

Perth Airport 

Master Plan 2020

APRIL 2020





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VOLVO

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Section 6: **Ground Transport Plan**

Ground transport planning is critical to the continued growth of Perth Airport and ensuring there is easy access for people coming to and going from the airport.



6.1 Introduction

Ground transport planning is critical to the efficient operation of Perth Airport. The journey to and from the airport often creates the first and last impression for people visiting Western Australia and Perth Airport is working closely with State and Local Governments to ensure road infrastructure provides easy access for all customers.

The development and implementation of the Ground Transport Plan is based on a core principle of seeking to provide multiple options and streamline the efficiency and customer experience for people coming to and going from the airport. This is achieved through integrated planning and adopting a collaborative approach with the State and Local Governments to ensure that the road, rail, shared path, and public transport networks are developed and operated to provide a suitable level of service.

The Ground Transport Plan is focused on the developments which will occur in the next five year period as well as considering the future requirements over the twenty-year planning horizon of this Master Plan 2020.

The key factors informing the Ground Transport Plan and access to Perth Airport are:

- the modes of transport used and how they will change over time,
- meeting the demands of forecast passenger numbers,
- the consolidation of all commercial air services into Airport Central by 2025,
- integration of the Forrestfield-Airport Link rail project into the transport network,
- the anticipated level of commercial development and associated employment on the airport estate,
- the growth in traffic on the roads surrounding Perth Airport generated by activities unrelated to Perth Airport,
- continuing to reduce the convergence of passenger and freight vehicle traffic,
- integration of the airport's ground transport network into the wider local and state-wide networks, and
- providing a safe, secure and sustainable ground transport network.

The key stakeholders involved in the development of the Ground Transport Plan include:

- the State Government Department of Transport, which sets policy and strategic direction for transport throughout Western Australia,
- the State Government Department of Planning, Lands and Heritage, which develops planning policies related to land use and the transport network,
- the Public Transport Authority (PTA), which manages and operates public transport within Perth and the regions,
- METRONET, which is made up of key government agencies including Department of Transport, PTA, Department of Planning, Lands and Heritage, Department of Communities, LandCorp and Metropolitan Redevelopment Authority,
- Main Roads Western Australia (Main Roads), which is responsible for planning, construction and management of the major State roads to the airport,
- Local Governments, which are responsible for the planning, construction and management of local and regional roads adjacent to and connecting to Perth Airport,
- Perth Airport, which is responsible for the planning and construction of roads within the airport estate, and
- the Commonwealth Minister for Infrastructure, Transport and Regional Development, who is responsible for the approval of the Ground Transport Plan, as part of this Master Plan 2020, as well as the approval of any subsequent major development plans required prior to the construction of road network projects.

Perth Airport works with State and Local Governments including Main Roads and the PTA to ensure that the changing demands of Perth Airport operations are reflected in strategic network modelling and planning. Perth Airport also ensures that developments within the airport estate consider the surrounding State and local infrastructure capacity. This engagement will continue to ensure both the internal and external ground transport networks cater sufficiently to meet demand.

6.2 State Planning

The State Government is both the regulator and operator of public transport services, including bus and rail for the Perth metropolitan area, including that servicing Perth Airport. Furthermore, the State Government is the regulator for taxi, rideshare and other commercial vehicle operations which service Perth Airport, in addition to its role setting the policy framework to determine mode share targets for the Perth metropolitan transport network.

Perth Airport is committed to working with State and Local Governments in achieving targets for sustainable transport options and mode share. Perth Airport will undertake this collaboration through co-ordination of projects located at the airport estate boundary, where appropriate.

State and Local Governments are responsible for the road network that surrounds and provides access to Perth Airport. The Ground Transport Plan considers and incorporates the key State Government land use and transport strategies which directly impact Perth Airport.

Figure 6-1 shows the location of Perth Airport in the context of metropolitan transport.

