AIRPORT ADVISORY COMMITTEE MEETING 13 DECEMBER 2023 ATTACHMENTS

City of Busselton
Geographe Bay

DRAFT FINAL AIRPORT MASTER PLAN

BUSSELTON MARGARET RIVER AIRPORT

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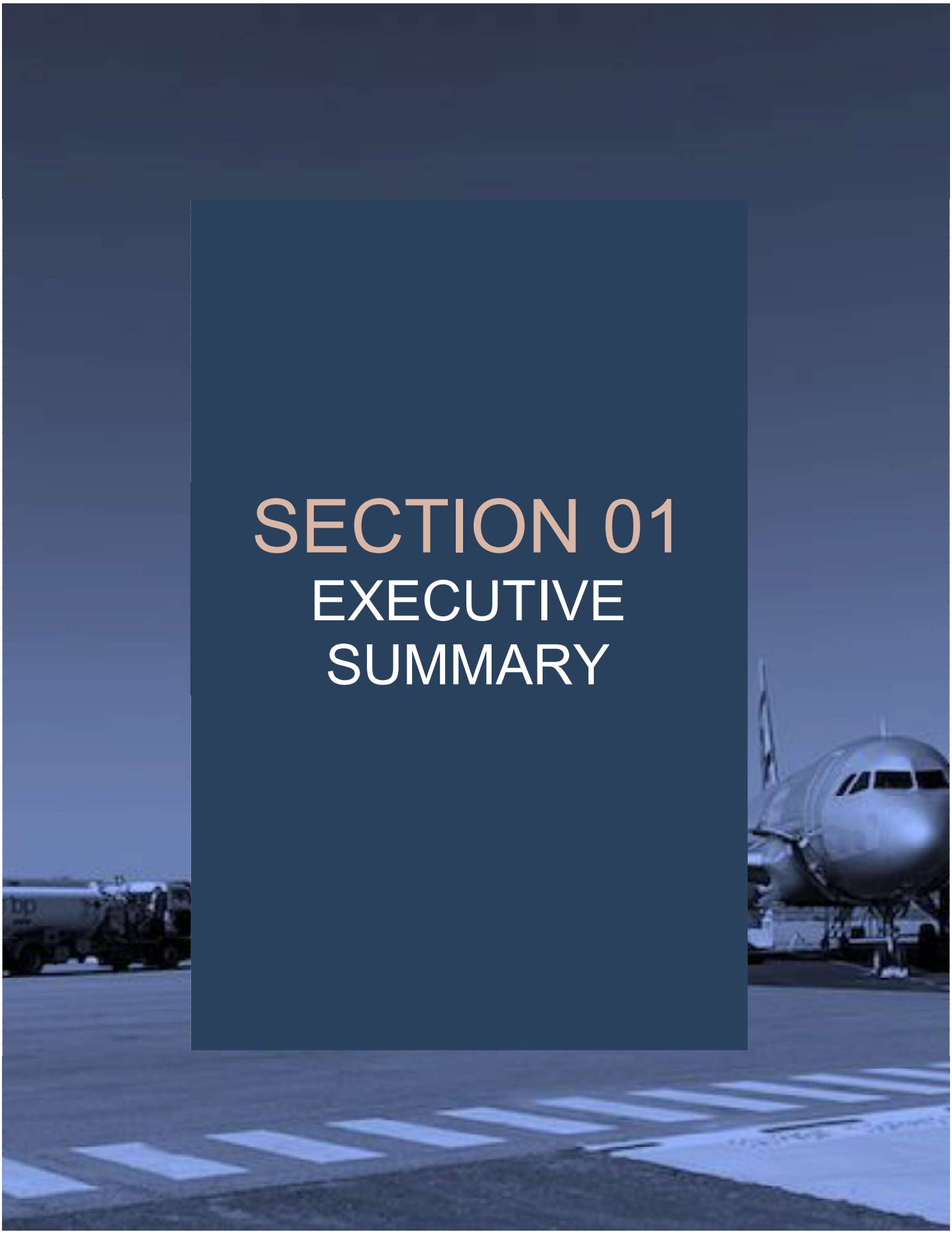


SECTION 01
EXECUTIVE SUMMARY

01 Executive Summary

In March 2022, it became possible for visitors to arrive directly into Busselton by air from Melbourne, with visitors no longer needing to drive from Perth adding hours to their journey. The sector has become extremely popular with visitors and residents such that growth of the route and additional services are planned. The ability for this to occur is a direct result of the efforts made by the City of Busselton (City) since 2016 to develop the Busselton Margaret River Airport (BMRA) as a regional aviation hub for both residents of and visitors to the region. It is therefore of critical importance to ensure that plans are established for the long-term future of the facility, so that it can continue to serve its purpose into the future. The BMRA Master Plan is the plan for the future of the airport. Some of the facilities and activities identified in the BMRA Master Plan will be developed in the near term, whereas some will take several years to justify and might be expected to be implemented in 10 to 15 years from now. The Master Plan identifies areas of the airport site that are reserved to enable the City to react to opportunities that might develop in the future but are not presently apparent thus giving the City flexibility to react to a changing landscape and business practices.

Since March 2022, a Jetstar Regular Passenger Transport (RPT) service using Airbus A320 aircraft has operated linking the Busselton Margaret River region directly to Melbourne. The RPT services started with 3 flights a week and the carrier will increase services in 2024 with direct flights to Sydney. The airport also services Fly-In-Fly-Out (FIFO) operations, ferrying workers to the various mineral extraction sites across the North West of Western Australia. The FIFO flights support the mining resources roster schedules, with swings that are currently concentrated on Tuesday, Wednesday and Thursdays. Traffic forecasts for BMRA were prepared as part of this Master Plan and identified growth in demand for both tourism and resident travel which shows increases in services throughout the week and so filling out the flight schedule.

“The BMRA Master Plan is the plan for the future of the airport.”

The forecasts also show demand for new sectors linking BMRA with Sydney, Brisbane, Singapore and Denpasar.

BMRA peak period passenger volumes are forecast to grow between present day and 2033. From that point onwards, additional passenger traffic growth would occur outside the peak period or fill out the week on non-peak days. Consequently, the Master Plan has addressed facility development driven primarily by the current deficiencies that exist in terms of capacity to reflect the nature of expected growth in passengers and flights, and the infrastructure required to serve this type of growth. Peak period demand on facilities is expected to grow until midway through the forecast period increasing demand on passenger facilities in the near term. Additional FIFO morning departures and RPT peak period arrivals will increase between 2025 and 2033, peak period demand will then level off and remain constant through to the end of the forecast period of 2043.

Opportunities such as additional facilities for Car Rental firms, a GA Precinct, Aircraft Maintenance, Fixed Base Operators, Airline Support organisations etc., were identified and explored to determine how the airport could contribute to the economic activities at and around the airport. Detailed analysis of responses to growing traffic or economic activity were examined and options for responding were developed. These options were considered and refined to reflect the journey from the present day BMRA to the Master Plan development for 2043. The Master Plan tells the story of this journey through three development phases. The BMRA Master Plan is depicted as a layout plan for the site in Exhibit 1.

The scope of development proposed for the BMRA through the Master Plan period has been separated into 3 phases, reflecting priorities determined through analysis of capacity and deficiencies, as well as perceived needs and opportunities.

As far as the proposed phases of development are concerned, these comprise the following:

Phase 1
Between 2023 and 2028

Phase 2
2028 to 2033

Phase 3
2033 to 2043

page 3

PHASE 1

The requirement for a new passenger terminal was identified in the previous Master Plan (2016) however due to the withdrawal of funding the terminal building was not constructed. As a result, the current Arrivals and Departures Passenger Terminals are operating beyond their capacity. As such, a new passenger terminal, located adjacent to the Southern Apron is required to be constructed in Phase 1. The terminal should be sized to accommodate the 2033 forecast peak demand as peak demand remains constant from 2033 to 2043. The passenger terminal also needs to accommodate international processing as international services are forecast to start in approximately 2028. International flights are anticipated to occur outside the peak period to fit into commercial scheduling patterns at the destination airports. Consequently, designers can then use operable walls and swing gates to minimise the building footprint. Phase 1 will see the GA Precinct lease established and initial hangars constructed for recreational and general aviation activates off Taxiway D1.

PHASE 2

Introduction of international operations will present the opportunity for local businesses, producing high value goods, particularly in the seafood industry, to export produce to Asian markets quickly. To support the economics of operating an international flight, the carrier will want to fill any excess cargo space on the aircraft. For a narrow body flight using an A320 type aircraft, there will likely be between 7 and 14m3 of additional cargo space available on each flight. To process and prepare the cargo for export, there needs to be an airfreight facility, which should be developed in time for the introduction of international flights.

Domestic operations tend to do most of the flight preparation at the major base or airport. For the current Melbourne sector, Jetstar conduct the cleaning and catering resupply prior to departing Melbourne, with no catering taken on in Busselton as the aircraft is carrying adequate supply for the return leg. Cleaning of the aircraft will be conducted but the level performed in Busselton will be minimal with a more thorough cabin preparation completed at the end of the operation in Melbourne. For an international operation, such as a flight to Singapore, the longer duration of the flight and the possibility of wishing to provide a more premium service, there is a probable need for a more thorough cleaning of the aircraft and inflight catering to be loaded at BMRA. This higher demand for servicing aircraft will result in the need for companies in the airline support industry to establish some presence at Busselton to support the developing international market. Introduction of international flights will therefore spur development in the Airline and Airport Support Precinct.

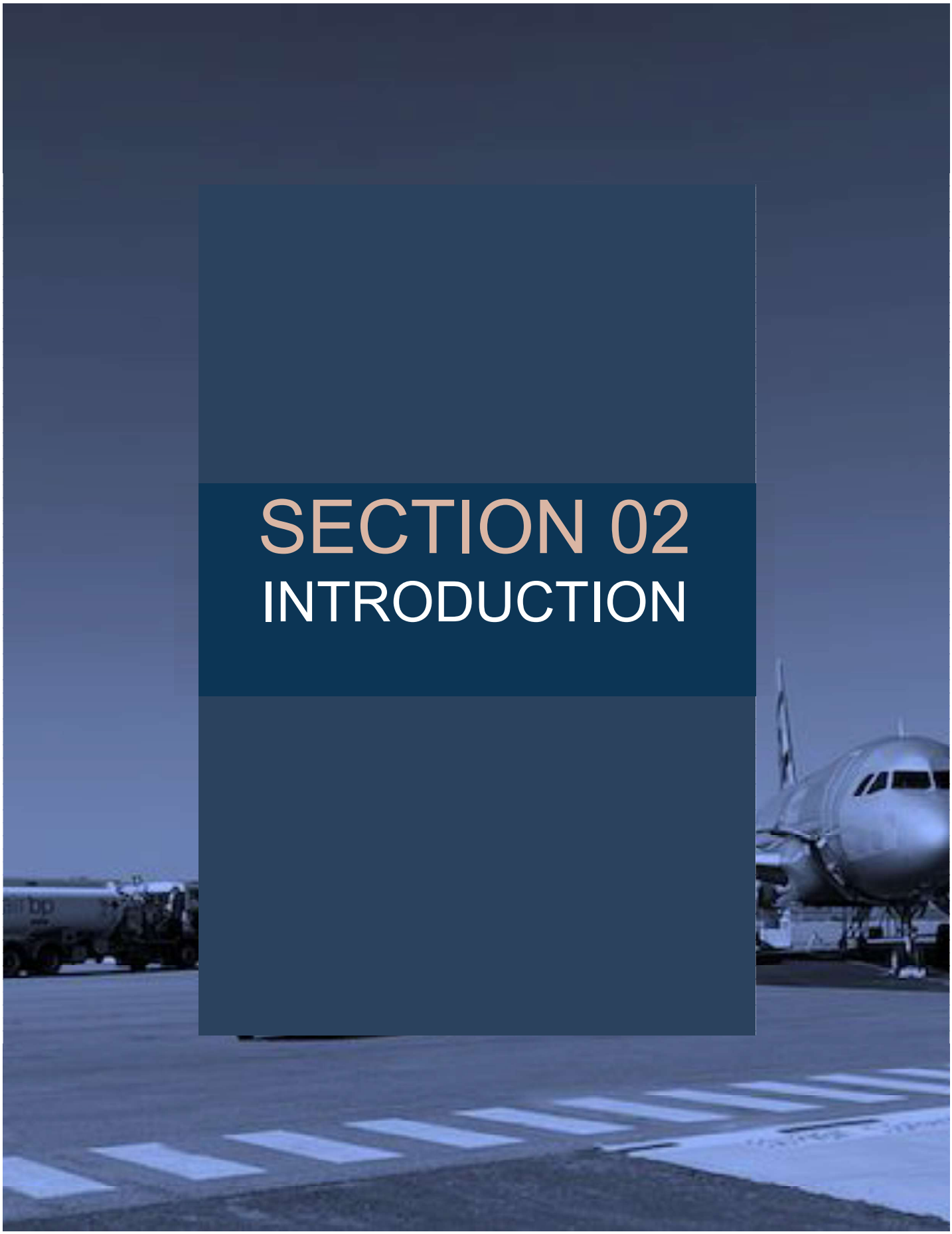
The forecasts identify the development of additional flight routes to major domestic city pairs during Phase 1 and Phase 2. The likely developments would be Sydney and Brisbane services. These flights will very likely target the same arrival and departure period as the existing Melbourne services. The forecasts identify up to five arrivals in the peak hour. For this to occur, at least one arrival must turnaround and depart within the hour and provide enough of a buffer to ensure the stand is prepared and available for the next arrival. As the demand for stands increases close to the capacity limit, it is recommended that the City expand the Southern Apron to five stands in Phase 2.

The BMRA is expected to reach the domestic passenger throughput numbers necessary for Level 2 Aircraft Rescue and Fire Fighting (ARFF) facilities during Phase 2. In addition, the introduction of international services will require the presence of Level 1 ARFF facilities. Therefore, during Phase 2 ARFF facilities are necessary and should be provided before either of these milestones are reached.

PHASE 3

Forecast passenger traffic is expected to grow in Phase 3 with growth forecast to occur outside peak periods and on off-peak days with carriers adding services on additional days of the week, growing towards daily services. In addition, FIFO services are forecast to continue to grow, however the peak hour is not forecast to increase and therefore, the passenger terminal will not need further expansion during this phase.

With the potential growth of international services, a carrier may choose to operate a widebody aircraft to BMRA. If this was to occur, BMRA would need to provide a suitable aircraft stand equipped with a refuelling hydrant system. During this phase, the Southern Apron should be expanded further to provide a total of 6 Code C stands. This will relieve pressure on the apron in the event of off-schedule operations during the peak period. The additional stand will be capable of accommodating Code C or Code E aircraft. It would be equipped with hydrant refuelling to facilitate a reasonable turnaround time for a Code E aircraft. By providing the hydrant fuel system at the most southern stand, it reduces the distance to the new fuel storage facility and therefore reduces the cost to implement.



SECTION 02
INTRODUCTION

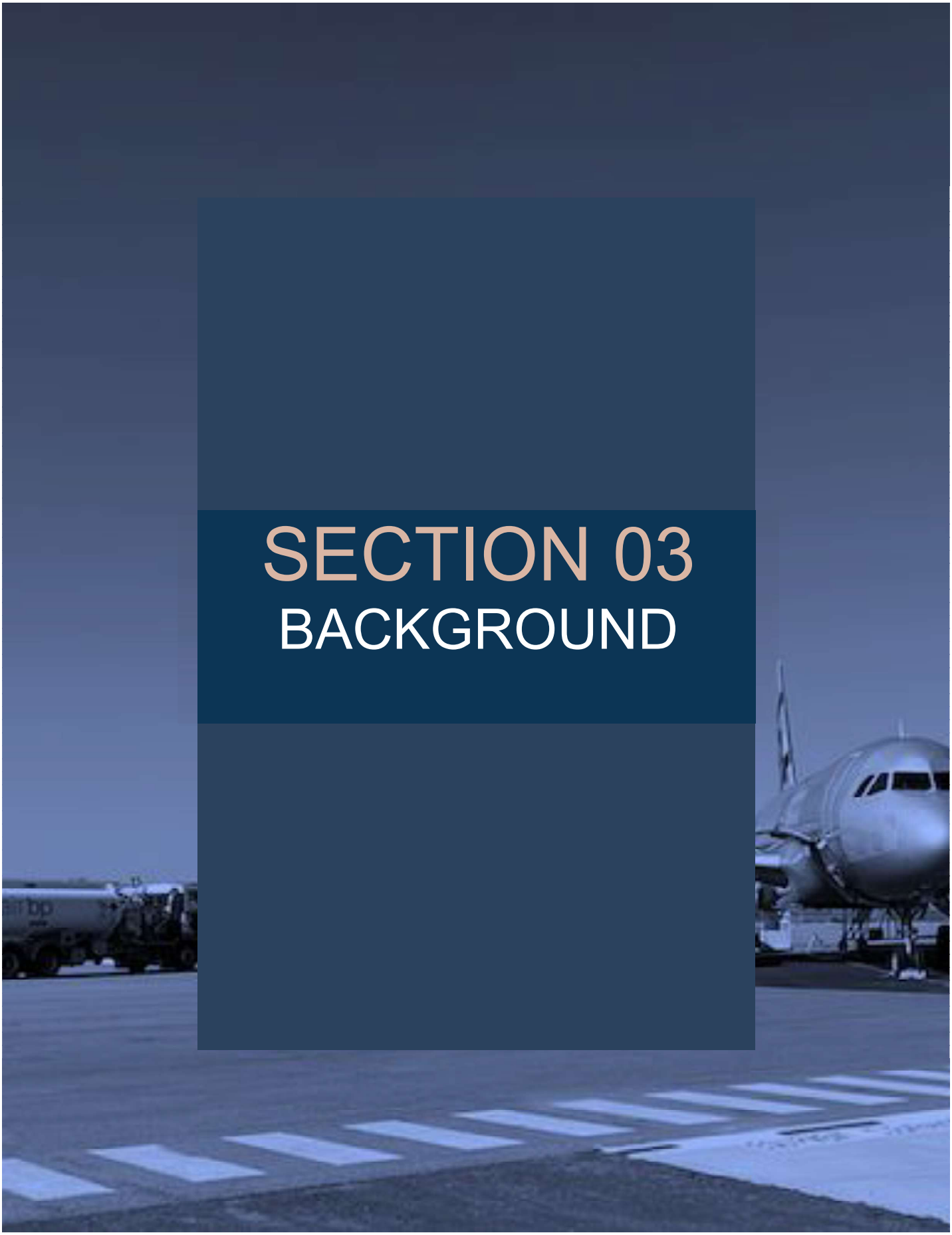
02
Introduction

three consulting in association with Leading Edge Aviation Planning Professionals (LEAPP) were appointed to produce the 2023 Busselton Margaret River Airport Master Plan. This document examines the historic airport traffic, current demand, and forecasts the aviation activity through to 2043 for Busselton Margaret River Airport (BMRA). Most of an airport's operational focus and revenue generation is determined by passenger flows through the facility, making this exercise a key aspect of the master planning process. The BMRA Master Plan then examines the existing airport infrastructure and identifies what infrastructure would be needed to accommodate the 2043 forecast aviation activity.

In the period between 2016 and 2018, the airport experienced a significant airside upgrade with an extended and widened runway bringing the BMRA to Code E standard, new taxiways, general aviation aprons, a new Passenger Terminal Apron, upgraded central apron and new airfield lighting systems. With the level of development experienced during this period, the airport is in a good position to accommodate significant growth in air traffic. The main areas where further developments will need to take place revolve around attracting commercial tenants and generating economic activity for growth of businesses in the region.

This Master Plan outlines the forecast traffic over the next 20 years to 2043. It identifies and safeguards the airport for the development of future commercial activity and how that activity interacts within the BMRA precinct.

"This Master Plan outlines the forecast traffic over the next 20 years to 2043."



SECTION 03
BACKGROUND

03
Background

The Busselton Margret River Airport (BMRA) originated as the Busselton Regional Airport which opened in 1997 with the primary objectives of improving tourism, business and emergency medical access to the South West region. The airport was served by short haul Regular Passenger Transport flights between Busselton and Perth, operated by Skywest Airlines, Maroomba and Skippers Aviation until 2001. At the time, the airport had an 1800m long by 30m wide runway serving turboprop aircraft operations.

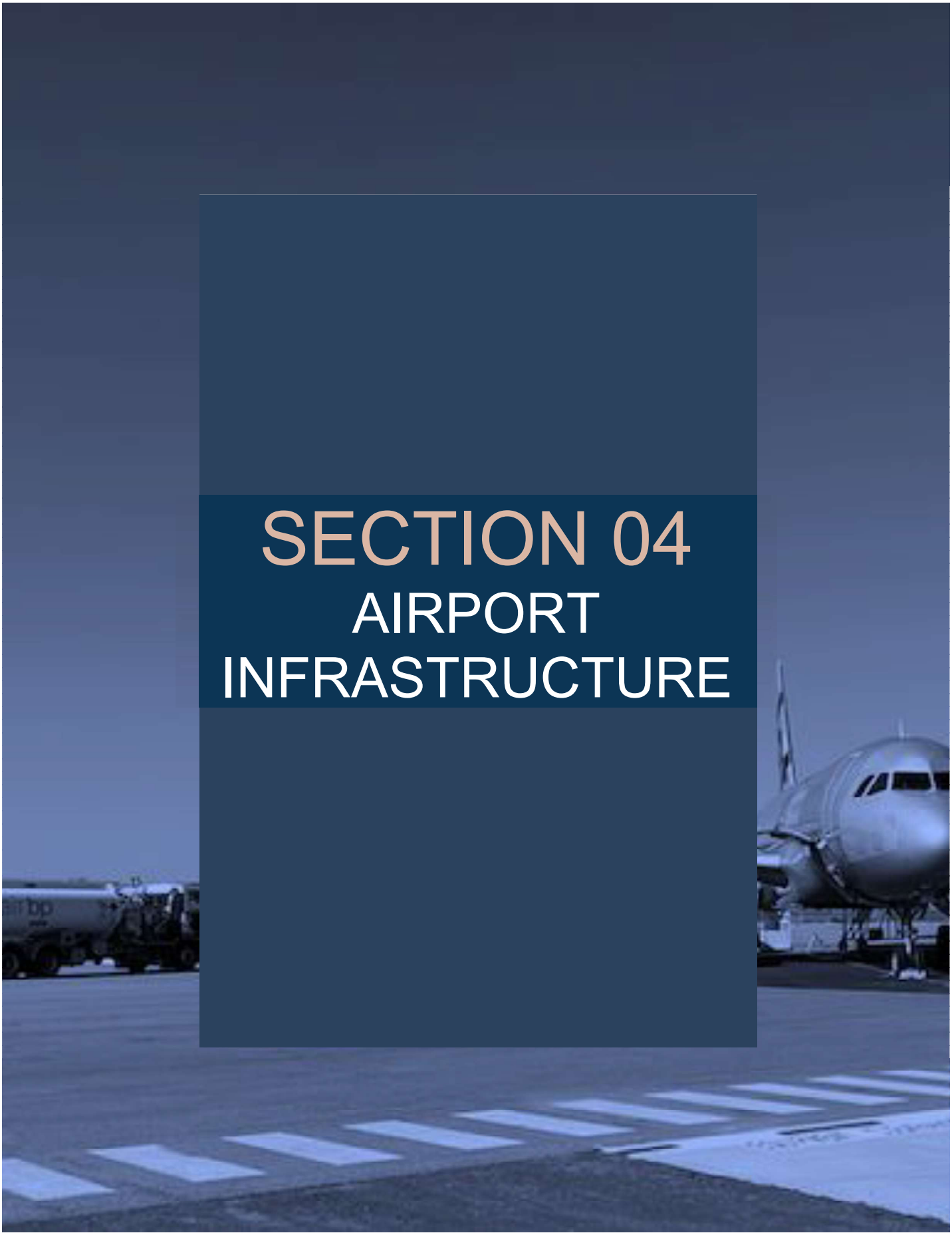
The first FIFO fight commenced in 2007 with Skywest operating services to the Pilbara for Rio Tinto. BMRA has seen a steady growth in FIFO traffic taking workers to various sites across the Pilbara, currently operating to eleven mine sites and regional airports with thirty-one flights per week. Busselton has successfully established itself as a source of FIFO workers and offers attractive and liveable lifestyle options for FIFO families. With the available housing and the lower cost of living in the Busselton region, BMRA is expected to see continued growth in FIFO traffic.

Starting in 2012, the City implemented a Noise Management Plan (NMP) for BMRA. The NMP was developed in response to community noise complaints and the need for the City to manage the level of noise generated from the airport resulting flight training. The NMP developed in coordination with the Office of the Environmental Protection Authority and extensive public consultation is reviewed and updated periodically. The NMP has resulted in some restrictions on certain types of activities such as the level of flight training, but has also given the City a means to manage noise levels and community expectations with respect to future noise levels, flight paths, hours of operations, Fly Neighbourly Agreements, noise complaint procedures, etc.

"With successive versions of the NMP, both the community and the City are now in a better position to control and manage noise impacts and aircraft operations."

The initial NMP imposed significant restrictions on the type and extent of operations at the airport, which had an impact on commercial activity. With successive versions of the NMP, both the community and the City are now in a better position to control and manage noise impacts and aircraft operations. Further refinements of the NMP over time, are expected to result in a less restrictive NMP giving the airport better ability to manage the resources while growing tourism and business opportunities for the region and improve the noise environment for the community.

The 2016 Master Plan outlined the required infrastructure development and in 2016/17, BMRA underwent a significant upgrade with a widening, extension and strengthening of the runway. This would prepare the airport to accommodate regular service by Code 4E aircraft. The new Southern Apron was developed to accommodate three Code 4C jet aircraft and one stand that could accommodate up to a Code F aircraft. A new General Aviation/Commercial Aviation precinct was developed and the Central Apron was expanded. Runway, taxiway and high mast apron lighting were installed. Access roads were upgraded and a new public car park constructed. The airport was prepared to serve regular domestic jet services to help grow the regional economy.



SECTION 04
AIRPORT INFRASTRUCTURE

04

Airport Infrastructure

The primary airport infrastructure comprises:

- Runway
- Taxiways
- Aprons
- Terminals
- Hangars
- Roads
- Fuel Facilities
- Lighting
- Navigational Aids
- Wind Direction Indicators
- Utilities

The existing airport infrastructure was extensively upgraded by 2018 providing the BMRA with the ability to accommodate air traffic growth for the City of Busselton and surrounding South West region. The existing infrastructure and airport layout has been provided in Exhibit 2.

Runway

The primary piece of infrastructure at the airport is the runway. BMRA has a single runway that is 2,460m long and 45m wide, oriented 028/208° magnetic and designated Runway 03/21. The runway pavement is grooved asphalt and has a strength of:

PCN 58 /F/A/1500(218PSI)/T Grooved

This means the pavement is a flexible pavement i.e. asphalt. The strength of the in-situ subgrade layer has a California Bearing Ratio (CBR) that is categorised as 'A'. An 'A' subgrade is considered as a high strength subgrade with a CBR value of 13 or higher. Determining the pavement strength is identified as 'T' which indicates that a technical evaluation was conducted to determine the PCN strength. A technical evaluation is conducted by testing the pavement which gives very accurate readings. Using the PCN/ACN system, the strength of the pavement is reported as a PCN of 58.

To assist the removal of water from the runway and ensure there is adequate friction, the surface of the runway is grooved. This process greatly reduces the potential for hydroplaning when the runway is contaminated with water.

