CHAPTER

11

# Aviation Plan

Aviation Plan

# 11.1 Overview

Brisbane Airport is the gateway to the world for Brisbane and Queensland. Ensuring adequate provision of airfield infrastructure and passenger terminals is vital for the continued growth of Brisbane Airport.

As Australia's most connected hub and having 24/7 international connections, Brisbane Airport needs to support a broad range of airline operations and be flexible to meet changing needs of passengers and airlines.

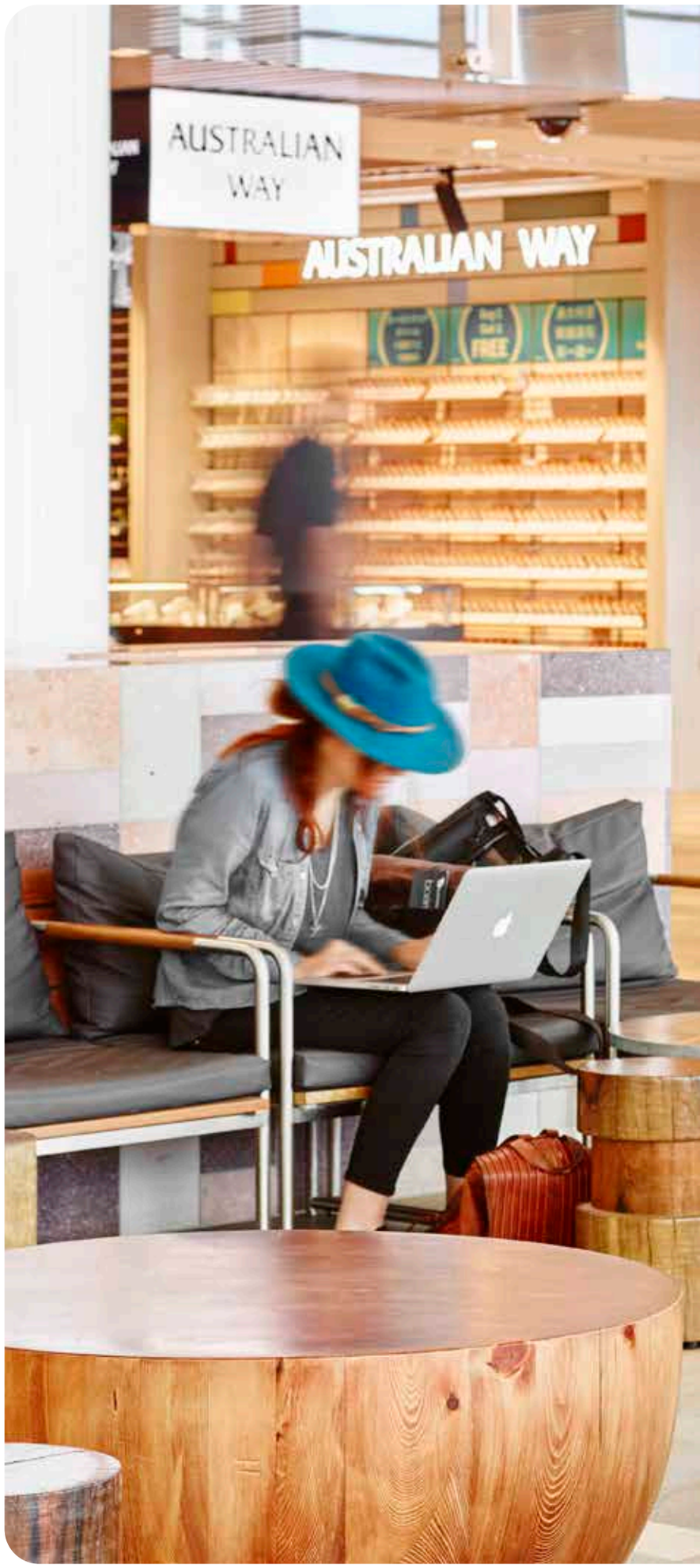
The Aviation Plan sets out the future development of Brisbane Airport's aeronautical infrastructure including airfield, terminals, and aviation support facilities. It aims to meet the current and future needs of passengers, airlines, and all relevant aviation support operations while considering regulatory requirements and operational constraints.

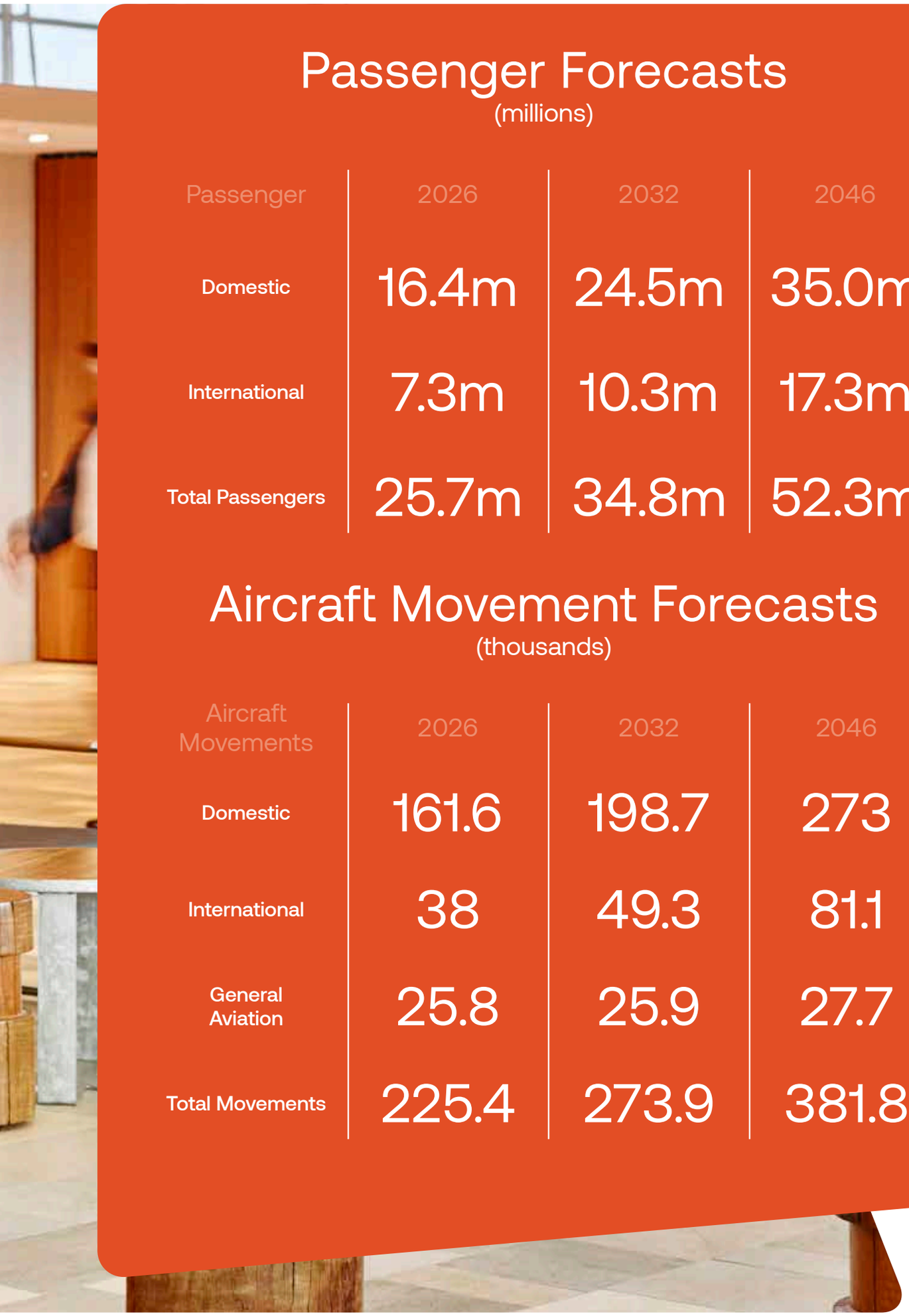
Passenger numbers at Brisbane Airport are forecast to more than double over the next 20 years, necessitating strategic long-term planning for terminal, airfield, and aviation support facilities.

As airline and passenger needs evolve due to technology, regulations, demographics, and climate change, the Aviation Plan emphasises incremental expansion to accommodate anticipated growth and BAC has engaged in thorough strategic planning to align with its vision and the needs of airlines, terminal retailers and passengers.

BAC aims to enhance its aeronautical infrastructure to tackle immediate challenges while preserving the integrity of its long-term strategies.

Planning for aviation infrastructure is based on a set of guiding principles and focuses on maintaining flexibility in development pathways to optimise the terminal and airside layout, considering the requirements at both 20 years, and ultimate operating capacity, to ensure areas for passenger and aircraft facilitation are safeguarded. It also includes a range of short-term projects envisaged for the next five years.