6.2.1 Perth and Peel @ 3.5 Million – The Transport Network

Perth and Peel @ 3.5 Million - The Transport Network (2018) was prepared by the State Department of Transport with the intent of guiding the long-term planning of transport infrastructure for the Perth metropolitan region. The Transport Network provides a framework to develop an efficient transport network catering for Perth's population as it approaches 3.5 million people and beyond.

This Master Plan 2020 is consistent with the intent of the Transport Network framework, in providing capacity to support the ongoing growth of Perth's population and subsequent required transport infrastructure.

6.2.2 State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning

The State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning (2019) (SPP 5.4) identifies primary freight roads and rail routes within the Perth metropolitan area, with the objective of promoting a system in which sustainable land use and transport are mutually compatible. The policy delineates both Tonkin Highway and Great Eastern Highway as Primary Freight Routes and identifies CBH Forrestfield, adjacent to Perth Airport, as an intermodal (rail to road) facility.

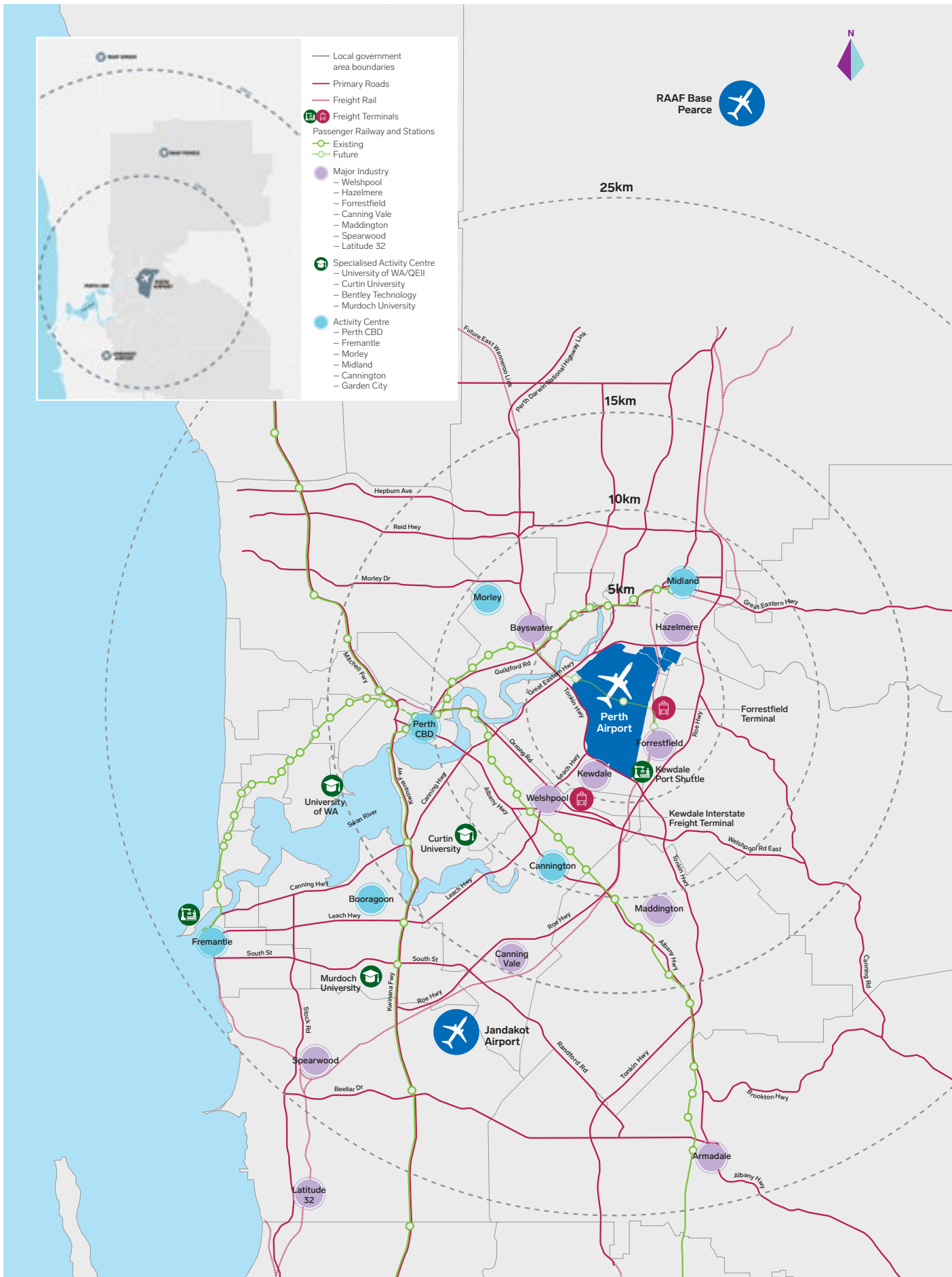


Figure 6-1 Perth Airport in the context of metropolitan transport
Source: Perth Airport

6.2.3 Western Australian Regional Freight Network Plan

The Western Australian Regional Freight Network Plan (WARFNP) identifies that the growing inner-metropolitan, Kewdale, Forrestfield, Perth Airport and Kwinana areas support Western Australia's freight activities, and that these areas will continue to represent convergence points for both metropolitan and regional freight and logistics activities. This Plan identified the need for the State Government to deliver the Gateway WA project to ensure growth in regional traffic does not constrain the freight performance of the Kewdale and Forrestfield intermodal terminals, Perth Airport and adjacent industrial precincts.

6.2.4 Westport: Port and Environs Strategy

The Westport: Port and Environs Strategy is currently being developed by the Department of Transport to provide guidance to the State Government on the planning, development and growth of the Port of Fremantle and Port of Bunbury, and also the required rail and road networks that contribute to the handling of the growing trade task.

The Strategy is focused on delivering a sustainable and globally responsive long-term supply chain strategy to optimise freight, trade and logistics needs from Fremantle and Kwinana to Bunbury. It is anticipated that strategy implementation will begin within the timeframe of this Master Plan 2020.

The Airport, neighbouring rail freight facilities and the availability of land supported by the surrounding major road freight network have led to the area being an attractive location for transport dependent businesses, making the area an important part of the State's freight and logistics supply chain.