Based on the current runway exit/entry positions, runway capacity would be approximately 8 to 12 movements per hour depending on the aircraft mix that is active on the runway. This capacity recognises that:

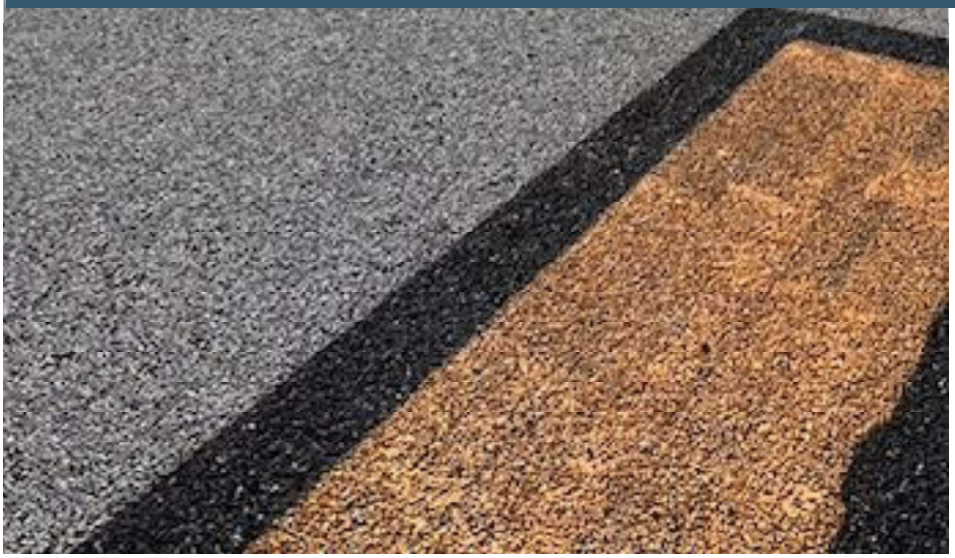
- the airport is an uncontrolled airport,
- aircraft need to turn around at the end of the runway before taxing back to the apron,
- aircraft need adequate separation, and
- aircraft need time to taxi from the apron to the end of the runway and turn around before lining up and departing.

During times of common aircraft type operation such as the morning departure wave of FIFO services, or when only small aircraft are operating, higher throughput rates can be achieved.

Taxiways

There are five taxiways at BMRA, designated Taxiways A, B, C, D and E. Taxiways A and B connect the runway with the Southern Apron and both taxiways have been designed to provide adequate strength for the larger Code E aircraft that could use the runway and apron. The as constructed pavement strength for Taxiways A and B is the same as the Runway (PCN 58). Taxiway C extends from the approximate midpoint of the runway to the Central Apron. Taxiway C was constructed at the same time as the runway. The Airport reports the pavement strength for Taxiway C to be the same as the runway. Taxiway E runs parallel to the runway and connects Taxiway B, the central GA hangars, to the Central Apron and on to the Northern Apron. Taxiway E is 15m wide which limits the taxiway to aircraft with Outer Main Gear Wheel Span (OMGWS) of 9m which limits the aircraft to Code A, B and some Code C aircraft. The AIP information restricts Taxiway E to Code A and B aircraft. Pavement strength information is not available for Taxiway E.

Taxiway D connects the runway to the Northern Apron. This taxiway is 15m wide and is therefore limited to aircraft with OMGWS of 9m, limiting the aircraft to Code A, B and some Code C aircraft. This taxiway is similarly limited in the AIP to Code A and B aircraft. The strength of the pavement however, is unknown. In addition Taxiway D extends into the Northern Apron with Taxiway D1 used to access the southern portion of the Apron and Taxiway D2 used for access to the northern portion of the Apron.



Aprons and Stands

The BMRA has three aprons. The Central Apron is the primary apron for all FIFO and RPT flights. This apron can accommodate four Code C aircraft on independent self-manoeuvring stands. The Passenger Terminals and the Jet A1 and Avgas refuelling bowsers are located next to the Central Apron. The BMRA has the Southern apron for large aircraft use and two aprons for small aircraft use to the north.

1

The Southern Apron was identified in the 2016 Master Plan and constructed as part of the BMRA Development Project. The 2016 Master Plan forecast the commencement of RPT traffic and recognised that a new larger apron and passenger terminal would be needed. The development of the passenger traffic precinct was planned to be located at the southern end of the airport. The Southern apron was constructed to accommodate 4 aircraft stands permitting 3 Code C aircraft and 1 Code E aircraft, accommodating aircraft up to the size of a B787. The designations for the stands are Bays 1 to 4 with Bay 1 capable of accommodating a Code E aircraft and Bays 2 to 4 sized for Code C aircraft. During the development project, the passenger terminal was not constructed as anticipated, resulting in the Southern Apron currently experiencing limited use. All FIFO and RPT traffic continue to use the Central Apron due to the proximity to the existing Passenger Terminals.

2

The Central Apron is located in front of the existing Passenger Departure Terminal. This apron is able to accommodate 4 Code C aircraft as well as a number of small aircraft accommodated along the southern edge of the Central Apron. This apron, being located in front of the current Departure Passenger Terminal, is used for RPT flights, FIFO operations as well as any itinerant charter aircraft operations. The 4 Code C stands are designated Bays 8 to 11. Bay 9 is directly in front of the Departure Terminal and Bay 10 is located directly in front of the Arrivals Terminal.

The current Jet-A1 and Avgas 100LL bowsers are located adjacent to the Central Apron, towards the southern portion of the apron. The bowsers are available for self-serve access and therefore adequate parking space is available on the apron to permit aircraft to park in front of the appropriate fuel bowser for refuelling. Larger jet aircraft such as the RPT and FIFO aircraft are served on stand via a mobile refuelling vehicle operated by AirBP

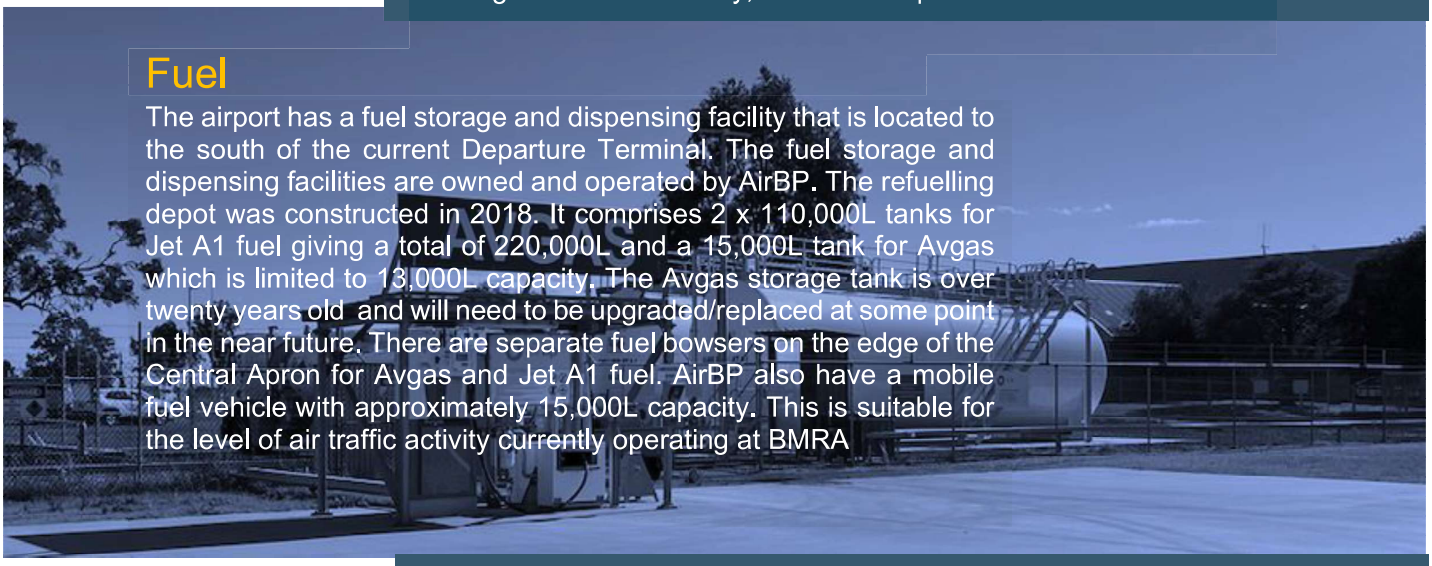
3

The Northern Apron Northern Apron was identified as part of the previous Master Plan and constructed during the Development Project. The Northern Apron is 43,158m2 and is divided into 3 sections accessed by Taxiways D, D1 and D2. Plans are currently underway to develop the D1 apron area as the recreational and private hangar zone.

The apron accessed by Taxiway D2, is expected to be a more traditional arrangement of hangar lots. This apron is planned for Code B sized hangars that would be suitable for small GA businesses.

Central Hangarage

Located immediately to the north of the Southern Apron, are 3 hangar buildings. The 3 buildings contain 17 individual leasable hangar spaces, with the northern and central hangars constructed in 1998 and the southern hangar in 2009. In the past tenants pursued a mix of private, recreational, commercial and business activities. The northern and central hangars were purchased by the City of Busselton in 2015 and converted to short term hangar hire arrangements. This resulted in a reduction in private and recreational GA activity at the BMRA. A consortium of aircraft owners privately owns the southern hangar under a ground lease arrangement with the City, which will expire in 2029.



Fuel

The airport has a fuel storage and dispensing facility that is located to the south of the current Departure Terminal. The fuel storage and dispensing facilities are owned and operated by AirBP. The refuelling depot was constructed in 2018. It comprises 2 x 110,000L tanks for Jet A1 fuel giving a total of 220,000L and a 15,000L tank for Avgas which is limited to 13,000L capacity. The Avgas storage tank is over twenty years old and will need to be upgraded/replaced at some point in the near future. There are separate fuel bowsers on the edge of the Central Apron for Avgas and Jet A1 fuel. AirBP also have a mobile fuel vehicle with approximately 15,000L capacity. This is suitable for the level of air traffic activity currently operating at BMRA

Lighting

The Southern and Central Aprons are fully equipped with High Mast lighting. Blue taxiway edge lighting has been installed on the taxiways and the runway is equipped with white edge low intensity runway edge lights. These are operated remotely via radio.

Both runway directions have Precision Approach Path Indicator lighting systems (PAPI). The PAPI lighting system is used by pilots to ensure they have established the correct glide angle to the runway. In this case the PAPIs have been established at 3°. PAPI lighting systems have been installed on both sides of the runway and are operated remotely along with the runway edge lights

Navigational Aids

BMRA currently has a Non-Directional Beacon (NDB) used primarily for area navigation. There are NDB approach procedures for both runway directions. The Busselton NDB is part of the Backup Navigational Network (BNN) which was established to provide a land-based air navigation backup system in the event that the satellite based GNSS navigational network is not available to a pilot. The BNN was established in 2016 and it currently contains 200 backup land-based navaids at approximately 124 airports around the country. Air Services have begun a Post Implementation Review of the BNN however have not identified what the next steps are and if the existing navaids will be maintained, upgraded or decommissioned. The NDB does not provide significant improved access to the airport and its location restricts the ability for the airport to expand the Southern Apron. As such, BMRA will continue to lobby Airservices for the decommissioning of the NDB at BMRA.

"BMRA maintains a GNSS approach as well as multiple satellite based Required Navigational Performance (RNP) approaches to each runway"

BMRA maintains a GNSS approach as well as multiple satellite based Required Navigational Performance (RNP) approaches to each runway. These satellite approaches provide BMRA with non-precision instrument approaches for both runways providing increased accessibility for the airport. Approach minima varies for each RNP approach, however they provide for minima as low as 107.8m (354 feet) above the aerodrome elevation.

Wind Direction Indicator

There are 3 Wind Direction Indicators (WDI) located at BMRA. There is a WDI located near to the Runway 03 threshold on the west of the runway. The primary WDI is located to the east of the Southern Apron. The final WDI is located north of the Central Apron, in between the Central and Northern Aprons. Of these, only the WDI near the Runway 03 threshold and the WDI near the Southern Apron are illuminated.

Passenger Terminal

When the Busselton Regional Airport opened in 1997, a small passenger terminal was constructed. The introduction of FIFO flights in 2007 serving Rio Tinto operations and RPT (Perth – Busselton- Albany return services) in 2011, resulted in the terminal building being expanded. With the growth in FIFO services, it became apparent that the terminal was not large enough for the traffic experienced and the passenger terminal was further renovated and expanded in 2014. The terminal was able to support FIFO operations until 2019 when a further expansion of the Departures terminal and construction of the arrivals terminal was completed in preparation for the commencement of interstate RPT flights. The introduction of RPT flights in 2022 identified that the volume of passengers exceeded the capacity of the departures terminal and the departures sterile lounge was expanded again.

The Departure Terminal has a floor area of approximately 1322m2 and the Arrival Terminal of 755m2 giving a total of 2077m2. This floor area would provide an approximate Level of Service (LoS) C for a 2-way flow of 148 passengers in the peak hour or a 1-way capacity of approximately 74 passengers. The existing peak departure demand comprises of 2 Code C FIFO departures in the morning with a passenger volume of up to 243 passengers per hour consisting of either two A320 aircraft or a single A320 and F100 aircraft. The peak hour arrivals period is similarly comprised of 2 FIFO arrivals comprising of up to 243 passengers. FIFO arrival passengers tend to have carry-on luggage only and do not linger in the terminal. As such, the FIFO arrivals do not have a large impact on the terminal sizing. The RPT arrival from Melbourne, however, does have an impact on terminal sizing and LoS as a single operation of the A320 operated by Jetstar would have a demand for 288 passengers (2-way) at an 80% load factor. That demand could reach 360 passengers if the flight were to operate at 100% load factor. As such the terminal system is operating well above capacity and the need for a new larger terminal remains critical.

Sewerage and Water Supply

The airport is not currently connected to the mainline sewerage network that extends partway down the Vasse Highway. Therefore, all sewerage is treated onsite. The existing onsite septic system is currently operating beyond its capacity and designs are underway to upgrade the system to service the existing terminal and the new terminal once built.

Local Transport and Access Roads

The airport is accessed via Neville Hyder Drive from the Vasse Highway. The Vasse Highway links into the Bussell Highway which is in the process of being upgraded and Stage 2 is due to be completed in 2024.

MET Facilities

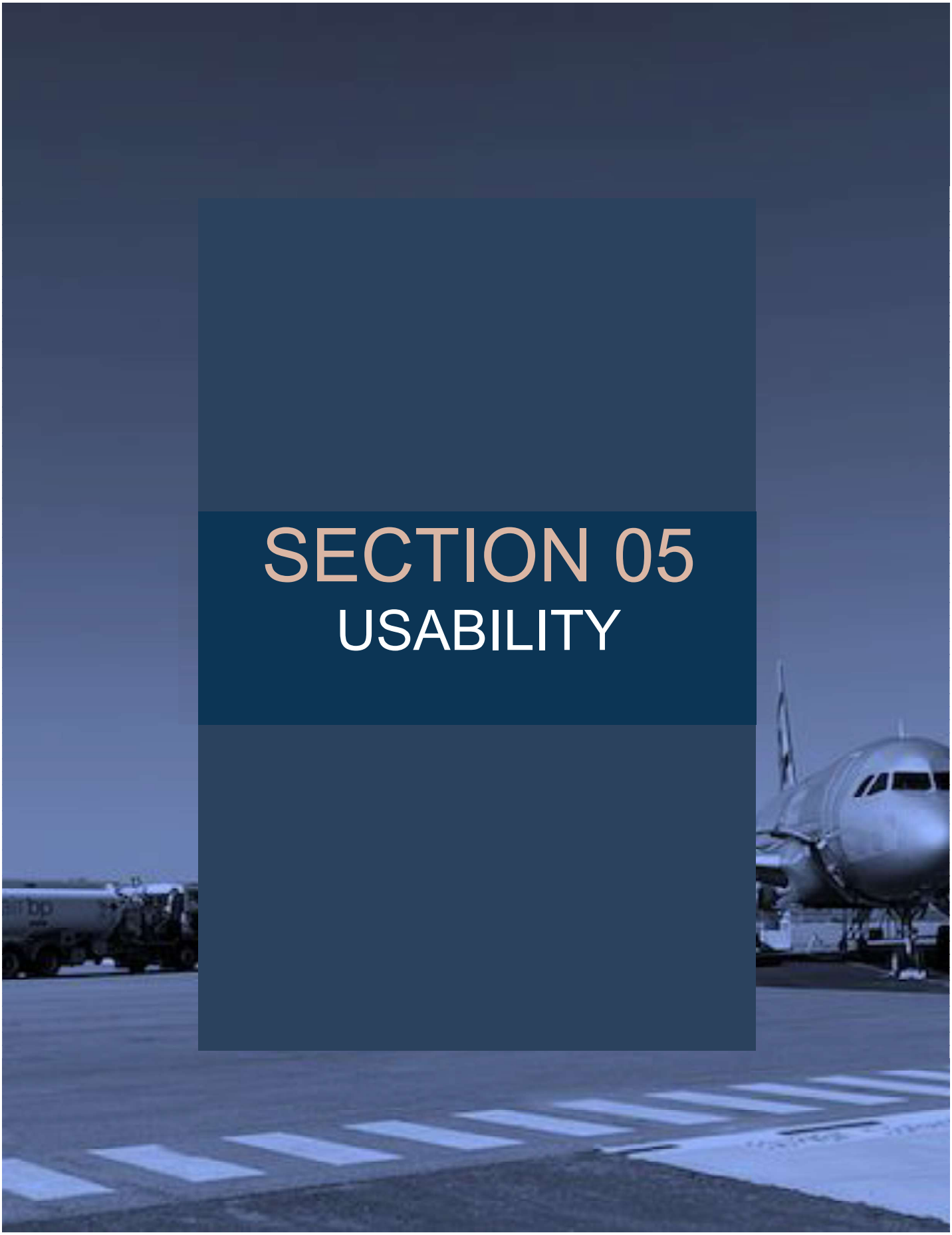
There is a Bureau of Meteorology facility containing meteorological instrumentation on the airport. This facility is located to the north of the North Aprons. Continually updated weather is provided by an AWIS service that is available via phone or broadcast on 128.05Mhz.

Car Parking

The City constructed a 422 bay public car park in 2019 which primarily provides parking for FIFO passengers. An extension to the public car park was completed in November 2022 with an additional 296 car parking bays added. Uptake of the facility has exceeded expectations and the City is exploring the development of additional long term parking to accommodate the growing demand for car parking spaces.

Aircraft Rescue and Fire Fighting

Air traffic at BMRA has not reached a level where the need for Aircraft Rescue and Fire Fighting (ARFF) services has been reached. Currently, an airport needs to have 350,000 passengers per annum for Level 2 coverage or 350,000 domestic passengers and international services for Airservices to implement Level 1 ARFF. As there is no ARFF at the airport, and emergency cover is provided by the local Busselton Fire and Rescue Services (BFRS) located on Harris Road. The BFRS facility is not a 24-hour facility and therefore the closest 24 hour fully staffed facility is the DFRS in Bunbury, approximately 40 minutes away. Ongoing discussions are taking place with Airservices Australia (ASA) to determine how best to provide ARFF cover such that BMRA can be used as an alternate aerodrome as early as possible.



SECTION 05
USABILITY

05
Usability

Aerodrome Reference Temperature

Pilots use current temperature readings to adjust their aircraft performance to ensure they are within safe limits. However, temperatures fluctuate throughout the day and throughout the year but planning requires the use of a temperature for facilities planning, that, although not the maximum recorded, is suitably high, to ensure pilots can reliably operate safely. The Aerodrome Reference Temperature is established to ensure that the facilities at the airport will be suitable most of the time, for the design aircraft. The Aerodrome Reference Temperature is calculated by taking the monthly mean of the daily maximum temperatures for the hottest month of the year. For current recordings, the aerodrome reference temperature at BMRA is 31.6°C.

Wind

Aircraft take-off and land into the wind. As such, the direction and strength of the wind dictates the ability of aircraft to operate. Wind directly down the runway aids the ability of the aircraft to generate lift and therefore reduces the length of runway used to take off. Winds blowing across the runway pose problems for aircraft and the difficulties are more pronounced for smaller aircraft then for larger aircraft. Airport planners will analyse wind data and determine what proportion of the historic wind records, aircraft of different sizes are able to operate.

Analysis of wind data for a 10-year period from 2013 to 2023, recorded by the Bureau of Meteorology at BMRA was conducted. The wind data obtained, recorded wind speed and direction every 30 minutes. The result is provided in Exhibit 3 and shows the prevailing wind strength and direction at BMRA. From Exhibit 3, it can be seen that winds from directly south, comprise the largest wind component, followed by easterly winds. Neither of these dominant wind conditions are the same as the runway alignment.

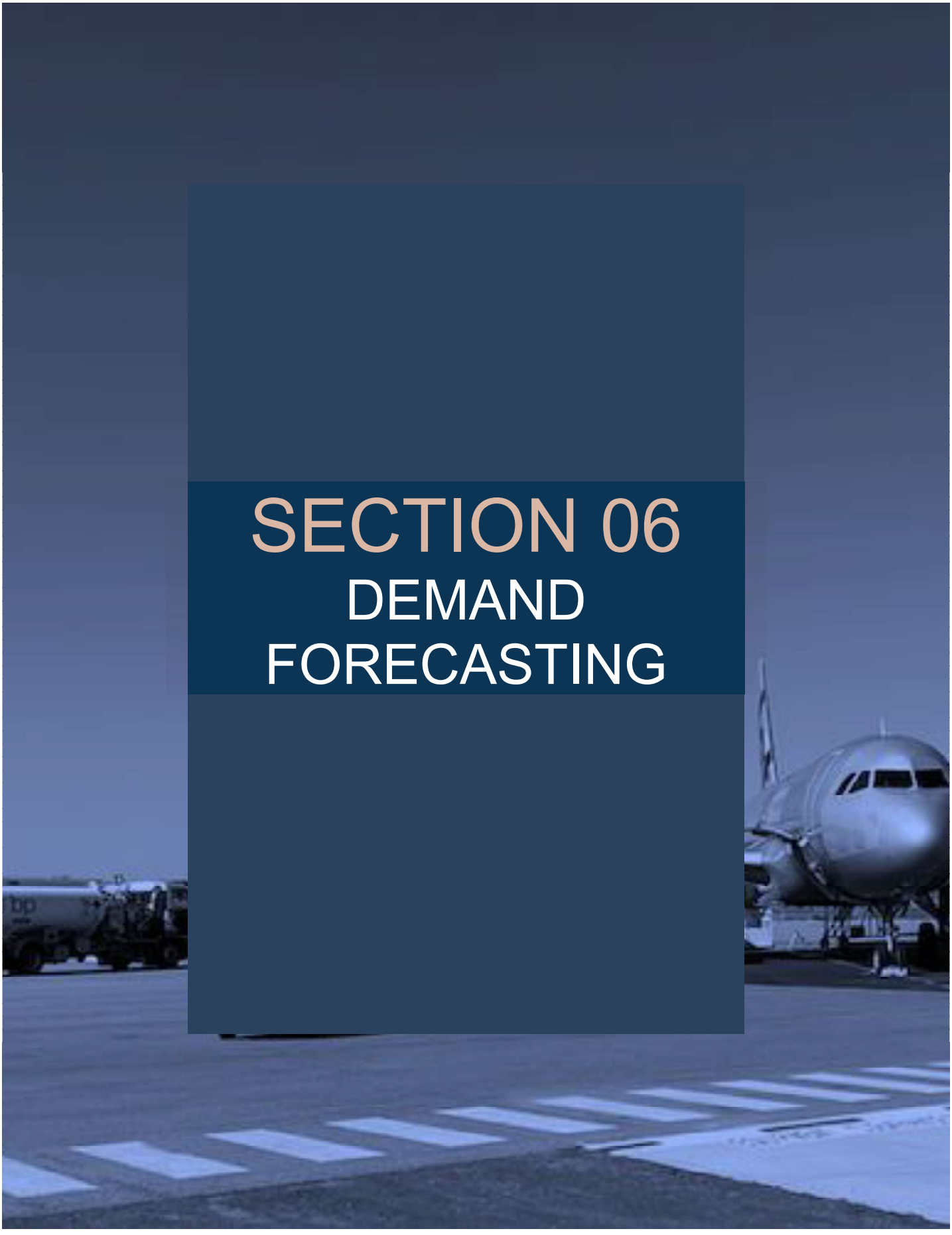
To accommodate smaller aircraft and to make operations of all aircraft easier, runways are often aligned as much as possible, according to the prevailing winds. However, it isn't always possible to construct lots of runways to give wind coverage for all wind conditions.

Therefore, it is important to determine what level of usability is available within the existing infrastructure. Although CASA no longer provides a target wind coverage, ICAO still identifies that an airport should provide runways that collectively provide 95% wind coverage for the crosswind limitation of the design aircraft or dominant aircraft type in use at the airport. To analyse the crosswind component in relation to the wind data, a windrose is created as shown in Exhibit 4 with bands identifying the typical crosswind limitations for different aircraft types. The typical crosswind limitations[1] used for this type of analysis and sample aircraft in each category are:

Crosswind Limitation	Example Aircraft	Runway 03/21 Wind Coverage
10 kts	Small Single Engine Aircraft eg: C150, Microlights, jabiru 120, PA-18	83.77%
13 kts	Single Engine GA eg: C172, Tecnam P92, Flight Design CTLS	90.97%
20 kts	Twin Engine aircraft eg: Beechcraft C350, Saab 340b and larger	99.51%

Large twin engine jets such as the A320 used by Jetstar, have maximum demonstrated crosswind limits well above the 20kts in the above chart. However, planners use a maximum of 20kts for determining wind coverage for a runway. As can be seen from Exhibit 4 and the table above, Runway 03/21 has a wind coverage of 99.51% for crosswinds of 20kts or below. This is well above the ICAO recommended coverage for the design aircraft i.e. RPT Code C twin jet aircraft. However, the wind coverage does not reach the coverage for smaller GA or recreational aircraft types. As such, these aircraft types will find operating at the airport more challenging or they will not be able to fly as frequently, due to crosswind conditions.

[1] *The crosswind limitation is in fact the maximum demonstrated crosswind from the aircraft's Pilot Operating Handbook. It is not necessarily a maximum that can be handled but a maximum experienced during the flight testing phase for the aircraft type. Experienced pilots may operate in higher crosswinds but inexperienced and student pilots are recommended to abide by the limitation.*



SECTION 06
DEMAND FORECASTING

06

Demand Forecasting

The development of air traffic at BMRA has shown itself to be dynamic and should be considered in the larger geographic context with Perth Airport (PER). Perth Airport is the state-capital facility, benefiting from superior network breadth (number of destinations) and network depth (number of frequencies) located approximately 2 ½ driving hours to the North.

Our approach was to define aviation demand for BMRA's catchment area, split into outbound residents and inbound visitors, and then further split into intra-state, inter-state and international visitors. These discrete demand buckets were formed based on long-term regressions where demand was correlated to economic and demographic drivers over a 20-year period. Resulting overall demand was then split into traffic passing through BMRA and traffic passing through PER, based on observations at similar airport pairs, such as Brisbane / Sunshine Coast, Sydney / Newcastle-Williamtown, and Melbourne / Avalon. Over time, as BMRA's aviation offer improves, BMRA's capture ratio (percentage of overall traffic passing through BMRA) will also improve.

The Busselton Airport Catchment Area

In keeping with past project work and the Master Plan 2016, BMRA's catchment area was defined as depicted on the map below, which is a function of drive times to neighbouring and competing airports, PER to the North and Albany (ALH) to the South East. In effect, BMRA's catchment area's Northern border lies between Waroona and Harvey and its South East border just East of Windy Harbour.

"Our approach was to define aviation demand for BMRA's catchment area, split into outbound residents and inbound visitors, and then further split into intra-state, inter-state and international visitors."

Population by LGA within BMRA Catchment

	2001	2006	2011	2016	2021
Harvey	17,224	19,556	23,237	26,920	28,567
Bunbury	28,564	29,702	31,348	32,670	32,987
Dardanup	8,332	10,339	12,405	14,390	14,686
Capel	6,517	10,206	14,638	17,510	18,175
Collie	8,387	8,614	9,127	8,900	8,812
Donnybrook-Balingup	4,297	4,741	5,320	5,940	6,155
Boyup Brook	1,536	1,480	1,588	1,690	1,834
Busselton	21,868	25,354	30,330	37,760	40,640
Bridgetown-Greenbushes	3,924	3,953	4,319	4,665	5,238
Augusta-Margaret River	9,655	10,353	11,761	14,700	16,791
Nannup	1,171	1,192	1,262	1,350	1,538
Manjimup	9,880	9,256	9,183	9,370	9,093
BQB Catchment Area	121,355	134,746	154,518	175,865	184,516
Western Australia	1,832,008	1,959,088	2,239,170	2,560,320	2,660,026
BQB Ratio	**6.6%**	**6.9%**	**6.9%**	**6.9%**	**6.9%**

	2026	2031	2036	2041	2043
BQB Catchment Area	200,295	217,054	234,633	253,246	260,993
Western Australia	2,880,046	3,113,748	3,357,651	3,615,082	3,722,003
BQB Ratio	**7.0%**	**7.0%**	**7.0%**	**7.0%**	**7.0%**

Based on ABS Census data and WA State Population Forecasts, the BMRA catchment resident population was around 185,000 in 2021 and is expected to grow to around 261,000 by the end of the forecasting period, in 2043. This represents a compound annual growth rate (CAGR) of 1.6%, just ahead of Western Australia's forecast CAGR of 1.5% over this time period.