# Passenger Forecasts
(millions)

| Passenger | 2026 | 2032 | 2046 |
|---|---|---|---|
| Domestic | 16.4m | 24.5m | 35.0m |
| International | 7.3m | 10.3m | 17.3m |
| Total Passengers | 25.7m | 34.8m | 52.3m |

# Aircraft Movement Forecasts
(thousands)

| Aircraft Movements | 2026 | 2032 | 2046 |
|---|---|---|---|
| Domestic | 161.6 | 198.7 | 273 |
| International | 38 | 49.3 | 81.1 |
| General Aviation | 25.8 | 25.9 | 27.7 |
| Total Movements | 225.4 | 273.9 | 381.8 |

# Key aeronautical infrastructure projects since the 2020 Master Plan:

## Terminal 1

- Baggage makeup area upgrades
- Security screening and retail upgrades
- Self-service check-in
- Passenger boarding bridge upgrades
- Passenger gate lounge expansion
- Precinct rooftop solar.

## Terminal 2

- Retail upgrades
- Bathroom upgrades
- Security screening upgrade
- Self-service check-in
- Southern and northern bussing lounges
- Passenger boarding bridge upgrade.

## Airfield

- Western runway opened
- Apron rectification works at T1.

## Aviation Support Facilities

- Ground service equipment charging neighbourhoods.

## Terminal 1 Security and Retail Upgrade Project

A significant refurbishment of the International Terminal, including expanded retail, food and beverage offerings, a new duty-free experience, and key changes that improve the passenger journey. New passenger and baggage screening equipment will align with government-mandated standards, allowing passengers to leave most items in their hand luggage. The check-in process will also be simplified for passengers — offering a more streamlined approach.

## Terminal 2 Security Upgrade Project

Major upgrades to passenger and baggage screening equipment, aligned with government-mandated standards that means passengers will be able to leave most items in their hand luggage. It will also include direct entrance from the Skywalk to the Domestic Terminal for checked-in passengers with carry-on bags, greatly streamlining their airport experience and increasing capacity in the rest of the terminal.

## Western runway construction

One of the largest aviation constructuion projects in Australia at the time, site works commenced in 2012 and construction completed in 2020 and included:

- A 3.3 km runway, 60m wide, topped with asphalt
- 12 km of taxiways
- Airside roads, drains, airfield lighting and signage
- Navigation aids, including an Instrument Landing System (ILS) and high intensity approach lighting system (HIAL) at both ends of the runway
- 300ha of landscaping to cover all non-paved areas of the airfield, and
- A four-lane underpass structure which links the T2 and General Aviation facilities.

# 11.2 Terminals Plan

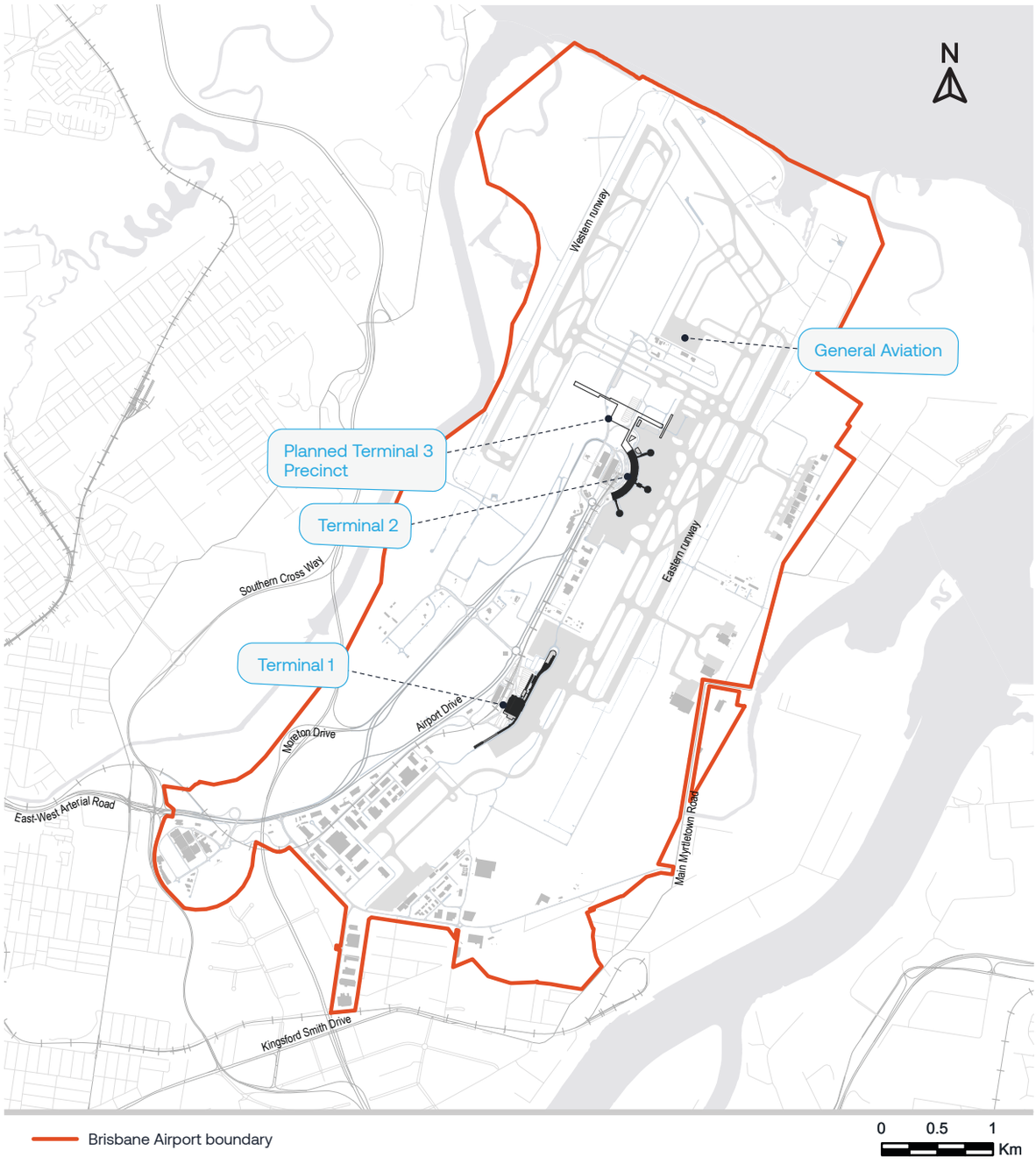
Brisbane Airport operates two main passenger terminals, located 1.5 km apart. Together, the two terminals facilitated the journeys of 24 million passengers in 2024.

This Master Plan presents revised terminal naming for the main passengers terminals which is consistent with naming conventions and other airports around the world. The designation for the International Terminal is Terminal 1 (T1) and the designation for the Domestic Terminal is Terminal 2 (T2).

The terminal plan outlined in this section describes the proposed development of passenger terminals over the next 20 years. This plan incorporates the ongoing use of the existing International Terminal 1 (T1) and Domestic Terminal 2 (T2), along with a new Terminal 3 (T3) precinct located to the north of T2. A smaller General Aviation Terminal is located north-east of the Domestic T2 Terminal and accommodates private and regional charter services throughout Queensland.

This section provides details on the current operations of each terminal, highlights significant new developments since the publication of the 2020 Master Plan, and outlines the future plans for the airport's terminal precincts.

FIGURE 11.1: LOCATIONS OF PASSENGER TERMINALS



Aviation Plan

### 11.2.1 International T1 Terminal

Terminal 1 (T1) opened in 1995, operating as a common-use facility for international airlines and comprises four-levels:

Level 1 – baggage handling, delivery dock, stores and airline offices

Level 2 – arrivals processing, airline offices, and landside retail

Level 3 – departures processing, departure lounges, airline lounges and airside retail

Level 4 – check-in, departures processing and landside retail.

Fourteen fixed links with aerobridges connect the terminal departure and arrival levels directly to the aircraft parking stands. Ground level facilities allow walk-out boarding and arrival access for six aircraft parking stands to the north and the south of the concourse.

International passenger forecasts indicate additional aircraft parking stands will be required in the short term at T1 and include stands connected to the terminal pier as well as remote stands requiring passengers to walk-out or use buses to access the aircraft.

Long-term development will include additional expansion of passenger processing areas within the terminal building and extensions of the terminal piers to connect to additional international aircraft parking stands by 2046. The long-term expansion of terminal capacity will be balanced with the capacity provided by the future T3 which is anticipated to ultimately accommodate both domestic and international passengers.

Planned projects at T1 in the next five years include:

- An expansion of the departure lounge areas, including departure bussing lounge for remote aircraft operations
- Baggage handling system capacity upgrades including additional areas to load and store baggage as it enters the system
- Expansion of self-service check-in areas
- Additional self-service processing facilities for arriving passengers at arrivals duty free, border and customs control points.