The potential for a future intermodal development within the airport estate would contribute to future container rail activity to the port(s). This supports the State Government's target of rail accounting for a 20 per cent mode share for freight movements in WA.

6.2.5 Eastern Metropolitan Regional Council Regional Integrated Transport Strategy Action Plan

The Eastern Metropolitan Regional Council (EMRC) Regional Integrated Transport Strategy (RITS) Action Plan forms part of the land use and transport planning for the eastern region of the Perth metropolitan area. It translates the high-level, whole of metropolitan area land use and transport planning undertaken by the State Government and applies it to the regional network. This includes roads that directly integrate with and impact the Perth Airport estate.

6.3 Current Road Network

In addition to Perth Airport funded projects within the estate, both the State and Commonwealth Governments have contributed significantly to fund infrastructure supporting the transformation of Perth Airport in recent years, including improving road access to the airport to support the consolidation of all commercial air services to the Airport Central Precinct.

6.3.1 Gateway WA

Access to Perth Airport was significantly improved with the April 2016 completion of the \$1 billion Gateway WA project, at the time Western Australia's largest-ever road project.

The Commonwealth Government provided \$676 million and the State contributed \$310 million to fund the development, with Perth Airport supporting the project through the contribution of 30 hectares of land, a financial contribution, and the construction of roadworks valued at \$35 million within the estate. Gateway WA improved the safety and efficiency of one of the State's most important freight transport corridors, and included:

- upgrading Tonkin Highway between Great Eastern Highway and Roe Highway to six lanes,
- a major freeway-to-freeway interchange at Tonkin Highway and Leach Highway,
- upgrading Tonkin Highway and Roe Highway interchange to a partial freeway-to-freeway interchange,
- a new interchange at the Tonkin Highway, Horrie Miller Drive and Kewdale Road intersection,
- a new interchange at the Leach Highway and Abernethy Road intersection,
- upgrading Leach Highway between Orrong Road and Tonkin Highway to an expressway standard and associated upgrades to local roads and intersections in the Kewdale area,
- Airport Drive constructed by Perth Airport as new passenger access to the Airport Central Precinct,
- a new interchange at Boud Avenue leading to T3 and T4 (known as the Dunreath interchange), and
- an extension to the principal shared cycling and pedestrian path network along Tonkin Highway and Leach Highway.

