestrial vertebrate species occur within or near Brisbane Airport, with various degrees of conservation significance under international, Commonwealth, state and local levels.

Migratory species of significance include the 'Endangered' Eastern Curlew (Numenius madagascariensis) and Little Tern (Sternula albifrons); birds of prey such as the White-bellied Sea-eagle (Haliaeetus leucogaster) and Square-tailed Kite (Lophoictinia isura); wader birds such as the Black-necked Stork (Ephippiorhynchus asiaticus) and 'Endangered' Australasian Bittern (Botaurus poiciloptilus).

Species of local significance include the 'Least Concern' Lewin's Rail (Lewinia pectoralis), Eastern Grass Owl (Tyto capensis), King Quail (Coturnix chinensis) and Red-bellied Black-snake (Pseudechis porphyriacus). Terrestrial vertebrate species richness has been recorded as high as a total of 204 different species, comprising 8 amphibians, 19 reptiles, 151 birds and 26 mammals, exhibiting a relatively stable trend over time.

Birds

A large variety of forest-dependent bird species are present in the casuarina plantations due to woody weed encroachment providing a micro habitat layer. Silvereyes (Zosterops lateralis), Mangrove Gerygones (Gerygone levigaster), Grey Fantails (Rhipidura albiscapa), Rufous Whistlers (Pachycephala rufiventris) and Olive-backed Orioles (Oriolus sagittatus) are common and breed within the plantations. Bird species found in the Phragmites wetland/unmanaged grasslands include Tawny Grassbirds (Megalurus timoriensis), Golden-headed Cisticolas (Cisticola exilis), Chestnut-breasted Mannikins (Lonchura castaneothorax), Brown Quail (Coturnix ypsilophora) and Lewin's Rail.

The Eastern Grass Owl and King Quail have also been located. Grassland bird species exist in the mown grasslands of the airfields ranging from Richard's Pipits (Anthus novaeseelandiae) and Masked Lapwings (Vanellus miles) up to wader birds such as Cattle Egrets (Bubulcus ibis) and ibis, with birds of prey such as Nankeen Kestrels (Falco cenchroides), Brown Falcons (Falco subniger) and Whistling Kites (Haliastur sphenurus).

Mammals

Terrestrial mammals consist mainly of hares, foxes and black rats, however Northern Brown Bandicoots (Isoodon macrourus) and Australian Swamp Rats (Rattus lutreolus) are present, with flying foxes (including the 'Vulnerable' Grey-headed Flying Fox (Pteropus poliocephalus)) and microbats (e.g. the Southern Myotis (Myotis adversus)) transiting or foraging onsite. The 'Vulnerable' Australian Humpback Dolphin (Sousa sahulensis) has occasionally been recorded in the adjacent Kedron Brook Floodway.

Reptiles and amphibians

Reptiles of significance include the locally significant Red-bellied Black-snake and occasional recordings of the 'Vulnerable' Green Sea Turtle (Chelonia mydas) in tidal creeks. Other reptiles include Eastern Brown Snakes (Pseudonaja textilis), Marsh snakes (Hemiaspis signata), and small skinks such as Calyptotis scutirostrum and Robust skinks (Ctenotus robustus). Amphibians include Striped Rocket Frogs (Litoria nasuta), Striped Marsh Frogs (Limnodynastes peronii) and Cane Toads (Bufo marinus).

Finfish and benthic invertebrates

Finfish and benthic invertebrates occur within airport channels and wetlands. In general, finfish and invertebrates consist of species common to tidal drainages and foreshore habitats in the Moreton Bay region and comprise several species of prawn, crab and fish of commercial and recreational value, supporting habitats that contribute to fisheries production in the wider region. No 'threatened' species under Commonwealth or state legislation occur within or adjacent to the Brisbane Airport site.

MIGRATORY SHOREBIRDS

Migratory shorebirds using intertidal mudflats on a 3km-long stretch of northern boundary foreshore have been monitored from September to April. Annually, between 1,000 to 2,500 birds have been recorded including large numbers of three critically endangered species (Curlew Sandpiper (Calidris ferrugin), Great Knot (Calidris tenuirostris) and Eastern Curlew) and two endangered species (Red Knot (Calidris canutus) and Lesser Sandplover (Charadrius mongolus).

AVIATION WILDLIFE HAZARDS

Brisbane Airport is committed to ensuring the safety of aircraft. The Brisbane Airport Wildlife Hazard Management Plan defines the risk wildlife pose to air traffic, setting objectives, performance indicators and procedures for risk management.

Compliant with Civil Aviation Safety Regulations 1998, Manual of Standards Pt 139, Chapter 10.14, and Civil Aviation Safety Authority Advisory Circular 139-26 on Wildlife Hazard Management at Aerodromes, it aims to reduce the frequency and severity of strikes by focusing efforts on species and habitats constituting significant hazards to aircraft.

POTENTIAL ENVIRONMENTAL IMPACTS

Potential impacts on local biodiversity include;

- Loss of significant flora and fauna species.
- Reduced fauna diversity and abundance in local area,
- Increased sediment and nutrients into local waterways.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACT

The Biodiversity Management Strategy ensures appropriate management of the ESAs and Biodiversity Zone and aims to;

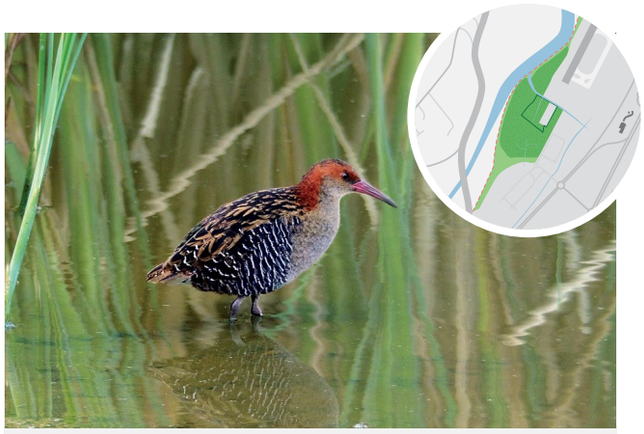
- Improve operational and construction activities that may be detrimental to species, ecological communities or ecological processes on airport land.
- Implement strategies to improve the airport's degraded biodiversity and ecological processes.
- Retain significant biodiversity values whilst simultaneously reducing the risk of aircraft wildlife strikes.

Ongoing commitments involving monitoring of key biodiversity values to ensure habitats remain viable over time, include;

- Lewin's Rail call playback to determine presence/absence and vegetation height/density assessments in the Lewin's Rail ESA to ensure habitat remains viable for the species.
- Mangrove and saltmarsh monitoring in all estuarine ESAs.
- Annual migratory shorebird monitoring at the airport foreshore and high tide roost sites.

ACTIVE MEASURES FOR PROTECTING BIODIVERSITY
Manage all pest and invasive exotic species incursions.
Engage with adjacent land owners regarding thr consistent management of on and off airport biodiversity zones.
Implement annual monitoring requirements in line with the Biodiversity Management Strategy.
Undertake woody weed removal in the Lewin's Rail Environmentally Significant Area.
Consider opportunities for new vegetation communities in new developments compatible with airport operations.

ACTION PLAN FOR PROTECTING BIODIVERSITY	TIMEFRAME
Review and update the Fire Management Plan to incorporate the operation of the new runway.	2021
Undertake review of airport-wide terrestrial fauna survey.	2024



1 LEWIN'S RAIL ESA

The Lewin's Rail ESA is an area of Phragmites wetland/ unmanaged grassland on the central-western boundary. It is a modified, ephemeral, palustrine (swamp) wetland in low lying coastal and estuarine floodplains.

Constructed runnels capture rainfall, supporting organisms dependent upon water for at least part of their life cycle. It provides habitat for four locally significant fauna species, (Lewin's Rail, Eastern Grass Owl, King Quail and Red-bellied Black-snake). Woody weed encroachment occurred following a 2007 wildfire, with annual removal undertaken to maintain the vegetation community and habitat values of the site.

2 JACKSON'S CREEK ESA

Jackson's Creek ESA is a 30 hectare area of remnant mangrove habitat surrounding Jackson's Creek, located on the north-western boundary .

This ESA contributes to the wider habitat value, productivity, and fisheries values of Moreton Bay. The Grey Mangrove is dominant, however the River Mangrove (Aegicera corniculatum) and Yellow Mangrove (Ceriops tagal) also occur in dense stands, with saltmarsh mudflats on areas of higher ground.