Projects at T1 over the next 20 years:

- Expansion of arrival and departure passenger processing areas
- Extension of terminal piers.

BAC will continue to monitor, upgrade and expand the terminal as required to accommodate demand in the international market while ensuring the continued delivery of a quality service to meet the needs of international airlines and passengers.

### 11.2.2 Domestic T2 Terminal

Terminal 2 (T2) first opened in 1988 and supports domestic passenger operations across two levels:

Level 1 – check-in and bag-drop, baggage handling system and baggage reclaim areas. Also located on this level are airline offices, regional boarding gates, ground transport kiosks, retail outlets and entry to premium lounges.

Level 2 – airline lounges, airline and airport staff offices, passenger security screening points, boarding gates, retail and food outlets.

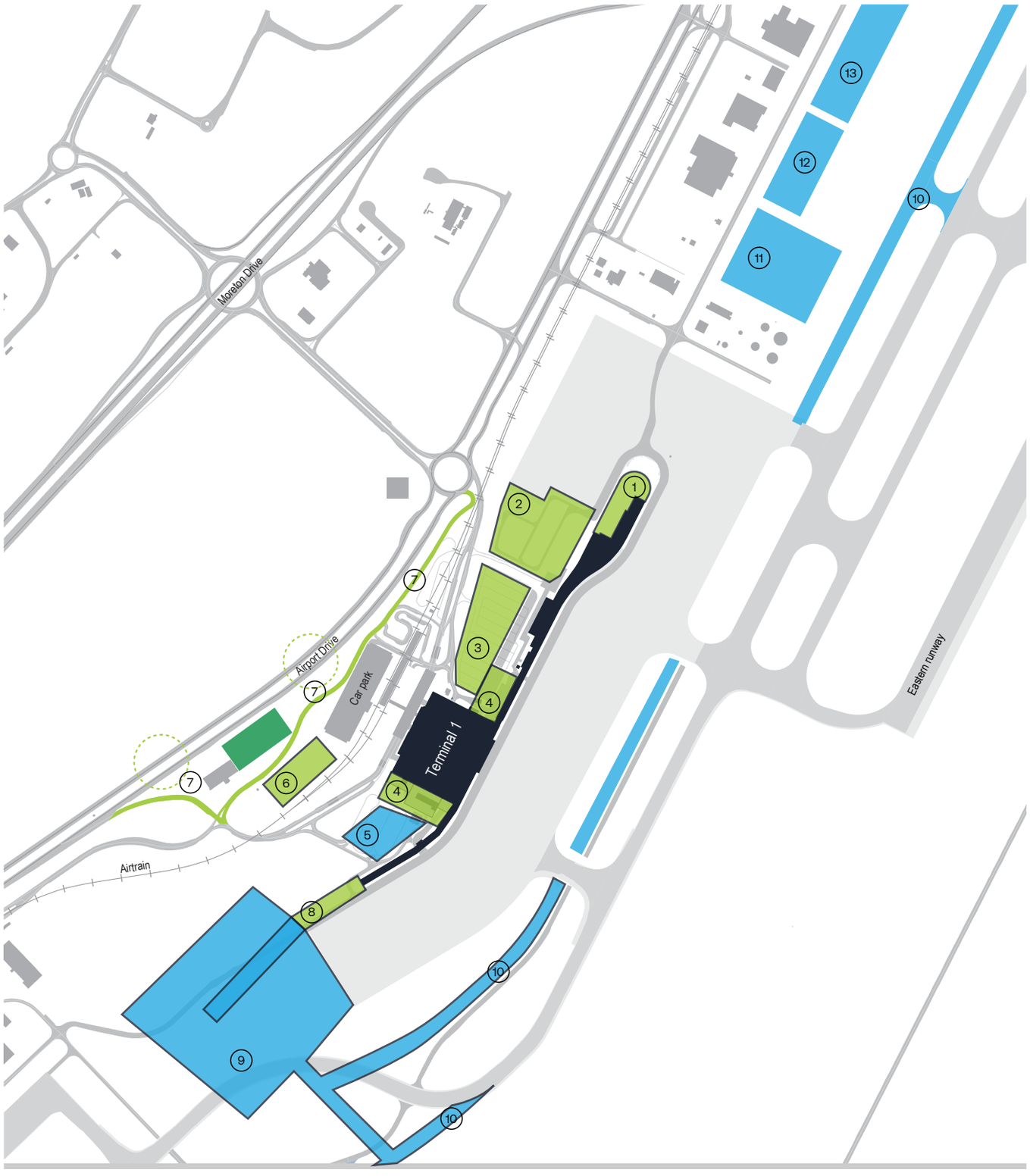
It's anticipated the current T2 Terminal footprint will be expanded to accommodate continued growth in the domestic market. Projects envisaged at the T2 Terminal in the next five years:

- Check-in upgrades including additional common-use self service facilities
- New departure lounges in the north and south of the terminal to support additional bussing operations
- Central and Southern Baggage Reclaim upgrades.

Projects envisaged at the T2 Terminal over the next 20 years:

- Terminal amenity improvements and refresh to maintain operational capacity and passenger experience
- Upgrades to passenger processing in line with technology opportunities and legislative drivers.

FIGURE 11.2: T1 EXPANSION OVER THE NEXT 20 YEARS




## Terminal 1 Plan

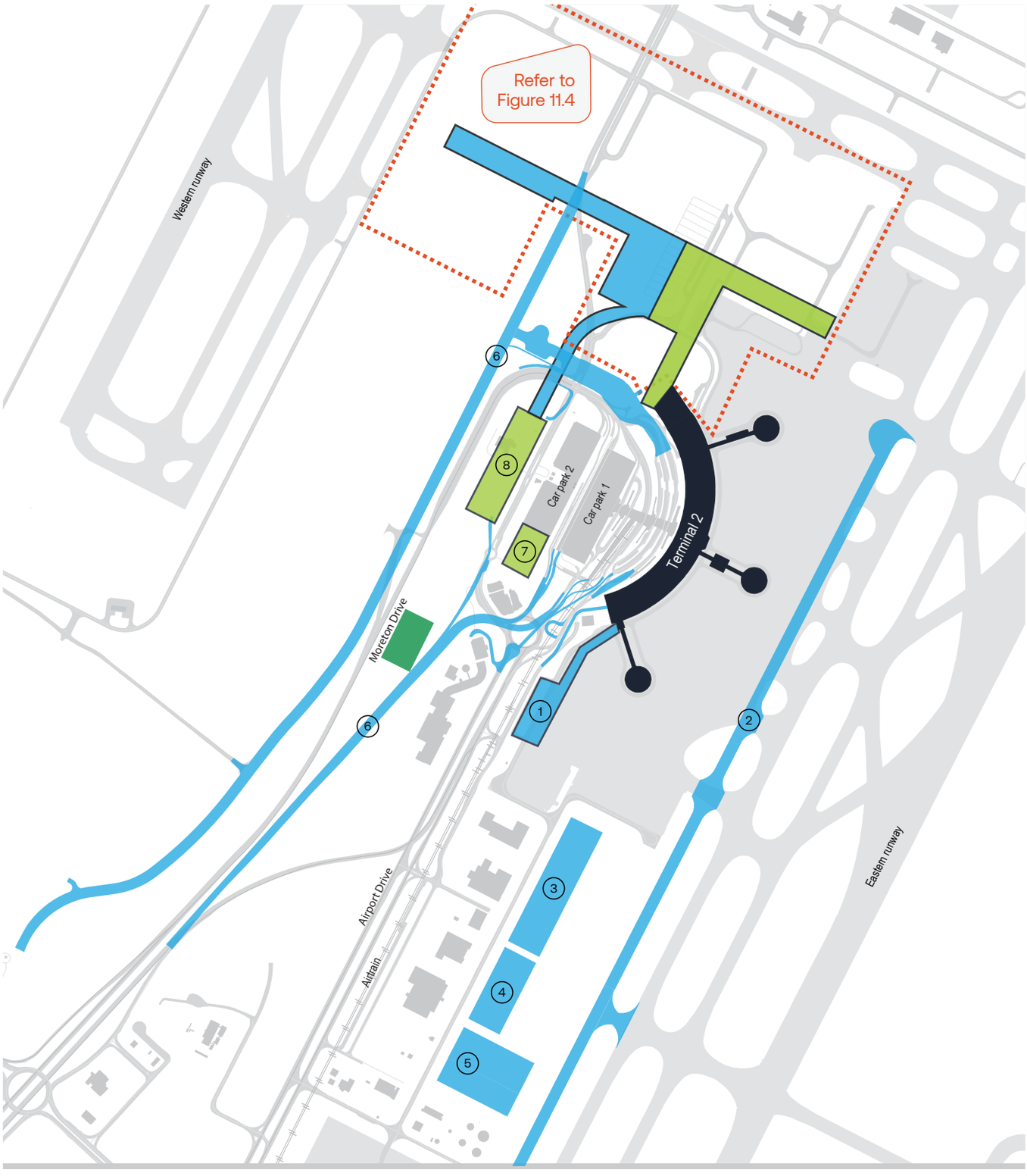
- Planned Developments to 2031
- Potential Developments to 2046
- Long term vertiport reserve