6.3.2 Road Network Hierarchy

The road network in Western Australia is categorised by a functional hierarchy that represents the role that the road is intended to perform. The hierarchy is determined by a range of criteria, including location, degree of connectivity, predominant road use, indicative traffic volume, and recommended operating speed.

Perth Airport is well served by the metropolitan primary main road network, connecting the airport with the Perth CBD and the major metropolitan areas. The Primary Distributor roads surrounding the airport are managed by Main Roads WA. Lower-order roads (Distributor A, Distributor B, Local Distributor and Access roads) feeding into the primary road network are managed by the three Local Government authorities (cities of Belmont, Swan and Kalamunda) that adjoin the estate. The road hierarchy relevant to Perth Airport includes:

- Primary Distributor: Tonkin Highway, Great Eastern Highway, Great Eastern Highway Bypass and Roe Highway, which provide for major traffic movement and carry large volumes of generally fast moving traffic,
- Distributor A: urban area roads in built up areas that carry traffic between industrial, commercial and residential areas and generally connect to Primary Distributor roads,
- Distributor B: similar to Distributor A roads, but with reduced capacity due to flow restrictions (often older roads with a traffic demand in excess of that originally intended),
- Local Distributor: roads that link Distributor roads (A and B) to access roads, and
- Access Roads: provide access to properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function.

Figure 6-2 shows the road hierarchy network surrounding the estate.