3 PINKENBA ESA

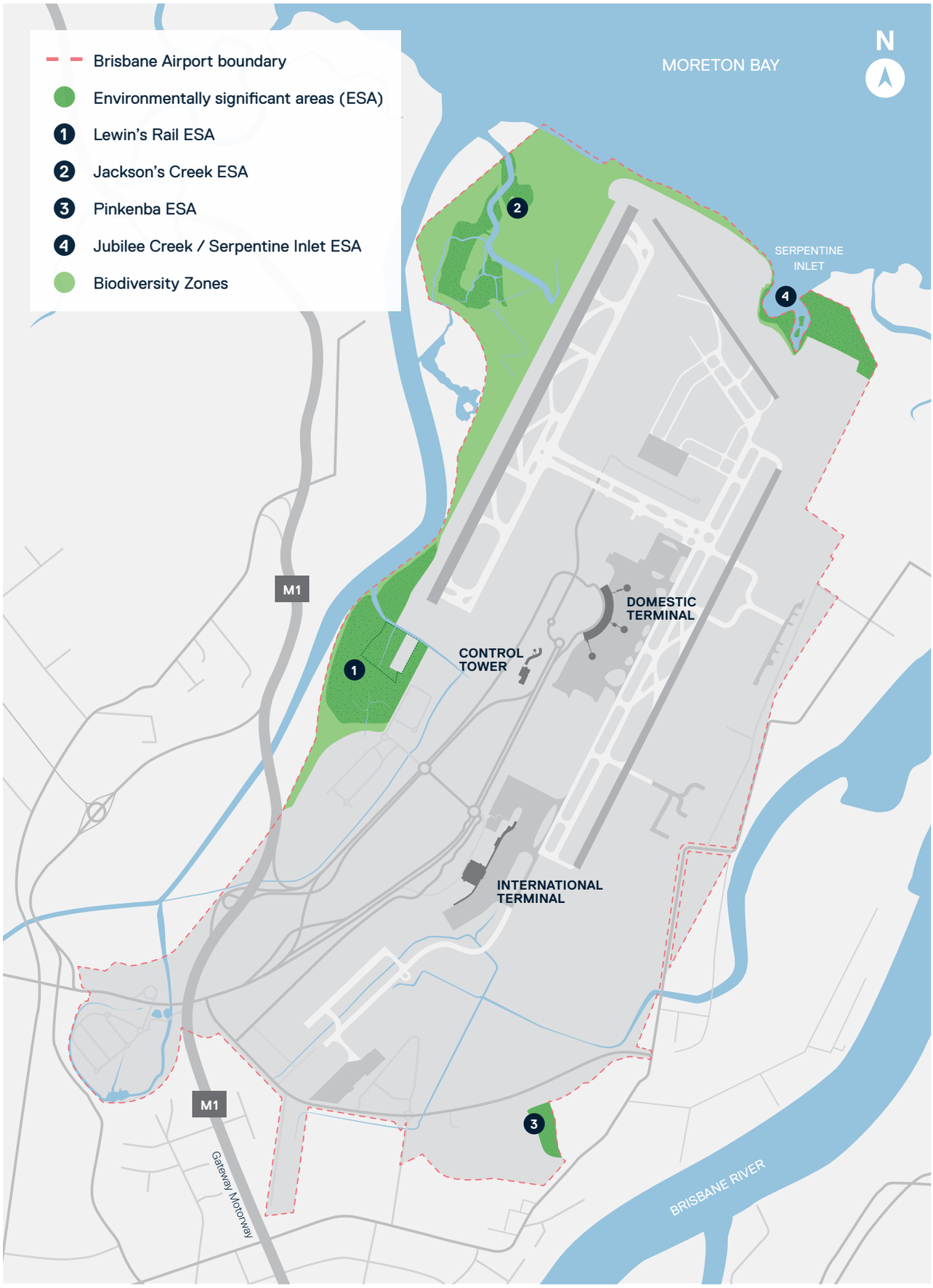
Pinkenba ESA is a 5 hectare area of remnant mangrove habitat located on the western boundary of the Pinkenba community, forming part of the original floodplain of Boggy Creek. Saltmarsh communities are present within and adjacent to the ESA with the Grey Mangrove dominating the site.

While the ESA contains well developed and vigorous mangrove forest, there was also a large area of mangrove dieback in the north-western portion of the ESA that has since been rectified through drainage maintenance work.

4 JUBILEE CREEK / SERPENTINE INLET ESA

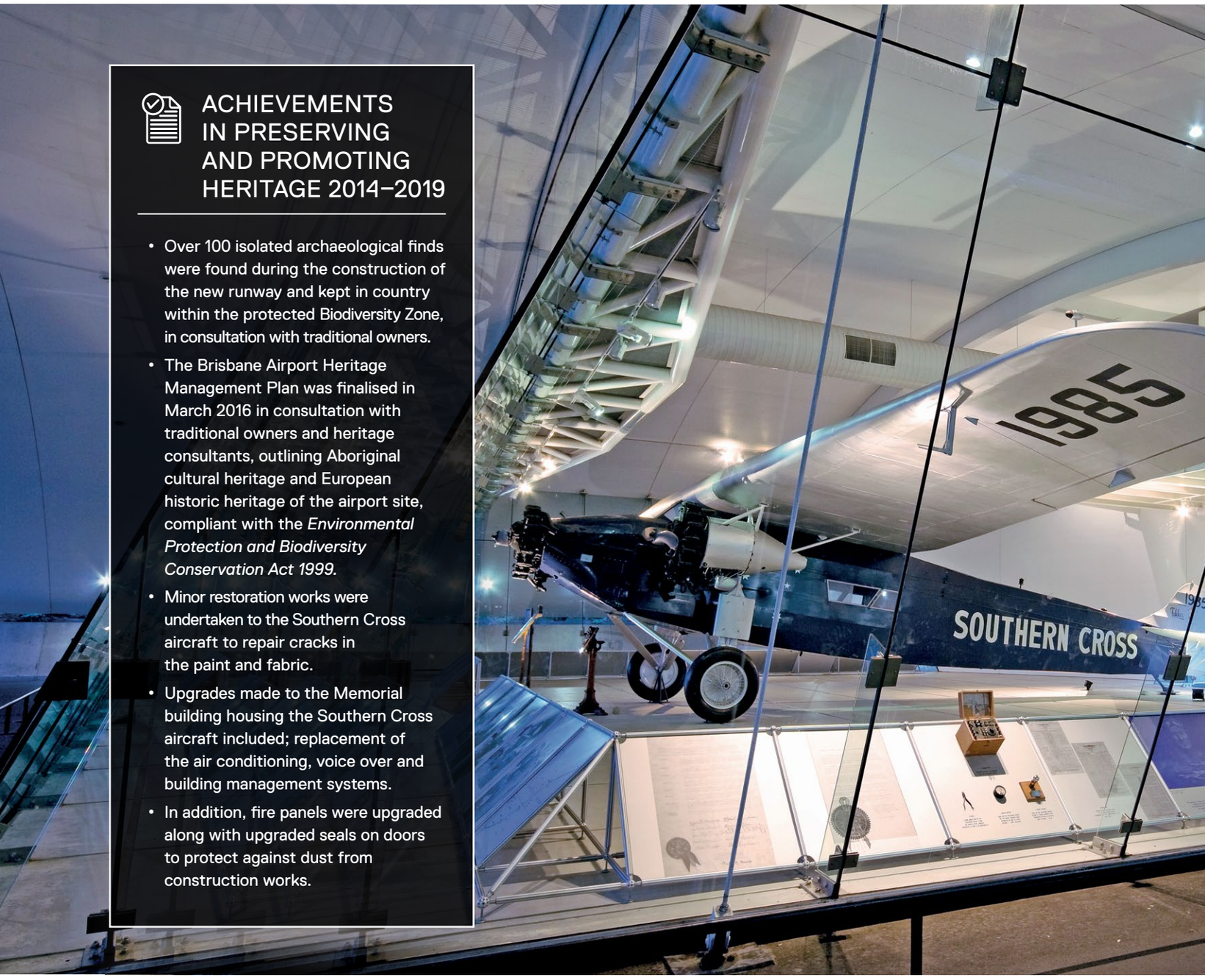
Jubilee Creek/Serpentine Inlet ESA comprises 30 hectares of remnant and constructed elements of intertidal and subtidal wetland areas that historically formed the estuary mouth of Serpentine Creek. Located along the northern boundary, it has very high conservation value. The community type is uncommon within Moreton Bay and is contiguous with the Luggage Point to Jubilee Creek mangrove community. The Grey Mangrove (Avicennia marina) is dominant with sparse stands of Red Mangrove (Rhizophora stylosa), Yellow Mangrove (Ceriops tagal) and River Mangrove (Aegiceras corniculatum) also present.

ENVIRONMENTALLY SIGNIFICANT AREAS AND BIODIVERSITY ZONES AT BRISBANE AIRPORT



AREAS OF FOCUS

11. PRESERVING & PROMOTING HERITAGE



ACHIEVEMENTS IN PRESERVING AND PROMOTING HERITAGE 2014–2019

- Over 100 isolated archaeological finds were found during the construction of the new runway and kept in country within the protected Biodiversity Zone, in consultation with traditional owners.
- The Brisbane Airport Heritage Management Plan was finalised in March 2016 in consultation with traditional owners and heritage consultants, outlining Aboriginal cultural heritage and European historic heritage of the airport site, compliant with the *Environmental Protection and Biodiversity Conservation Act 1999*.
- Minor restoration works were undertaken to the Southern Cross aircraft to repair cracks in the paint and fabric.
- Upgrades made to the Memorial building housing the Southern Cross aircraft included; replacement of the air conditioning, voice over and building management systems.
- In addition, fire panels were upgraded along with upgraded seals on doors to protect against dust from construction works.