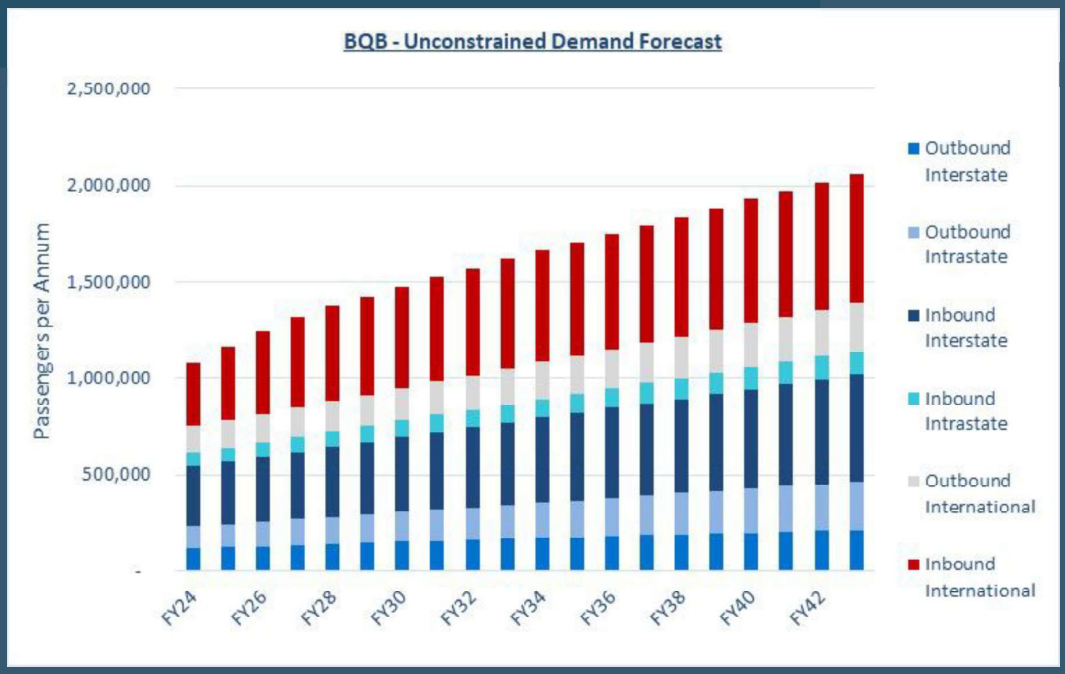
Put into a national context, the BMRA catchment area is Australia's 15th largest, larger than Darwin's and Albury-Wodonga's, however BMRA's RPT traffic generation ranks at around 75th, highlighting substantial traffic development opportunities over the forecasting period.


BMRA Catchment Area
Harvey
Collie
Bunbury
Dardanup
Busselton
Capel
Donnybrook – Balingup
Boyup Brook
Bridgetown-Greenbushes
Augusta Margaret River
Nannup
Manjimup
Narrogin
Darling Scarp
Stirling Range National Park
WESTERN AUSTRALIA
Perth

Unconstrained Demand Forecast

As outlined above, the forecasting process was started with establishing unconstrained demand levels for the BMRA catchment area. Results for the Base Forecast are shown below, showing demand levels of just over 1 million passengers in FY24, increasing to just over 2 million passengers in FY43. Data clearly shows that Australia's South West is more of an inbound destination than an outbound origin, with demand by international visitors producing the largest demand component. This highlights the importance to carefully navigate from unconstrained demand to actual traffic forecast as BMRA will never rival PER as an international gateway.

BMRA Catchment Area Unconstrained Demand Forecast



"Data clearly shows that Australia's South West is more of an inbound destination than an outbound origin, with demand by international visitors producing the largest demand component."

Traffic Forecast

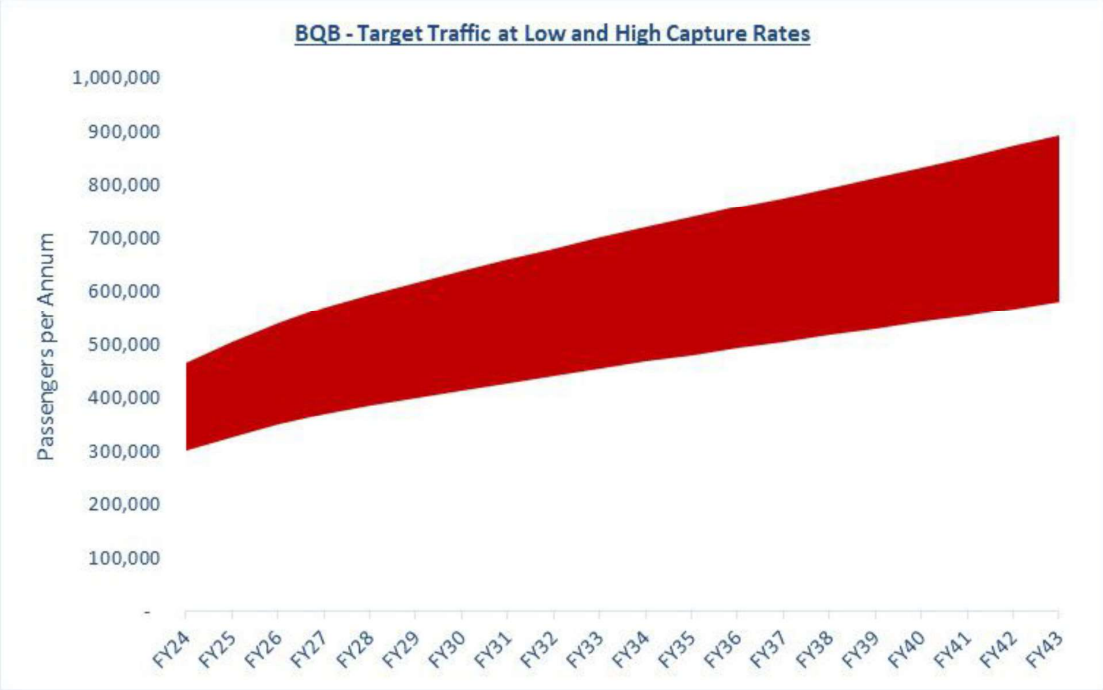
Demand and traffic forecasts differ and the situation at BMRA is a perfect example why that's the case. Traffic leakage is a common phenomenon in commercial aviation, it relates to passengers travelling to and from an airport's catchment area via a different airport, typically due to a more comprehensive aviation offer (network breadth and depth) and/or more attractive air fares. As pointed out before and due to BMRA's location in relatively close proximity to PER, leakage to PER is inevitable. The challenge is to create a meaningful and realistic traffic capture scenario, based on the demand assessment presented above.

We analysed similar airport configurations, wherein a smaller, regional airport competes against a larger state-capital airport in relative proximity in detail and were able to establish two ratios:

- When comparing traffic statistics of secondary airports with demand levels generated in their catchment areas over longer term periods, secondary airports appear to be able to capture around 40% of that demand
- When combining catchment populations for both the primary (state-capital) and secondary airports, the smaller airports are typically able to secure a traffic share of around one quarter of their population share. e.g. Avalon has a catchment area population of around 460,000; Greater Melbourne including Avalon has a catchment population of around 5.5 million, in theory Avalon's passenger throughput should be 9% of the total but in effect Avalon facilitates around 2.3% of Greater Melbourne area passengers, a quarter of its population share.

Applying these measures or capture ratios to the situation at Busselton suggests traffic outcomes over the forecasting period as shown below:

BMRA Catchment Area Unconstrained Demand Forecast



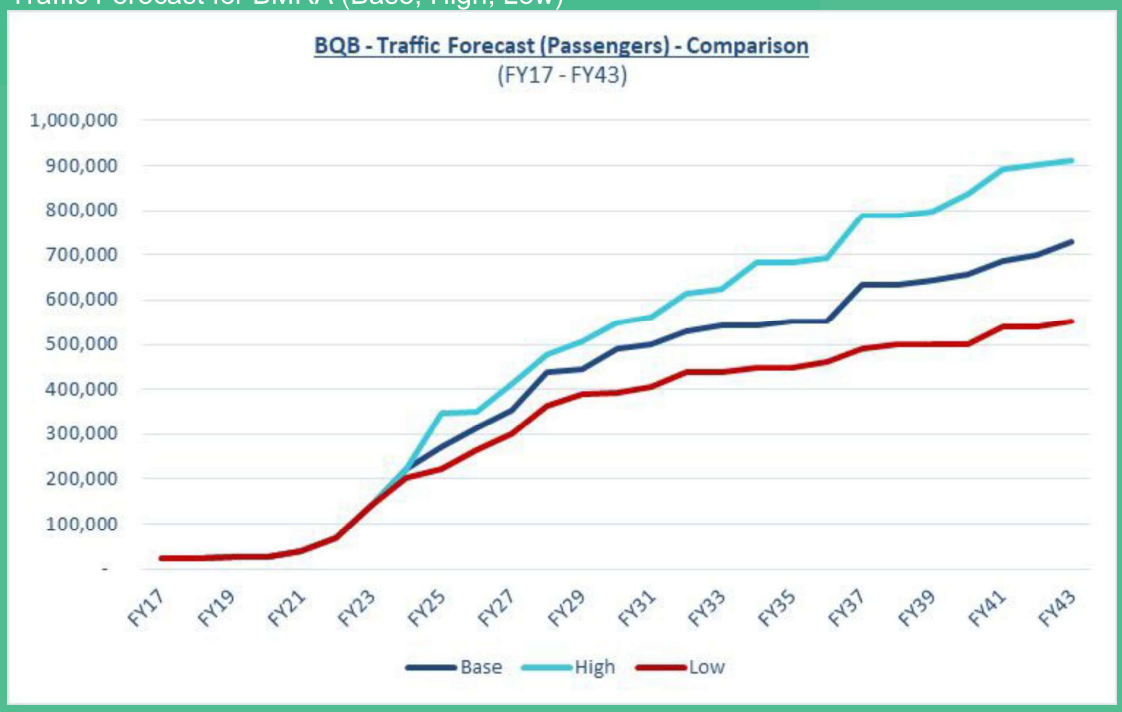
Analysing available data a step deeper highlights that capture ratios don't apply uniformly across a catchment area's demand profile but that different demand buckets are captured at different levels. In a steady-state scenario, the following ratios apply:

- Domestic Inbound: 50%
- Domestic Outbound: 60%
- International Inbound: 10%
- International Outbound: 20%

The combination of the above allowed us, as a first step, to build up an O&D market ranking for BMRA, and, ultimately to produce base, high and low traffic forecasts for the airport.

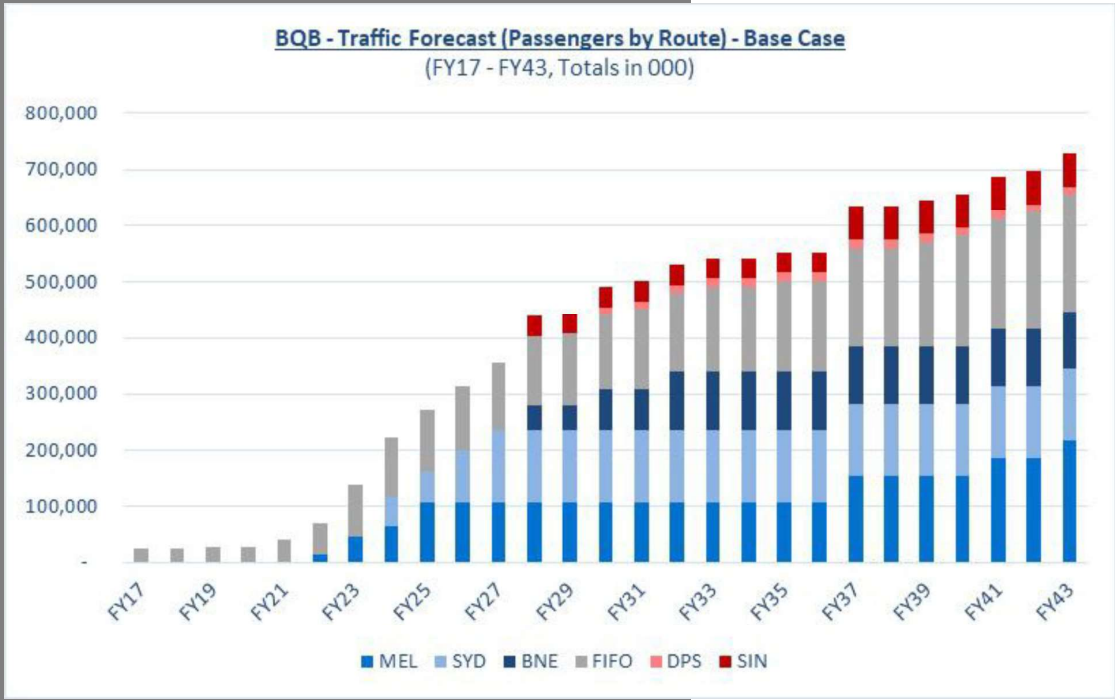
O&D Market Ranking for BMRA (FY23)

Traffic Forecast for BMRA (Base, High, Low)



Finally, the graph below shows how traffic is expected to develop across BMRA's route portfolio over the next 20 years:

Traffic Forecast by Route (Base Case)

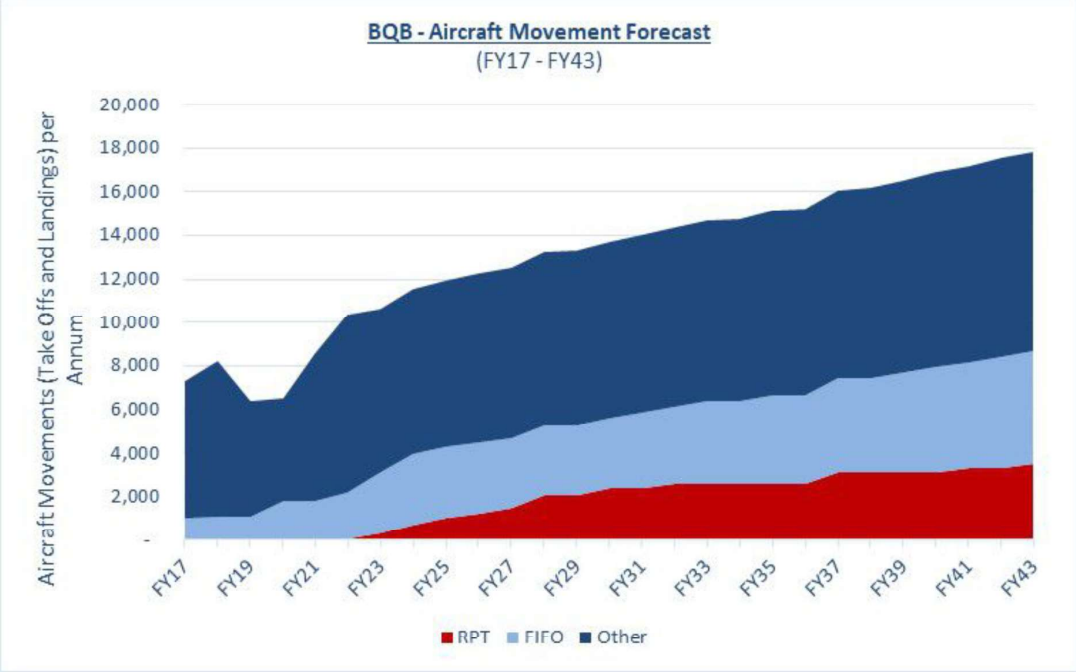


Aviation Activity Forecast

FIFO and RPT forecasts were translated into annual aircraft movements associated to these two categories. Aircraft movements in relation to other purposes (e.g. GA) have been in decline over recent years which is understood to have been primarily a function of many GA operators relocating to Bunbury Airport which offers more appropriate and better priced infrastructure to this segment.

As this historic lack of focus on the GA sector is set to be corrected during the current planning period, we see other aircraft movements return to historic levels and then increase at an annual rate of 1%.

Aviation Activity/ Aircraft Movement Forecast (Base Case)



All of the above is summarised on an annual level in the table below:

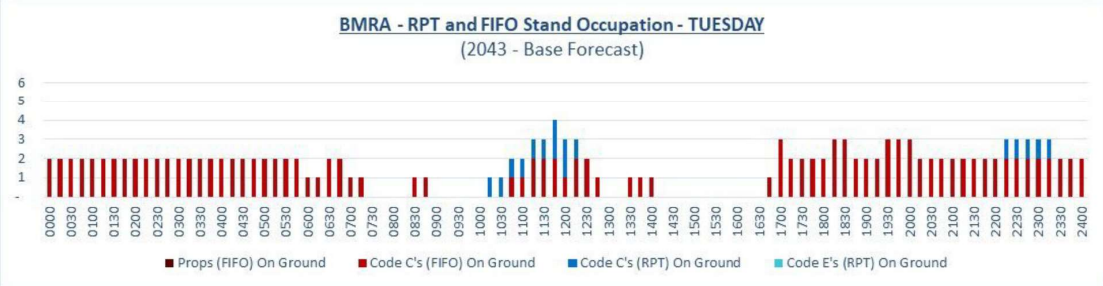
	Low Scenario - Traffic			High Scenario - Traffic			Base Scenario - Traffic			Base Scenario - Movements			
	RPT	FIFO	Total	RPT	FIFO	Total	RPT	FIFO	Total	RPT	FIFO	Other	Total
FY17	-	23,333	23,333	-	23,333	23,333	-	23,333	23,333		1,036	6,274	7,310
FY18	-	23,964	23,964	-	23,964	23,964	-	23,964	23,964		1,068	7,144	8,212
FY19	-	25,241	25,241	-	25,241	25,241	-	25,241	25,241		1,074	5,310	6,384
FY20	-	26,321	26,321	-	26,321	26,321	-	26,321	26,321		1,810	4,724	6,534
FY21	-	40,206	40,206	-	40,206	40,206	-	40,206	40,206		1,810	6,712	8,522
FY22	13,951	55,553	69,504	13,951	55,553	69,504	13,951	55,553	69,504	80	2,132	8,160	10,372
FY23	45,526	94,368	139,894	45,526	94,368	139,894	45,526	94,368	139,894	343	2,763	7,532	10,638
FY24	116,814	87,360	204,174	116,814	104,832	221,646	116,814	104,832	221,646	728	3,224	7,607	11,559
FY25	132,289	91,000	223,289	236,455	109,200	345,655	163,239	109,200	272,439	1,040	3,224	7,683	11,947
FY26	168,897	94,640	263,537	236,455	113,568	350,023	199,847	113,568	313,415	1,248	3,224	7,760	12,232
FY27	202,676	98,280	300,956	295,028	117,936	412,964	236,455	117,936	354,391	1,456	3,224	7,838	12,518
FY28	260,646	101,920	362,566	345,104	132,496	477,600	316,421	122,304	438,725	2,080	3,224	7,916	13,220
FY29	284,670	105,560	390,230	369,128	137,228	506,356	316,421	126,672	443,093	2,080	3,224	7,995	13,299
FY30	284,670	109,200	393,870	407,795	141,960	549,755	359,747	131,040	490,787	2,392	3,224	8,075	13,691
FY31	284,670	120,120	404,790	407,795	152,880	560,675	359,747	141,960	501,707	2,392	3,493	8,156	14,041
FY32	318,449	120,120	438,569	451,122	163,800	614,922	389,034	141,960	530,994	2,600	3,493	8,238	14,330
FY33	318,449	120,120	438,569	451,122	174,720	625,842	389,034	152,880	541,914	2,600	3,761	8,320	14,681
FY34	318,449	131,040	449,489	497,547	185,640	683,187	389,034	152,880	541,914	2,600	3,761	8,403	14,765
FY35	318,449	131,040	449,489	497,547	185,640	683,187	389,034	163,800	552,834	2,600	4,030	8,487	15,117
FY36	318,449	141,960	460,409	497,547	196,560	694,107	389,034	163,800	552,834	2,600	4,030	8,572	15,202
FY37	347,735	141,960	489,695	580,508	207,480	787,988	459,483	174,720	634,203	3,120	4,299	8,658	16,077
FY38	347,735	152,880	500,615	580,508	207,480	787,988	459,483	174,720	634,203	3,120	4,299	8,744	16,163
FY39	347,735	152,880	500,615	580,508	218,400	798,908	459,483	185,640	645,123	3,120	4,567	8,832	16,519
FY40	347,735	152,880	500,615	606,794	229,320	836,114	459,483	196,560	656,043	3,120	4,836	8,920	16,876
FY41	377,022	163,800	540,822	661,706	229,320	891,026	490,434	196,560	686,994	3,328	4,836	9,009	17,173
FY42	377,022	163,800	540,822	661,706	240,240	901,946	490,434	207,480	697,914	3,328	5,105	9,099	17,532
FY43	377,022	174,720	551,742	661,706	251,160	912,866	521,384	207,480	728,864	3,536	5,105	9,190	17,831

Busy Day and Busy Hour Assessment

Finally, we developed synthetic schedules for the last year of the forecasting period, 2043, which enabled us to define busy day and busy hour schedule and passenger throughput patterns. Whilst, at times, this is done via applying multipliers to busy day and busy hour patterns in the base year, we have long maintained, that this doesn't do the issue full justice. Schedules need to be created in a realistic manner, keeping the nature of the operation (e.g. FIFO and RPT), departure and arrival times at outstations as well as aircraft rotational parameters in mind.

Tuesday turned out to be the busy day in 2043 with up to four Code C aircraft on the ground simultaneously. However, the development of flights that results in the peak would develop between 2028 and 2033. As such the situation with 4 aircraft on the ground in the peak period would be seen from 2033

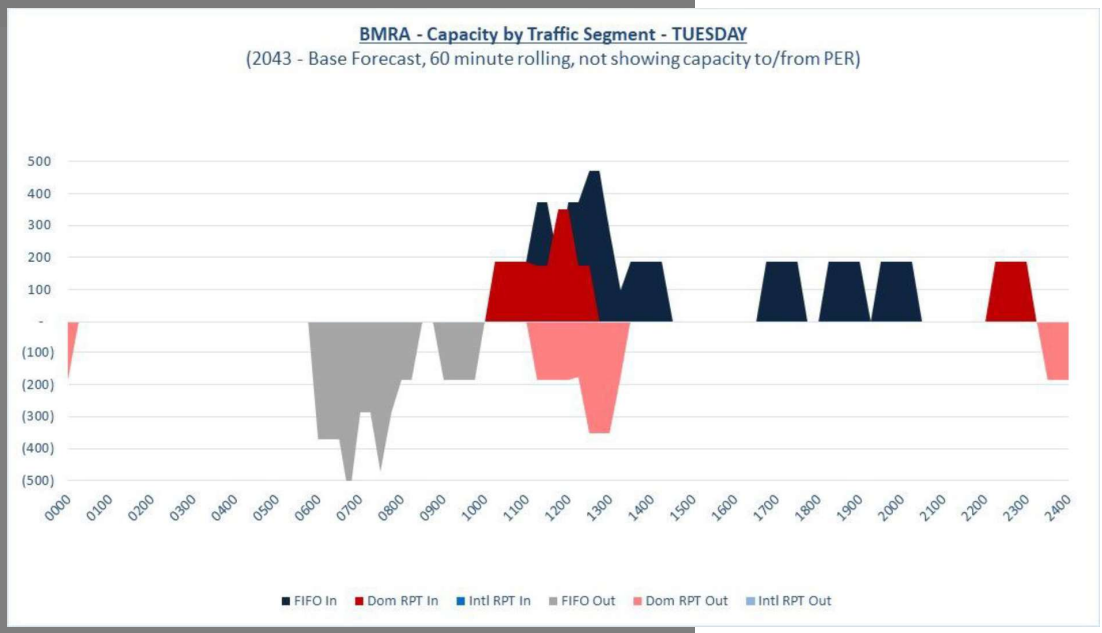
Busy Day Assessment (Base Case)



"Schedules need to be created in a realistic manner, keeping the nature of the operation (e.g. FIFO and RPT), departure and arrival times at outstations as well as aircraft rotational parameters in mind."

Whilst FIFO and RPT departure passenger loads are separated across the day (FIFO departures occur in the morning whereas RPT departures are concentrated around lunchtime), there is a distinct arrival peak of up to 800 passengers, driven by both FIFO and RPT operations, between 1200 and 1300hrs. With the short turnaround times of Code C aircraft used for FIFO and RPT, aircraft are able to arrive and depart within an hour and therefore the peak hour passenger demand is a result of up to 5 aircraft operations but only 4 aircraft happen to be on the ground at any one time during the peak hour. The FIFO aircraft would arrive and deplane the inbound FIFO passengers. The aircraft would then turn around and depart empty. The departure peak period develops to 3 departing FIFO aircraft in 2033 with up to 502 passengers. The nature of FIFO flights is such that flight schedules work around the shift changes at the mine sites. The departure peak is therefore expected to grow. Whilst shift changes currently occur on Tuesdays, Wednesdays and Thursdays only, we do expect Mondays to be added over time and, consequently, added Monday FIFO movements to our longer term forecast.

Busy Hour Assessment (Base Case)



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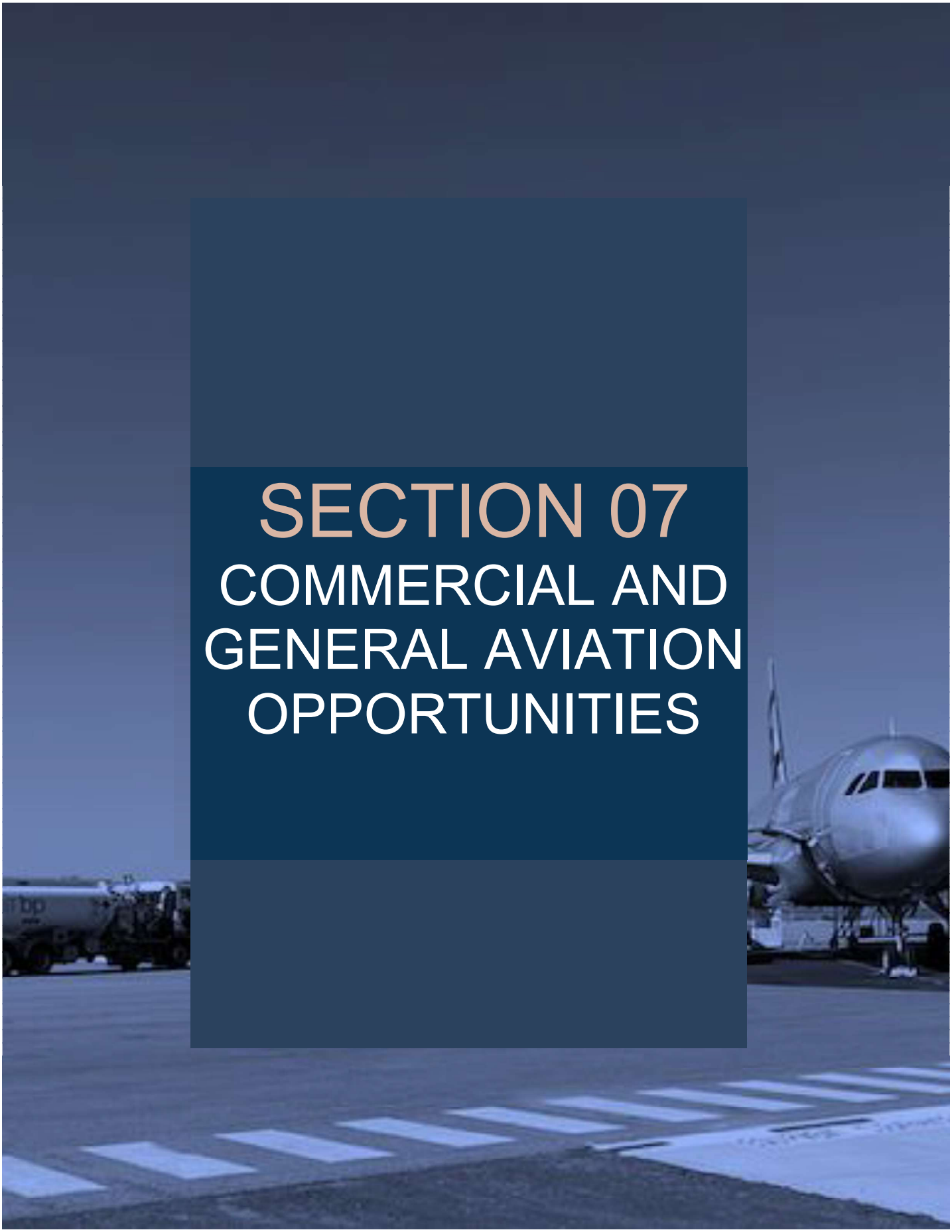


SECTION 07
COMMERCIAL AND GENERAL AVIATION OPPORTUNITIES

07

Commercial and General Aviation Opportunities

The expansion of BMRA in 2018 has resulted in undeveloped land being prepared for commercial development. The new General Aviation aprons present a large number of airside lease lots and the Central Apron is planned to be transformed into a commercial precinct once the new terminal has been constructed. Increased number of Code C aircraft movements and the prospect of international flights will present the opportunity for a number of businesses to establish themselves at the airport to support the airline activities.