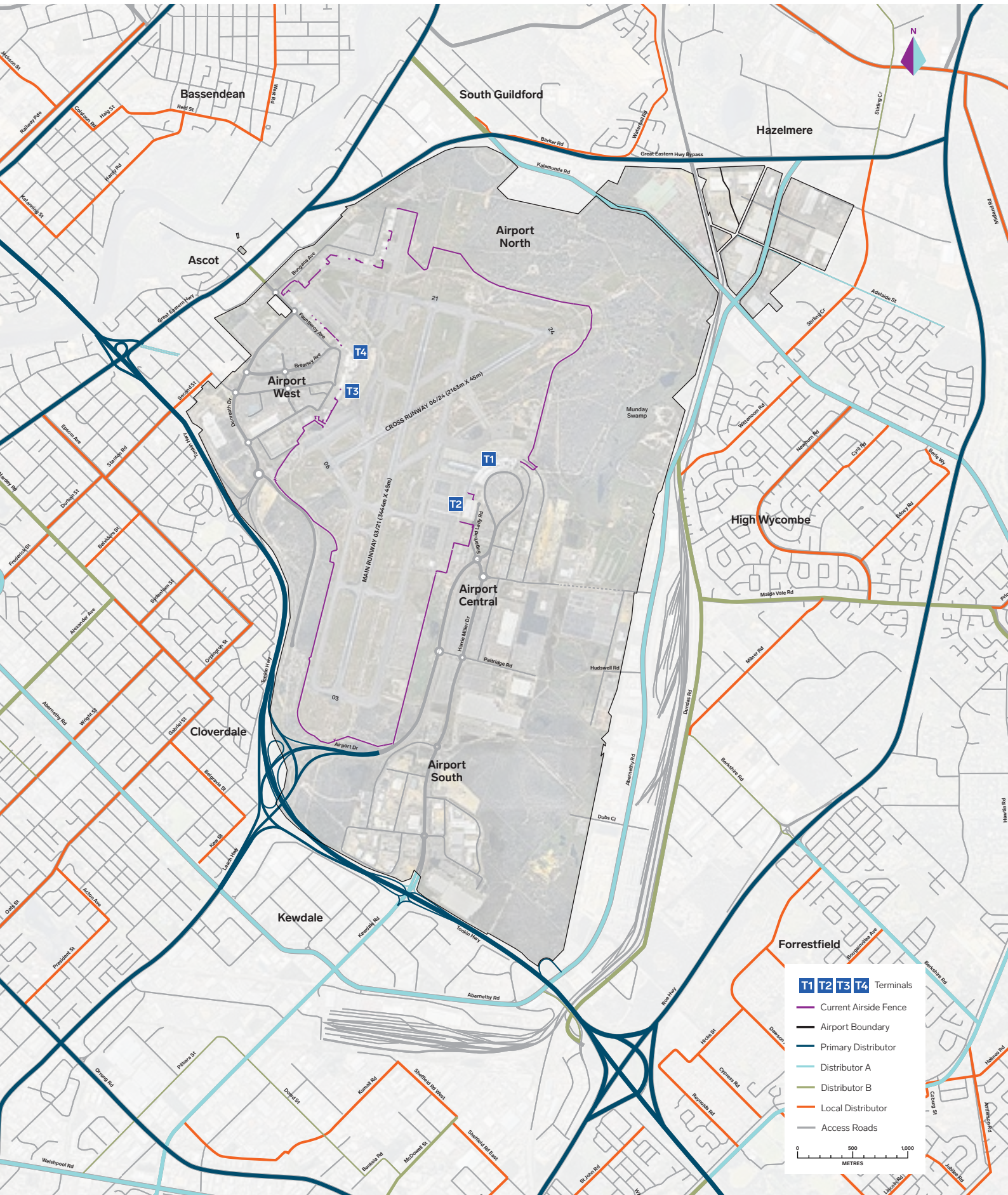


Figure 6-2 Main Roads WA road hierarchy
Source: Aurecon

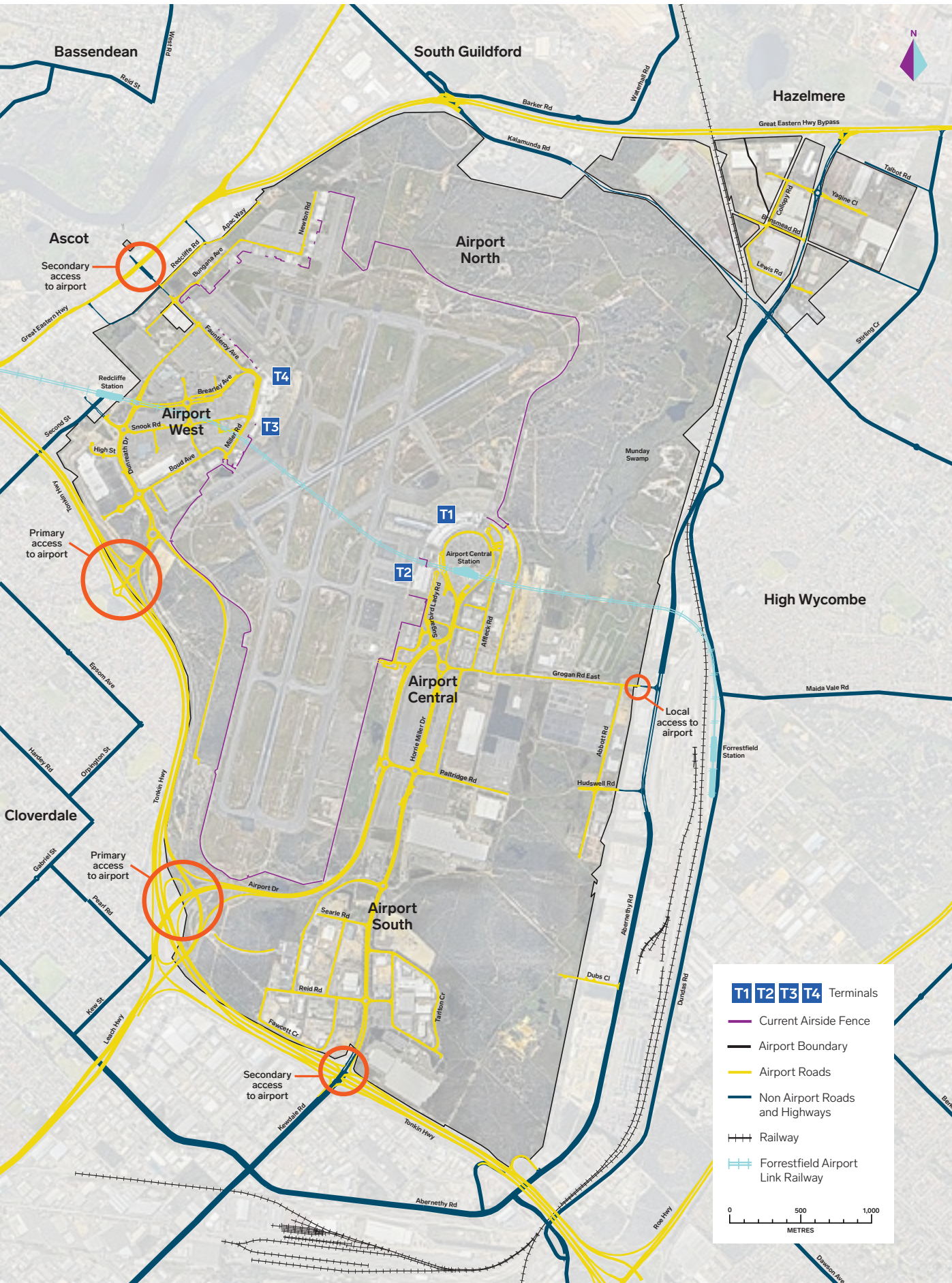


Figure 6-3 Existing road network within and around Perth Airport
Source: Perth Airport

6.3.3 Access to Perth Airport

The close proximity of Perth Airport to the CBD enables good off-peak access via the arterial road network. During morning and evening peak periods, the road network surrounding Perth Airport facilitates significant volumes of commuter traffic. The peak periods for passengers using the Perth Airport passenger terminals currently differs to the traditional metropolitan commuter peak periods, reducing the impact of the airport traffic on the surrounding road network capacity at peak times.

As shown in Figure 6-3, the main access to the passenger terminals within the Airport Central Precinct is through the grade separated Tonkin Highway, Leach Highway and Airport Drive intersection.

Constructed by Perth Airport, Airport Drive is the designated primary access to Airport Central and all road signs direct traffic for T1 and T2 onto this route. It has been designed and land safeguarded to allow future upgrade to provide a three-lane dual carriageway access to the airport terminals.

The secondary access point into the Airport Central Precinct is the Tonkin Highway, Horrie Miller Drive and Kewdale Road intersection. This intersection was upgraded as part of the Gateway WA works to a grade separated single point intersection, controlled by a set of traffic signals providing access to Airport South and Kewdale industrial