KEY OBJECTIVES 2020-2025

- Ensure airport management is guided by identified heritage values.
- Ensure identified heritage values at Brisbane Airport are understood and interpreted.
- Engage with Traditional Owners and key historic heritage stakeholders.

PRESERVING HERITAGE

The cultural heritage of the airport is strongly tied to Aboriginal and Torres Strait Islanders connection to the land, and includes:

- Traditions, ideas, skills or rituals, passed through generations;
- Expressive activities including language, music, dance and drama;
- Sites, landscapes and areas of significance;
- Movable objects (artefacts).

POTENTIAL ABORIGINAL HERITAGE RISKS

Aboriginal heritage risks and impacts include:

- Lack of recognition of Aboriginal heritage values and places resulting in loss of cultural heritage values;
- Lack of consultation with Aboriginal parties resulting in heritage values not being understood or interpreted, and;
- Risk of inadequate archaeological management resulting in loss of cultural heritage values.

POTENTIAL HISTORIC HERITAGE RISKS

Historic heritage risks include the risk of redevelopment and demolition of heritage assets and inadequate archaeological management resulting in loss of historic heritage values.

ACTIONS TO PREVENT, CONTROL OR REDUCE RISKS

Brisbane Airport has a regular and positive engagement and consultation process with Traditional Owners and other Aboriginal stakeholders. Training for management personnel is provided on the heritage values and management requirements of the airport site. For all earthworks, a stop works procedure is implemented for any suspected archaeological finds.

Brisbane Airport also continues to implement requirements of the Southern Cross Aircraft Warehousing and Display Agreement with the Commonwealth Government. The management of heritage on Brisbane Airport is conducted in accordance with the Brisbane Airport Heritage Management Plan developed in consultation with Traditional Owners in 2016.

ACTIVE MEASURES FOR PRESERVING AND PROMOTING HERITAGE
Host annual Heritage Management Plan compliance meetings with Traditional Owners.
Undertake annual training for management personnel on the heritage values and management requirements of the Brisbane Airport site.
Implement the stop works procedure for suspected archaeological finds.
Implement requirements of the Southern Cross Aircraft Warehousing and Display Agreement between BAC and the Commonwealth Government.
Host airport tours to groups to convey the heritage values of the Brisbane Airport site.
Update website content on European historic heritage and Aboriginal cultural and spiritual significance of the Brisbane Airport area.

ACTION PLAN FOR PRESERVING AND PROMOTING HERITAGE	TIMEFRAME
Investigate the potential to construct a heritage trail, linking the Auto Mall development site and the Kingsford Smith Memorial.	2021
Undertake a review of the Brisbane Airport Heritage Management Plan and incorporate the operation of the new parallel runway system into the plan.	2021
Undertake archival recording of the Cribb Island Complex.	2023
Prepare an interpretation strategy of the Cribb Island Complex and Kingsford Smith Memorial.	2024

HISTORIC HERITAGE

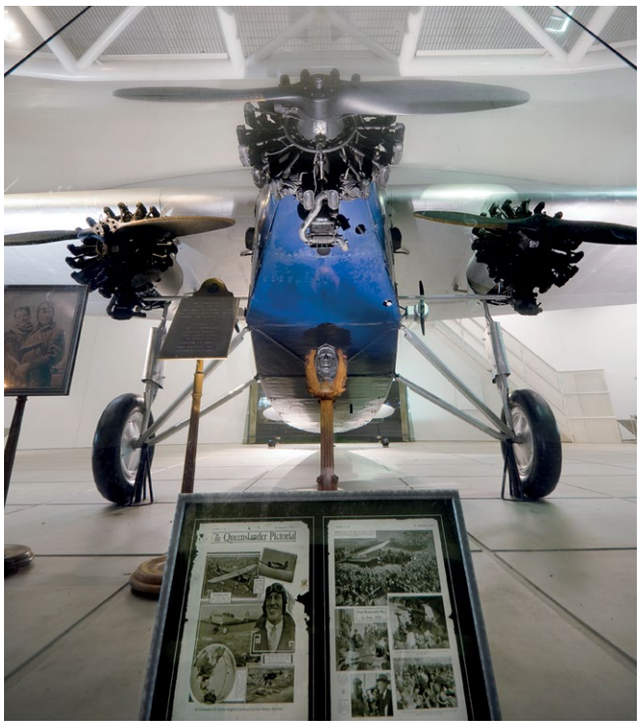
SITE ID	SITE NAME	COMMENTS	SIGNIFICANCE
1	Cribb Island Complex (the Jetty is located off airport land)	The complex provides physical evidence of the former Cribb island community and is considered significant at a local level for social reasons. There may be archaeological remains at the site in addition to the Cribb Island dressing shed foundations, the retaining wall, memorial plaques and former roads.	Low
2	Former Cribb Island School site	The former school site has low archaeological potential for the footings of the former school building, although this is under the terminal area radar station.	Low
3	Kingsford Smith Memorial including the Southern Cross aircraft	The memorial houses the plane that was flown by Sir Charles Kingsford Smith in 1928, which famously landed at Eagle Farm Aerodrome. The memorial itself is significant as a museum but the key values of this site relate to the aircraft and artefact.	Moderate (building) Exceptional (aircraft and artefacts)
4	No. 460 Squadron Memorial	As a memorial to the RAAF 460 bomber squadron of World War Two, the memorial is considered significant at a local level for social reasons.	Low
5	Memorial gardens at the KSM gardens	Unofficial garden for the scattering of ashes.	Low

CULTURAL HERITAGE

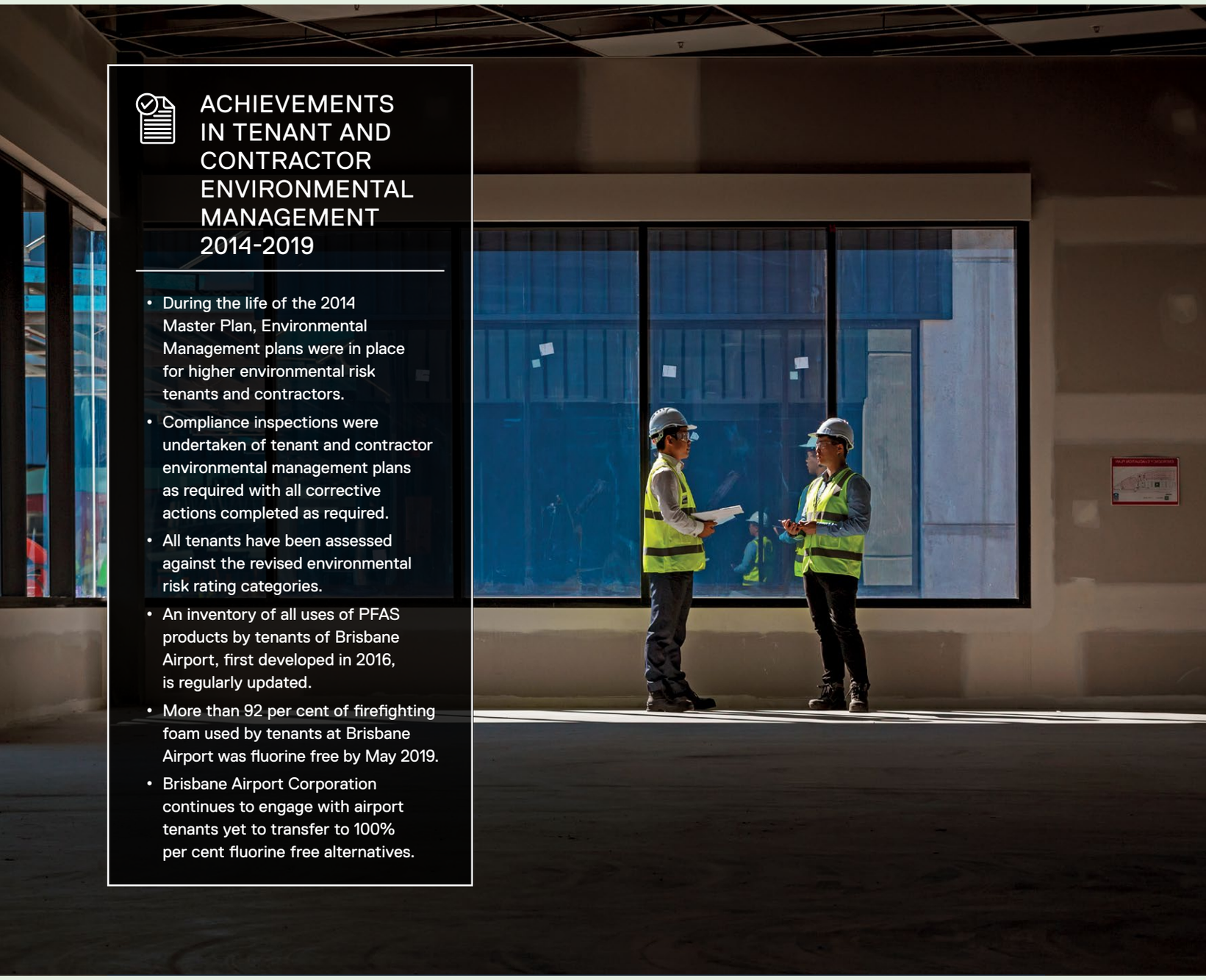
This section provides a summary of the Aboriginal cultural and spiritual significance of the Brisbane Airport area based on consultation with Traditional Owners, research, previous reports, and site surveys. The Brisbane Airport area retains cultural and spiritual significance for Traditional Owners. Some of the aspects listed are not able to be mapped.