The term General Aviation refers to all types of aviation activity that is not scheduled or Regular Passenger Transport. As such, a considerably wide variety of aerial activity and commercial aviation activity falls into the General Aviation category.

Private and Recreational Aviation

The BMRA is home to the Busselton Aero Club. The Aero Club conducts flight training for Recreational Aviation Australia (RAAus) pilot certificates as well as the CASA Recreational Pilots Licenses (RPL) and CASA Private Pilots Licence.

BMRA with its long runway and non-precision instrument approaches, was a popular airport for flight training, both for the local Busselton Aeroclub as well as other flight training schools based in Perth and Jandakot. With restrictive environmental conditions placed on the BMRA and community noise complaints reaching a high in 2010, the then Shire of Busselton restricted flight training at the BMRA with the exception of the Busselton Aeroclub. The BMRA Noise Management Plan, endorsed by the Environmental Protection Authority in 2012 placed strict limits on the nature and type of flight training that can be performed at the BMRA, which for the most part remain in place today. The overall impact of the restrictions on flight training and acquiring of the available BMRA hangar space, is that General Aviation at BMRA has dramatically reduced over time. However, with the high number of FIFO flights and RPT services, the BMRA is not reliant on General Aviation activity.

The Busselton Aero Club does have plans to grow its membership and increase small aircraft activity at the BMRA. More importantly, the Aero Club activity will provide the base market demand for other aviation businesses that will be important to the development of aviation business and commercial activity in the General Aviation Precinct.

Aerial General Aviation Business

General aviation business activity at BMRA is currently very low with a few businesses operating from the GA hangars on the north side of the Southern Apron.

The airport has 3 primary GA business areas; part of the Northern Apron, the Central Apron and the original GA area. No development has yet taken place on the Northern Apron.

Aerial Fire Fighting

The Western Australia State Government Department of Fire, Emergency and Rescue Services (DFES) have contracted a private aviation service provider to provide aerial firefighting with Large Air Tankers (LAT) based at the BMRA during the firefighting season. BMRA is ideally located to protect the South West region and accommodate the LATs as the airport has unconstrained airspace and good runway capacity for the LAT operations and space for associated facilities.

DFES also contract an aviation service provider to provide helicopter firefighting aircraft based at the BMRA, including 2 Bell 214 aerial firefighting helicopters

Lifesaving

Westpac Rescue Helicopter operates out of BMRA as part of the South West service. This service provides aerial surveillance between Bunbury and Hamelin Bay. The service operates between September and April to identify sharks near popular tourist areas and dangerous sea conditions. The WestPac Helicopter Service also provides rescue services as needed.

Charter Flights

A small number of private charter companies operate out of the BMRA offering sightseeing tours around the Busselton Margaret River region, particularly into the wineries. This includes helicopter operators, a Tigermoth flight experience and smaller GA style charters

Crop Spraying

Currently, there is no active aerial crop seeding/spraying operations from the BMRA. Given the proximity of the wine region and crop growing to the west and south of Busselton, there is an opportunity for aerial work related activities to base themselves at BMRA

Light Aircraft Maintenance

At present, aircraft maintenance is not offered at the BMRA. With the development of the Aeroclub, there is significant potential for businesses to support this activity. Light aircraft maintenance businesses would not only support the Aero club but also provide services for surrounding aerodromes and in particular Bunbury Airport which is a busy RAA and GA flight training airport. Note that a good and reputable AMRO, particularly one that has developed specialised services or supports unique and specialist aircraft, will attract business from across the country, rather than being limited to neighbouring towns and cities. For example, specialist aircraft restoration, recovering and painting services are not offered by many AMRO organisations. Organisations offering such services can have significant waitlists and therefore, there is scope for additional capacity through new organisations establishing themselves at airports where such services are currently not offered.

Heavy Aircraft Maintenance

Larger passenger carrying aircraft such as those used for RPT activities will undergo various types of maintenance activity. Airlines will carry out large aircraft maintenance at their primary base of operations or at an airport that has significant aircraft movements, reducing aircraft downtime and transportation costs. For the larger RPT aircraft, the market for heavy maintenance is world-wide. Carriers are able to ferry their aircraft considerable distances to other countries in order to save on the cost of maintenance. However, the aircraft being serviced need to be able to fly the distances necessary to get to the maintenance base. As such, overseas maintenance is possible for larger RPT aircraft such as the B737/A320 or larger, but not for the smaller RPT aircraft such as Q400 or Saab 340b. The smaller RPT aircraft therefore need to have all maintenance activity conducted domestically.

Most small carriers will provide some level of maintenance at or near their primary base of operations. Generally, RPT operators have route networks that extend from the state capital cities and therefore their preferred base for maintenance activity would be at that capital city airport. However, space at Perth Airport and Jandakot Airport are becoming increasingly constrained and therefore expensive.

AMROs in the greater Perth area may look to BMRA as a potential base for maintenance activity where there is plenty of available land and flying distances are short. As of writing this Master Plan, two such organisation have approached the City with interest in basing some of their maintenance activity at BMRA for large turboprop aircraft. With increased activity at Perth Airport, there is additional scope for BMRA to attract more aircraft maintenance activity and therefore establish itself as a maintenance hub with plenty of expansion capability, also attracting skilled labour to the region.

Spare Parts and Aircraft Sales

Supporting the light aircraft maintenance businesses as well as aircraft owners, firms specialising in the sale of aircraft parts, engines and avionics often choose airports as suitable locations. These businesses, unless also providing aircraft services, can be located in lots and facilities that do not have airside access. With online sales increasing, aircraft parts suppliers do not necessarily need to be located on an airport or on a busy airport.

The sale of new light aircraft has been low for a significantly long period in Australia. However, the introduction of the Light Sport Aircraft (LSA) category has started to see the introduction of new aircraft into the market at a lower price than traditional certified aircraft. With the lower cost of ownership with the LSA category, the number and variety of aircraft available for this market is likely to increase. In addition, the LSA category is expected to undergo a major overhaul in the next few years as the US FAA works through its Modernisation of Special Airworthiness Certification (MOSIC) which is expected to expand the LSA category to larger aircraft. If successful, there will be pressure worldwide for regulators in other countries including CASA to adopt some or all of the changes implemented in the US. If so, it could see more and larger aircraft become less costly to purchase, resulting in more demand and sales. The opportunity for BMRA, comes from an organisation looking for airside hangar space where they can set up hangar/showrooms for aircraft sales as well as take prospective buyers on test flights as part of the sales programme. Although, an organisation selling aircraft, may wish to locate, near large population centres, they will also want cheaper rent, a less busy airport and easy access to a training area where they can demonstrate the capabilities of the aircraft to a prospective buyer. BMRA has all these characteristics and is not far from the large population centres of WA.

Fuel Sales

There is currently a fuel farm supplying Jet-A1 and Avgas operated by AirBP. The fuel facility is located beside the old passenger terminal on the Central apron. The Avgas facility is now older than twenty years and due for replacement in the near future. With the Aero Club expressing interest in establishing a fuel facility to provide Avgas, closer to their future club rooms and hangars situated on the Northern apron it is likely to assume that the current Avgas facility would be decommissioned and a new facility located in the GA precinct.

The Jet-A1 tanks and bowser are relatively new but are not fixed permanently to the current location and therefore could be moved to make way for hangar development on the current site or to accommodate growth in aircraft size using the Southern Apron.

The current location for Jet-A1 fuel is suitable and a good location based on the current type and mix of traffic. RPT and FIFO aircraft take-on fuel at BMRA and therefore, as long as the RPT and FIFO aircraft operate from the Central Apron, the current location should remain. Once the FIFO and RPT traffic move to the Southern Apron, the AirBP fuel vehicle will need to shuttle back and forth. At the point when widebody aircraft start to operate to BMRA, refuelling via vehicles is not practical and therefore hydrant refuelling will be needed on any aircraft stand supporting widebody aircraft. At this point, due to the cost of piping between a fuel facility and the hydrant, a new fuel facility would need to be established.

Freight and Freight Forwarding

With regular scheduled flights developing and growing, there is an opportunity for air service providers to carry freight. With narrowbody aircraft, there is not a significant business opportunity for freight activity but as aircraft size increase or lucrative freight opportunities develop such as a Singapore flight, the need for freight facilities will increase. To support freight activity, an organisation will need to develop a suitable freight processing facility in an airside lease lot. With the potential for international freight, a facility will need to be developed such that a freight processing centre can be secured. In addition, as the high value outbound freight is likely to be some form of seafood and fresh perishables, suitable cold storage would be needed. It is possible for the City to develop the freight processing warehouse with individual freight forwarding firms to take up other leases on the airport. However, as the low volume of freight to be processed for domestic activity may not justify the cost of the facility, the City may seek to encourage a private organisation to develop the freight processing facility or develop it in partnership with the City.

Mail and Courier

As mail and parcel shipping increasingly occurs by air, it has become more likely for courier and mail businesses to take advantage of RPT services. Either a new freight operator or a well established organisation may take up space at the airport to support the mail and courier activity in the area. With regular RPT flights a reliable network can be established and therefore providing an opportunity for a courier, mail or freight operator to take up a lease on the airport.

Airline Support

There are a number of businesses that support RPT aircraft operations such as Flight Catering, aircraft cleaning, line maintenance, etc. These businesses would need to have space on the airport at some point in time. However, the need for many of these businesses, will not develop until international services start or towards the end of the Master Planning period or beyond. Facilities for these businesses have few special requirements and will be in the form of lease lots either landside or airside

GSE Maintenance

BMRA currently has a single RPT operation conducted by Jetstar who operate 4 services a week on an Airbus A320 aircraft. In addition to the Jetstar service, BMRA has 31 departures to the Pilbara region a week operating FIFO traffic on a mix of different aircraft types including turboprop aircraft through to A320. Therefore, ground handlers need to have a wide variety of GSE equipment on hand to accommodate these aircraft types. A constraint identified with the current operation is the amount of suitable GSE storage around the Central Apron to accommodate the GSE equipment when not in use. Although not a problem yet, space and facilities for the ground handling organisations needs to be identified to maintain the GSE equipment.

Aircraft Owner and Pilot Support

Many airports that are destinations for pilots or aircraft owners have been successful at developing what is known as a Fixed Base Operator (FBO). This can take many forms but, in this instance, would be an organisation that attends to the needs of aircraft owners, pilots or individuals travelling on their own usually in business jets or turboprop aircraft. An FBO would typically offer a lounge for the clients to use while waiting, a pilot briefing room, restroom facilities, catering, permit processing and even local transport. Some will also offer business services and meeting room rental. An FBO may also provide aircraft ground handling, lounges and support to pilots and clients waiting for their aircraft but may also provide hangarage for visiting aircraft and aircraft rental.

Specialist Aviation Business

With the large amount of space available for rent in the Northern Apron, there are opportunities for specialised aviation businesses. Specialised aviation businesses such as aircraft restoration, interior refurbishment, painting or aircraft parts manufacturing, have a nationwide market and therefore could locate at BMRA. Busselton is an attractive location to live with a growing workforce and the airport has ample space for growth of a business. The City has an opportunity to attract such businesses to the region.

SECTION 08
FUTURE DEVELOPMENT REQUIREMENTS

08

Future Development Requirements

Design Aircraft

The Design Aircraft is a concept that is used to assist in the planning of airports to ensure facilities are suitable and appropriate safety standards are used. The characteristics of the Design Aircraft set the requirements for the future development such as runway length required for operating, Obstacle Limitation Surfaces, pavement strength, taxiway widths and clearances. The Design Aircraft for the 2016 Master Plan was a progressive growth of aircraft used for design starting with the A320/B737 in Stage 2, growing to the A330/B787 in Stage 3 and ultimately the Boeing B747-800 in Stage 4, a Code F aircraft. As such, many of the decisions concerning development of the BMRA in the 2016 Master Plan were based on accommodating the Code E or the Code F aircraft. Some of the development that took place was based on the needs of the Stage 2 Design Aircraft. However, where facilities would need to be moved, rather than expanded, the Stage 3 or 4 Design Aircraft was chosen, allowing the airport to safeguard future development.

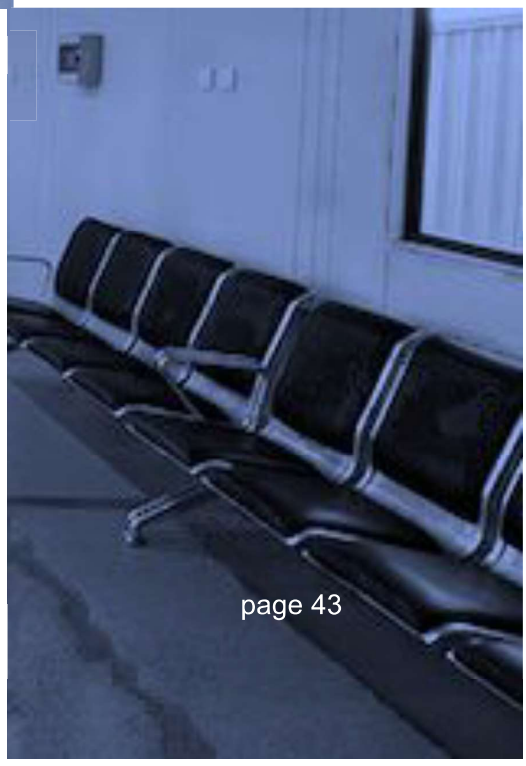
For this 2023 Master Plan, the largest aircraft forecast for operation in the Base Case Forecast, is the A320/B737 sized aircraft or a Code C aircraft. As such, for most facilities the Code C aircraft is used for planning purposes. However, the High Forecast discussed in Section 6, identifies the possibility of international carriers initiating services using the larger A350 and B787 aircraft which are both Code E aircraft. To accommodate the possibility of an international service using a Code E aircraft and to safeguard the ability for BMRA to be used as an alternate aerodrome, some consideration and accommodation of these aircraft have been made. Use of a Code C as the design aircraft but also ensure where necessary, full Code E clearances have been applied, ensures some flexibility for future planning.

“For this 2023 Master Plan, the largest aircraft forecast for operation in the Base Case Forecast, is the A320/B737 sized aircraft or a Code C aircraft.”

The 2016 Master Plan identified a potential for the A380 or B747-800 to use BMRA as an alternate airport and therefore aprons were setback from the runway to accommodate the Code F aircraft operations. The A380 and B747-800 aircraft have failed to generate significant sales numbers and have not been able to operate at seat costs lower than aircraft such as the A350 and B787; consequently, Airbus and Boeing have ended production of their very large Code F aircraft types. Most carriers prefer to operate smaller Code E, twin-engine aircraft rather than the high-capacity Code F aircraft. This is not to exclude the potential for Code F aircraft in the future but with the decline in A380 operations and the lack of new very large aircraft entering the world's fleets, the need to have Code F facilities to operate as an alternate airport diminishes. The forecast traffic does not indicate such an aircraft would operate to BMRA and therefore it is not being used in the future design. However, where facilities have been established on the basis of Code F capabilities, those safeguards will remain in place. In the event a Code F aircraft does need to land at BMRA, safeguarding for that aircraft can be handled operationally and procedurally, rather than having facilities constructed and maintained for an arrival that may not occur. It is therefore recommended that BMRA have a set of procedures which include what facilities are Code F compatible and which could not be used for such an operation.

Passenger Terminal

The 2016 Master Plan identified the need for a new terminal. The new terminal was to be designed to accommodate 350 passengers in the peak hour and be capable of accommodating the demands for 2 Code 4C aircraft operating simultaneously. The final design resulted in a 4900m2 terminal building. The Jetstar flight from Melbourne has since been established (2022) and has demonstrated good demand for the sector. Further route sectors are forecast for the BMRA such as to Sydney and Brisbane. Demand for a BMRA - Sydney flight is sufficient for a service to start in the 2024/5 period and BMRA to Brisbane in approximately 2028. For the peak day, it is expected that 3 FIFO arrivals will also occur during the peak hour. The Peak Hour is forecast for 4 aircraft on the ground at one time but over the entire hour, it is expected that there would be 2 RPT flights and 3 FIFO flights, operating simultaneously.

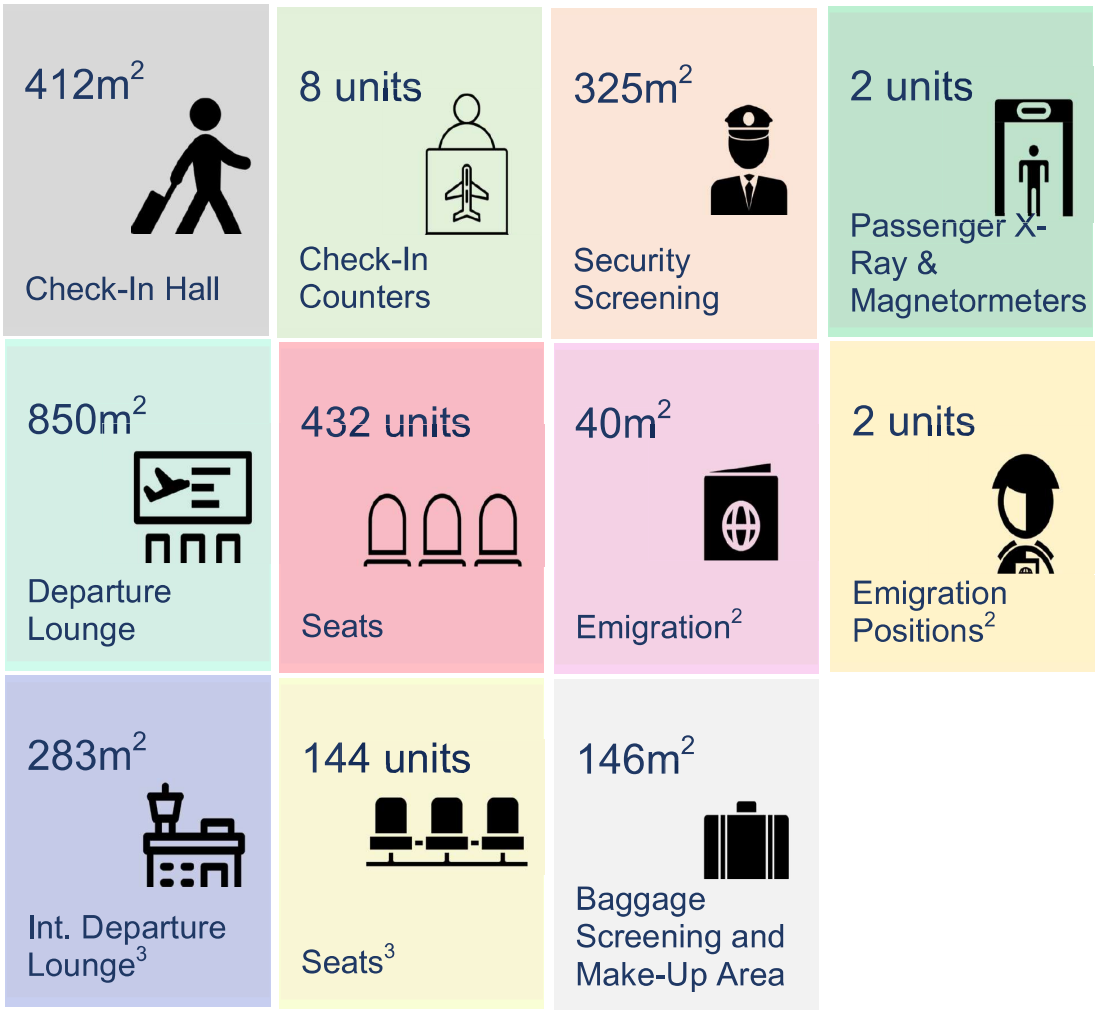


This equates to a peak hour arrival flow of 837 total passengers and a departure flow of 335 passengers. The arrival flow however, is comprised of 335 RPT passengers and 502 FIFO passengers, The terminal requirements for FIFO arrivals are minimal as most FIFO passengers have hand baggage only, do not wait around collecting baggage or renting vehicles and therefore only corridor/walkway capacity is required to accommodate the additional 502 FIFO passengers during the RPT peak arrival period. As such, the passenger terminal needs to be sized for 335 RPT passengers plus corridor/walkway and some terminal facility usage for the FIFO arrivals. The departure peak is defined as a morning FIFO peak comprising 3 aircraft leaving within 60 minutes. This departure peak presents a demand for 502 passengers in the peak hour. The passenger terminal should therefore be sized to accommodate 335 arrival passengers and 502 departing passengers for the 2033 year. Based on general expectations of suitable Level of Service (LOS) C for domestic passenger terminals, a passenger terminal of 11,718m^2 would therefore, be required.

The forecasts identify a demand for international flights starting in approximately 2028. The international flights would likely not coincide with domestic or FIFO peaks due to the sector flight times and schedule patterns at the destination airports. As such, the terminal needs to be able accommodate a single Code C international arrival with a capacity of 180 to 200 seats resulting in 167 to 180 international arrival passengers and 167 to 180 international departure passengers. To optimise the terminal building area, design should consider the use of operable walls and doors as well as swing gate concepts. This will provide the separation needed between arrivals and departures, including passenger processing for immigration and customs for the international flights without interfering with domestic traffic or having significant space dedicated to international passenger processing.

With peaky demand patterns that are typical at smaller airports, the terminal will undoubtedly experience periods of high passenger flows, quickly followed by periods of no activity. Fully accommodating the peak period demand for the forecast horizon year, will result in a significant build cost for the terminal. With the peak demand for the planning horizon being achieved in 2028 to 2033 and remaining constant throughout the rest of the planning period, the initial build of the terminal should be able to accommodate the long term 2043 demand. Expansion of the terminal would not be required until additional flights occur in the peak periods resulting in a need for additional terminal space. This expansion would not be needed until some point beyond the Master Plan. Expansion of the Passenger Terminal has been shown in Exhibit 5 which provides the Passenger Terminal Precinct area and identifies the expansion reserves for the longer term Passenger Terminal.

Quantity or Area for Airport Facilities- Departures



[2] *Only needed for international flights*
[3] *Due to the offset between domestic peak and international peak, may be shared facilities for both Domestic and International by using swing gates or operable walls*

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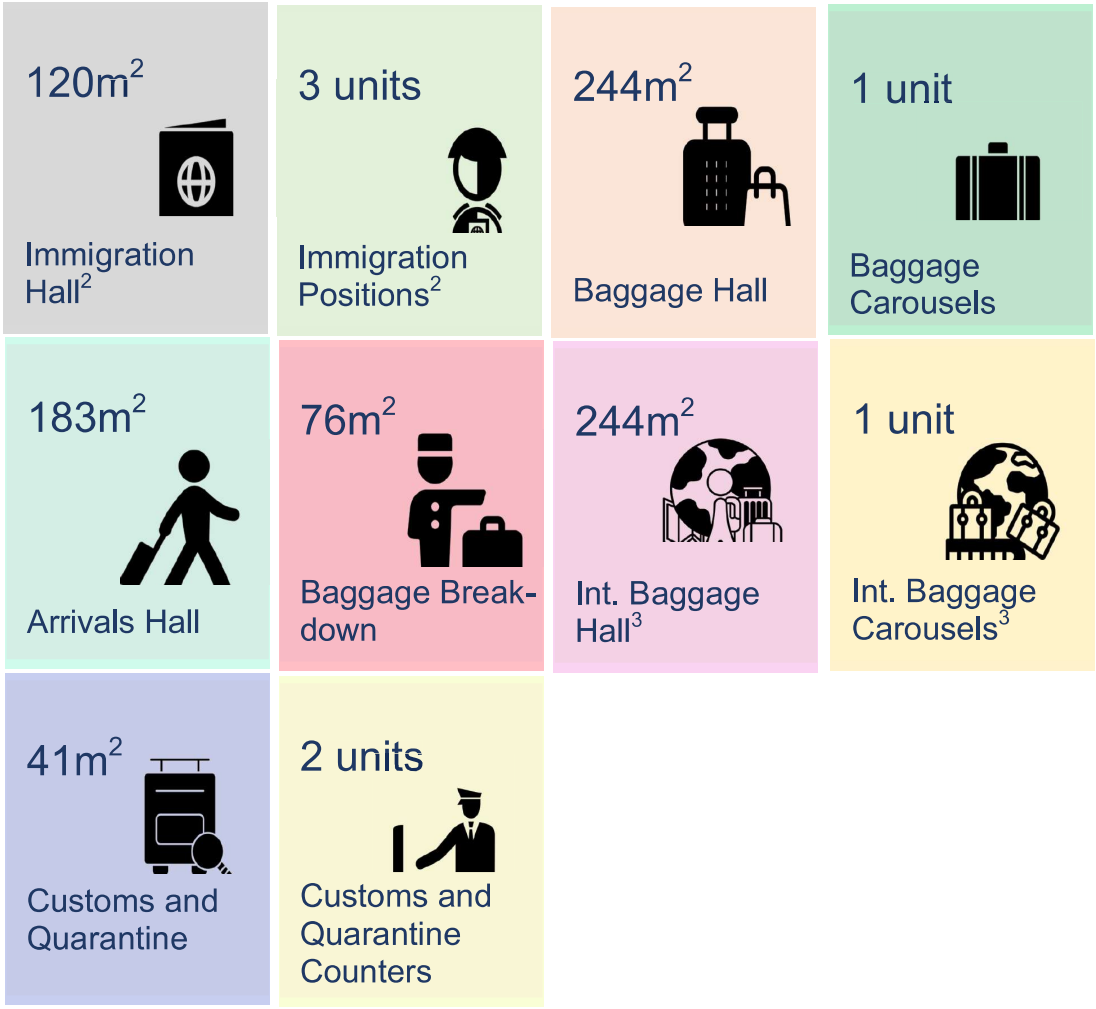
Quantity or Area for Airport Facilities- Arrivals



[2] *Only needed for international flights*
[3] *Due to the offset between domestic peak and international peak, may be shared facilities for both Domestic and International by using swing gates or operable walls*

Southern Apron

Constructing the Passenger Terminal beside the Southern Apron will move all RPT and FIFO operations to the Southern Apron. Current peak aircraft stand demand occurs between 6:00am and 7:35am on a Tuesday morning with 2 FIFO aircraft operations. The forecast morning departure peak is expected to grow by a single FIFO departure resulting in 3 Code C FIFO departures within a 60 minute period. The Peak Hour arrival period is forecast to have 2 RPT arrivals from Melbourne and Sydney, as well as 3 FIFO arrivals. Code C turnaround times are short with typical schedules of 30 to 45 minutes on stand. As such, the peak stand demand is for 4 Code C aircraft parking positions. To account for potential delays or aircraft arriving early and possible technical issues causing aircraft to be unable to depart, there is a high probability for 5 aircraft to be on stand. Therefore, the BMRA needs to have 5 aircraft parking stands available. It is also possible for carriers to schedule a turnaround at a low activity airport such as BMRA, to be longer than normal to minimise holding and fuel burn when arriving back at the busy hub airport. If this was to occur, the stand demand could quickly increase to 5 aircraft on the ground during the peak period, necessitating 6 aircraft stands be available.