areas. Traffic for T1 and T2 is not directed along this route as it is intended primarily for commercial vehicle access. Traffic between the Perth CBD and the airport is directed onto the Great Eastern and Tonkin Highways, while traffic from the east on the primary road network is directed to use the Roe, Reid and Tonkin Highways.

Grogan Road historically connected to the surrounding local road network before Abernethy Road was constructed; the road was closed in 1987 following the construction of T1, preventing its use for through traffic until it was reopened in 2005. Grogan Road is currently used by local traffic either accessing T1 and T2, businesses on the estate, or as a through route to access the primary road network south and west of the estate. In fact, Grogan Road traffic surveys have determined that this through traffic constitutes a significant portion of overall traffic during commuter peak hours (westbound in the morning peak and eastbound in the afternoon peak), confirming that Grogan Road is being used by non-airport related traffic as a through-route.

Access to T3 and T4 is via the Tonkin Highway and Dunreath Drive grade separated intersection which opened in 2015 as part of the Gateway WA project. Central Avenue was extended from the airport boundary to a new roundabout constructed on Dunreath Drive to provide improved connections to the local road network. Brearley Avenue, the previous access road from Great Eastern Highway to the terminals, was permanently closed in early 2017 to allow the construction of the Forrestfield-Airport Link's Redcliffe Station.