1. Northern Pier extention
2. Apron extension
3. Pick up and drop off facility
4. Terminal Building expansion
5. Ground Transport Centre
6. Car park
7. Road and intersection upgrades
8. Southern Pier extension
9. Apron expansion
10. Taxiway upgrades
11. Aircraft refuelling reserve
12. Future freight and cargo development
13. GSE Reserve

N

0 80 160 m

FIGURE 11.3: T2 PLANNED EXPANSIONS




Terminal 2 Plan

- Planned Developments to 2031
- Terminal and Airfield Expansions to 2046
- Long term vertiport reserve
- Terminal 3 Precinct

1. Southern Pier extention
2. Taxiway re-alignment
3. GSE Reserve
4. Future freight and cargo development
5. Aircraft refuelling reserve
6. Ground transport upgrades
7. Car park – under construction
8. Car park

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0 100 200 m


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Aviation Plan

## 11.2.3 T3 Terminal Precinct

Planning studies for Brisbane Airport indicate that when domestic passenger numbers reach 25 million passengers per annum (anticipated around 2032) additional terminal floor area will be required for domestic operations and processing facilities. It is also anticipated that additional international terminal capacity will be required when the existing Terminal 1 reaches 10-12 million passengers (anticipated around 2030-2034).

Several expansion options were assessed to address terminal requirements, as well as seamless passenger travel concepts, and expansion of existing passenger terminals. These options were evaluated based on detailed criteria which identified a new modular terminal expansion as the preferred pathway. A new modular terminal allows for passenger processing and handling spaces that can be progressively developed in a manner that is able to adapt to future seamless passenger processes and co-location of domestic and international operations.

The strategic drivers for developing T3 include:

- A staged approach to delivering aviation capacity
- Planning for an integrated precinct which includes landside connectivity
- Continued detailed engagement with airlines to facilitate alignment of the short, medium, and long-term terminal infrastructure needs
- A balanced outcome between commercial development costs, capacity needs and the continued retention and operation of T1 and T2.

The location of T3 begins to shift the operational centre of passenger and aircraft facilitation to a location between the parallel runways which results in optimal airfield access and reduced aircraft taxi times.

The Terminal 3 Precinct has been planned to include:

- Co-location of international and domestic operations – optimising space and process utilisation, as well as improving passenger transfer connections
- Flexible allocation of space and processing capacity depending on airline allocation and specific growth requirements. It is intended the terminal operations will accommodate a mix of carriers
- Adaptability to regulatory changes in passenger processing (e.g. common international/departure lounge) and convert terminal area from processing to commercial as new technologies reduce processing times and space requirements
- Flexible and adaptable design to incorporate sustainable solutions to achieve circular terminal operations (net zero emissions, zero waste and water management)
- Universal design fundamentals throughout the passenger journeys and worker spaces.

The size of T3 has been informed through terminal planning studies, airline consultation, and precinct commercial opportunities underpinned by the desired customer experience. The initial stage of T3 is planned for completion in the early to mid 2030s and will be delivered in stages to meet passenger demand.

Key components will include:

- First stage of the terminal build is planned to accommodate international and domestic operations with ability to swing security lanes, reclaim and gates using a call to gate operation for passengers
- Forecourt serving as an interchange space between kerbside, T3 and T2 – forecourt & kerbside
- Connections to existing landside transport corridors
- Passenger connection to existing T2
- Airside interface to northern apron, and
- Hotel development.

T3 will be incrementally expanded over the coming decades to meet growth forecasts. Expansions will occur in line with growth in passenger forecasts.

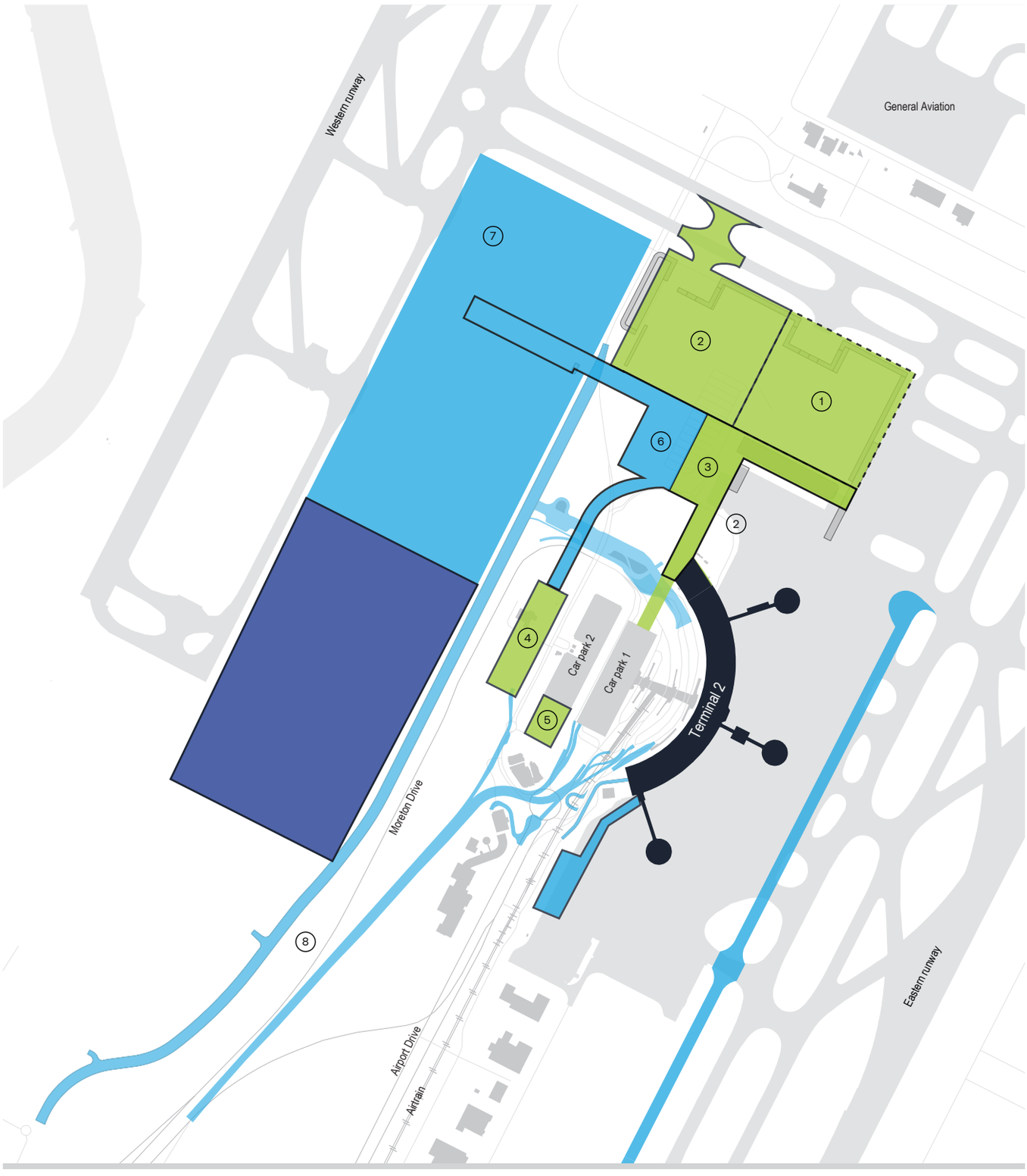
Key stages are expected by 2040 and 2046. Long-term land use reservation has been made through this planning process to ensure adequate area for terminal expansion is available. The following figure illustrates how T3 could expand over the next 20 years to accommodate up to approximately 18 million passengers per year.

The key components expected to be delivered as part of this future development include:

- Common departures lounge operation with international border at gate
- Integrated ground transport centre with future hotel
- Multi-level pick-up and drop off facility in forecourt, and
- Dedicated premium security lanes.

Beyond this, future reservation for terminal expansion has been identified adjacent to the western runway.

FIGURE 11.4: FUTURE TERMINAL DEVELOPMENT




## Terminal 3 Plan

- Planned Developments to 2031
- Potential Developments to 2046
- Airfield and terminal expansion beyond 2046
- Construction to 2028

1. Northern apron (2028)
2. Apron development (2031)
3. Terminal development
4. Car park
5. Car park – under construction
6. Terminal development to 2046
7. Airfield expansion to 2046
8. Ground Transport upgrades

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0 100 200 m

# 11.3 Airfield Plan

This section outlines the current operations of the airfield and future upgrades to respond to anticipated growth over the planning period.