NO.	ASPECT	COMMENTS
6	Dreaming Tracks & Dreaming Sites	An integral part of the Aboriginal people's connection to country, Brisbane Airport and surrounds are largely associated with 01. Maiwar (Brisbane River) Dreaming Track 02. Ballum Di (Brisbane River) Dreaming Song 03. Murukutjin (Black swan) Dreaming Track
7	Pathways	The Nudgee to Eagle Farm pathway and connected Bora Rings, hunting grounds and campsites in the area. This pathway would have skirted around the very southern boundary of Skygate, cut across Viola Place on its way from Hedley Avenue to the army bulk stores, and continued on to the Brisbane River.
8	Ceremonial grounds	Possible Bora Ring at Pinkenba The existence of Bora Rings at the Nudgee Waterholes and elsewhere at Pinkenba indicate the cultural importance of the broader area in traditional times. Large-scale gatherings were an important aspect of Aboriginal culture in South East Queensland and bora grounds were often the meeting place used by groups for such gatherings.
9	Food & water resources	Wetlands, floodplains and swamps of the Brisbane Airport area provided a rich variety of food resources and useful materials and a sound base for a semi-permanent population.
10	Camp sites	A temporary campsite is said to have existed at the mouth of Serpentine Creek at Cribb Island on the beach (State Registered Site) and another near the rafting yards at Serpentine Creek (a State Registered Site which is no longer in existence).
11	Isolated finds	Relocation area for artefacts/pieces recovered during monitoring of Brisbane's new runway project. This site has not been identified to ensure protection of the artefacts kept in country within the Biodiversity Zone. Airport Burial Site – State Registered Site. The recorded location is now likely destroyed due to coastal erosion at the Brisbane Airport foreshore over time.
12	Burial site	Airport Burial Site – State Registered Site

LOCATION OF HISTORIC AND CULTURAL HERITAGE SITES



12. TENANT AND CONTRACTOR OBLIGATIONS



ACHIEVEMENTS IN TENANT AND CONTRACTOR ENVIRONMENTAL MANAGEMENT 2014-2019

- During the life of the 2014 Master Plan, Environmental Management plans were in place for higher environmental risk tenants and contractors.
- Compliance inspections were undertaken of tenant and contractor environmental management plans as required with all corrective actions completed as required.
- All tenants have been assessed against the revised environmental risk rating categories.
- An inventory of all uses of PFAS products by tenants of Brisbane Airport, first developed in 2016, is regularly updated.
- More than 92 per cent of firefighting foam used by tenants at Brisbane Airport was fluorine free by May 2019.
- Brisbane Airport Corporation continues to engage with airport tenants yet to transfer to 100% per cent fluorine free alternatives.

KEY OBJECTIVES 2020-2025

- **Provide direction to and measure how airport tenants manage their environmental responsibilities whilst undertaking operations and activities at Brisbane Airport.**

TENTANT AND CONTRACTOR MANAGEMENT

A large number of diverse businesses and organisations operate at Brisbane Airport. These businesses include tenants (and their subtenants), contractors (and their subcontractors), licensees and other operators.

As a key component of BAC's commitment to maintaining long term environmental sustainability, tenants and contractors working on the airport site are also required to ensure that environmental responsibilities and practices remain closely aligned with all levels of sustainability adopted by the Corporation.

To achieve that goal, BAC provides direction to, and closely monitors how, tenants and contractors manage their environmental responsibilities whilst undertaking operations and activities at Brisbane Airport.

In addition, BAC has established environmental risk rating profiles for all airport tenants through regular audits and monitoring with regular forums held to promote best practice environmental procedures to airport tenants.

OVERVIEW OF ENVIRONMENTAL RISK RATINGS FOR AIRPORT TENANTS

TENANT ENVIRONMENTAL RISK RATING SYSTEM

BAC assesses the potential environmental risk of all tenant activities . The level of risk assigned to each tenant is based on the highest rated activity undertaken by that tenant. Tenants are assessed prior to taking occupancy.

Assessment is based on the tenant's proposed 'Permitted Use' of the premises as detailed in the draft lease or letter of offer and any additional relevant information provided by the airport property manager.

'AA' Risk Tenants	• Includes those tenants with the potential to cause serious environmental harm (high impact and irreversible or creates substantial harm to health or safety or substantial damage to property). For example: - Bulk fuel storage and distribution facilities. - Aircraft maintenance hangars that use firefighting foam containing chemicals persistent in the environment (notably PFAS). - Facilities with large chemical/dangerous goods storage.
'A' Risk Tenants	• Tenants with potential to cause material environmental harm (significant impact OR harm to health or safety, or damage to property). For example: - Aircraft maintenance hangars which have been proven to use fluorine-free firefighting foams. - Facilities which have chemical/dangerous goods storage and regulated waste such as aviation hydraulic oils (e.g. aircraft maintenance hangars, fuel/chemical storage tanks). - Large catering facilities.
'B' Risk Tenants	• Tenants with potential to cause material or nuisance environmental harm (low impact, transient or interferes unreasonably with enjoyment). For example: - Operation and maintenance of ground service equipment. - Other maintenance workshops. - Large warehouse facilities.
C' Risk Tenants	• Tenants with potential to cause nuisance environmental harm (e.g. offices and retail stores). • Tenants in this category are assessed based on lease entry and exit; in response to complaints; and to observations made during airport inspections made by BAC personnel. Tenants with a 'C' risk category are not required to submit audit results or provide operational environmental management plans.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

Operational Environmental Management Plans

Tenants with an environmental risk rating of AA, A or B are required to provide an Operational Environmental Management Plan (OEMP) and audit reports based on the environmental risk of their activities.

An OEMP is a tenant/site specific plan to ensure that appropriate environmental management practices are followed throughout the life of the tenancy.

An effective OEMP should ensure:

- Application of best practice environmental management.
- Compliance with environmental laws.
- That the environmental risk associated with the tenant's activities, and contractor activities, are properly managed.

Operational Environmental Management Plans must be consistent with Section 4 of AS/NZS ISO 14001 and include (but not be limited to) the following:

- Description of tenant's operations,
- Identification of environmental aspects and impacts,
- Determination of level of risk impacts,
- Management of impacts,
- List of standard operating procedures,
- Details of staff training and awareness,
- Details of the process to review and update the Plan,
- Identification of employees/positions responsible for environmental management on the site,
- Management of contractor's environmental risks and impacts,
- Environmental performance targets,
- Details of audit/review and improvement measures.

To assist tenants, Brisbane Airport has developed guidelines to assist in the development of an appropriate OEMP. The guidelines also contain an Activity Risk Register which provides guidance in determining an activity's risk rating and category.

Activities not included on this register will be assigned a risk category rating on a case-by-case basis.

Use of Firefighting Foam

The Queensland Department of Environment and Science (DES) developed an Operational Policy for the Environmental Management of Fire Fighting Foams (2016) which establishes a framework for the environmental assessment of firefighting foam use in Queensland.

BAC determined based on currently available evidence and consistent with the DES Operational Policy, that Tenants must only use fluorine free firefighting foams at Brisbane Airport and in relation to those tenants with existing firefighting foam systems containing chemicals persistent in the environment long-term (e.g. PFAS), that they take steps to promptly transition to a fluorine-free system.

Tenants using mobile (wheeled or hand held) firefighting foam units must ensure they update their OEMPs to include a foam management plan in accordance with Brisbane Airport's Foam Management Plan Guidelines.