The current Southern Apron has a maximum capacity of 4 Code C aircraft stands. Therefore, the Southern Apron should be expanded before the demand for additional stands is reached in 2033, when 5 aircraft stands should be available. Exhibit 6 illustrates the expanded Southern Apron accommodating 5 aircraft stands. As identified in the Demand Forecasting section of this report, the peak hour forecast, reaches 4 aircraft stands and then growth occurs through infilling additional days and expanding outside the peak period. As such, from the 2033 period through to the end of the forecast period, the peak demand remains at 4 Code C aircraft on stand with a single stand available to accommodate delays or technical issues.

The forecasts have identified the possible introduction of international flights as early as 2028. The aircraft used for these flights in the Base Case forecast are narrowbody aircraft i.e. Code C. However, the high forecast identifies the possible introduction of a widebody aircraft for international routes. The apron was designed to accommodate Code E aircraft and therefore, the future apron should retain the ability for 1 Code E aircraft to park on the apron in the event that the international sectors grow faster than forecast or the carrier chooses to introduce a widebody aircraft on the route. With the international flights being out of the peak periods, the use of multiple Code C stands to accommodate a Code E aircraft is possible.

The City needs to provide the existing 4 Code C stands plus a contingency of a single stand by 2033 as identified. However, from the forecast of aircraft in the peak period, it is conceivable that delays to more than 1 aircraft would quickly result in a demand for more than 5 aircraft stands or carriers choose to have longer turnarounds at BMRA, increasing the stand demand. In addition, the City should consider how much additional infrastructure they intend to construct at once and whether the development of 6 Code C stands should be developed for the 2033 period rather than the 5 necessary. Exhibit 7 shows the development of 6 Code C aircraft stands and how a single Code E stand could be accommodated. The Code E aircraft stand has been located on the new pavement, pushing it as far south as possible and close to the fuel storage depot, as it is not practical to refuel a Code E sized aircraft using mobile refuelling vehicles.

New Fuel Facility

The current fuel storage and dispensing facility would be suitable throughout the forecast period. However, with RPT and FIFO flights shifting to the Southern Apron when the Passenger Terminal opens, mobile fuel vehicles would need to travel back and forth from the refuelling facility to the Southern Apron. This distance is not excessively long but if it becomes inconvenient for the refuelling operator and potentially adds to refuelling times. A new location has been identified south of the Southern Apron for a future fuel storage compound.

The Base Case Forecast discussed in Section 6 of this Master Plan, only identified Code C aircraft operating to BMRA. However, the High Forecast identified the need to accommodate widebody aircraft should the international flights be operated using such aircraft. If so, Council should review the installation of a hydrant system and consider costs at the next major forecasting exercise. Widebody aircraft burn considerably more fuel and therefore would require the uplift of more fuel at BMRA. Such a prospect would likely cause an increase in the volume of fuel stored and the need for hydrant refuelling. A mobile refuelling vehicle is able to uplift approximately 1,000L per minute and therefore, Code C aircraft taking on approximately 10,000L, can be refuelled using a mobile refuelling vehicle without delays or refuelling impacting aircraft turnaround times. However, a widebody aircraft operating to Singapore would uplift 50,000L to 60,000L of fuel. Using a mobile refuelling vehicle at 1,000L per minute, the refuelling process would become a limitation on the turnaround time. A fuel hydrant system, can uplift fuel at a rate of approximately 2,300L per minute, thereby shortening the turnaround time drastically. As such, if the demand increases to a point where widebody aircraft are going to operate to BMRA, the City will need to look at the construction of hydrant refuelling in any new aprons. To facilitate the future potential for hydrant refuelling, and thereby reducing the distance from fuel storage to the apron fuel hydrant, the future fuel storage facilities compound has been relocated to the south of the Southern Apron. Exhibit 8 illustrates the new fuel storage facility located and hydrant refuelling location in the apron for Code E aircraft.

Aircraft Rescue and Firefighting

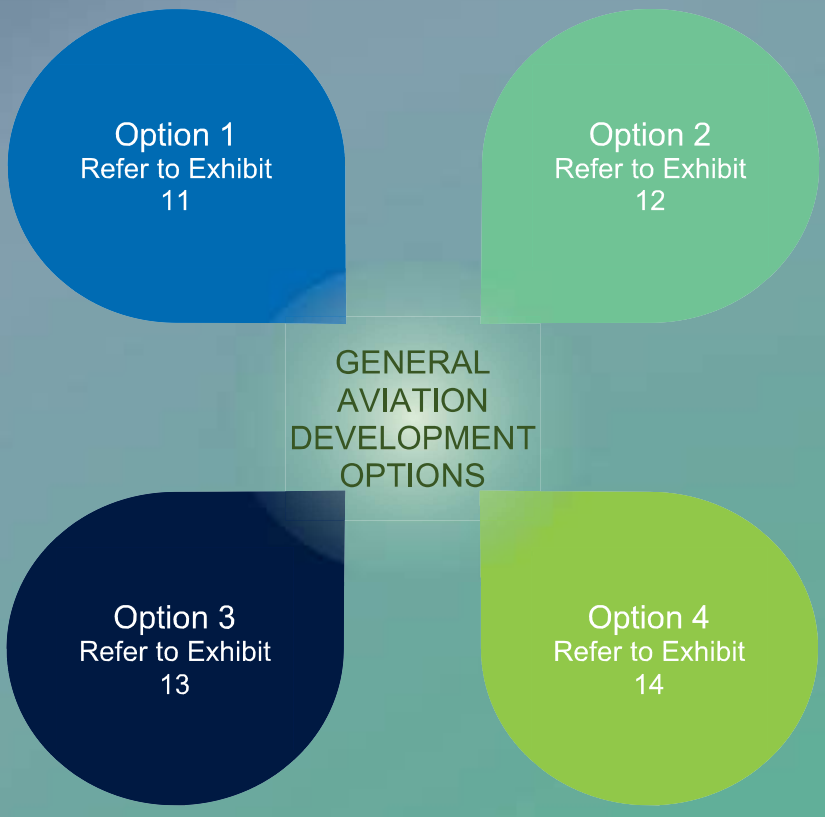
Currently BMRA do not have the passenger volumes necessary to justify establishing an ARFF facility at the airport. However, international services are forecast to occur from 2028 which will trigger the need to have suitable Level 1 ARFF to support aircraft operating the sector. The forecast identifies that initial international services would likely be narrow body operations which would result in the sector being served by a A320/B737 sized aircraft. This size of aircraft would require BMRA to have a Category 6 or 7 ARFF facility and therefore provision would be needed for such a facility. It should be noted however, that the High Forecast identifies the international sector would be operated by a larger widebody aircraft and therefore the eventual size of the ARFF facility may need to be either expandable or built to provide Category 8 or 9 ARFF cover. For Airservices to implement Level 2 ARFF, domestic traffic volumes need to reach 350,000 passengers per annum. The forecasts identify this will be reached early in 2028. A location for the ARFF facility has been identified in Exhibit 9. However, Airservices is currently reviewing the criteria they use to trigger the establishment of an AFRF service at an airport which may change the threshold passenger volume necessary for ARFF. As the international obligation for ARFF is triggered at approximately the same time as the domestic passenger volume reaches the current trigger point, it may be the international flight requirement for ARFF that dictates when an ARFF facility is established.

GSE Storage and Staging

With the increasing use of Code C aircraft at BMRA, there has been an increasing need for GSE storage and staging areas. The Central Apron was not anticipated as providing the long-term aircraft stands for these aircraft and therefore, was never designed to accommodate the demand for staging and storage of GSE equipment. Where possible, the airport has been able to stage GSE close to the aircraft stands but has had to spread the staging along the face of the apron. As no development has yet taken place on the GA aprons, the ground handlers have been able to store GSE equipment on the GA Apron. Once development starts on the GA Apron, the apron can no longer be used for GSE Storage. With the opening of the Southern Apron, there needs to be both GSE staging near to the apron and a dedicated GSE storage area. As shown in Exhibit 10, the GSE storage area has been located beside the passenger terminal. Initially, GSE storage and staging would be in the areas beside the terminal, along the apron edge. However, expansion of the terminal will reduce the GSE storage and Staging areas over time. Eventually, GSE staging will be along the apron edge and in small areas to the north and south of the terminal with GSE storage located behind the extended wings of the long term development of the terminal building. Storage of GSE has been located beside the terminal with access to GSE Maintenance in the Airline Support Precinct

Commercial Development Options

With the development of the 2 northern aprons accessed from Taxiway D1 and D2, there are a number of options available for both Recreational and General Aviation. Development of the new Passenger Terminal will move the RPT and FIFO traffic from the Central Apron to the Southern Apron. This will enable the redevelopment of the Central Apron for Commercial Aviation opportunities. As the activity that would take place on the Central and GA Aprons could be similar, there are a number of options that can be considered.



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Option 1
Refer to Exhibit 11

The current General Aviation zone located in between the South Apron and the Central Apron, is inadequate to accommodate the future GA requirements. The new aprons accessed from Taxiway D1 and D2 have been developed to accommodate all GA activity. Option 1 presented in Exhibit 11, illustrates the GA and Commercial arrangement from the 2016 Master Plan. This arrangement provides 6 Code B sized hangars.

These can be developed as small Code A hangars if that suits the lease arrangements. The 2016 Master Plan developed the 2 aprons in different stages with the apron accessed off Taxiway D2, subject to expansion of the property. The apron accessed off Taxiway D2 can accommodate 19 Code B sized hangars. All hangars in the option are arranged to front the taxilane i.e. perpendicular to the taxilane. They have also been set back to permit an apron in front of each hangar while maintaining suitable clearance requirements.

The 2016 Master Plan included 8 general aviation hangar lots and one apron area and illustrated in Exhibit 11. The Development Project completed in 2018 resulted in two northern aprons and additional hangar lots constructed with access from Taxiway D1 and D2. A revised precinct plan was prepared in 2021 which showed the two northern apron areas and hangar lots. Since, then the layout and size of the hangar lots has been revisited to include a smaller number of lots but of increased area. Option 1 illustrates 19 Code B sized hangars. All hangars in the option are arranged to front the taxilane i.e. perpendicular to the taxilane. They have also been set back to permit an apron in front of each hangar while maintaining suitable clearance requirements

Option 2
Refer to Exhibit 12

The City has been in discussion with the Aero Club to develop the Apron off Taxiway D1 for Aero Club activities, leaving the apron off Taxiway D2 to be progressed by the City for light commercial aviation businesses. A proposal has been developed for the apron accessed off Taxiway D1 that increases the potential number of hangars to 27 Code A hangars.

This also includes a refuelling apron as part of the development. The proposal requires an increase in apron area as the hangars are arranged in a series of cul-de-sacs. The proposal also restricts 17 of the hangars to a maximum wingspan of 12m. For the Aero Club activity, a maximum wingspan of 12m is unlikely to present any restrictions as most LSA and private GA aircraft have wingspans of less than 12m. As the proposal also includes 10 hangars that can accommodate the full Code A clearances, they can accommodate members who need hangars with wingspans up to 15m.

The proposal developed and shown in Exhibit 12, allows the apron accessed from Taxiway D2to be suitable for small GA business activity such as light aircraft AMROs and aircraft painting.

Option 3
Refer to Exhibit 13

Option 3 uses the Code A hangar development proposed in Option 1 for the hangars accessed via Taxiway D1. This provides for 27 Code A hangars for GA and Recreational aircraft. To accommodate GA businesses needing hangars to service aircraft up to Code B sized aircraft, the south side of Taxiway D2 can accommodate 6 Code B sized hangars.
To accomplish this, the rear face of the lease lot has been moved to the south. The northern part of Road 12 has been removed to increase the airside land.

This option also includes Code C hangars permitting smaller Code C aircraft such as the DHC-8 aircraft. Full Code C clearances have been used to separate the hangars however, the property limitation would restrict the depth of aircraft that could be accommodated on the lease lot. In addition, the pavement structure was designed to accommodate small light aircraft. Aircraft accessing the hangars would however, have a weight limit due to the limited pavement strength. When empty, the Q400 has an ACN of between 7 and 8 depending on tyre pressure and therefore the pavement should be able to support empty Q400 aircraft being brought onto Taxiway D2. The option therefore includes 4 limited width Code C hangar lots for aircraft up to the Q400. Having access to Code C accessible lots would enable the City to respond to inquiries and interest in larger lease lots quickly. As this option is prepared to permit Code C aircraft with weight restrictions, to access Taxiway D2, Taxiway D and part of Taxiway E should be widened to accommodate an aircraft with an OMGWS of up to 9m.

Beside the Code C hangar lots, on the eastern side, a facility for RFDS patient transfers has been identified. An area including a building for ambulance parking while waiting for RFDS aircraft to arrive and an apron for both fixed wing and rotary wing aircraft for patient transfers.

The hangars facing Taxiway E are Code B and have been positioned to ensure they do not restrict the airport from developing a full parallel taxiway along Runway 03/21. The safeguarding for a future potential parallel taxiway is beyond the Master Planning horizon and is discussed in Section 11 of this report. To facilitate accessing the potential future parallel taxiway, Taxiway E would need to remain active but clearance between the parallel taxiway and Taxiway E would require Taxiway E is moved north-west. Therefore any hangars that would face Taxiway E would need to be positioned far enough back to ensure clearance from the long term future parallel taxiway alignment rather than the current Taxiway E alignment.

Option 4
Refer to Exhibit 14

Interest has been expressed for larger maintenance hangar space at BMRA. The specific requests were to accommodate large turboprop aircraft such as the DHC-8 series aircraft. The option shown in Exhibit 14 presents a series of larger hangars constructed along the Central Apron, small GA and Recreational Hangars on the more southern of the North Aprons (D1) and Code B hangars on the northern apron (D2). The pavement strength for the taxiways and apron is high and therefore there are no limitations on aircraft weight taxiing to the lease lots. However, the land along the edge of the Central Apron is not available for immediate release as the current use is for passenger terminals, fuel facilities and Aero Club. In addition, until the Passenger Terminal is constructed adjacent to the Southern Apron, FIFO and RPT operations need to be able to use Bay 8 to 11 restricting a lessee from accessing their hangar at times.

Freight Precinct

With increasing demand for RPT activity, there is an increase in regular spare capacity travelling between city-pairs. This spare capacity can be used by carriers for freight. With the current Jetstar service operating 4 times per week to Melbourne, there is some capacity available that may open a market for freight activity. The size of that market, however will be small as the aircraft used is the A320 which has that can be sold as freight of approximately 7 to 14m^3. With forecast international services, local produce, particularly high value perishables such as seafood, can be air freighted to international markets. Any international service will be looking to sell all spare capacity in this way. The Base Case forecast identifies initial international services are likely be narrowbody aircraft such as the B737/A320 aircraft, this will constrain the available capacity for freight on these sectors. Once international sectors are introduced with widebody aircraft, the potential freight market increases considerably as outbound freight will make up a large part of the financial proposition for the aircraft used.

The Margaret River area is known for its quality wineries and wine production. It is these wineries that are so attractive for tourism to the region. However, transportation of wine is not a commodity that justifies air freight. Usually, commodities that are air freighted are those that have a very high value, very low weight or are time sensitive. Products such as wine are often sea freighted as they are heavy and not time sensitive. Any crops that are able to be transported to Perth could be air freighted from Perth as there is a large air freight volume departing Perth daily producing a more regular, diverse and more competitive market. Seafood and floriculture are potential candidates for air freight as they are extremely time sensitive. Therefore, the seafood industry in the Busselton Augusta Margaret River region, Nannup Shire, and Manjimup Shire, would likely benefit from cargo capacity to destinations such as Singapore as seafood is a time sensitive commodity.

To support the long-term freight activity, an airside freight terminal is required with suitable Custom, Quarantine and Security as well as cold storage facilities. An initial facility should be available for the introduction of international services. This facility would be supported by the development of freight forwarding operations that can develop landside. As the long-term volumes remain low, the location of the freight terminal does not need direct freighter aircraft parking however, 2 options have been developed to provide long term flexibility for freight operators to develop facilities that they can operate with adequate expansion options and efficiency.

Freight Option 1

The first option for a freight terminal is to utilise some of the space on the Central Apron that becomes vacant once the passenger terminal activities move to a new passenger terminal. Freight forwarding activity would be located behind the terminal in the Northern Commercial Precinct as shown in Exhibit 15. In this option, all freight would be loaded onto tugs and dollies and transported to the Southern Apron to be loaded into the belly of passenger aircraft.

Freight Option 2

With the development of the Passenger Terminal adjacent to the Southern Apron, there is a large precinct further south with ample commercial lease land available for development of a freight facility and freight forwarders. Such a location is close to the Southern Apron for easy transfer of freight to the passenger aircraft and if demand for freight were to increase to the point of a dedicated freighter aircraft operation, the area to the south of the Southern Apron can be developed into a cargo apron. This option is shown in Exhibit 16

Aircraft and Pilot Support (FBO) Precinct

Some aircraft owners require support when preparing their aircraft departure, as well as servicing the aircraft and providing ground handling services when they arrive at an airport. The extent of services provided vary greatly from airport to airport and depends on the type of clients at each airport. To support these pilots and aircraft owners, organisations known as Fixed Base Operators (FBO) have developed providing services such as ground handling, pilot briefing support, lounges, permits, local ground transportation, etc. Based on interest that has been expressed to the City, the opportunity exists for a facility to provide support to the pilots and owners as well as hangar space. To support the potential for an FBO type business at BMRA, 2 options have been developed to safeguard for future facilities.

FBO Option 1

The old terminal presents an opportunity for an organisation to utilise the building as their FBO facility and the Central Apron for aircraft parking. This option is presented in Exhibit 17.

FBO Option 2

With the Aero Club relocation to the Northern Apron, Option 2 as shown in Exhibit 18, positions a future FBO opportunity on the Northern Apron with a prime view of the runway and the apron in front of the FBO for visiting aircraft. A limitation of Option 2 is the unknown strength of the apron and the limited width of Taxiway D. Please note that some business jets exceed Code 2 but have OMGWS of less than 9m and due to the high tire pressures used, can still have a high ACN.

Airport and Airlines Support Precinct

With the growth of RPT Code C jet activity, there is a need to provide space for carriers or organisations that provide support to airline activity. Whilst the primary services are domestic, the level of support opportunities would remain low but once international services start, it is likely that that there will be increased need to provide additional services to the carriers. The Airline Support Precinct would comprise organisations providing:

- GSE Maintenance
- Flight Catering
- Airline Offices
- Aircraft Cleaning
- Ground Handling Services

As shown in Exhibit 19, the Airport and Airline Support Precinct has been located close to the Passenger Terminal. The area provides opportunities for commercial organisations to construct facilities that would provide support to the carrier operations.

Retail, Commercial and Accommodation Precinct

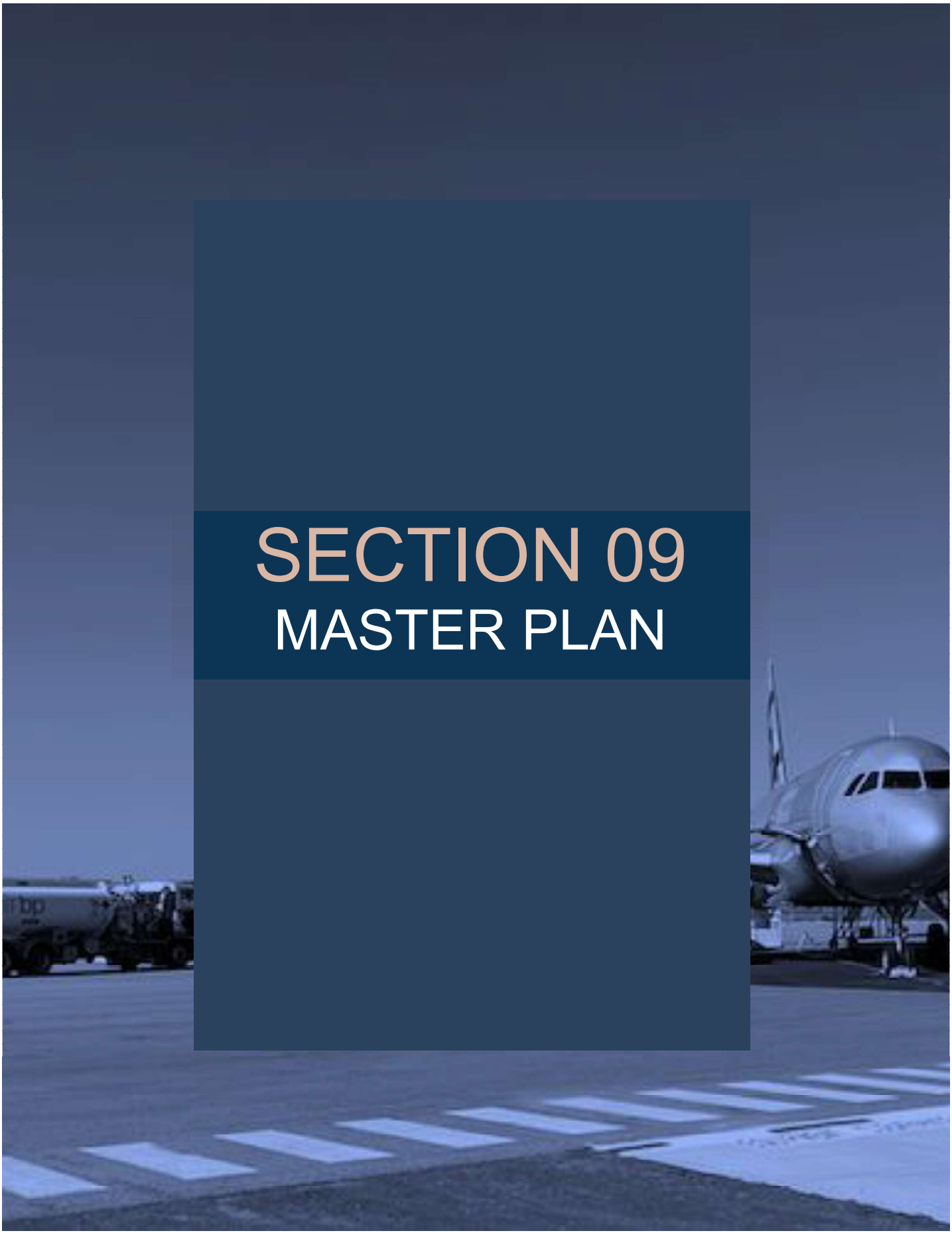
With the growth of aviation related activity at BMRA, there will eventually be demand for commercial activity in the form of hotels, petrol stations, office/business centre and retail opportunities. To accommodate demand for these activities developing, the Retail, Commercial and Accommodation Precinct has been identified. Demand for this area would likely start towards the end of the planning horizon or beyond. Therefore, this area should be safeguarded for development of this type as shown in Exhibit 20.

Car Rental Precinct

The Car Rental Precinct is located to the north east of the public car park. The car rental firms needing space to store cars in preparation for future rentals as well as cleaning and in some cases, vehicle maintenance would use the Car Rental Precinct. To support the growing demand for car rental space, the Car Rental Precinct will provide space for firms to establish their rental bases, cleaning and storage facilities. The Car Rental Precinct, is located as shown in Exhibit 21, beside the Northern Commercial Precinct. The Car Park near the passenger terminal will have sections specifically for Car Rental firms to stage cars that have been booked by inbound passengers or accept car returns.

Airport Maintenance

Airport maintenance is an important and ongoing function at the airport. Airport maintenance includes functions such as mowing, drain clearing, equipment storage, building maintenance and pavement repair. To support the airport maintenance function, there needs to be a location to store the various difference pieces of equipment, vehicles, tools and materials. The airport maintenance facilities have been located in the Northern Commercial Precinct as shown in Exhibit 22.



SECTION 09
MASTER PLAN

09
Master Plan

A Master Plan represents an orderly plan for development for the airport site and its facilities over the defined horizon. In this case, as is typical for airports, the time period used for the planning horizon is 20 years. The full Master Plan development therefore identifies development that is expected to be required over the 20 year period to 2043. Passenger and freight traffic development may not, of course, develop exactly as forecast, regulations may change, or geopolitics may result in changes to use of the airport facilities that can impact how the airport develops. Consequently, the Airport Master Plan will need to be updated periodically to ensure that land reserved on the airport site is aligned with Aviation trends and the development of the BMAR. The Airport Master Plan has been presented in Exhibit 23.

Current passenger traffic at BMRA is predominantly served with FIFO flights as the region is becoming a popular location for the families of FIFO workers. The RPT operations include a 4 times a week service between BMRA and Melbourne. The FIFO flights represent the majority of passenger departing and arrival BMRA, however FIFO arrival passengers have little to no checked baggage, don't avail themselves of rental cars and transit through the arrivals processes quickly. The RPT arrival represents the peak demand for arrival terminal spaces with the collection of checked baggage and use of car hire services or transport options. Peak departure demand is during the peak FIFO departure period occurring early in the mornings. The air traffic forecasts prepared for the Master Plan identified two patterns to growth in air passenger traffic. The first pattern is the introduction of new services on the peak day with a forecast introduction of a service to Sydney and Brisbane as well as Singapore and Bali. Services are also forecast to grow through additional services being added on other days throughout the week.

As a result, the airport is forecast to reach a peak period demand between 2028 and 2033and then forecast to remain constant throughout the forecast period as the additional growth occurs outside the peak period and peak day.

"A Master Plan represents an orderly plan for development for the airport site and its facilities over the defined horizon"

For future facility demands, this means that while overall annual passenger traffic is forecast to increase, the number of passengers passing through the terminal building in the peak period of the day will not increase significantly. Therefore, the passenger processing facilities need to be planned to accommodate at an acceptable level of service, defined at the passenger demand levels represented by the 2033 forecast. This peak demand is for 3 morning FIFO departures and an arrival peak of 2 RPT arrivals and 3 FIFO arrivals using A320/B737 sized aircraft. The FIFO arrivals would deplane and walk straight through the terminal so the space demands caused by the large number of FIFO arrivals is minimised. The international flights by virtue of their restrictions and markets at the destinations, would operate outside the peak periods. As such, the facility demands for international passenger processing can be assisted with the use of swing gates and operable walls, to reduce the overall building footprint.

Where development has been identified in Section 8 of this document, the Council have reviewed the options available and identified which approach to development they prefer to follow to accommodate future operations or to safeguard for potential future changes or opportunities. The primary facility issues addressed earlier in the document, and for which development

Passenger Terminal

The need for a new passenger terminal has been evident for some time with the 2016 Master Plan identifying the requirement for a new terminal building. The requirement the new terminal has since grown in importance with the introduction of the RPT services and the success of these services is likely to result in additional services to Sydney and Brisbane. To facilitate the existing and forecast growth the new terminal is required and development should begin as soon as possible. The passenger terminal should be sized to ensure the 2028/2033 peak period arrivals and departures demand can be accommodated. The terminal should then be able to operate through the forecast period without the need for further expansion.

Commercial Aviation Development

The BMRA Development Project completed in 2018 has provided the City with airside leases for aviation commercial and business opportunities. Once the new passenger terminal is constructed, the land adjacent to the Central Apron will be available for development. A number of options for developing the land adjacent to the Central Apron and northern aprons were explored with Option 4 (Exhibit 14) selected as the preferred option for Commercial Development. on the Central Apron and Option 3 was selected for the development of the North Apron. Using a combination of Option 3 and Option 4 allows the City to rapidly respond to interest provided the aircraft weight can be accommodated on Taxiway D2, in the near term. In the longer term, the City can lease Code C hangar lots along the Central Apron after the new Passenger terminal is constructed

Air Freight Facilities

There is currently no demand for air freight. However, with the increase in RPT services, carriers will want to generate additional revenue from the excess capacity they carry on flights. This is particularly true when international services start operating and producers from the region can benefit from air freight, including seafood produced in the area that would find an enthusiastic market in Singapore where tourism demand is forecast to generate passengers to develop and sustain international flights. Carriers operating international services will be looking to fill all available aircraft belly space and therefore the introduction of international passenger flights will cause an increased demand for freight operations. To support freight operations, 2 options were considered for the development of a freight terminal. Option 2 was selected as this places the freight facilities close to the Passenger Terminal and the RPT aircraft stands on the South Apron.