## 11.3.1 Runways

Brisbane Airport has two widely spaced (2km) parallel runways as set out in Figure 11.5, the eastern and western runways. This runway system has been designed for independent runway operation capability, meaning simultaneous arrivals or departures can occur on both runways. The eastern runway opened in 1988, and the western runway opened in 2020.

Brisbane Airport predominantly uses a "compass mode" system to manage aircraft movements, which is based on the direction from which aircraft are approaching or departing.

- The eastern runway is typically used by aircraft operating to and from the south and east of Brisbane
- The western runway is generally used by aircraft operating to and from the north and west of Brisbane.

This runway system helps to minimise airspace conflicts between aircraft, and streamline air traffic management, making the airport's operations safer and more efficient.

The existing lengths of both runways are sufficient for current operations. Land under the runway approaches at the southern end will continue to be safeguarded for the possible provision of a future extension to each runway to accommodate emerging aircraft variants and performance characteristics should additional runway length be required.

Design characteristics of the two parallel runways at Brisbane Airport are summarised in Table 11.1.

TABLE 11.1: RUNWAY CHARACTERISTICS

| | EASTERN RUNWAY | WESTERN RUNWAY |
|---|---|---|
| DESIGNATION | 01R/19L | 01L/19R |
| RUNWAY WIDTH | 45 m | 60 m |
| RUNWAY LENGTH | 3,560 m (extension safeguarded to 4,040 m) | 3,300 m (extension safeguarded to 3,600 m) |
| RUNWAY STRIP WIDTH | 300 m | 300 m |

Brisbane Airport's cross runway was decommissioned in 2020 and is used for long-term aircraft parking. This allows Brisbane Airport to optimise the operational space while accommodating the growing demand for aircraft storage.

Planned projects for the runway system in the planning period include:

- Upgrades to airfield infrastructure including lighting and signage upgrades
- Surface rejuvenation on the eastern runway.

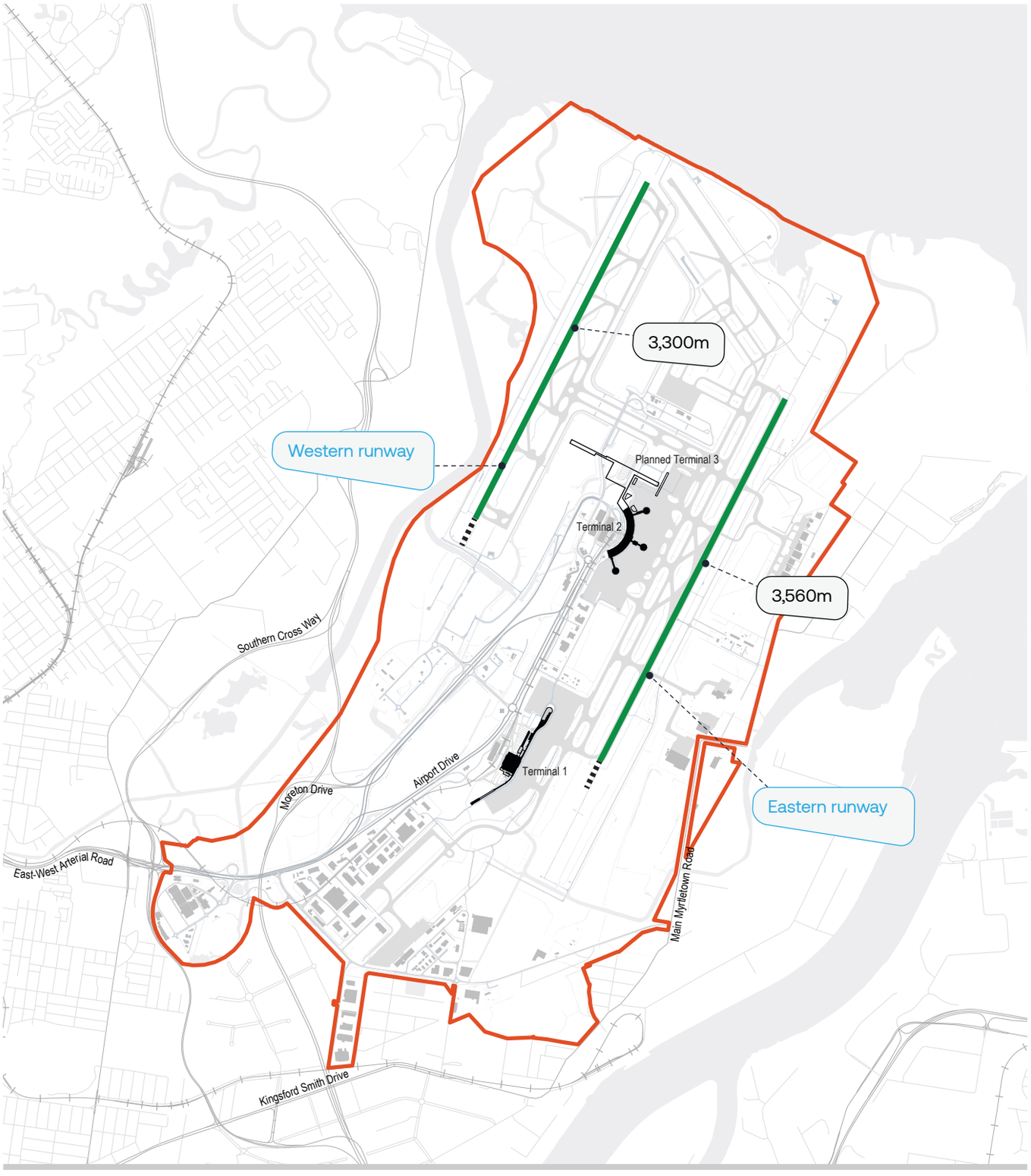
## 11.3.2 Taxiways

The runways are served by a taxiway network which provides connection to aircraft parking aprons and other aviation support facilities such as maintenance hangars on the eastern side of the airport.

There are two full length parallel taxiways that service the eastern runway. There is also one full length parallel taxiway that services the western runway with multiple connecting taxiways. Additional parallel taxiway segments to service the western runway have been safeguarded for and will be constructed in the future in line with traffic growth.

Dual cross-field taxiways between the eastern and western runway systems provide critical access across the airfield, located in the mid-field north of T2. T3 will be located to the south of the existing cross-field taxiways and it is anticipated that additional crossfield taxiway connections will be required over the planning period to maintain resilient taxiway connectivity across the airfield as aircraft activity increases.

FIGURE 11.5: OPERATIONAL RUNWAYS AT BRISBANE AIRPORT.



## 11.3.3 Parking Aprons

### T1 Apron

The current T1 apron consists of high strength concrete pavement servicing all aerobridge and remote stands.

The T1 apron has provision for 19 aircraft stands, of which seven are Multiple Aircraft Ramp System (MARS) configurations. These systems offer flexibility in terms of the number and type of aircraft that can be parked on the apron at any time. Complementing this are several non-aerobridge stands which are used for both remote parking and walk-out boarding of passenger services.

Table 11.2 sets out the current aircraft parking stands at T1.

An in-ground fuel hydrant system is connected to the Joint User Hydrant Installation (JUHI) depot facility and services all of the T1 aircraft stands in current operation.

The T1 Apron is proposed to expand in the initial five years of this Master Plan period to accommodate new walk-out aircraft stands to the south of T1. It is expected expansion will involve reconfiguring existing stands and the construction of at least two new stands to cater for a range of aircraft sizes.

Additional capacity for T1 can also be realised through bussing passengers to the existing remote stands on the southern T2 apron.

Over the 20-year planning period, expansion of the international apron will be safeguarded to the north, along the northern pier, and south (further expansion of the southern pier and associated contact parking stands), as well as within the central apron between T1 and T2.

TABLE 11.2: T1 AIRCRAFT STAND CAPACITY

| DESIGN STANDARD | CONFIGURATION | AVAILABLE STANDS | CAPACITY (TOTAL) | TERMINAL CONNECTION |
|---|---|---|---|---|
| Code E (Typical medium to long haul aircraft such as B787 or A350) | Single | 11 | 11 Code E, or up to 11 Code C | Aerobridge |
| | | 1 | 1 Code E or up to 1 Code C | Walk-out |
| Code F (typical long haul aircraft such as A380) | MARS* | 4 | 4 Code F, or up to 8 Code C | Aerobridge |
| | | 3 | 3 Code F aircraft, or up to 6 Code C | Walk-out |

* Multiple Aircraft Ramp System (MARS) configurations that can accommodate either 1 widebody or 2 narrow body aircraft

TABLE 11.3 :T2 AIRCRAFT STAND CAPACITY

| DESIGN STANDARD | CONFIGURATION | AVAILABLE STANDS | TERMINAL CONNECTION |
|---|---|---|---|
| Code C (typical regional aircraft such as Q400 or aircraft with a wingspan less than 29m) | Single | 4 | Walk-out |
| | | 4 | Remote (bussed) |
| Code C (typical short haul aircraft such as B737 or A320) | Single | 19 | Aerobridge |
| | | 11 | Walk-out |
| | | 22 | Remote |
| Code Code E (Typical medium to long haul aircraft such as B787 or A350) | Single | 2 | Aerobridge |

## T2 Apron

The current T2 apron consists of high strength concrete pavement servicing all aerobridge and remote stands, except for five aircraft stands used by regional aircraft that are flexible pavement.