Tenants operating a fixed firefighting foam system of any type (deluge, canon or underwing) must ensure it is fitted with a fluorine free foam and update their OEMPs to include an Asset Management Plan for the firefighting foam system. This plan is to include, but is not limited to the following:

01. A description of the foam type used, its chemistry and effects if released into the environment, and the controls in place to prevent its release to the environment.
    - *NB. Brisbane Airport must be notified of any proposed change in the type of foam used and its effect on the existing foam firefighting system, including equipment and system performance prior to implementation.*
02. A risk assessment identifying how the firefighting foam system can fail and the likely points of failure. This is to be undertaken in collaboration with airport staff with relevant fire system experience.
03. Details on how the asset is being maintained in accordance with the manufacturer's specifications, including:
    - A copy of the scheduled maintenance program for the foam system as detailed by Australian Standards, NFPA requirements and foam equipment manufacturers technical standards and data sheets.
    - A copy of the capital replacement plan for the firefighting foam system.
    - An indication of the annual operating expenditure for maintenance of the firefighting foam system.

In addition, tenants must submit annual Certificates of Maintenance in accordance with AS1851 to both the Airport Property Manager and the Queensland Fire and Emergency Service.

ENVIRONMENTAL AUDITING AND REPORTING REQUIREMENTS FOR TENANTS

Based on their allocated risk category, airport tenants may be required to provide the airport with appropriate audit/review results as they become available. As part of this process, tenants must assess their progress to improve environmental performance of their operation by addressing environmental issues identified in previous internal and external audits and airport environmental inspections.

BAC undertakes scheduled and unscheduled tenant inspections based on audit findings. The inspections performed do not form the basis of an internal or external audit but are intended to assist airport tenants to comply with their obligations under Airports Legislation, Environmental Laws, Environmental Requirements and the requirements of their lease.

If a non-conformance is identified as a breach of the tenant's lease, they may be issued with a notice to remedy the nonconformance by the Brisbane Airport Property Manager. Depending on the nature and severity of the non-conformance, it may be necessary to seek legal advice. Certain incidents and non-conformances may require notification to the Airport Environment Officer from the Commonwealth Department of Infrastructure, Regional Development and Cities.

FREQUENCY OF AUDIT				
	'AA' TENANTS	'A' TENANTS	'B' TENANTS	'C' TENANTS
External Audit	Annual	Biennial	As agreed by BAC	N/A
Internal Audit	Annual	Annual	Annual	N/A

AA AND A RISK TENANTS

Audits are to include:

- Assessment of environmental impact, including compliance with statutory requirements and conformance with the approved OEMP;
- Assessment of management practices and procedures relating to environmental performance targets (including waste management);
- Assessment of environmental safeguards in place to minimise risks and the level of environmental impact; and
- Assessment of emergency plans (relevant to environment only).

Findings of audits are to be presented in a format consistent with recognised standards for the reporting of environmental audits with all findings made available to Brisbane Airport by 31 July for the previous financial year.

B RISK TENANTS

These audits require a less formal reporting structure but must address the same issues that 'AA' and 'A' tenants are required to address (see above). The results of audits are to be forwarded to Brisbane Airport by 31 July for the previous financial year.

HAZARDOUS CHEMICALS AND DANGEROUS GOODS

Queensland Work Health & Safety Legislation regulates the storage and handling of hazardous chemicals and identifies manifest quantities of hazardous chemicals which, when exceeded, triggers notification requirements to Workplace Health and Safety, Queensland and the Queensland Fire and Emergency Service as well as placarding requirements.

Any new development or tenant proposing to store hazardous or flammable materials must be assessed and managed appropriately to address potential impacts on people, operations, and the environment.

Brisbane Airport engages an appropriately qualified contractor to act in the capacity of Dangerous Goods Advisors and to advise on the management of dangerous goods across Brisbane Airport, including tenanted areas where quantities stored have the potential to impact airport operations. Airport-wide audits of all areas are undertaken annually to identify facilities that meet placard and/or manifest requirements and ensure reporting, notification and emergency management requirements are maintained.

ACTIVE MEASURES FOR ENVIRONMENTAL MANAGEMENT (TENANTS)

'AA', 'A' and 'B' environmental risk tenants must complete Operational Environmental Management plans for their activities and update as required.
Brisbane Airport will review tenant Operational Environmental Management plans for consistency with Guidelines.
Brisbane Airport will conduct annual inspections to assess compliance with tenant operational environmental management plans. (not including class C tenants).
Each quarter, or as required, through the tenant engagement program Brisbane Airport will communicate environmental matters of interest to airport tenants.
'AA', 'A' and 'B' environmental risk tenants must annually provide copies of internal and/or external audit reports.
Tenants must comply with the Queensland Firefighting Foam Policy (2016).
Tenants must ensure that firefighting foam management plans/asset management plans are included in Operational Environmental Management plans.
Tenants must ensure that annual Certificates of Maintenance (as per AS1851) of fire systems are submitted to airport property managers and to the Queensland Fire and Emergency Services.
Tenants must ensure regulated waste is managed in accordance with relevant state guidelines.
Tenants must remove and remediate end-of-life underground fuel storage tanks and replace with above-ground storage tanks or other alternatives (e.g. electrical charging stations).
BAC will continue to ensure airport-wide audits of dangerous goods are undertaken to identify facilities that meet placard and/or manifest requirements, and ensure reporting, notification and emergency management requirements are maintained.
BAC will continue to ensure that any tenant development proposing to store hazardous or flammable materials is assessed and managed to address potential impacts on people, operations, and the environment.

CONTRACTOR OBLIGATIONS

KEY OBJECTIVES 2020-2025

- Implementation of environmental management plans to minimise potential environmental impacts from contractor activities.
- To design, construct and manage construction projects in accordance with the Brisbane Airport corporate sustainability principles and performance criteria.

OVERSIGHT OF CONTRACTOR ACTIVITIES

To ensure that BAC continues to uphold the highest standards of all aspects of environmental management, contractors working on the airport site, as a condition of their engagement, are required to follow BAC guidelines including the completion of an Environmental Management Plan.

POTENTIAL ENVIRONMENTAL IMPACTS

Potential environmental impacts include;

- Degradation of soil, surface and groundwater quality,
- Emissions to land, water and air,
- Vibration and noise,
- Sedimentation of waterways and increased nutrification,
- Waste generation and natural resource consumption, and:
- Loss of biodiversity and historic and cultural heritage values.

MEASURES TO PREVENT, CONTROL OR REDUCE ENVIRONMENTAL IMPACTS

Operational Contractors

Operational contractors typically include security, IT, cleaning, waste, car parking and facilities management. Contractors with the potential to cause material nuisance, environmental harm or above must develop and implement Environmental Management Plans in accordance with airport guidelines.

BAC will conduct inspections and audits of compliance with Environmental Management Plans as required.

Construction Contractors

Construction/development projects with the potential to cause material nuisance, environmental harm or above are managed through a Construction Environmental Management Plan (CEMP). Developed by the contractor, the plan specifically addresses the risks associated with the construction phases of the project, in accordance with guidelines.

Brisbane Airport has developed specific Guidelines for the creation of a CEMP that assist contractors in achieving the high level of environmental management for projects and developments at Brisbane Airport.

These guidelines are reviewed annually to ensure they reflect industry best practice. Once the contractor's project-specific CEMP is reviewed by Brisbane Airport, regular inspections of the project is undertaken to ensure contractor compliance with the CEMP. Any potential environmental issues are identified and corrective actions assigned during Brisbane Airport inspections.

Outcomes of the project inspections are then communicated to the Regulator.

ACTIVE MEASURES FOR ENVIRONMENTAL MANAGEMENT (CONTRACTORS)
Contractors (operational and construction) must develop Environmental Management Plans for their activities in accordance with BAC Guidelines.
Contractors (operational and construction) must implement measures to prevent, control or reduce environmental impacts from their activities in accordance with Environmental Management Plans.
BAC will review contractor Environmental Management Plans (operational and construction) for consistency with Guidelines.
BAC will conduct inspections of contractor activities (for material/nuisance environmental harm or above) to ensure compliance with Environmental Management Plans.