Aircraft and Pilot Support Precinct

There were 2 options for the development of an FBO facility. The first was to position the FBO on the Central Apron and the second, was to position the FBO on the North Apron. Option 1 was selected as an FBO would be able to make use of the old passenger terminal for their FBO services. The site also permits the organisation to develop hangars beside the FBO Terminal for hangarage or maintenance activities for their customers. In addition, the apron strength of the Central Apron is understood to be a PCN of 58 and therefore is capable of accommodating any sized itinerant aircraft or business jet that might wish to fly into BMRA.

Phasing

The Airport Master Plan identifies the infrastructure needs for the future development of the BMRA. The Master Plan also identifies areas that should be safeguarded for development beyond the planning horizon or ensure that businesses can take advantage of opportunities as and when they manifest, benefiting the BMRA and all airport users. As such, the Master Plan has looked at the forecast traffic and what infrastructure is needed to accommodate the forecast demand. The Master Plan has looked at potential business opportunities and what would be needed for those opportunities to develop. Some can be developed quickly with interest already expressed by businesses and interested groups. However, some will develop over time and the City needs to monitor how conditions change and when those opportunities would be suitable to encourage. To assist the City in planning for the longer-term development of the airport and to monitor traffic development and how that will influence some of the opportunities identified, the forecast planning horizon used in this Master Plan has been divided into 3 phases:

PHASE 1

The initial phase of development for the airport is forecast to see the introduction of new RPT routes and an increase in FIFO traffic. The Phase 1 development has been shown in Exhibit 24. The existing airport infrastructure is suitable for significant growth in air traffic with the primary exception being the Passenger Terminal capacity. A new Passenger Terminal was identified as being required in the 2016 Master Plan and has been confirmed as being needed in the Phase 1 development. Current passenger demand exceeds the capacity of the existing passenger terminal system and therefore the need for the new terminal is immediate. Initial planning, design, funding and construction of the new terminal will take between 2 and 4 years.

The City is receiving interest for aviation lease lots. It is important for the City to respond quickly to these requests for sites. Commercial activity at the airport generates revenue through leases and aviation fees and creates employment with associated economic multipliers that result in the region. The apron accessed from Taxiway D1 is to become the GA and Recreational Aviation home with 27 small hangars. This area is ready for development and the Aero Club are an interested party in developing this area. The apron accessed from Taxiway D2, is ready for development and the City can respond to requests immediately.

There has also been some interest in larger hangars to give aircraft maintenance organisations the ability to develop facilities and expand their businesses. Developing the lease lots as per Option 3 would permit the City to respond quickly to interest. Any interest expressed after passenger operations move to the Southern Apron, can be accommodated on the Central Apron as per Option 4.

The car rental industry was quick to identify the opportunity presented with the introduction of the Jetstar service to Melbourne. With increased services to Melbourne during Phase 2 and the forecast introduction of a Sydney service in 2024/5, the demand is going to continue to grow. Car rental organisations are looking to grow their services at the airport and during Phase 1, space would be made available for vehicle storage area, valet and cleaning services.

PHASE 2

From 2028 to 2033, the concentration of development is to encourage commercial aviation activity as shown in Exhibit 25. The new Passenger Terminal is to be developed during Phase 1, resulting in the Central Apron no longer utilised for RPT and FIFO aircraft. Similarly, the old passenger terminal buildings will not be required for this purpose. During Phase 2, the old passenger terminal can be repurposed into the FBO and larger hangar lots made available can be leased along the face of the Central Apron.

The level of aircraft activity and number of aircraft on the Southern apron stands in the peak period is forecast to reach 4 aircraft. As the aircraft in the peak period are Code C aircraft and are able to turnaround in 30 to 45 minutes, the actual demand during the peak period is for 5 arrivals with one departure occurring during the same hour. Therefore, any technical issue or delay to the flight schedule will quickly result in 5 to 6 aircraft on stand at once. The Southern Apron can accommodate 4 aircraft at any one time and therefore accommodate the peak demand provided there are no delays. During Phase 2, it is recommended that the City expand the Southern Apron to include 5 Code C stands and if international air service providers indicate the introduction of widebody aircraft, the City should expand the apron to include 6 stands in Phase 2 rather than Phase 3.

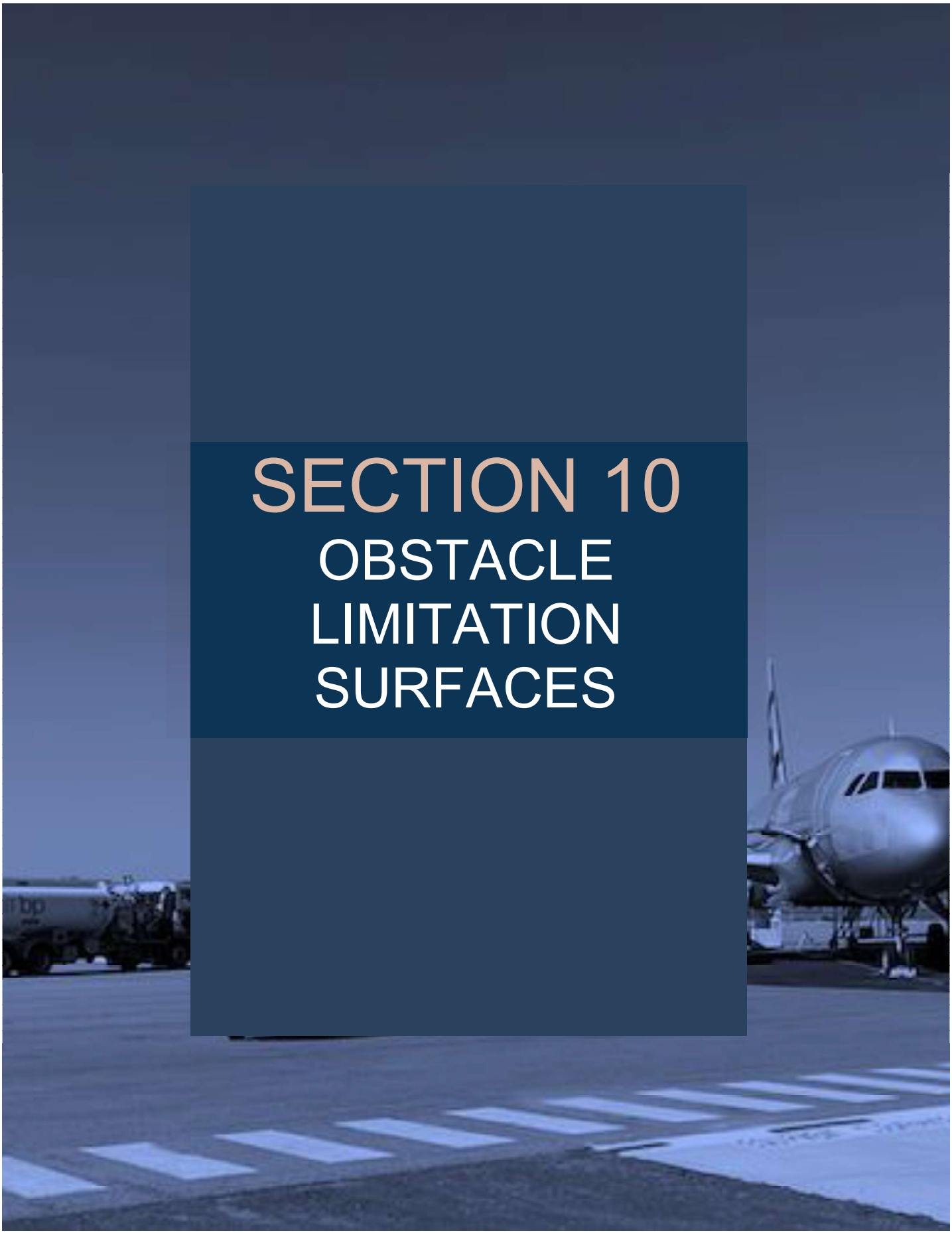
During Phase 2, the forecasts identify the commencement of international services. The City should prepare for the development of freight facilities that will help to encourage an international carrier to start the BMRA to Singapore sector and provide an export opportunity for airfreight the region.

The introduction of international services triggers a need for airline support services. During Phase 2, the development of services including aircraft cleaning and catering would be required. Initially, it is expected that this may be provided by Perth based firms providing the services but as the international schedule develops over the week, the opportunities for businesses to provide these services with locally based staff and facilities develops

PHASE 3

The period from 2033 to 2043, Phase 3, is for a concentrated effort to encourage the development of the existing route network including RPT and FIFO operators. Increase in air traffic activity during Phase 3 is expected to occur outside the peak period with additional frequencies for both RPT and FIFO flights occurring on additional days. The infrastructure developed in Phase 1 and 2 should be able to support the air traffic growth. Exhibit 26 illustrates the airport development in Phase 3. As the level of activity increases, the BMRA can continue to develop the commercial activities in the Airport and Airline Support Precinct. Initial activity in the Retail, Commercial and Accommodation Precinct can start being developed.

The Southern Apron would have been expanded to 5 aircraft stands in Phase 2 and it is recommended the apron be expanded further to a capacity of 6 stands in Phase 3. The 6th stand at the southern end of the apron would be able to accommodate a Code E aircraft. The stand should be equipped with a refuelling hydrant system to allow rapid refuelling of the Code E aircraft. To accommodate the hydrant refuelling the refuelling storage facility would be moved to the reserved location near the Southern Apron

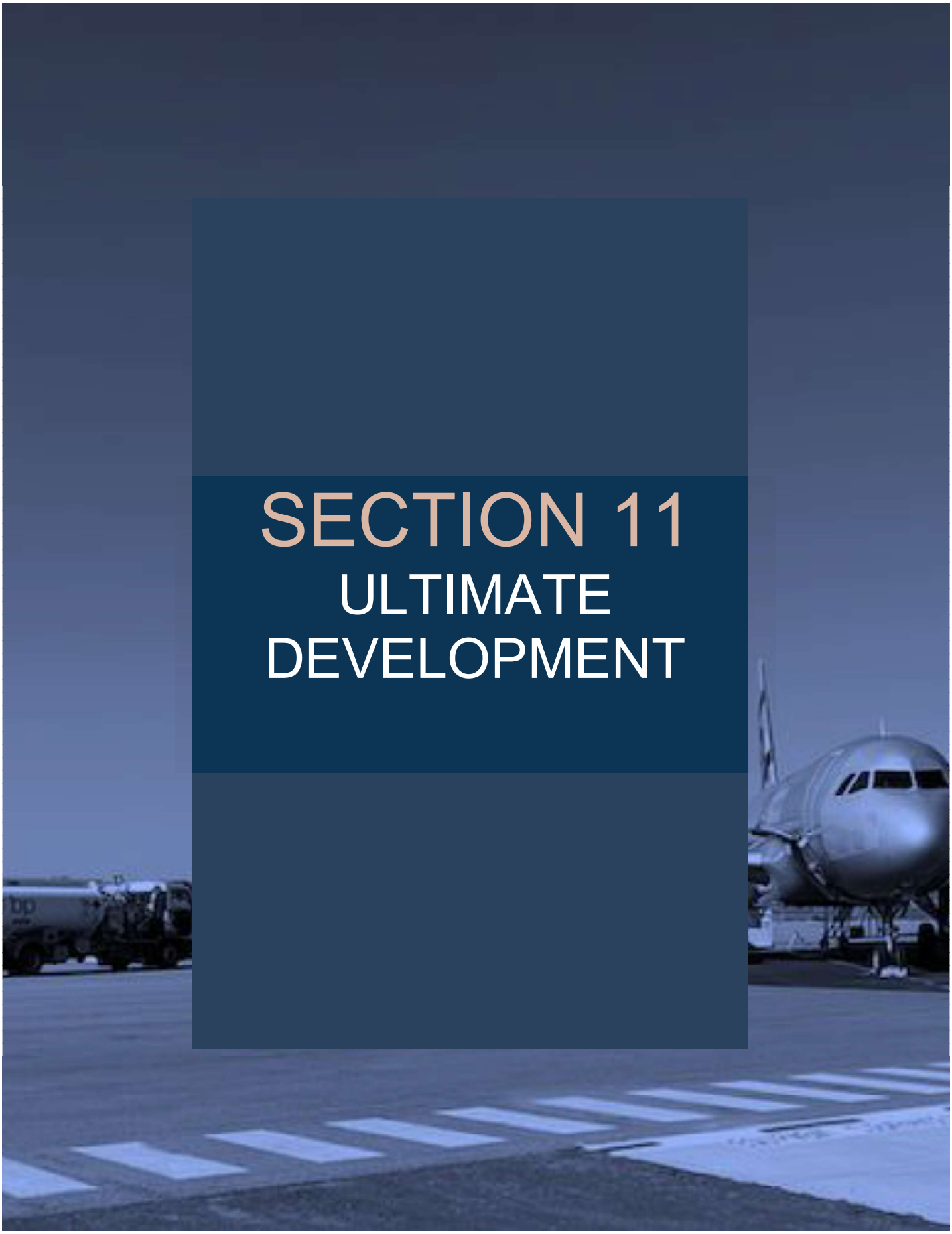


SECTION 10
OBSTACLE LIMITATION SURFACES

10 Obstacle Limitation Surfaces

CASA sets forth a set of imaginary surfaces that extend upwards from the ground referred to as Obstacle Limitation Surfaces. These surfaces protect the airspace above an aerodrome as well as around a runway, to ensure obstacles do not present safety hazards for aircraft flight operations. The criteria for the airport OLS are established and detailed in MoS 139 Chapter 7 giving the technical criteria for heights and location of each surface. The established OLS must be monitored by the airport to ensure all obstacles are identified and controlled. Upon establishing the OLS, they become part of the National Airports Safeguarding Framework (NASF) which established guidelines for the development of infrastructure near to airports and associated flight lines that enable the continued growth of aviation. The City will also use the OLS to establish building restrictions that ensure development can take place without causing limitations to the current and future airport. Development planning applications for tall structures made to the City will be assessed against the airport OLS according to the NASF Guidelines. An illustration of the OLS has been provided in Exhibit 27.

“Development planning applications for tall structures made to the City will be assessed against the airport OLS according to the NASF Guidelines.”



SECTION 11
ULTIMATE DEVELOPMENT

11 Ultimate Development

The Master Plan is created to provide the City with a plan for the development of the airport over a 20 year period. As part of the Master Plan, air traffic is forecast over the 20 year period and the document identifies the infrastructure necessary to respond to that forecast demand. To safeguard for the longer term development and activity of the airport, the ultimate development of the airport has been shown in Exhibit 28. Over the course of the next 20 years, the City will periodically update and revise the Master Plan. It is hoped that the Ultimate Development shown in Exhibit 28 will help to guide future planners to ensure the long term airport business is safeguarded.

The Passenger Terminal Precinct has room for considerable expansion of the Passenger Terminal and associated car parking. The overall Passenger Terminal could ultimately reach 24,692m^2 on the existing site which would translate into approximately a peak hour 2-way passenger demand of 1763 passengers per hour.

The peak capacity for 6 aircraft stands reached in Phase 3 of the Master Plan, reflects a peak demand for 4 operational stands as well as two non active stands The initial expansion of the Southern Apron beyond the planning horizon would be to the south. Ultimately, this expansion could accommodate up to 11 stands. When this is reached, the central hangarage would be removed and expansion to the North would be possible. Tenants in the Central Hangar zone would need to relocate to the North Apron.

“ The Master Plan is created to provide the City with a plan for the development of the airport over a 20 year period.”

To accommodate significant growth in the peak hour, land has been reserved for a parallel taxiway. The point where the parallel taxiway is implemented will depend on the aircraft types in the peak hour but would likely occur when peak hour demand reaches approximately 12 movements per hour. The Parallel taxiway is planned at a distance of 172.5m (appropriate for Code E aircraft) from the runway centreline as per the current CASA standards. The reduction of the separation from the previous 2016 Master Plan separation of 190m is to permit a reconfiguration of the Central Apron, allowing a Code C taxilane on the apron, for access to any hangars that are developed.

Retaining Code F clearances would have required additional taxilanes constructed to join each hangar to the parallel taxiway. The portion of Taxiway E from the Central Apron to Taxiway D would have to be downgraded to Code B as it would not be possible to provide full Code C clearance in front of any development of the Northern Apron. The reduction of the planned parallel taxiway from Code F to Code E would limit Code F aircraft operations at BMRA but would not prevent the Code F aircraft from using the BMRA. During Code F aircraft operations, the parallel taxiway would not be available to other aircraft until the Code F aircraft has either taken off or has landed and exited the runway at either Taxiway A or B.

“To accommodate significant growth in the peak hour, land has been reserved for a parallel taxiway.”

ABBREVIATIONS AND GLOSSARY OF TERMS

A320	A narrow body type of jet aircraft manufactured by Airbus
A330	A wide body type of jet aircraft manufactured by Airbus
A350	A new wide body type of jet aircraft manufactured by Airbus
A380	A very large wide body type of jet aircraft manufactured by Airbus
ABS	Australian Bureau of Statistics
ACN	Aircraft Classification Number, part of the ACN/PCN system of pavement strength assessment
ALH	IATA Code for Albany Airport
AMRO	Aircraft Maintenance and Repair Organisation
ARFF	Aircraft Rescue and Fire Fighting
Avgas	A type of fuel used by small aircraft with internal combustion engines
B737	A type of narrow body aircraft manufactured by Boeing
B787	A type of wide body aircraft manufactured by Boeing
BFRS	Busselton Fire and Rescue Services
BMRA	Busselton Margaret River Airport
BNN	Backup Navigational Network
BQB	IATA code for Busselton Margaret River Airport
CAGR	Compound Annual Growth Rate
CASA	Civil Aviation Safety Authority
CBR	California Bearing Ratio is a measure of the strength of material in relation to crushed gravel
City	The City of Busselton
Code A	Aircraft with a wingspan of less than 15m
Code B	Aircraft with a wingspan from 15m up to but not including 24m

ABBREVIATIONS AND GLOSSARY OF TERMS (cont.)

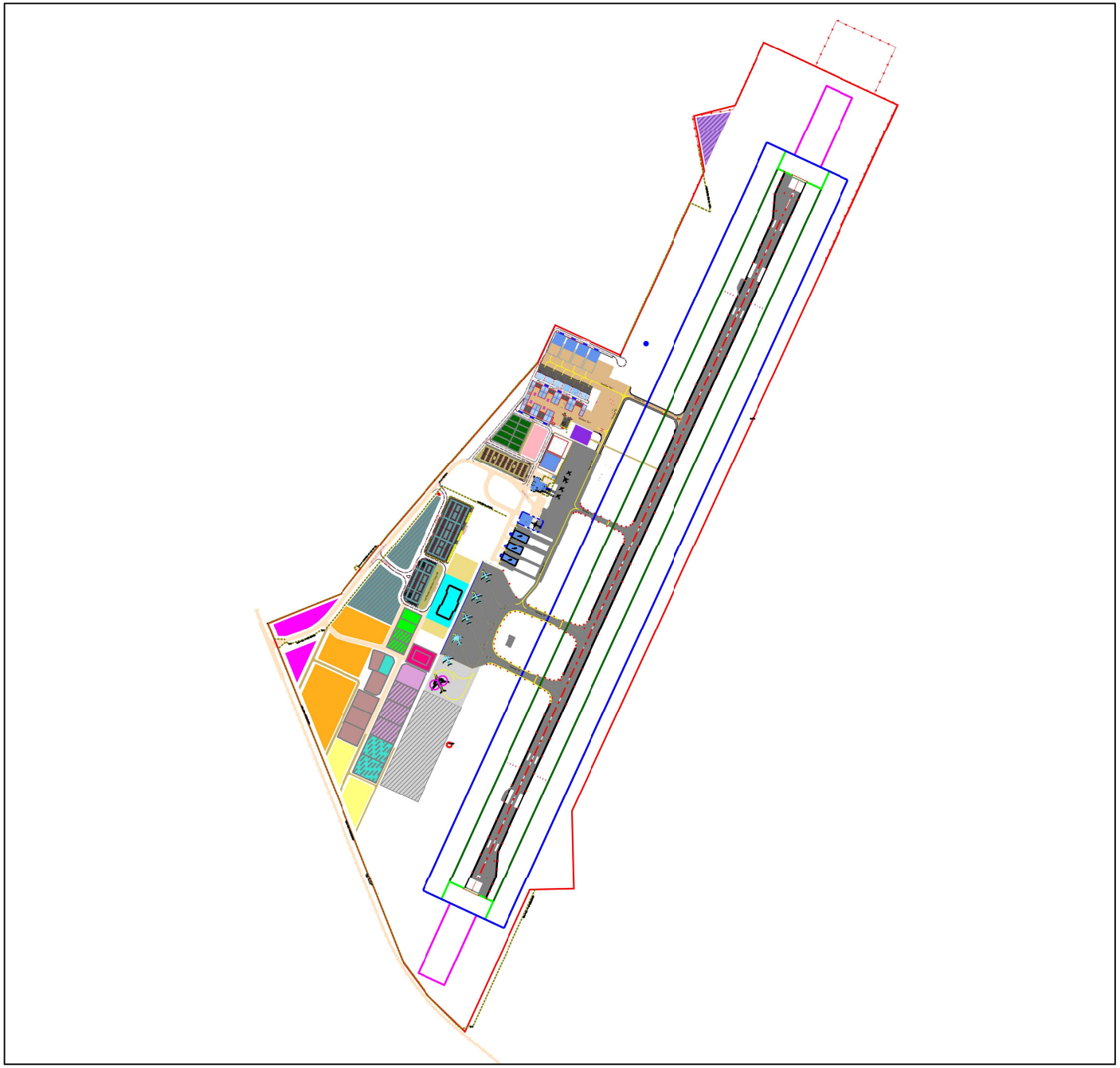
Code D	Aircraft with a wingspan from 36m up to but not including 52m
Code E	Aircraft with a wingspan from 52m up to but not including 65m
Code F	Aircraft with a wingspan from 65m up to but not including 80m
DFES	Department of Fire and Emergency Services
DFRS	Department of Fire and Rescue Services
DHC-8	A family of turboprop aircraft manufactured by DeHavilland Canada carrying between 50 and 74 passengers
FBO	Fixed Base Operator is a term used to describe an organisation that assists pilots and aircraft owners with the storage and servicing of aircraft at airports. FBOs can also venture into lots of different activities such as organising ground transport for visiting aircraft owners, providing meeting facilities as well as aircraft maintenance.
FIFO	Fly-In-Fly-Out. Referring to workers who travel by air to their workplace, often resource sector workers working in remote resource projects.
GA	General Aviation. Can refer to either private aviation but can also include non-scheduled commercial aviation
GNSS	Global Navigational Satellite System
GSE	Ground Service Equipment used to move and assist with the ground activities with and around aircraft, for example mobile stairs or baggage carts.
ICAO	International Civil Aviation Organisation

ABBREVIATIONS AND GLOSSARY OF TERMS (cont.)

Jet A1	A type of fuel used by turbine and turbo-prop aircraft
Kts	Nautical miles per hour
LAT	Large Air Tanker used in aerial firefighting
LGA	Local Government Area
LoS	Level of Service. IATA defined levels of comfort for space and processing within passenger terminals
LSA	Light Sport Aircraft is a relatively new class of small aircraft permitting operation by Recreational Pilot Certificate holders
MoS 139	CASA Manual of Standards Part 139 that covers airports and aerodromes.
MOSAIC	Modernisation of Special Airworthiness Certification is a programme by the US aviation regulator to increase the capabilities and therefore popularity of LSA aircraft.
NASF	National Airports Safeguarding Framework
NDB	Non-Directional Beacon
NMP	Noise Management Plan
OLS	Obstacle Limitation Surfaces
O&D	Stands for Origin and Destination passengers. These are inbound or outbound passengers that do not transfer or transit.
OMGWS	Outer Main Gear Wheel Span. The distance span between the outer edge of the main landing gear.
PAPI	Precision Approach Path Indicator
PCN	Pavement Classification Number, part of the ACN/PCN system of pavement strength assessment
PAPI	Precision Approach Path Indicator

ABBREVIATIONS AND GLOSSARY OF TERMS (cont.)

PCN	Pavement Classification Number, part of the ACN/PCN system of pavement strength assessment
PER	IATA Code for Perth International Airport
Q400	The largest member of the DeHavilland DHC-8 family of turboprop aircraft carrying up to 74 passengers
RAAus	Recreational Aviation Australia
RNP	Required Navigational Performance
RPL	Recreational Pilot License
RPT	Regular Passenger Transport or scheduled passenger services
Runway 03	Runway 03 refers to use of the runway in the 028° magnetic direction i.e. to the north east. Runway 03 is the reciprocal direction to Runway 21
Runway 21	Runway 21 refers to use of the runway in the 208° magnetic direction i.e. to the south west. Runway 21 is the reciprocal direction to Runway 03
Saab 340b	Regional turboprop aircraft manufactured by Saab Aerospace that carries up to 34 passengers
WDI	Wind Direction Indicator



BUSSELTON MARGARET RIVER Airport

three CONSULTING

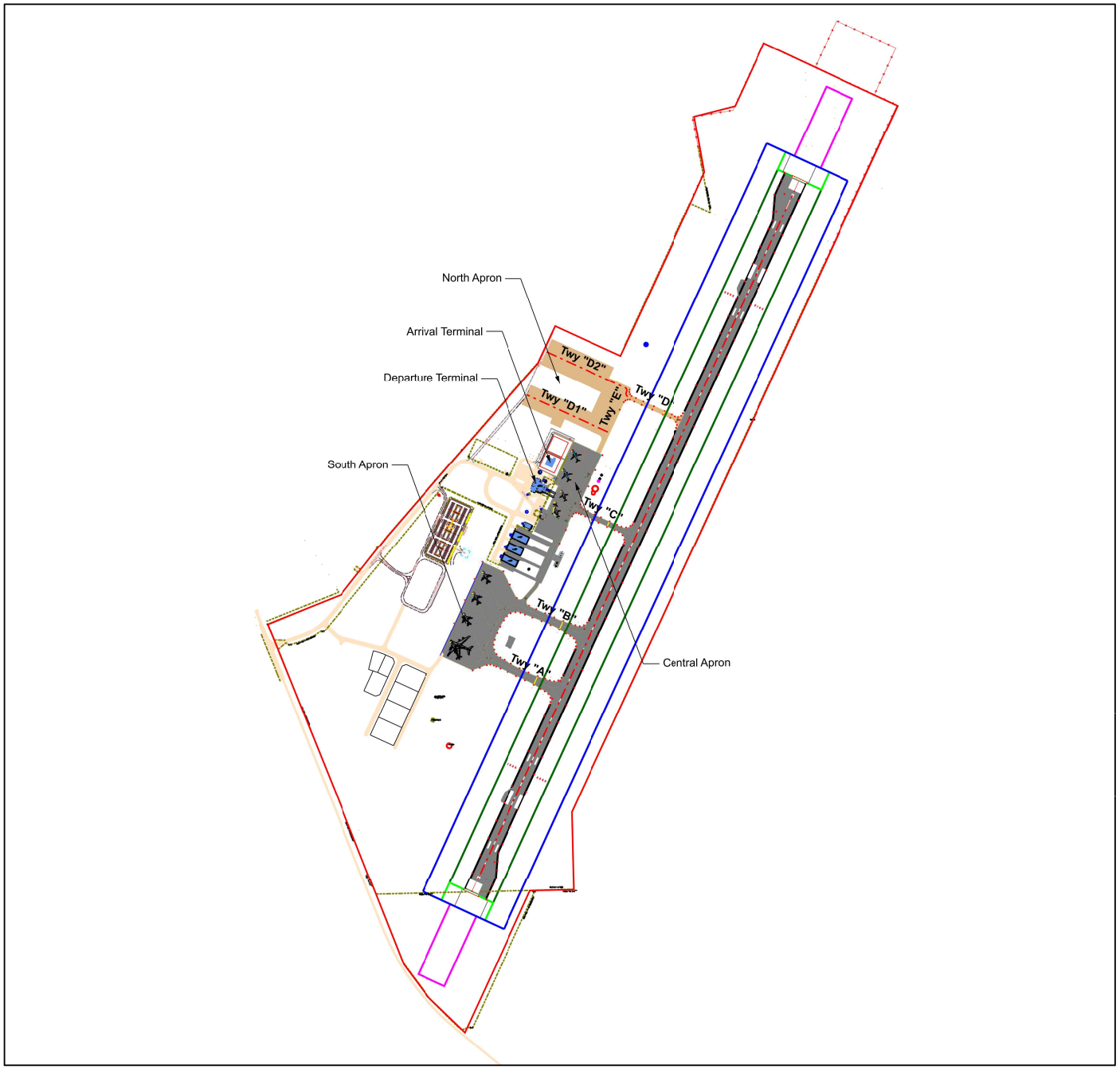
L · E · A · P · P

Legend

- Airport Property Boundary
- Runway Strip
- Clearway
- RESA
- Future Passenger Terminal
- Future Apron Expansion
- Future Long Term Apron Reserve
- Future Fuel Farm
- ARFFS
- Future Airside Commercial Development
- Future Airside Commercial Development Rsv
- Future Airport and Airline Support
- Future Airport and Airline Support Reserve
- GSE Maintenance / Storage / Staging
- Future Cargo / Freight
- Future Cargo / Freight Reserve
- Future Retail Commercial Reserve
- Future Accomodation Reserve
- Future Public Car Park
- Future Long Term Public Car Park Reserve
- Future Rental Car Parking
- Future Northern Commercial Development Rsv
- Future Airport Maintenance Rsv
- Future Utilities Reserve
- Airport Commercial Reserve
- ARFFS Training Area
- FBO