The T2 apron has provision for 62 aircraft stands. Characteristics of T2 aircraft stands are outlined in Table 11.3.

An in-ground fuel hydrant system is connected to the Joint User Hydrant Installation (JUHI) depot facility and services around half of all existing stands. GSE storage areas are located to the south and north of the apron.

To increase capacity, over time additional remote operations will be facilitated through domestic passenger bussing to the remote parking aprons to the north and south of the Domestic T2 Terminal.

Additional domestic apron capacity will be provided through the early development of the T3 apron to the north over the next five years to support the increasing domestic aircraft operations.

## New Northern Apron

This apron will be developed in stages, with the initial stages supporting domestic operations from 2028 onwards. As the T3 precinct is expanded over time and the terminal building is incrementally expanded, the apron will be expanded to the west to supply apron capacity for T3.

These new apron areas will be serviced by an in-ground fuel hydrant system connecting to the existing JUHI.

Along with apron area, additional airside road infrastructure and aviation support facilities such as GSE staging, storage and into-plane hydrant refuelling and truck parking will be constructed as required.

A complementary taxiway network will be developed, which will link the T3 apron to the cross-field taxiway system.

## Logistics Apron

The logistics apron is used by a variety of aircraft including cargo/freight, visiting ad-hoc aircraft (including visiting Australian and International military aircraft), and as in-active stands for commercial international aircraft.

In 2024 the logistics apron was reconfigured to provide for 4 Code F MARS positions. In-ground aviation fuel is not available at the logistics apron and is not proposed within the planning period.

## Airport South Parking Area

The original “Eagle Farm” Brisbane Airport runway, now referred to as Airport South Parking Area, is located to the south of the airfield and serves in-active (non-passenger) aircraft parking for up to 12 Code C aircraft. Aircraft utilising Airport South Parking Area parking stands are primarily domestic commercial aircraft or smaller cargo/freight aircraft.

In the short term it is proposed to undertake small upgrades, such as high mast lighting, to improve the functionality of the area and enable the facilitation of minor aircraft maintenance at night.

## General Aviation Apron

The General Aviation (GA) apron is approximately 78,000m$^2$ and provides aircraft parking for a variety of airlines and aircraft types up to Code C design standard. The GA Apron and connecting taxiways are comprised of flexible pavement with an aircraft weight limitation of 66,000kg.

A GA apron expansion is anticipated to occur within the next five years to support growth in GA activity and associated facilities.

## 11.3.4 Navigational Aids and Systems

Safe and secure aircraft operations are paramount to Brisbane Airport. Critical to this is the provision and operation of navigation aids on Brisbane Airport. There are several navigation aids used daily in airport operations. It's expected that these navigation aids will continue to be used and updated in line with the adoption of new technology.

### Instrument Landing System

The key navigational aids at Brisbane Airport are the Instrument Landing Systems (ILS), currently operating at ICAO Category 1 standard. It is available on both runways in each direction and is used by aircraft landing in lower visibility conditions or at night.

Brisbane Airport regularly reviews the existing capability of the ILS to determine whether further upgrades are required beyond the Category 1 standard. To future proof for a possible upgrade, the western runway has hardware and underground conduits already installed to expedite an upgrade to a Category 2 or 3 ILS.

It is anticipated that existing ILS equipment on the eastern runway will be replaced and upgraded by Airservices Australia within the period of this Master Plan as it reaches the end of operational life. The new equipment would be able to support Category 2 or 3 instrument approaches and therefore appropriate safeguarding of building restricted areas will be maintained to enable future upgrades on both runways.

It is anticipated that the ILS will remain a relevant navigational aid in the foreseeable future. Advances in technology utilising satellite systems may impact the future use of the system, however, it is likely to remain in use as a back-up system for operational resilience.

### Radio Navigation Systems

Brisbane Airport uses Very High Frequency Omni-Directional Range (VOR) and distance measuring equipment (DME) combined radio navigation stations for aircraft.

The VOR produces an angle between the station and the receiver in the aircraft, while DME does the same for range. Together, they provide the two measurements needed to produce a navigational "fix" using a chart.

Airservices Australia has indicated that within the planning period of this Master Plan, the VOR will become redundant although remain part of the Backup Navigation Network maintained by Airservices Australia. The DME will continue to be used in conjunction with the ILS when the VOR becomes part of the Backup Navigation Network.

### Radar Facilities

A Surveillance Radar facility is established at Mt. Hardgrave on North Stradbroke Island and an on-airport Terminal Area Radar is located at Brisbane Airport. It is anticipated both surveillance radar installations will remain operational for the foreseeable future.

## Surface Movement Control

Airservices Australia has an established surface movement radar (SMR) system at Brisbane Airport.

The transponder-based system provides comprehensive real-time surveillance of all aircraft and vehicles moving around the airfield inclusive of terminal apron areas. It assists Air Traffic Control in managing flight operations at Brisbane Airport and further reducing the risk of runway incursions.

The system involves two installations adjacent to each runway comprising a system of antennas with capability to triangulate all areas of the movement area.

The separation of aircraft taxiing on the apron maneuvering area is a joint pilot and air traffic controller responsibility. Brisbane Airport supports digital solutions to provide additional information to the surface movement controller within Air Traffic Control when required.

## Future Navigational Aids and Systems

Brisbane Airport continues to monitor emerging navigation aids in consultation with airlines and Airservices Australia. Upgrades to any navigation aids are dependent on the required capability of aircraft fleets and their renewal cycles.

One such example of emerging technology is the adoption of satellite tracking as an alternative to land-based navigation equipment. Some airports have installed Ground Based Augmentation Systems (GBAS), which are satellite-based precision landing systems. Since siting a GBAS is not dependent on proximity to a runway, there are many siting options available, potentially reducing the need for extensive land preparation typically associated with radio navigation aids.


Aviation support facilities are crucial for maintaining the seamless and efficient operation of Brisbane Airport.

# 11.4 Aviation Support Facilities

Aviation support facilities are crucial for maintaining the seamless and efficient operation of Brisbane Airport. Ensuring these facilities are strategically planned and well-maintained is essential for the safe, secure, and efficient functioning of airlines, passengers, and businesses utilising the airport. Essential support facilities provided by Brisbane Airport include:

- General aviation and fixed-base operators
- Cargo and freight facilities
- In-flight catering
- Fuel facilities
- Ground service equipment storage, staging and maintenance
- Maintenance, repair and overhaul
- Airservices Australia facilities.

Future requirements for these support facilities have been developed using planning parameters with metrics derived from the 20-year forecast for passenger and aircraft movements for the planning period. Strategic locations have been identified through an options-based planning process that considered future technologies, engineering requirements, operational performance, connectivity, risk, sustainability and overall feasibility.

The future aviation support facility requirements are described in this section with the locations mapped on Figure 11.6. The mapping aims to integrate planning for aviation support facilities with land use planning, ensuring provision in a planned and coordinated manner.

## 11.4.1 General Aviation / FBO

General aviation is a vital component of Brisbane Airport's operations, bringing important economic and social value, supports pilot training and underpins critical services such as education, healthcare and emergency response.

General aviation operators are currently spread across multiple locations in Aerotech Park, Airport North and the Da Vinci precincts. Most of operations are concentrated in the Airport North precinct where current tenant facilities serve a range of activities including aeromedical, general aviation charter flights, fly-in/fly-out (FIFO), regional freight and private/ business jet facilitation.

The Airport North Precinct features a common-use aircraft parking apron capable of accommodating a variety of aircraft sizes up to aircraft design Code C (typical interstate or short haul aircraft) as well as a small common-use terminal to facilitate charter passenger services.

A new aeromedical precinct is under construction in this area that will consolidate aeromedical service providers such as Royal Flying Doctor Service (RFDS), Life Flight Recovery Services Queensland (part of Queensland Health) in new dedicated facilities. It will also accommodate the Queensland Government Air Wing.

There is continued support and growth anticipated for general aviation in the Airport North Precinct to offer the highest performance in terms of operability and ability to stage future infrastructure growth. Over the next 20 years, Brisbane Airport is anticipated to require an additional 12 ha for general aviation.

This additional area would accommodate up to 35,000 $m^2$ for a premium general aviation facility to accommodate private / business jet facilitation, hangarage and premium lounge and business facilities.