11

APPENDICES

APPENDIX ONE

REQUIREMENTS OF THE AIRPORTS ACT 1996 FOR CONTENTS OF A MASTER PLAN

REGULATORY REQUIREMENT		RELEVANT SECTION OF THIS MASTER PLAN
71 (2)	Contents of draft or final Master Plan	
(a)	the airport-lessee company's development objectives for the airport; and	CHAPTER FIVE
(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	CHAPTER EIGHT
(c)	the airport-lessee company's intentions for land use and related development of the airport site, where the uses and developments embrace airside, land-side, surface access and land planning/zoning aspects; and	CHAPTER SIX
(d)	an Australian Noise Exposure Forecast (in accordance with regulations, if any, made for the purpose of this paragraph) for the areas surrounding the airport; and	CHAPTER EIGHT
(da)	flight paths (in accordance with regulations, if any, made for the purpose of this paragraph) at the airport; and	CHAPTER EIGHT
(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	CHAPTER EIGHT
(f)	the airport-lessee company's assessment of environmental issues that might reasonably be expected to be associated with the implementation of the plan; and	CHAPTER TEN
(g)	the airport-lessee company's plans for dealing with the environmental issues mentioned in paragraph (f) (including plans for ameliorating or preventing environmental impacts); and	CHAPTER TEN
(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:	CHAPTER NINE
	(i) a road network plan; and	CHAPTER NINE
	(ii) the facilities for moving people (employees, passengers and other airport users) and freight at the airport; and	CHAPTER NINE
	(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	CHAPTER NINE
	(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	CHAPTER NINE

	(v) the capacity of the ground transport system at the airport to support operations and other activities at the airport; and	CHAPTER NINE
	(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	CHAPTER NINE
(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:	CHAPTERS SIX & SEVEN
	(i) commercial, community, office or retail purposes; or	CHAPTERS SIX & SEVEN
	(ii) for any other purpose that is not related to airport services; and	CHAPTER SIX & SEVEN
(gc)	in relation to the first 5 years of the Master Plan – the likely effect of the proposed developments in the Master Plan on:	CHAPTER FOUR
	(i) employment levels at the airport; and	CHAPTER FOUR
	(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	CHAPTER FOUR
	(h) an environment strategy that details:	CHAPTER TEN
	(i) the airport-lessee company's objectives for the environmental management of the airport; and	CHAPTER TEN
	(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	CHAPTER TEN
	(iii) the sources of environmental impact associated with airport operartions and	CHAPTER TEN
	(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	CHAPTER TEN
	(v) the time frames for completion of those studies and reviews and for reporting on that monitoring; and	CHAPTER TEN
	(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	CHAPTER TEN
	(vii) the time frames for completion of those specific measures; and	CHAPTER TEN
	(viii) details of the consultations undertaken in preparing the strategy (including the outcome of the consultations); and	CHAPTER TEN
	(ix) any other matters that are prescribed in the regulations; and	CHAPTER TEN
(d)	release, into the air, of substances that deplete stratospheric ozone; and	CHAPTER TEN
(e)	generation and handling of hazardous waste and any other kind of waste; and	CHAPTER TEN

(f)	usage of natural resources (whether renewable or non renewable); and	CHAPTER TEN
(g)	usage of energy the production of which generates emissions of gases known as 'greenhouse gases'; and	CHAPTER TEN
(h)	generation of noise.	CHAPTER TEN
(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:	CHAPTER TEN
(a)	the matters mentioned in subregulation 5.02A (2) and subregulations 5.02B (3) and (4); and	CHAPTER TEN
(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	CHAPTER TEN
(c)	the approaches and measures identified by the airport-lessee company as its preferred conservation approaches and measures; and	CHAPTER TEN
(d)	the professional qualifications that must be held by a person carrying out the monitoring; and	CHAPTER TEN
(e)	the proposed systems of testing, measuring and sampling to be carried out for possible, or suspected, pollution or excessive noise; and	CHAPTER TEN
(f)	the proposed frequency of routine reporting of monitoring results to the airport environment officer (if any) for the airport, or to the Secretary	CHAPTER TEN
(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:	CHAPTER TEN
(a)	the matters mentioned in subregulations (2) to (4); and	CHAPTER TEN
(b)	the means by which it proposes to achieve the cooperation of other operators of undertakings at the airport in carrying out those plans	CHAPTER TEN

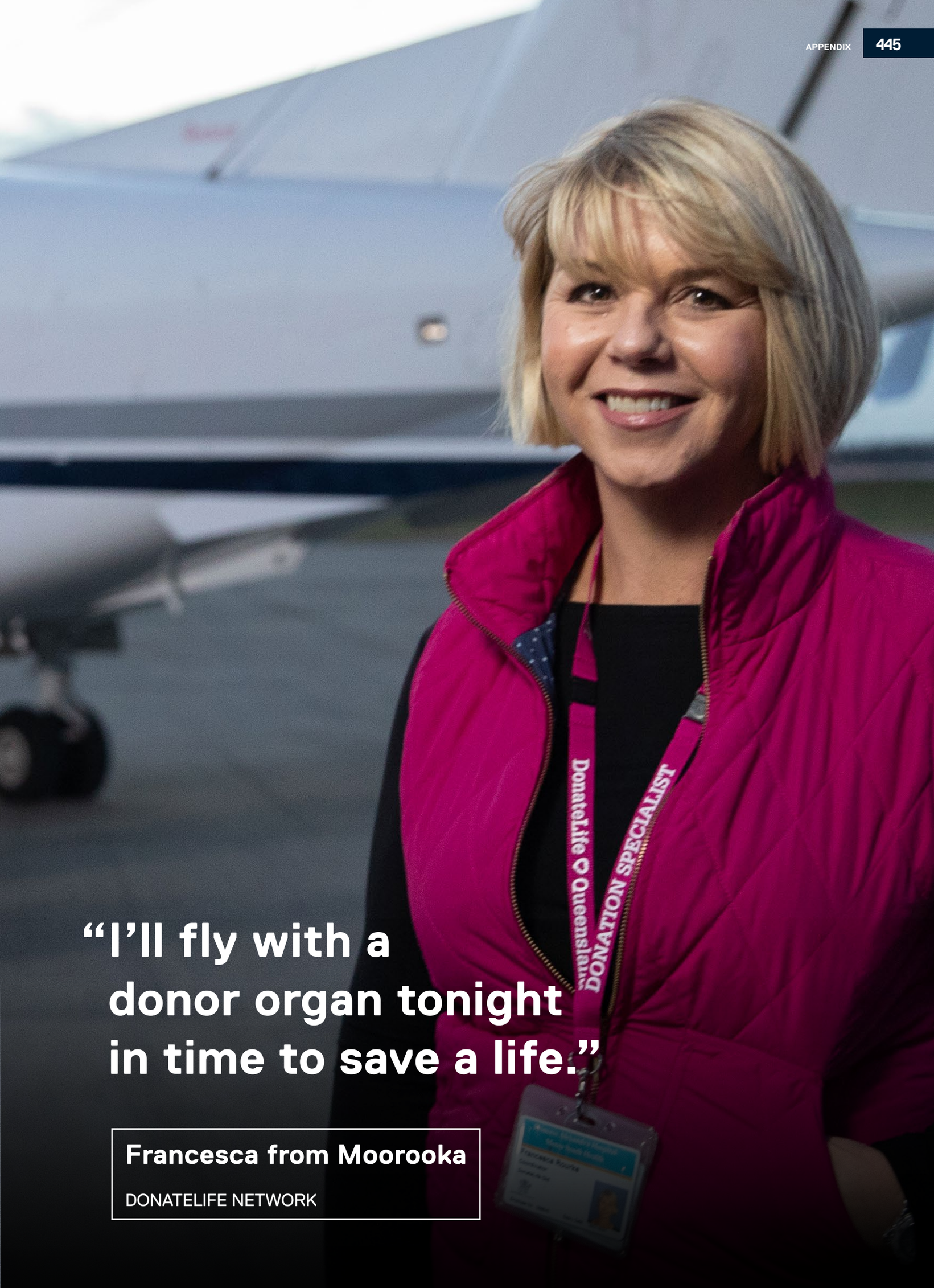
AES LEGISLATIVE REQUIREMENTS: AIRPORTS REGULATIONS 1997

SECTION	SUBSECTION	LEGISLATIVE REQUIREMENT	AES REFERENCE
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 addressed in the environment strategy.	CHAPTER TEN
	(2)	The environment strategy must specify any areas within the airport site to which the strategy applies that the ALC for the airport has identified as being a site of Indigenous significance, following consultation with: (a) Any relevant indigenous communities and organisations; and (b) Any relevant Commonwealth or state body.	CHAPTER TEN
	(3)	The environment strategy must specify the ALC'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.	CHAPTER TEN
	(4)	(a) The training necessary for appropriate environment management by persons, or classes of persons, employed on the airport site by the ALC or by other major employers; and (b) The training programs, of which the ALC is aware, that it considers would meet the training needs of a person mentioned in paragraph (a).	CHAPTER TEN
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 the regulations.	CHAPTER TEN
5.02B This section specifies those matters that the ALC must address in its environmental objectives	(2)	(a) Continuous improvement in the environmental consequences of activities at the airport.	CHAPTER TEN
		(b) Progressive reduction in extant pollution at the airport.	CHAPTER TEN

		(c) Development and adoption of a comprehensive environmental management system for the airport that maintains consistency with relevant Australian and international standards.	CHAPTER TEN
		(d) Identification, and conservation, by the ALC and other operators of undertakings at the airport, of objects and matters at the airport that have natural, Indigenous and heritage value.	CHAPTER TEN
		(e) Involvement of the local community and airport users in development of any future strategy.	CHAPTER TEN
		(f) Dissemination of the strategy to sublessees, licensees, other airport users and the local. community.	CHAPTER TEN
5.02B This section outlines those matters that must be addressed by the ALC in specifying environmentally significant areas on the airport site.	(3)	(a) Any relevant recommendation of the Australian Heritage Council.	CHAPTER TEN
		(b) Any relevant recommendation of the Department of Environment regarding biota, habitat, heritage or similar matters.	CHAPTER TEN
		(c) Any relevant recommendation of a body established in the state in which the airport is located, having responsibilities in relation to conservation of biota, habitat, heritage or similar matters.	CHAPTER TEN