Busselton Margaret River Airport
Master Plan

Exhibit E-1
2043 Airport Master Plan



BUSSELTON MARGARET RIVER Airport

three CONSULTING

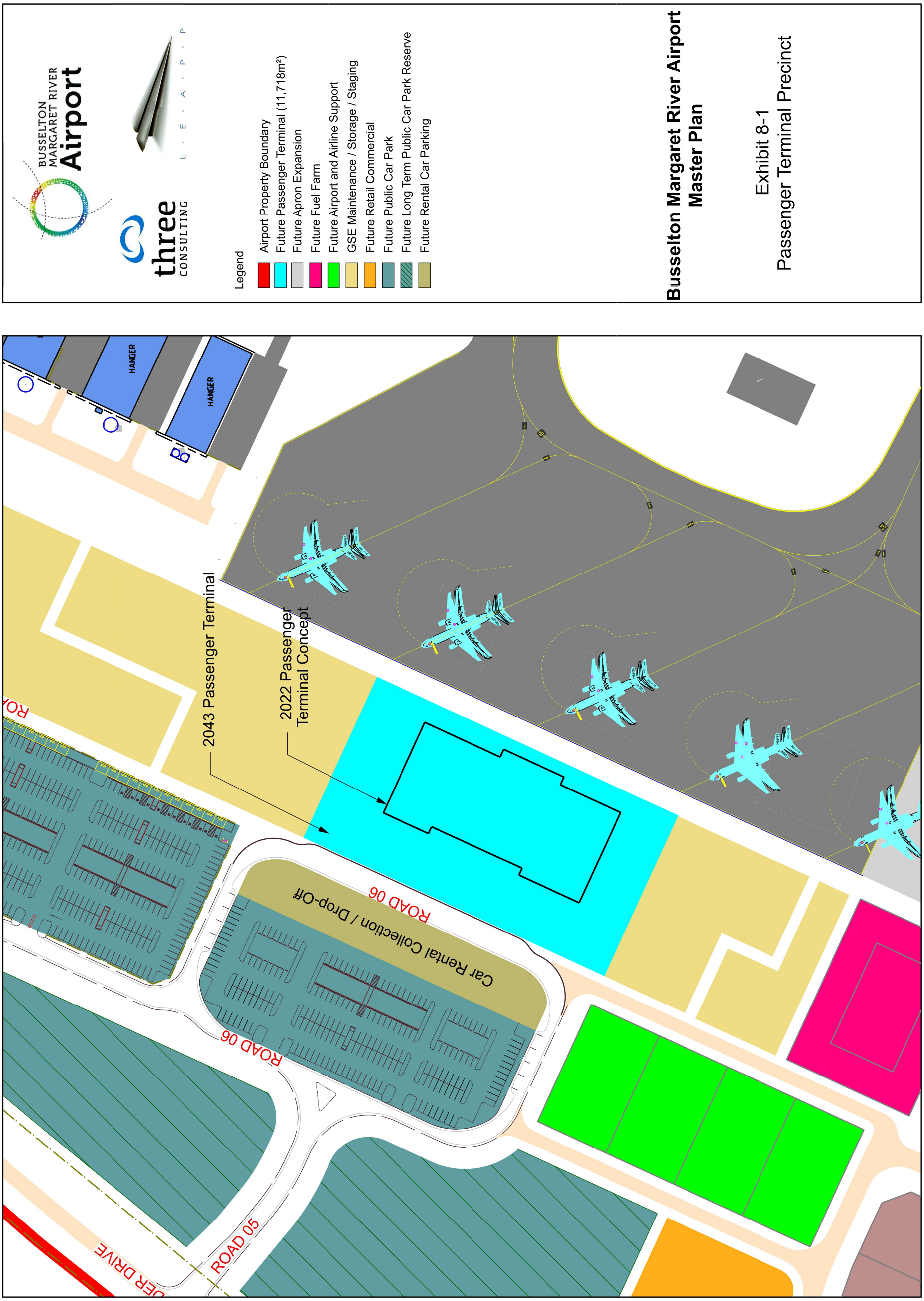
L · E · A · P · P

Legend

- Airport Property Boundary
- Runway Strip
- Clearway
- RESA

Busselton Margaret River Airport Master Plan

Exhibit 4-1
Existing
Busselton Margaret River Airport


BUSSELTON MARGARET RIVER Airport
three CONSULTING
L · E · A · P
Legend
Airport Property Boundary
Future Passenger Terminal (11,718m²)
Future Apron Expansion
Future Fuel Farm
Future Airport and Airline Support
GSE Maintenance / Storage / Staging
Future Retail Commercial
Future Public Car Park
Future Long Term Public Car Park Reserve
Future Rental Car Parking
Busselton Margaret River Airport
Master Plan
Exhibit 8-1
Passenger Terminal Precinct
HANGER
HANGER
2043 Passenger Terminal
2022 Passenger Terminal Concept
ROAD 06
Car Rental Collection / Drop-Off
ROAD 06
ROAD 05

BUSSELTON MARGARET RIVER Airport

three CONSULTING

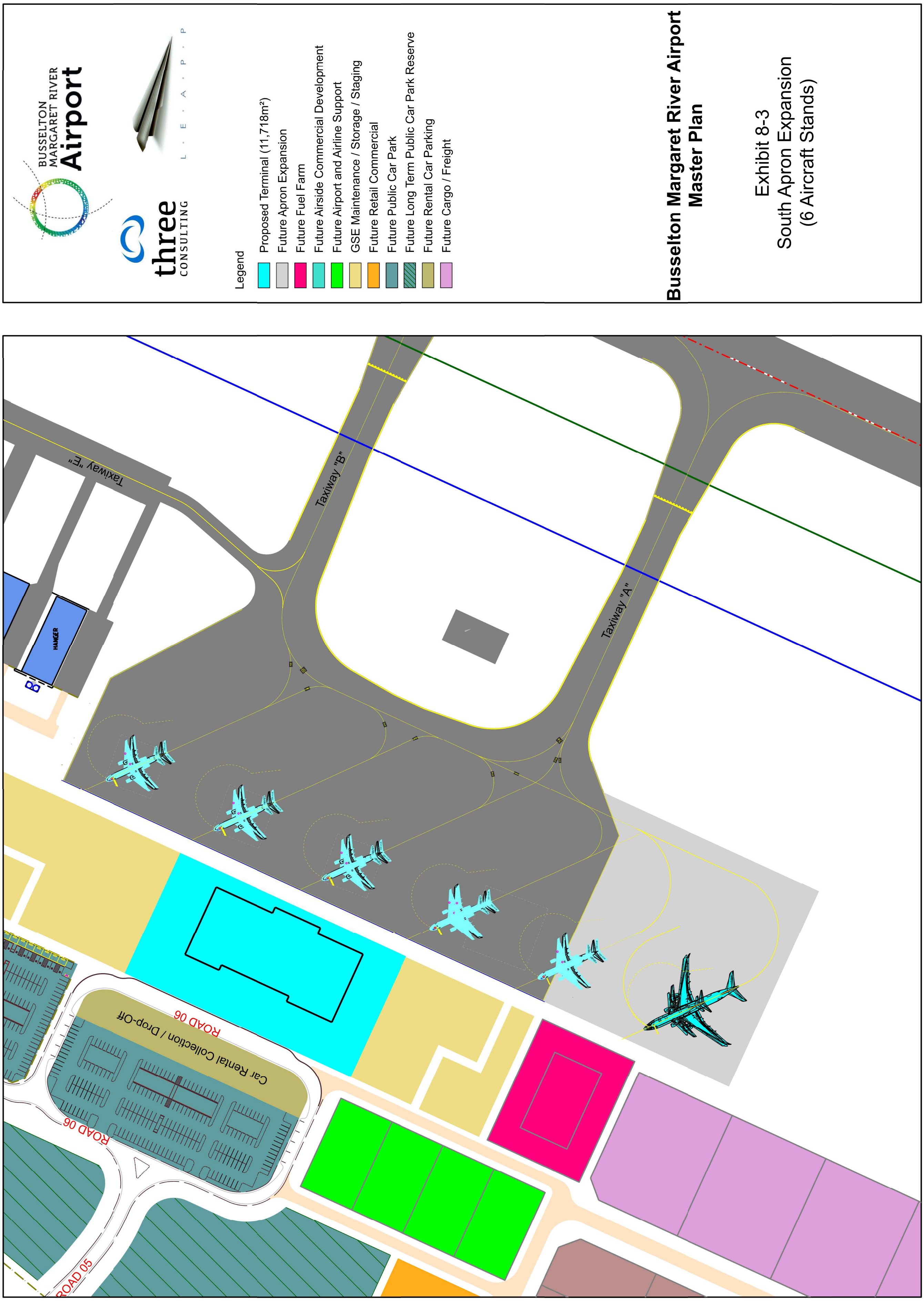
L · E · A · P · P

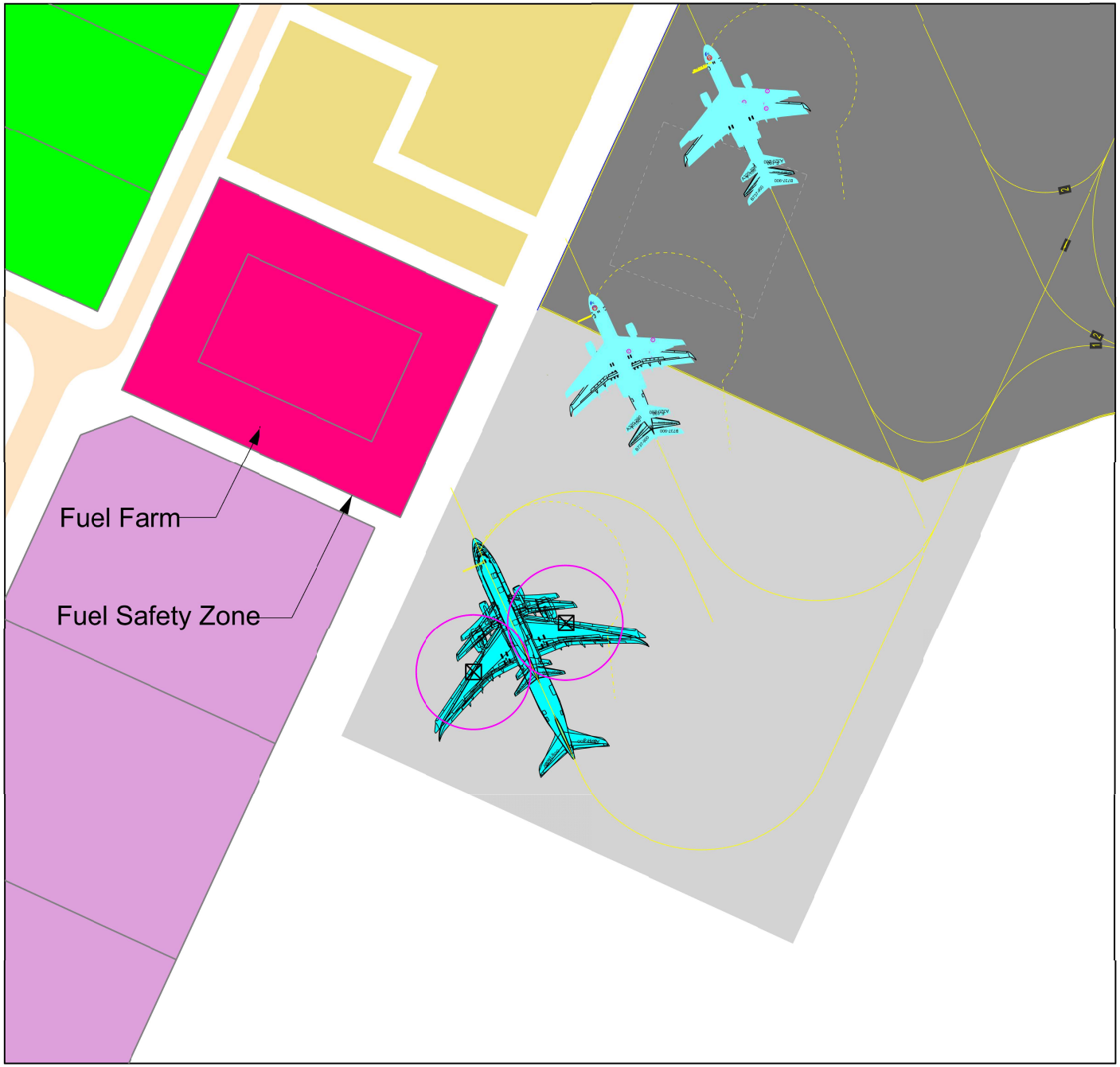
Legend

- Proposed Terminal (11,718m²)
- Future Apron Expansion
- Future Fuel Farm
- Future Airside Commercial Development
- Future Airport and Airline Support
- GSE Maintenance / Storage / Staging
- Future Retail Commercial
- Future Public Car Park
- Future Long Term Public Car Park Reserve
- Future Rental Car Parking
- Future Cargo / Freight

Busselton Margaret River Airport Master Plan

Exhibit 8-2
South Apron Expansion
(5 Aircraft Stands)


BUSSELTON MARGARET RIVER Airport
three CONSULTING
L · E · A · P
Legend
Proposed Terminal (11,718m²)
Future Apron Expansion
Future Fuel Farm
Future Airside Commercial Development
Future Airport and Airline Support
GSE Maintenance / Storage / Staging
Future Retail Commercial
Future Public Car Park
Future Long Term Public Car Park Reserve
Future Rental Car Parking
Future Cargo / Freight
Busselton Margaret River Airport Master Plan
Exhibit 8-3
South Apron Expansion
(6 Aircraft Stands)
Taxiway "B"
Taxiway "A"
Taxiway "E"
HANGER
ROAD 06
Car Rental Collection / Drop-Off
ROAD 06
ROAD 05



BUSSELTON MARGARET RIVER Airport

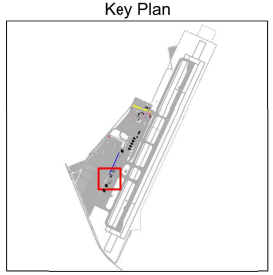
three CONSULTING

L · E · A · P · P

Legend

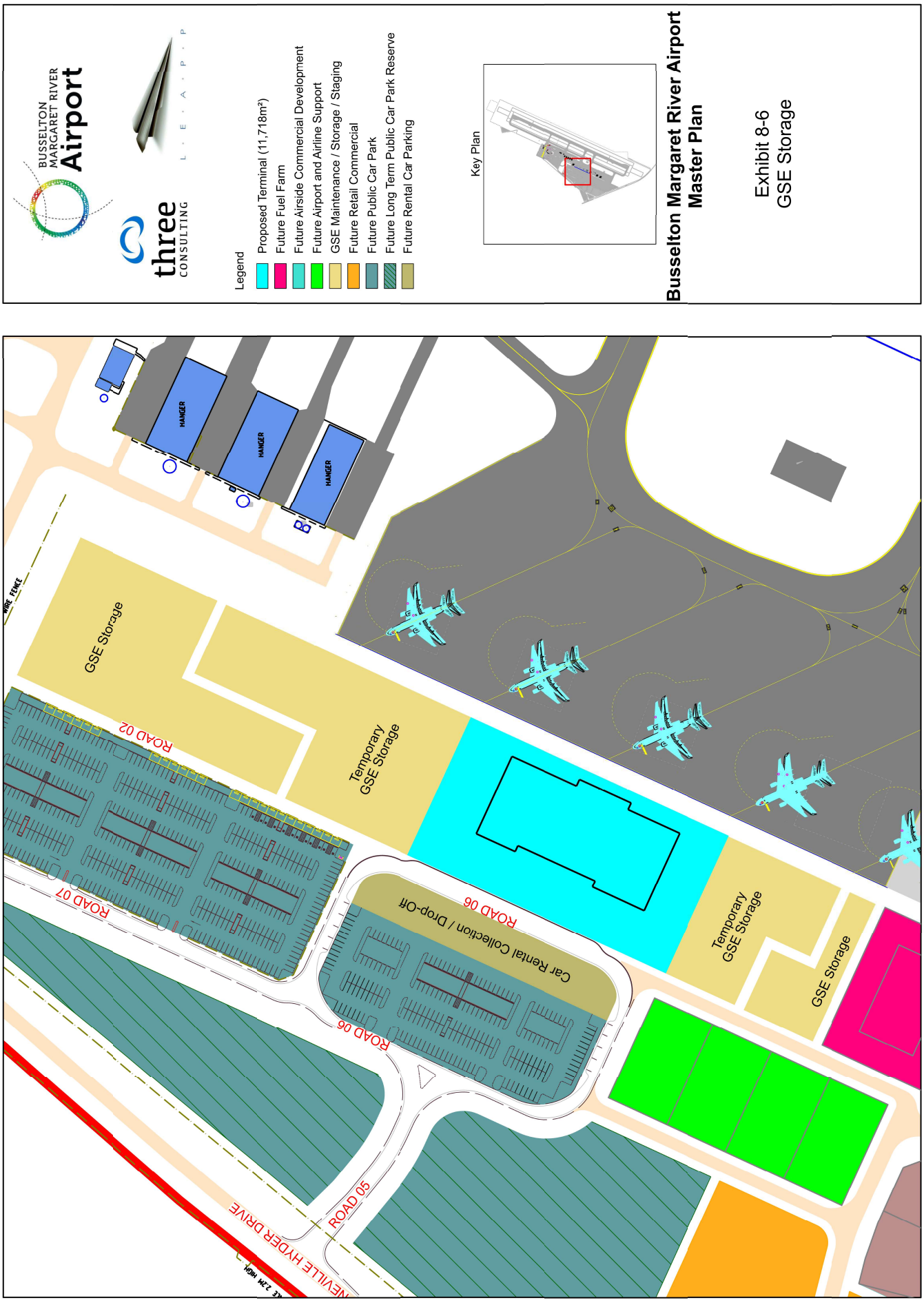
- Future Apron Expansion
- Future Fuel Farm
- Future Airport and Airline Support
- GSE Maintenance / Storage / Staging
- Future Cargo / Freight
- Fuel Hydrant Reach
- Fuel Hydrant

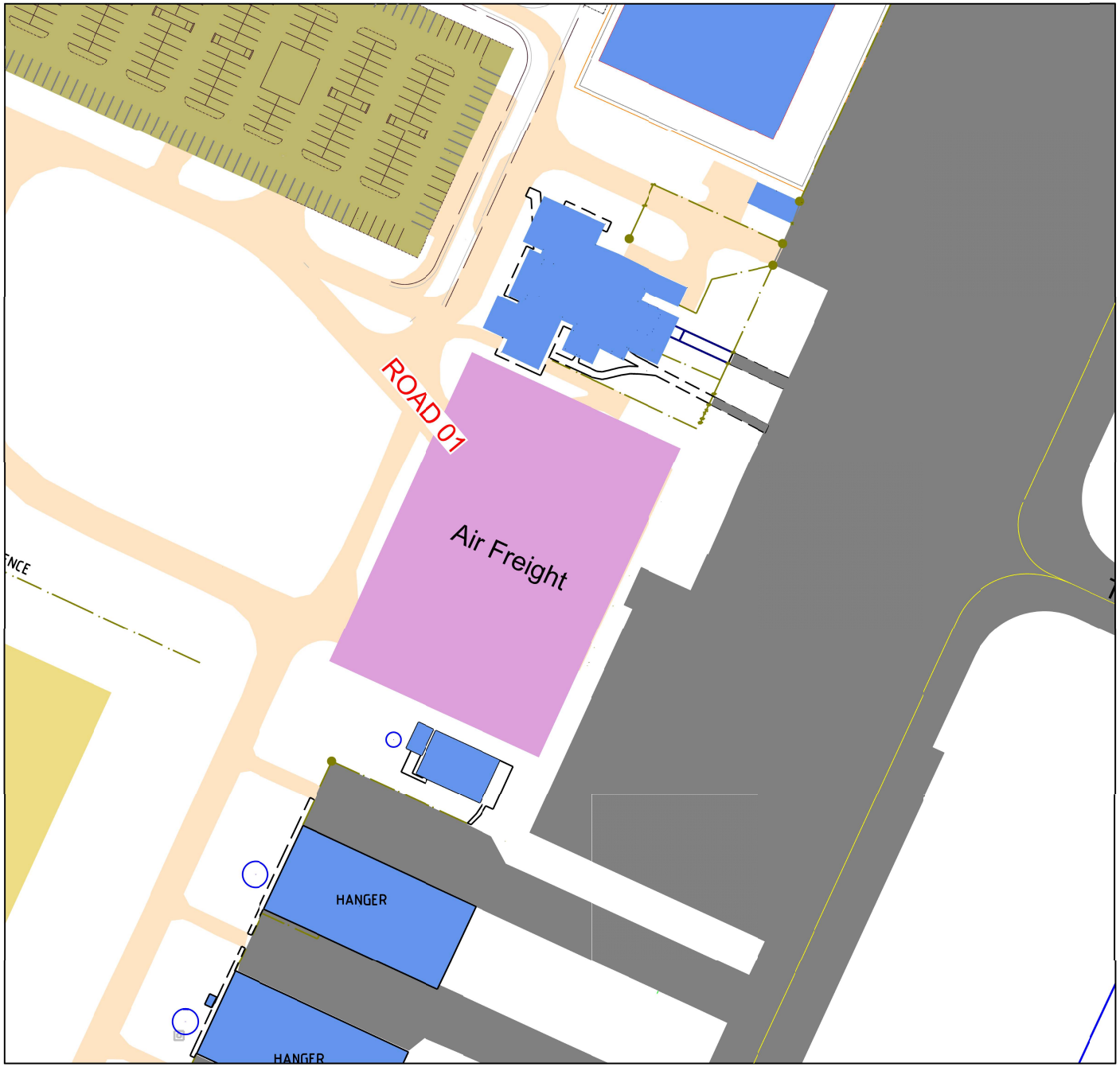
Key Plan



Busselton Margaret River Airport Master Plan

Exhibit 8-4
Fuel Hydrant and
New Fuel Storage


BUSSELTON MARGARET RIVER Airport
three CONSULTING
L · E · A · P · P
Legend
Proposed Terminal (11,718m²)
Future Fuel Farm
Future Airside Commercial Development
Future Airport and Airline Support
GSE Maintenance / Storage / Staging
Future Retail Commercial
Future Public Car Park
Future Long Term Public Car Park Reserve
Future Rental Car Parking
Key Plan
Busselton Margaret River Airport
Master Plan
Exhibit 8-6
GSE Storage
HANGER
HANGER
HANGER
GSE Storage
Temporary GSE Storage
ROAD 02
ROAD 07
ROAD 06
Car Rental Collection / Drop-Off
ROAD 06
Temporary GSE Storage
GSE Storage
ROAD 05
NEVILLE HYDER DRIVE
WIRE FENCE



BUSSELTON MARGARET RIVER Airport

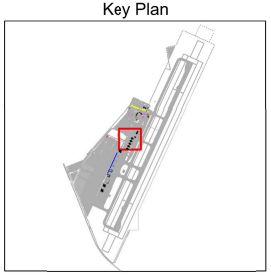
three CONSULTING

L · E · A · P · P

Legend

- Future Cargo / Freight
- Future Rental Car Parking

Key Plan



Busselton Margaret River Airport Master Plan

Exhibit 8-11
Air Freight - Option 1

BUSSELTON MARGARET RIVER Airport

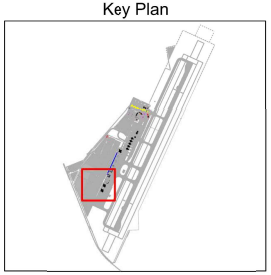
three CONSULTING

L · E · A · P · P

Legend

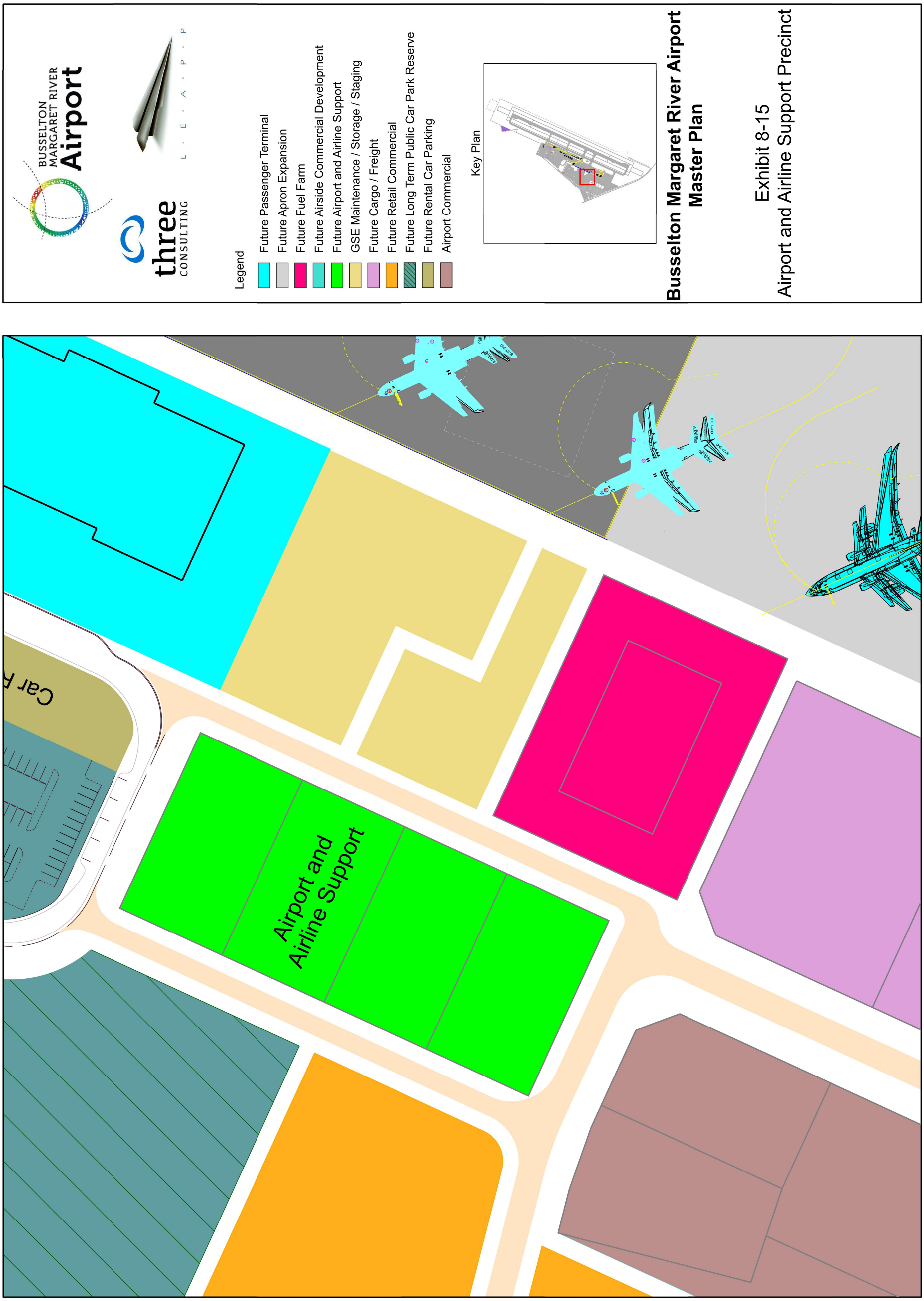
- Future Apron Expansion
- Future Fuel Farm
- Future Airside Commercial Development
- Future Airport and Airline Support
- GSE Maintenance / Storage / Staging
- Future Cargo / Freight
- Future Retail Commercial
- Future Utilities
- Future Airport Commercial