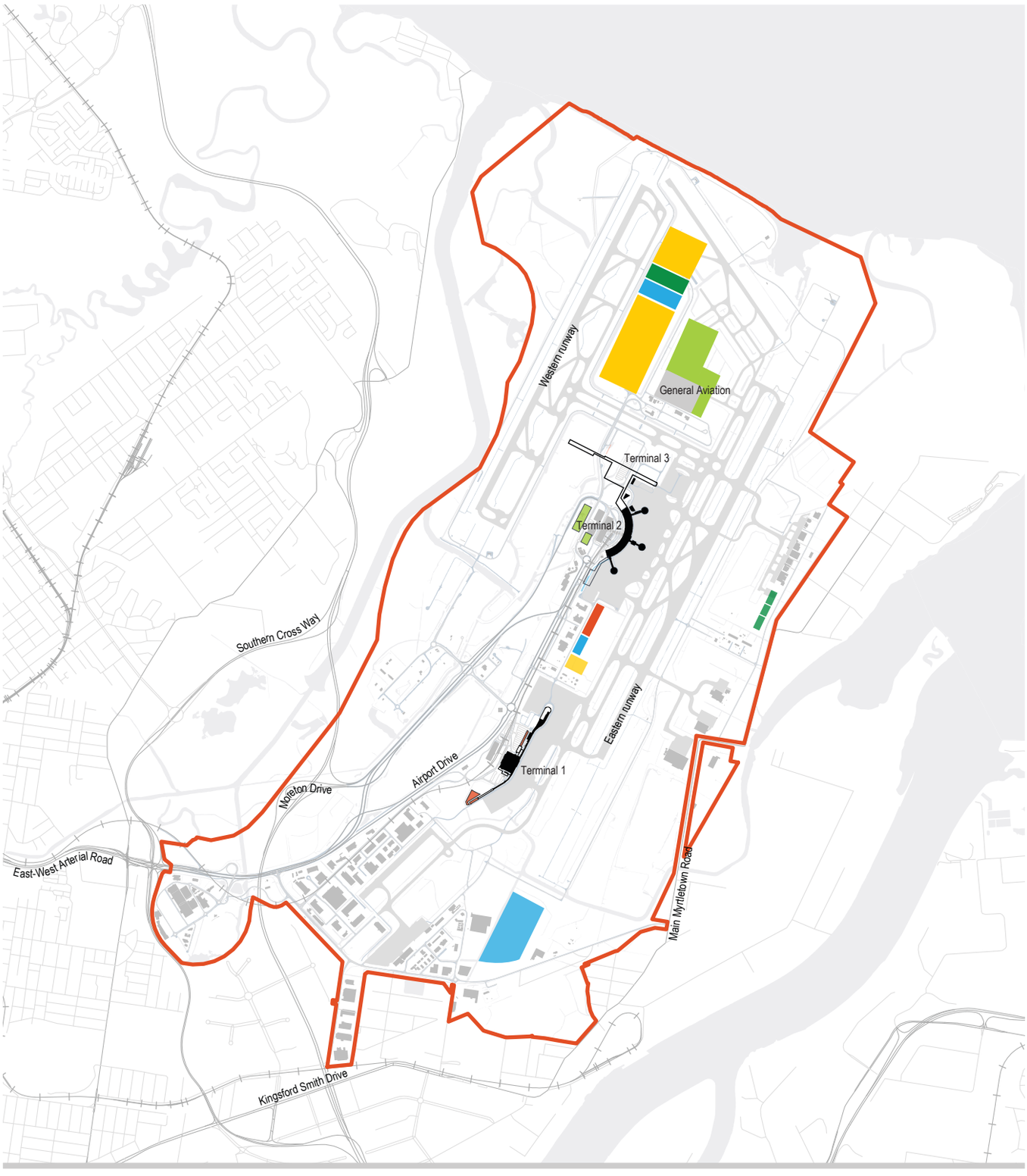
A general aviation apron expansion will also occur over the next five years to support general aviation operations and the premium general aviation facility.

## 11.4.2 Maintenance, Repair and Overhaul

There are a range of maintenance, repair and overhaul (MRO) facilities located within the Airport East precinct covering an area of approximately 37.5 ha. The facilities are operated by airlines or third-party service providers who undertake a range of aircraft maintenance and engineering services for both civilian and defence aircraft and the facilities are predominantly driven by long-term contracts to maintain aircraft fleet types commonly operating in Australia and at Brisbane Airport.

Growth of these facilities is not linked to passenger or aircraft movement demand. As a result, future facility requirements will be dependent on market opportunities identified and implemented by BAC. It is anticipated approximately 15 ha will be required in Airport East over the planning period to accommodate future MRO facilities based on market demand.

FIGURE 11.6: AVIATION SUPPORT FACILITIES SAFEGUARDING



## 11.4.3 Cargo and Freight Facilities

Brisbane Airport plays a vital role in facilitating air cargo and freight, serving as an international gateway for imported goods and a key trade hub for Queensland's high-value exports. Existing cargo and freight operations are primarily located within the Export Park, Da Vinci and Terminal Area precincts, providing efficient landside and airside access for goods to move between road vehicles and aircraft carrying freight.

Broadly, the existing cargo and freight operators at Brisbane Airport are categorised into three groups: cargo terminal operators, warehouse/freight forwarders and the aircraft operators who carry freight through passenger aircraft or dedicated freight aircraft. Consultation with existing cargo and freight operators has highlighted a need for improvements to airside road connectivity between the T1 and T2 terminal buildings.

It's forecast that an additional 38 ha of land over the next 20 years will be needed to cater for growth in cargo and freight operations at Brisbane Airport. Key considerations for the placement of cargo and freight facilities include efficient movement of goods to and from aircraft as well as prioritising connectivity to landside roads for freight forwarding facilities.

With existing cargo and freight facilities currently concentrated in Export Park, Da Vinci and Central Terminal Area precincts, the planning intent is to enhance these areas with nearby land in Airport Industrial Park, while also establishing new, centrally located facilities to ensure closer proximity to future aircraft operations. These centralised facilities will support staging areas for cargo carried by passenger aircraft.

## 11.4.4 In-Flight Catering

In-flight catering facilities are crucial for supporting airline operations from Brisbane Airport and are currently located in Central Terminal area, Export Park, and Da Vinci precincts. Key services of these facilities include:

- Storage and replenishment of supplies, toiletries and equipment
- Food preparation and storage
- Management of food waste generated in flight.

The existing land area to support these facilities is currently underprovided and to meet both current and future needs, approximately 9 ha have been reserved for the expansion of in-flight catering facilities in the Airport Central Precinct. This allocation balances the preference for direct airside access with the need for operational efficiency.

## 11.4.5 Aviation Fuel Facilities

### Fuel Storage and Hydrant Refuelling Capability

Aircraft fuel infrastructure at Brisbane Airport comprises of onsite storage tanks and a pipeline network connected to aircraft parking stand hydrants to deliver fuel efficiently and directly to aircraft rather than via tanker refuelling. The infrastructure is currently managed by a joint venture of fuel companies and is referred to as the joint user hydrant installation (JUHI).

The JUHI facility at Brisbane Airport is situated between T1 and T2. It comprises of four storage tanks with a combined fuel capacity of 12.8ML. The current fuel reserve at Brisbane Airport allows for approximately three days storage, meeting the industry benchmark for resilience against supply disruption events.

The hydrant refuelling network encompasses two spurs covering aircraft parking stands at the T2 aprons to the north and T1 aprons to the south. Expansion of fuelling infrastructure is expected to occur alongside future apron expansion at existing terminals and T3 once developed.

With sufficient landside and airside access, the existing storage site can be expanded by approximately 1.3 ha to accommodate the forecasting increase demand for fuelling activities within the planning period. A secondary location in the General Aviation Precinct has been identified as a supplementary fuel facility to further enhance fuel supply resilience at Brisbane Airport which would include the potential to accommodate both fuel storage tanks and bowser refuelling activities. Further, critical to the efficient delivery of fuel to aircraft, another into-plane parking area for hydrant refuelling trucks has been safeguarded in the vicinity of T3.

## 11.4.6 Ground Service Equipment: Storage, Staging and Maintenance

Ground Service Equipment (GSE) supports the operations of aircraft on the ground. GSE areas are provided both on aircraft stands and longer-term parking areas away from the aprons. These include staging areas where vehicles and equipment may be held while waiting to service aircraft.

Currently, there is a transition of existing GSE fleet to a larger fleet of electric GSE (eGSE) vehicles and equipment. By 2032, Brisbane Airport is aiming for all GSE to operate with zero emissions, primarily through electrification. In the next five years, Brisbane Airport expects to deploy additional charging infrastructure in all GSE storage areas.

Over the next 20 years, a further 2.3 ha of land will be required in the airfield for GSE storage. Further, an additional 4 ha is anticipated for GSE maintenance facilities, with areas identified in the Terminals and Airport Central Precincts.