5.02B This section specifies the "sources of environmental impact" that the ALC must address	(4)	(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.	CHAPTER TEN
		(b) Water quality, including potentially affected groundwater, estuarine waters and marine waters.	CHAPTER TEN
		(c) Soil quality, including that of land known to be already contaminated.	CHAPTER TEN
		(d) Release, into the air, of substances that deplete stratospheric ozone.	CHAPTER TEN
		(e) Generation and handling of hazardous waste and any other kind of waste.	CHAPTER TEN
		(f) Usage of natural resources (whether renewable or non-renewable).	CHAPTER TEN
		(g) Usage of energy the production of which generates emissions of gases known as 'greenhouse gases'.	CHAPTER TEN
		(h) Generation of noise.	CHAPTER TEN
5.02B This section specifies the studies, reviews and monitoring that the ALC plans to carry out	(5)	(a) The matters mentioned in subregulation 5.02A (2) and subregulations 5.02B (3) and (4).	CHAPTER TEN
		(b) The scope, identified by the ALC, for conservation of objects and matters at the airport that have natural, indigenous or heritage value.	CHAPTER TEN

		(c) The approaches and measures identified by the ALC as its preferred conservation approaches and measures.	CHAPTER TEN
		(d) The professional qualifications that must be held by a person carrying out the monitoring.	CHAPTER TEN
		(e) The proposed systems of testing, measuring and sampling to be carried out for possible, or suspected, pollution or excessive noise.	CHAPTER TEN
		(f) The proposed frequency of routine reporting of monitoring results to the AEO (if any) for the airport, or to the Secretary.	CHAPTER TEN
5.02B This section specifies the measures that the ALC must address in preventing, controlling or reducing environmental impact	(6)	(a) The matters mentioned in subregulations (2) to (4).	CHAPTER TEN
		(b) The means by which it proposes to achieve the cooperation of other operators of undertakings at the airport in carrying out those plans.	CHAPTER TEN
5.02B	(7)	An ALC, in specifying the company's strategy for environmental management under sub-regulation 5.02A (3), must address the matters in sub-regulations (2) to (6).	CHAPTER TEN



“I’ll fly with a donor organ tonight in time to save a life.”

Francesca from Moorooka

DONATELIFE NETWORK

APPENDIX TWO

BRISBANE AIRPORT 2020 MASTER PLAN – LAND USE DEFINITIONS

USE	EXPLANATION OF DEFINITION OF USE
Advertising Device	**Advertising Device —** (a) means a permanent sign, structure or other device used, or intended to be used, for advertising; and (b) includes a structure, or part of a building, the primary purpose of which is to support the sign, structure or device
Agricultural Supplies Store	**Agricultural supplies store** means the use of premises for the sale of agricultural supplies and products. *Examples of agricultural supplies and products — animal feed, bulk veterinary supplies, chemicals, farm clothing, fertilisers, irrigation materials, saddlery, seeds*
Air Services	**Air Service** means the use of premises for - (a) the arrival or departure of aircraft; or (b) housing, servicing, refuelling, maintaining, repairing, manufacturing of aircraft; or (c) the assembly and dispersal of passengers or goods on or from an aircraft; or (d) training and education facilities relating to aviation; or (e) aviation facilities; or (f) an activity that— (i) is ancillary to an activity or facility stated in (a) to (e); and (ii) directly services the needs of workers, students or aircraft passengers. *Examples of Air Services — airport, air strip, runway, taxiway, helipad, heliport, terminals, aircraft maintenance facility, aviation activity, aviation education facility, freight handling, aircraft refuelling, navigational aids*
Animal Keeping	**Animal Keeping** means the use of premises for - (a) boarding, breeding or training animals; or (b) an activity that is ancillary to an activity stated in (a), including, but not limited to retailing, holding facilities, machinery repairs and servicing facilities. *Examples of animal keeping — aviary, cattery, kennel, stables, wildlife refuge*
Animal Husbandry	**Animal Husbandry** means the use of premises for - (a) producing animals or animal products on native or improved pastures or vegetation; or (b) a yard, stable, temporary holding facility or machinery repairs and servicing, if the use is ancillary to the use in (a). *Examples of animal husbandry— cattle stud, grazing of livestock, non-feedlot dairy*

Bulk Landscape Supplies	**Bulk Landscape Supplies** means the use of premises for the bulk storage and sale of mainly non-packaged landscaping and gardening supplies, including, for example, soil, gravel, potting mix or mulch.
Car Park	**Car Park** means land or premises used for staff and/or public parking of motor vehicles, including buses and limousines, motorcycles and bicycles, where necessary, including manoeuvring space and access thereto, whether operated for gain or not. Common uses include parking facilities operating supporting services, such as car washing and detailing, valet parking, parking for rental vehicles or share hire vehicles.
Childcare Centre	**Childcare Centre** means the use of premises for the care, education and minding, but not residence, of children. *Examples of a childcare centre — before or after school care, crèche, early childhood centre, kindergarten, vacation care*
Club	**Club** means the use of premises for - (a) an association established for social, literary, political, sporting, athletic or other similar purposes; or (b) preparing and selling food and drink, if the use is ancillary to the use in (a).
Community Use	**Community Use** means the use of premises for - (a) providing artistic, social or cultural facilities or community services to the public; or (b) preparing and selling food and drink, if the use is ancillary to the use in (a). *Examples of a community use — art gallery, community centre, community hall, library, museum*
Distribution Centre	**Distribution Centre** means a building or place used mainly or exclusively for storing or handling items (whether goods or materials) pending their sale or distribution, but from which no retail sales are made. Permitted uses include recycling/waste transfer facilities, and mixing, blending and packaging facilities.
Emergency Services	**Emergency Services** means the use of premises by a government entity or community organisation to provide - (a) essential emergency services; or (b) disaster management services; or (c) management support facilities for the services. *Examples of emergency services — ambulance station, evacuation centre, fire station, police station*
Entertainment Facility	**Entertainment Facility** means a theatre, cinema, musical or concert hall, dance and the like, but does not include a pub, nightclub or registered club. Further meanings of use include: (a) cinema means premises used for the presentation of films or commercial gain. This use includes a building with a single screen as well as a complex with multiple screens. Ancillary facilities may be provided for the sale of food and beverage to patrons of the cinema (b) means premises used for the amusement and entertainment of the public, including ancillary catering, light refreshments and sale of merchandise.
Environment Facility	**Environment Facility** means (a) the use of premises for a facility for the appreciation, conservation or interpretation of an area of cultural, environmental or heritage value; but (b) does not include the use of premises to provide accommodation for tourists and travellers

Event Facility	**Event Facility** means an area on airport used for an event for onsite entertainment, recreation or similar events for the general public. Events include festivals, travelling circus, exhibition trade show, musical festival. The use may include provision of food and beverages for consumption on site.
Food and Drink Outlet	**Food and Drink Outlet** means the use of premises for - (a) preparing and selling food and drink for consumption on or off the premises; or (b) providing liquor for consumption on the premises, if the use is ancillary to the use in (a). *Examples of a food and drink outlet — cafe, coffee shop, drive-through facility, kiosk, milk bar, restaurant, snack bar, takeaway shop, tearoom, micro-brewery.*
Freight Handling Facility	**Freight Handling Facility** means a facility used principally for the bulk handling of goods for transport by road, rail, air or sea including any facility for the loading and unloading of vehicles, aircraft, vessels or containers used to transport those goods and for the parking, holding, servicing or repair of those vehicles, aircraft or vessels or for the engines or carriages involved.
Function Facility	**Function Facility** means the use of premises for - (a) receptions or functions; or (b) preparing and providing food and liquor for consumption on the premises as part of a reception or function.
Garden Centre	**Garden Centre** means the use of premises for - (a) selling plants; or (b) selling gardening and landscape products and supplies that are mainly in pre-packaged form; or (c) a food and drink outlet that is ancillary to the use in (a).
Hardware and Trade Supplies	**Hardware and Trade Supplies** means the use of premises for selling, displaying or hiring hardware and trade supplies, including, for example, house fixtures, timber, tools, paint, wallpaper or plumbing supplies.
Health Care Services	**Health Care Services** means the use of premises for medical purposes, paramedical purposes, alternative health therapies or general health care, if overnight accommodation is not provided on the premises. *Examples of a health care service— dental clinic, medical centre, physiotherapy clinic*
Horticulture Activity	**Horticulture Activity** means interim short term land uses which may be used as turf farms and for management, propagation, conservation, growing of plants, located in undeveloped areas or road reserves not immediately required for aeronautical or other selected land use development.
Hotel	**Hotel** means the use of premises for - (a) selling liquor for consumption on the premises; or (b) a dining or entertainment activity, convention or exhibition activity, or providing accommodation to tourists or travellers, if the use is ancillary to the use in (a).
Indoor Sport and Recreation	**Indoor Sport and Recreation** means the use of a premises for - (a) a leisure, sport or recreation activity conducted wholly or mainly indoors; or (b) an activity that is ancillary to an activity stated in (a), including, but not limited to, student accommodation, food and beverage facilities. *Examples of indoor sport and recreation— amusement parlour, bowling alley, gymnasium, squash court*