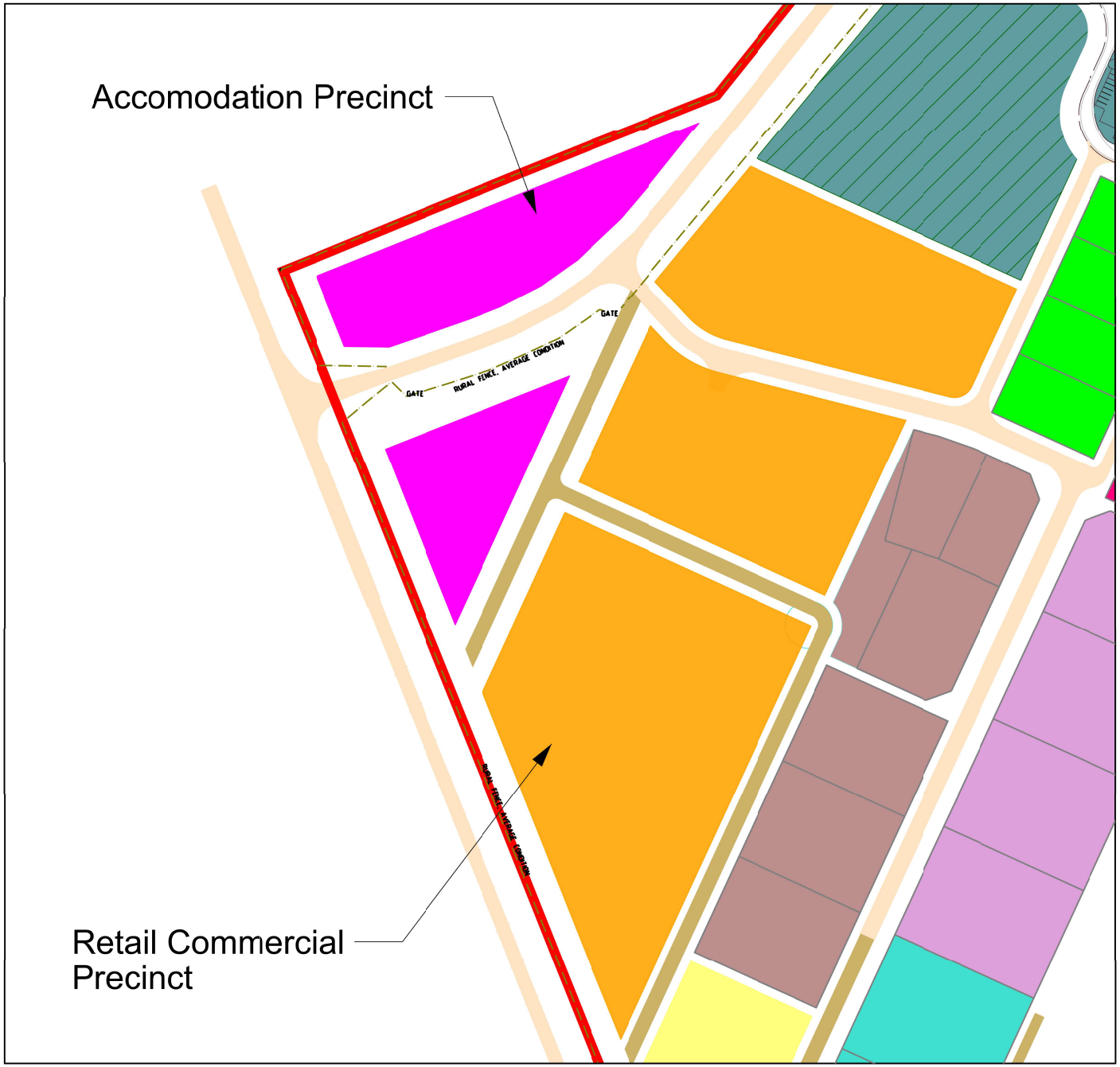
Key Plan



Busselton Margaret River Airport Master Plan

Exhibit 8-12
Air Freight - Option 2


BUSSELTON MARGARET RIVER Airport
three CONSULTING
L · E · A · P · P
Legend
Future Passenger Terminal
Future Apron Expansion
Future Fuel Farm
Future Airside Commercial Development
Future Airport and Airline Support
GSE Maintenance / Storage / Staging
Future Cargo / Freight
Future Retail Commercial
Future Long Term Public Car Park Reserve
Future Rental Car Parking
Airport Commercial
Key Plan
Busselton Margaret River Airport
Master Plan
Exhibit 8-15
Airport and Airline Support Precinct
Airport and Airline Support
Car R



BUSSELTON MARGARET RIVER Airport

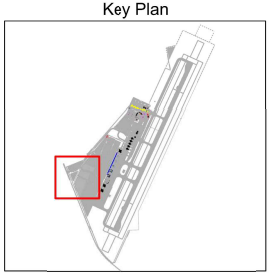
three CONSULTING

L · E · A · P · P

Legend

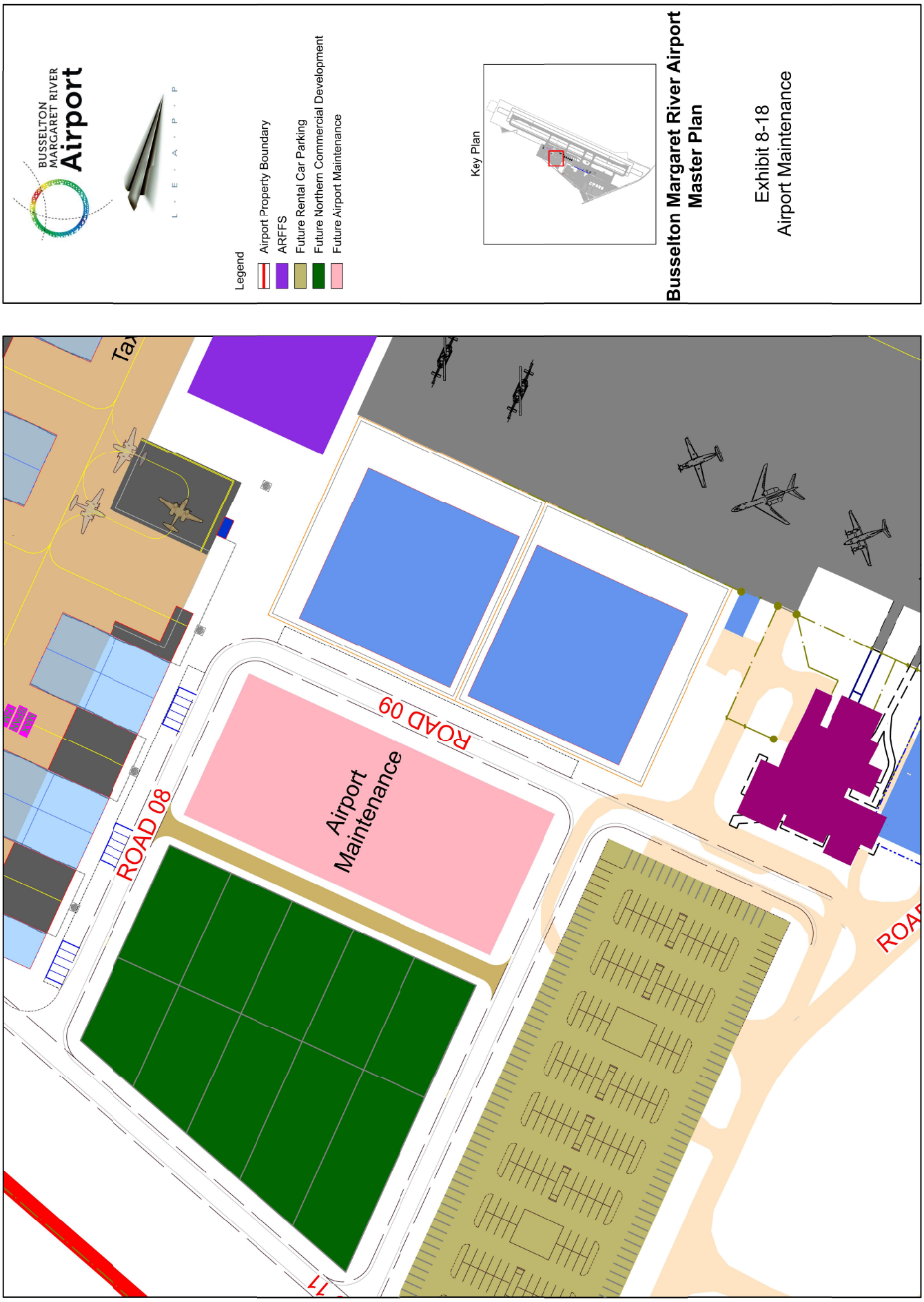
- Airport Property Boundary
- Future Passenger Terminal
- Future Airside Commercial Development
- Future Airport and Airline Support
- Future Cargo / Freight
- Future Retail Commercial
- Future Accomodation
- Future Long Term Public Car Park Reserve
- Future Utilities
- Airport Commercial

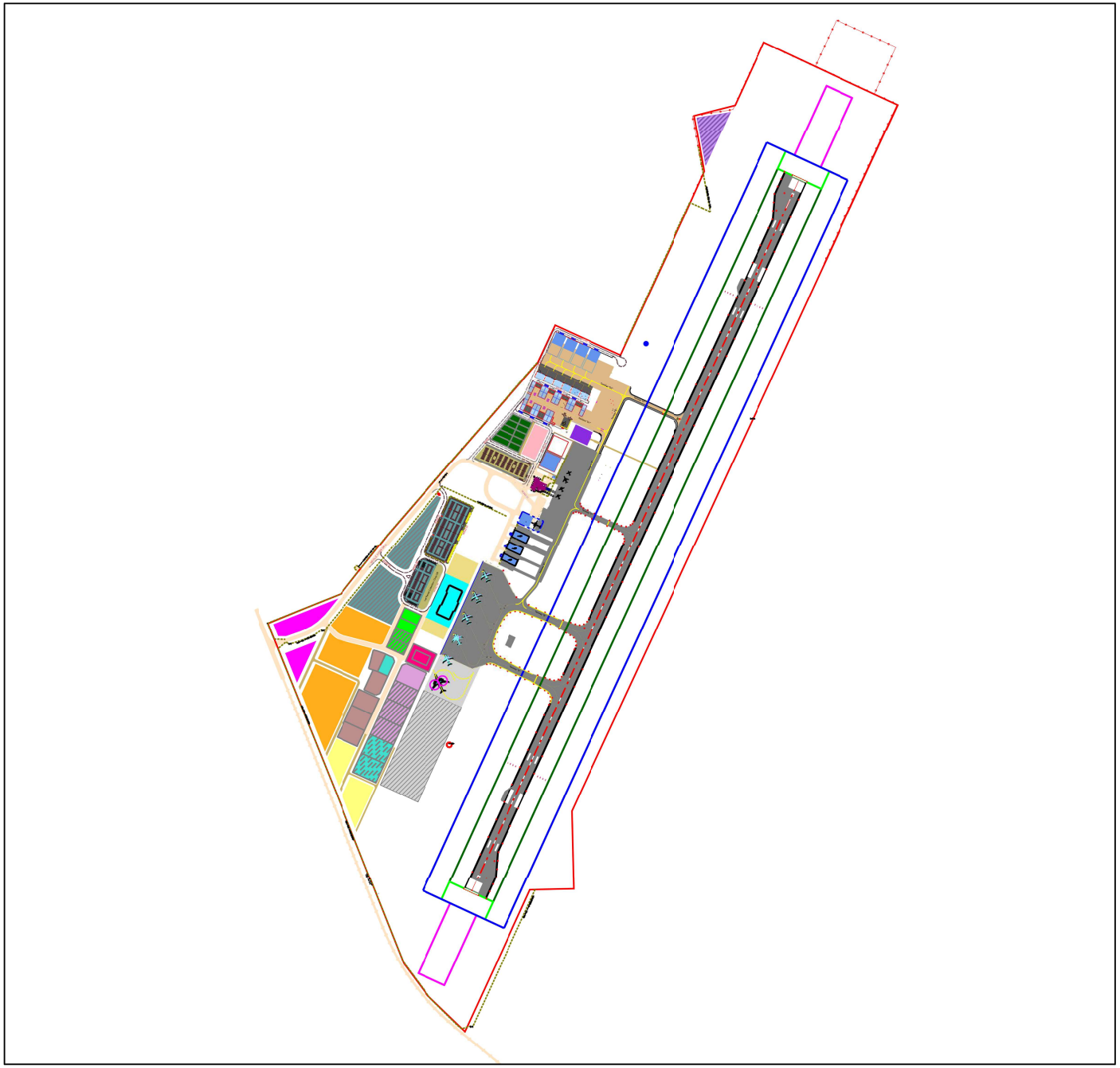
Key Plan



Busselton Margaret River Airport Master Plan

Exhibit 8-16
Retail Commercial and Accomodation Precinct


BUSSELTON MARGARET RIVER Airport
L · E · A · P · P
Legend
Airport Property Boundary
ARFFS
Future Rental Car Parking
Future Northern Commercial Development
Future Airport Maintenance
Key Plan
Busselton Margaret River Airport
Master Plan
Exhibit 8-18
Airport Maintenance
ROAD 09
ROAD 08
Airport Maintenance
17



BUSSELTON MARGARET RIVER Airport

three CONSULTING

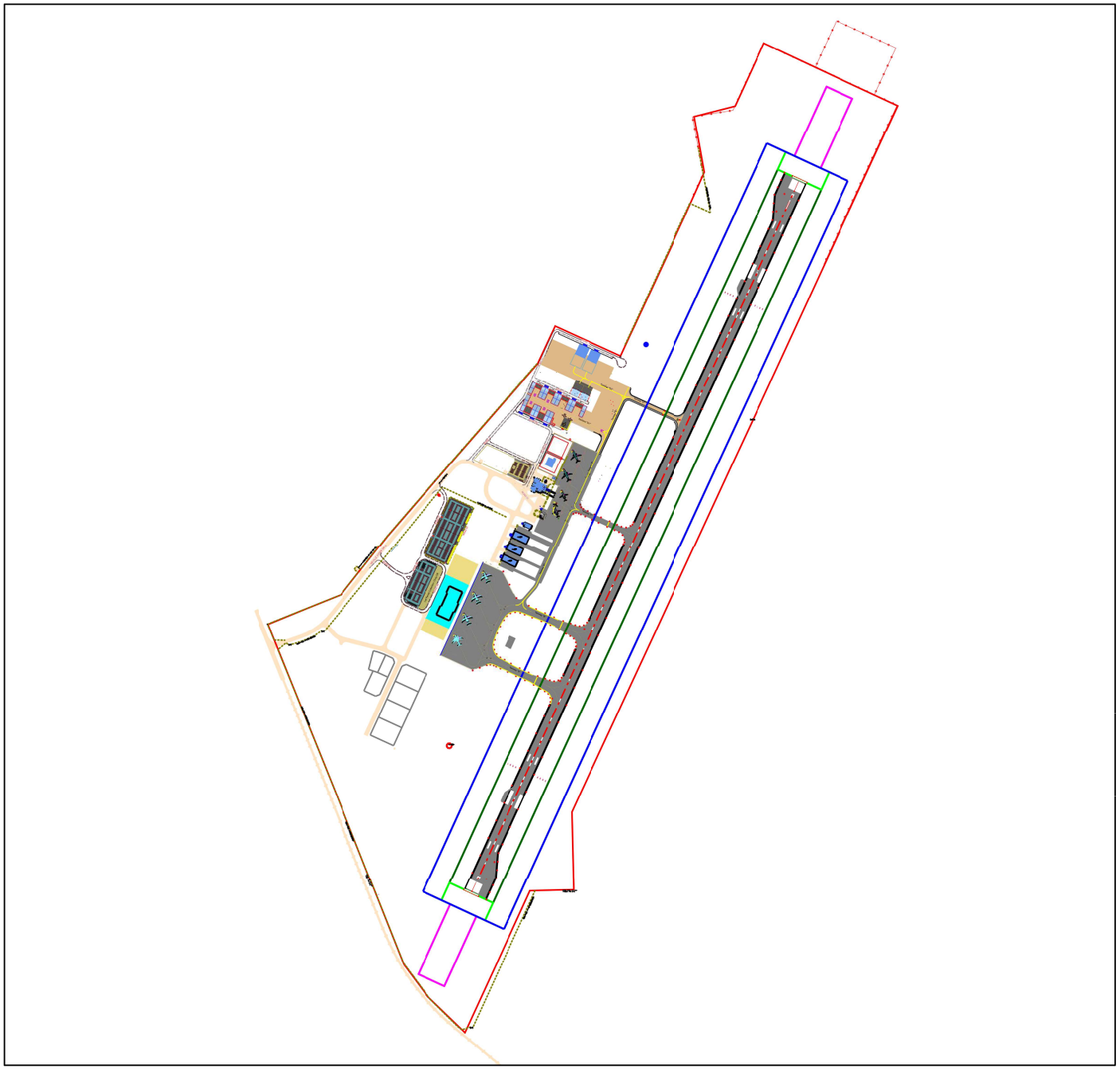
L · E · A · P · P

Legend

- Airport Property Boundary
- Runway Strip
- Clearway
- RESA
- Future Passenger Terminal
- Future Apron Expansion
- Future Long Term Apron Reserve
- Future Fuel Farm
- ARFFS
- Future Airside Commercial Development
- Future Airside Commercial Development Rsv
- Future Airport and Airline Support
- Future Airport and Airline Support Reserve
- GSE Maintenance / Storage / Staging
- Future Cargo / Freight
- Future Cargo / Freight Reserve
- Future Retail Commercial Reserve
- Future Accomodation Reserve
- Future Public Car Park
- Future Long Term Public Car Park Reserve
- Future Rental Car Parking
- Future Northern Commercial Development Rsv
- Future Airport Maintenance Rsv
- Future Utilities Reserve
- Airport Commercial Reserve
- ARFFS Training Area
- FBO

Busselton Margaret River Airport
Master Plan

Exhibit 9-1
Airport Master Plan



BUSSELTON MARGARET RIVER Airport

three CONSULTING

L · E · A · P · P

Legend

- Airport Property Boundary
- Runway Strip
- Clearway
- RESA
- Future Passenger Terminal
- GSE Maintenance / Storage / Staging
- Future Public Car Park

Busselton Margaret River Airport Master Plan

Exhibit 9-2
Airport Master Plan - Phase 1
(2023 to 2028)

BUSSELTON MARGARET RIVER Airport

three CONSULTING

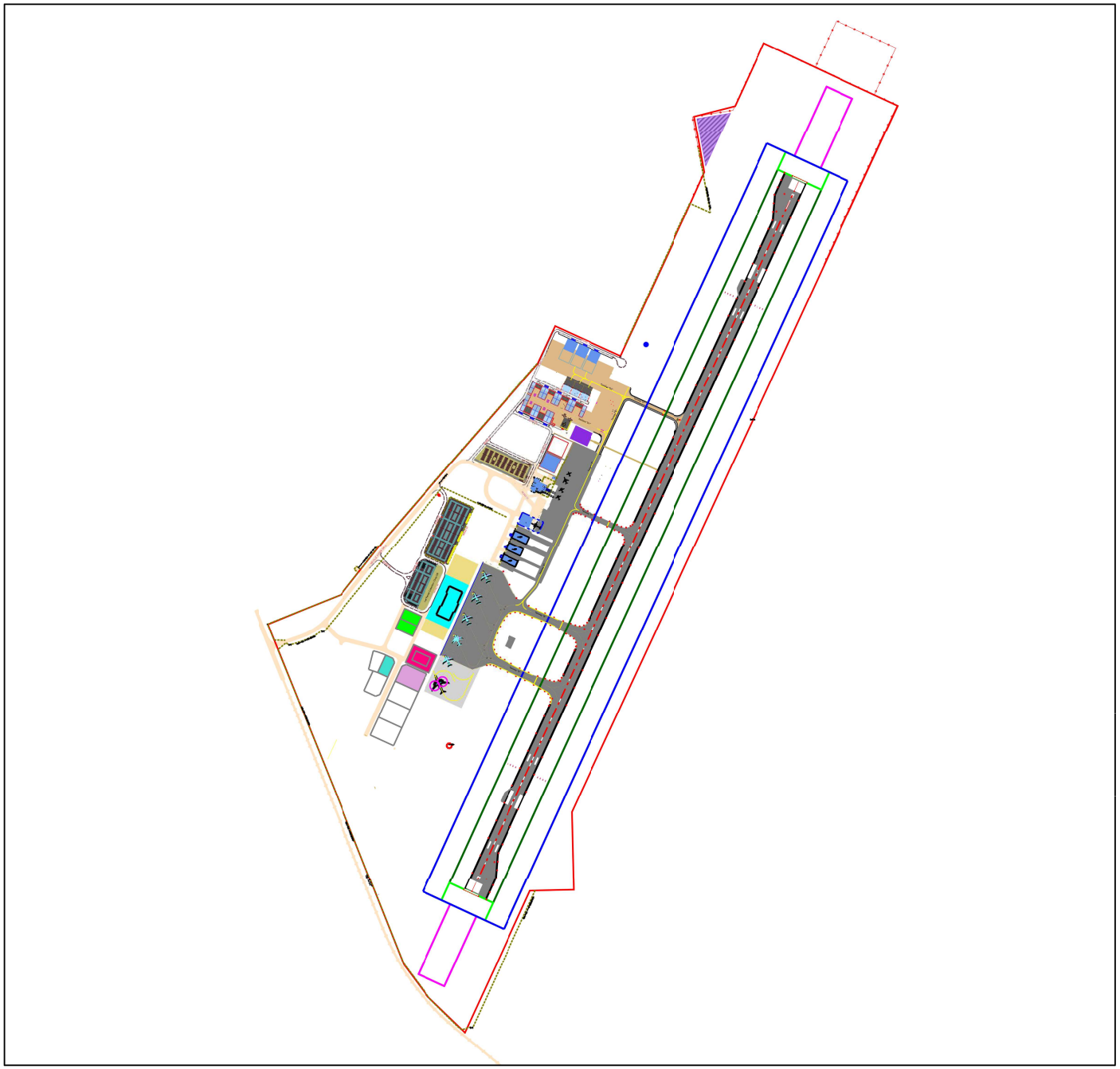
L · E · A · P · P

Legend

- Airport Property Boundary
- Runway Strip
- Clearway
- RESA
- Future Passenger Terminal
- Future Apron Expansion
- ARFFS
- Future Airport and Airline Support
- GSE Maintenance / Storage / Staging
- Future Cargo / Freight
- Future Public Car Park
- Future Rental Car Parking
- ARFFS Training Area
- FBO

Busselton Margaret River Airport Master Plan

Exhibit 9-3
Airport Master Plan - Phase 2
(2028 to 2033)



BUSSELTON MARGARET RIVER Airport

three CONSULTING

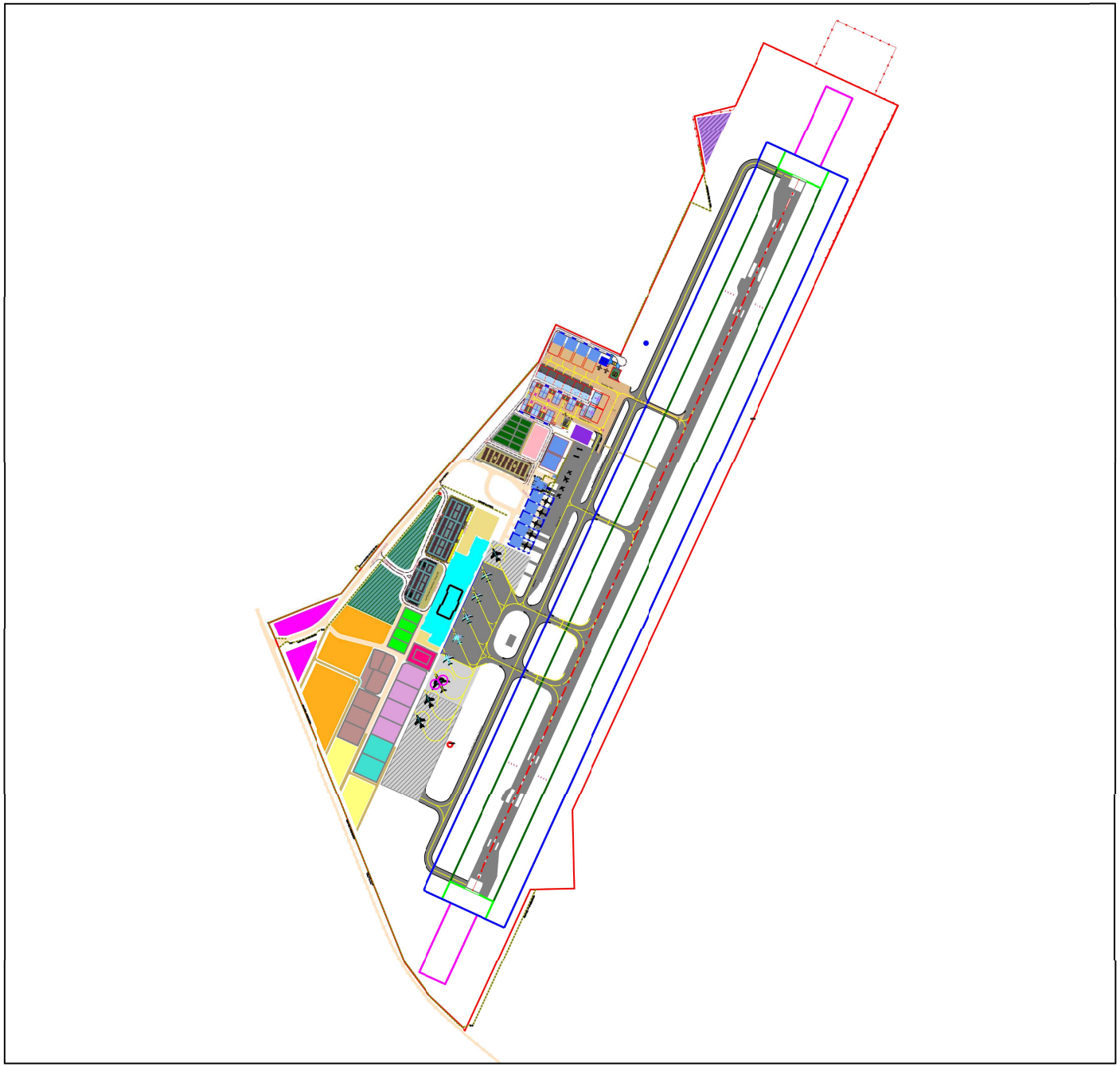
L · E · A · P · P

Legend

- Airport Property Boundary
- Runway Strip
- Clearway
- RESA
- Future Passenger Terminal
- Future Apron Expansion
- Future Fuel Farm
- ARFFS
- Future Airside Commercial Development
- Future Airport and Airline Support
- GSE Maintenance / Storage / Staging
- Future Cargo / Freight
- Future Public Car Park
- Future Rental Car Parking
- ARFFS Training Area
- FBO

Busselton Margaret River Airport Master Plan

Exhibit 9-4
Airport Master Plan - Phase 3
(2033 to 2043)



BUSSELTON MARGARET RIVER Airport

three CONSULTING

L · E · A · P · P

Legend

- Airport Property Boundary
- Runway *Strip*
- Clearway
- RESA
- Future Passenger Terminal
- Future Apron Expansion
- Future Long Term Apron Reserve
- Future Fuel Farm
- ARFFS
- RFDS
- Future Airside Commercial Development
- Future Airport and Airline Support
- GSE Maintenance / Storage / Staging
- Future Cargo / Freight
- Future Retail Commercial
- Future Accomodation
- Future Public Car Park
- Future Long Term Public Car Park Reserve
- Future Rental Car Parking
- Future Northern Commercial Development
- Future Airport Maintenance
- Future Utilities
- Airport Commercial
- ARFFS Training Area
- FBO

Busselton Margaret River Airport Master Plan

Exhibit 10-1
Ultimate Airport Development