Approximately 9 ha have been reserved for the expansion of in-flight catering facilities in the Airport Central Precinct.

# 11.5 Airservices Australia Facilities

Airservices Australia operates a range of support facilities at Brisbane Airport, providing integral services for airport users in addition to their regulated responsibilities.

## 11.5.1 Air Traffic Control

Brisbane Airport's Air Traffic Control tower was completed in 1985 and, with recent upgrades, remains well suited to provide air traffic control services for all aircraft and vehicle movements on taxiways and runways at Brisbane Airport.

Advances in virtual technology may impact the future need for maintaining this tower in its current format however it is envisaged that the footprint of the current site will remain sufficient regardless of the technology employed.

At some Australian airports, Airservices Australia are implementing virtual air traffic control tower operations. There are numerous benefits to airport operations such as enhanced visibility and airside surveillance as well as providing opportunities for the airport to reduce some building height constraints relating to direct line of sight requirements of air traffic control towers. Whilst such benefits may be considered longer term, the protection and safeguarding of existing lines of sight and air traffic management facilities located at Brisbane Airport will remain with any future technology considerations to be discussed jointly by Airservices Australia and Brisbane Airport.

## 11.5.2 Aviation Rescue and Fire-Fighting Facilities

Airservices Australia provides aviation rescue firefighting services (ARFF) at Brisbane Airport in accordance with the standards and requirements prescribed in Part 139H of the Civil Aviation Safety Regulations 1998 (CASR). ARFF provides the capability to deal with aircraft emergencies at Brisbane Airport, as well as a structural response capability to deal with fire or the threat of fire at the aerodrome. As part of this service, ARFF also provides a dedicated water rescue service and difficult terrain capability that is tailored to suit the local conditions at the airport.

ARFF at Brisbane Airport provides services up to a Category 10 (highest category) in accordance with Civil Aviation Safety Authority (CASA) requirements to accommodate the largest aircraft types. ARFF facilities at Brisbane Airport are also used for training purposes for regional airports. This is an ongoing strategy of ARFF and BAC and provides a contribution to the region to support ARFF operations at other airports.

The ARFF service also provides first response first aid to incidents in terminals/buildings at the airport.

There are currently two ARFF stations and one training facility located at Brisbane Airport. The main ARFF station, located in Airport East, accommodates the Fire Control Centre and primarily services Runway 01R/19L operations. The second ARFF station was constructed as part of the western runway project and is located in the General Aviation Precinct to primarily service operations on the western runway.

Another satellite ARFF station in the General Aviation Precinct, originally located to service operations of the cross runway, was closed and decommissioned in 2020.

No additional ARFF facilities are required to accommodate the expected growth during the next 20 years.

# 11.6 Emerging Aviation Trends

As the aviation industry continues to evolve, seeking global sustainability of its ecosystem, it is imperative to carefully consider the role of technology and innovation in planning processes. Critical to this evolution is the site wide integration of technological advancements and innovative solutions for aviation.

At this moment, there are unknowns, ranging from the scalability and viability of emerging fuel technologies to the regulatory and infrastructural implications of their integration. However, during these periods of uncertainty there are opportunities to safeguard likely technologies whilst continuing to enhance operational efficiency, optimise resource utilisation, and elevate the customer experience.

This section considers various technology and innovation concepts focussed within the aviation ecosystem and explores emerging trends, possible disruptions and approaches to safeguard infrastructure and operations for the future.

## 11.6.1 Future Energy

This Master Plan considers the importance of future energy sources for both direct to aircraft and to supply aviation support facilities through provisions of future energy infrastructure. These considerations include the potential adoption of hydrogen fuel cells and battery technology for both aircraft fuel and aviation support operations at Brisbane Airport. In addition to environmental benefits, the integration of hydrogen and batteries into the aviation support facilities aligns with the planning principles of enhancing operational efficiency, safeguarding for industry shifts and innovation in aviation technology.

### Sustainable Aviation Fuel

There are a number of alternative fuel options which could be utilised by the aviation industry globally to achieve carbon emissions reductions. While it's anticipated decarbonisation of the aviation industry will broadly be realised through a combination of changes in technology, flight operations and use of alternate fuels, the uptake of sustainable aviation fuel (SAF) is considered the prime option and replacement of fossil derived jet fuel in the medium to long-term.

As an alternative to fossil fuels, SAF presents an opportunity to reduce greenhouse gas emissions and the environmental impact of aviation operations. There are minimal to no infrastructure upgrades required at Brisbane Airport to support the uptake of SAF into aircraft refuelling services.

Widespread adoption of SAF will require ongoing collaboration with industry stakeholders to ensure its increased availability and affordability for airlines. BAC will continue to advocate for SAF supply and plan for SAF infrastructure on airport aligned to airline demands.

The ARFF service also provides first response first aid to incidents in terminals/buildings at the airport.

## Hydrogen

Hydrogen-powered aircraft represent a potential solution for reducing carbon emissions and achieving long-term sustainability goals in the aviation sector, particularly domestic short-haul and regional operations. Key industry players in Australian aviation and green hydrogen have launched the Hydrogen Flight Alliance (HFA). The aim of the alliance is to ensure Australia plays a leading role in the aviation industry's transition towards net-zero emissions by 2050. The aspiration of the HFA is to achieve Australia's first emission-free hydrogen powered flight of a passenger aircraft between Brisbane Airport and Gladstone Airport in 2026.

Brisbane Airport is an active member of the HFA and will continue to work closely with stakeholders to support the integration of hydrogen into the aviation industry.

This Aviation Plan includes provisions for future energy infrastructure to support the integration of hydrogen aircraft operations at Brisbane Airport. More specifically, it is anticipated a hydrogen fuel cell facility with a capacity of approximately 15 million litres including additional parking for fuel cell infrastructure may be accommodated within the General Aviation Precinct. Fuel cells could be transported via heavy vehicles from the facility directly to aircraft for loading.

## Electric Aircraft and Energy Supply

Electric aircraft are an emerging aircraft type for general aviation, regional and short haul domestic operations. BAC is well-placed to support this shift, particularly given its role in supporting regional aviation connectivity across Queensland. This Aviation Plan includes provisions for future energy infrastructure to support the integration of electric battery technology for aircraft. This encompasses the development of charging infrastructure and battery storage facilities in the General Aviation Precinct, co-located with GA and FBO operators. It is anticipated the infrastructure provided will be a grid scale Battery Energy Storage System (BESS) within a warehouse.

## 11.6.2 Digital and Automation

Automation can influence the future land area requirements of aviation support facilities by optimising space and improving operational efficiency. This Aviation Plan acknowledges the significance of digital and automation within individual facilities and emphasises the importance of engaging stakeholders to fully understand its operational implications.

- Biometric boarding and facial recognition technology to increase speed and efficiency of passenger processing
- Mobile apps and digital wallets to enhance passenger wayfinding and retail experiences within terminals
- Increased E-gates and automated passport control facilities to streamline border and transfer processing
- Cargo and freight handling processes are optimised through logistics operations, maximising throughput, and reducing turnaround times. Potential automation may include robotic sorting systems and autonomous guided vehicles
- In-flight catering operations are enhanced by automated kitchen equipment and food processing systems, increasing production capacity while minimising labour costs and food wastage
- Maintenance, repair, and overhaul (MRO) operations in future have the potential to utilise predictive maintenance systems, robotic inspection tools, and digital twin simulations to streamline
- Advancements in surveillance technologies, such as synthetic vision for aircraft tracking and virtual air traffic management operations, are diminishing the reliance on line-of-sight and on-airport ATC.

Automation can influence the future land area requirements of aviation support facilities by optimising space and improving operational efficiency.

## 11.6.3 Advanced Air Mobility

The Advanced Air Mobility (AAM) industry is developing at a rapid pace with significant investment in new aircraft types and propulsion systems to facilitate the transport of both passengers and freight. While there are a wide variety of potential use cases for the new aircraft, the most likely future challenge for BAC will be the introduction of electric Vertical Take-off and Landing aircraft (eVTOL) for passenger transport.

There are a number of regulatory challenges that need to be resolved before eVTOL aircraft can operate safely and without impact on Brisbane Airport's capacity. The future success of a commercial model to support eVTOL passenger operations relies on standards and procedures that have yet to be developed and approved.

In the absence of a clear pathway and timeframes for integration, BAC has strategically identified potential locations across the airport that would be able to be considered to support eVTOL that are in proximity to passenger terminal facilities should the industry require. Proximity and access to passenger terminals will be a significant contributor to the acceptance and usage of eVTOLs as a transport alternative. BAC will continue to monitor industry advancements and the demand for eVTOL aircraft and will provide the required supporting infrastructure as needed. Further evaluation of the potential sites for feasibility, commercial opportunities and regulatory compliance will be undertaken prior to safeguarding.