Industrial Retail Outlet	**Industrial Retail Outlet** means a building or place that - (a) is used in conjunction with an industry (b) is used for the storage, display, or sale (i.e. showrooms) (whether by retail or wholesale) of those goods that have been manufactured, stored or distributed on the land on which the industry is carried out.
Industry	**Industry** means premises used for manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring, treatment of products or servicing. Industry accommodates uses depending on the merits of the proposal, the nature of surrounding development and impacts of the use on air and water quality, storing dangerous goods, noise abatement, freight access, danger from fire and explosion, safeguarding airport operations or any other relevant matter. Industry includes industrial uses operating to service 24/7 airport operation.
Intensive Horticulture	**Intensive Horticulture** (a) means the use of premises for — (i) the intensive production of plants or plant material carried out indoors on imported media; or (ii) the intensive production of plants or plant material carried out outside using artificial lights or containers; or (iii) storing and packing plants or plant material grown on the premises, if the use is ancillary to the use in (i) or (ii); but (b) does not include the cultivation of aquatic plants.
Boating Facility	**Boating Facility** means the use of premises for a structure - (a) for mooring, launching, storing and retrieving vessels; and (b) from which passengers embark and disembark.
Liquid Fuel Depot and Distribution Facility	**Liquid Fuel Depot and Distribution Facility** means storage and distribution premises that are used for the bulk storage and distribution of petrol, oil, petroleum or other inflammable liquid for aircraft and airport vehicles.
Major Sport, Recreation and Entertainment Facility	**Major Sport, Recreation and Entertainment Facility** means the use of premises for - (a) large-scale events, including, for example, major sporting, recreation, conference or entertainment events; and (b) an activity that is ancillary to an activity stated in (a), including, but not limited to, food and beverage, retail, transport facilities.
Market	**Market** means the use of premises on a regular basis for - (a) selling goods to the public mainly from temporary structures, including, for example, stalls, booths or trestle tables; or (b) providing entertainment, if the use is ancillary to the use in (a).
Navigational Aids	**Navigational Aids** mean any aircraft surveillance equipment, control towers, radars, visual and non-visual navigation aids.
Nightclub Entertainment Facility	**Nightclub Entertainment Facility** means the use of premises for - (a) providing entertainment that is cabaret, dancing or music; or (b) selling liquor, and preparing and selling food, for consumption on the premises, if the use is ancillary to the use in (a).

Office	**Office** (a) means the use of premises for - (i) providing an administrative, financial, management or secretarial service or function; or (ii) the practice of a profession; or (iii) providing business or professional advice or services; (iv) an activity that is ancillary to an activity stated in (i), (ii), (iii) including, but not limited to food and beverage facilities; but (b) does not include the use of premises for making, selling or hiring goods. *Examples of an office — bank, real estate agency*
Outdoor Sales	**Outdoor Sales** means the use of premises for - (a) displaying, selling, hiring or leasing vehicles, boats, caravans, machinery, equipment or other similar products, if the use is mainly conducted outdoors; or (b) repairing, servicing, selling or fitting accessories for the products stated in (a), if the use is ancillary to the use in (a).
Park	**Park** means the use of premises, accessible to the public free of charge, for sport, recreation and leisure activities and facilities.
Place of Worship	**Place of Worship** means the use of premises for - (a) organised worship and other religious activities; or (b) social, education or charitable activities, if the use is ancillary to the use in (a).
Produce Market	**Produce Market** means premises used for bulk supply of fresh produce for distribution and for wholesale and retail sale to the public.
Public Safety Area	**Public Safety Area** means an area at the end of the runways to enhance the protection and safety of property and people on the ground in the event of an aircraft crashing during landing or take-off.
Public Transport Facility	**Public Transport Facility** means a building or place used for the assembly or dispersal of passengers by any form of public transport and facilities required for parking, manoeuvring, storage or routine servicing of any vehicle that uses the building or place for public passenger transfer, including a public transport interchange, mass transit stations, rail stations and bus stops for shuttle bus services or government controlled bus services.
Research and Technology Industry	**Research and Technology Industry** means the use of premises for an innovative or emerging industry that involves designing and researching, assembling, manufacturing, maintaining, storing or testing machinery or equipment.
Research Station or Centre	**Research Station or Centre** means a building or place for the principle purpose of environmental, fisheries, forestry, meteorological, minerals, scientific or soil data collection or research and includes any associated facility for training and administration.
Service Station	**Service Station** means the use of premises for - (a) selling fuel, including, for example, petrol, liquid petroleum gas, automotive distillate or alternative fuels; or (b) a food and drink outlet, shop, trailer hire, or maintaining, repairing, servicing or washing vehicles, if the use is ancillary to the use in (a).

Shop	**Shop** means the use of premises of - (a) displaying, selling or hiring goods; or (b) providing personal services or betting to the public. *Examples of a shop — betting agency, corner store, department store, discount variety store, hair dressing salon, liquor store, supermarket*
Shopping Centre	**Shopping Centre** means the use of premises for an integrated shopping complex consisting mainly of shops.
Short Term Accommodation	**Short Term Accommodation** means the use of premises for - (a) providing accommodation to tourists or travellers; or (b) a manager's residence, office, or recreation facilities for the exclusive use of guests, if the use is ancillary to the use in (a):
Showroom	**Showroom** means the use of premises for the sale or hiring of goods or equipment that are of - (a) a related product line; and (b) a size, shape or weight that requires - (i) a large area for handling, display or storage; and (ii) direct vehicle access to the building that contains the goods by members of the public, to enable the loading and unloading of the goods. *Examples of a showroom — Large format retail, bulk stationary supplies, ey goods sales, bulk home supplies, bulk hardware and trade supplies, motor vehicle sales showroom*
Sport and Recreation Activity	**Sport and Recreation Activity** means - (a) a major sport, recreation and entertainment facility at which events are carried out mainly outdoors; or (b) a motor sport facility at which the motor sports are carried out mainly outdoors; or (c) outdoor sport and recreation; or (d) tourist accommodation, or accommodation for employees, that is ancillary to a use stated in (a) to (c); or (e) a commercial use that is ancillary to a use stated in (a) to (c).
Storage Premises	**Storage Premises** means a building or place used for the storage of goods, materials, plant or machinery for commercial purposes and where the storage is not ancillary to any business premises or retail premises on the same parcel of land. *Examples include storage sheds and depots, vehicles, and salvage yards, and includes the storage, handling, use and/or production of dangerous goods.*
Telecommunications Facility	**Telecommunications Facility** means the use of premises for a facility that is capable of carrying communications and signals by guided or unguided electromagnetic energy.
Temporary Use	**Temporary Use** means a use that - (a) is carried out on a non-permanent basis; and (b) does not involve the construction of, or significant changes to, permanent buildings or structures.
Tourist Information Centre	**Tourist Information Centre** means a building or premises for the purposes of providing information about local, regional and state attractions and tourist activities.

Transport Depot	**Transport Depot** means the use of premises for - (a) storing vehicles, or machinery, that are used for a commercial or public purpose; or (b) cleaning, repairing or servicing vehicles or machinery, if the use is ancillary to the use in (a).
Utility Installation	**Utility Installation** means the use of premises for - (a) a service for supplying or treating water, hydraulic power or gas; or (b) a sewerage, drainage or stormwater service; or (c) a transport service; or (d) a waste management service; or (e) a maintenance depot, storage depot or other facility for a service stated in (a) to (d).
Veterinary Services	**Veterinary Services** means the use of premises for - (a) the medical or surgical treatment of animals; or (b) the short-term stay of animals, if the use is ancillary to the use in (a).
Warehouse	**Warehouse** means the use of premises for - (a) storing or distributing goods, whether or not carried out in a building; or (b) the wholesale of goods, if the use is ancillary to the use in (a). *Examples of a warehouse included self-storage facility, storage yard*
Wholesale Nursery	**Wholesale Nursery** means the use of premises for - (a) the wholesale of plants grown on or next to the premises; or (b) selling gardening materials, if the use is ancillary to the use in (a).
Wholesale Supplies	**Wholesale Supplies** mean premises used for the display, sale or hire of goods or materials by wholesale only to businesses that have an Australian Business Number.
Works Depot	**Works Depot** means a building or place used for the storage (but not sale or hire) of plant, machinery or other goods (that support the operations of an existing undertaking, including construction) when not required for use. This includes ancillary temporary office facilities and amenities supporting such a depot.