Dunreath Drive will continue to be the main access to the Airport West Precinct after the relocation of Qantas operations to Airport Central by 2025, with Fautleroy Avenue continuing to supply secondary access and Second Street (Stanton Road) providing local access.

Access to the General Aviation (GA) Area is provided by Fautleroy Avenue, from Great Eastern Highway.

The primary road network within and surrounding the estate also forms part of the metropolitan freight network for over-size Restricted Access Vehicles (RAV). There are RAV 4 (27.5 metre B-Double, comprising a towing vehicle and two semitrailers) and RAV 6 (36.5 metre double road train 87.5 tonnes) routes on the estate and RAV 7 (36.5 metre double road train 107.5 tonnes) on Tonkin Highway and Abernethy Road providing heavy vehicle access to the estate. There is a turning restriction at the intersection of Abernethy Road and Grogan Road for all RAV vehicles, with right turns not being permitted either from Abernethy Road into Grogan Road or from Grogan Road into Abernethy Road.



6.4 Public Transport

6.4.1 Rail

The \$1.86 billion Forrestfield-Airport Link is an 8.5 kilometre underground extension of the Perth rail network from Bayswater to Forrestfield, of which 3.8 kilometres is located within the Perth Airport estate. The project is jointly funded by the State Government (\$1.37 billion) and the Commonwealth Government (\$490 million) and is being delivered by the State Government. The rail link, shown in Figure 6-4, will form an integral component of Perth's long-term public transport network to meet existing and future public transport demand. Works on the Forrestfield-Airport Link project commenced in October 2016 and are expected to be completed by 2021.

As part of the Forrestfield-Airport Link project, a rail station (Airport Central Station) is being constructed adjacent to the Air Traffic Control tower within the Airport Central precinct. Passengers will access T1 and T2 via a 280 metre long elevated 'Skybridge' walkway that is currently being constructed by Perth Airport. The new terminal, to be constructed for the relocation of Qantas operations to Airport Central by 2025, will also connect to the Airport Central Station.

The Forrestfield-Airport Link also provides two additional train stations outside the estate at Redcliffe (Redcliffe Station) and High Wycombe (Forrestfield Station).

The route provides a commuter rail service from Forrestfield that connects to Bayswater station on the existing Midland line and ultimately to the Perth CBD. The link runs underground from Forrestfield to the underground stations at Airport Central and Redcliffe before emerging on the western side of the river. As the demand for pick-up, drop-off and parking proximate to terminals in the Airport Central Precinct increases, Perth Airport will look at encouraging the use of rail access to diversify the modes by which Airport Central is accessed and increase the use of more sustainable transport methods.

6.4.2 Network Context

The Perth urban rail network is based on a 'hub-and-spoke' model focused on the Perth Central station, located in the CBD, as the hub which radiates with five separate passenger rail services.

The connection of Perth Airport to the remainder of the metropolitan rail network will offer passengers and employees who work on the estate an alternative means of accessing the airport. Current planning is for trains to run every ten minutes during peak times, providing passengers with an 18 minute journey time between Airport Central Station and the CBD at the same fare payment rates as the rest of the Metropolitan rail network. Perth Airport will continue to work with the Public Transport Authority and the nearby Local Governments to ensure the stations are well connected to other modes of transport.

6.4.3 METRONET

The Forrestfield-Airport Link is the first stage of the State Government's METRONET project, a \$3.6 billion passenger rail project comprising approximately 72 kilometres of new passenger rail and up to 18 new stations, as shown in Figure 6-5.

METRONET is the largest single investment in public transport that Perth has seen and is a catalyst to convert over 5,000 hectares of land around new stations into desirable places for investment in housing, jobs and services for growing communities.

Perth Airport supports the State Government's investment in METRONET to increase the public transport connection to the airport. Perth Airport will seek to improve connectivity from the Airport Central Station and Redcliffe Station to businesses on the estate not served by the Public Transport Authority bus service.

6.4.3.1 Redcliffe Station

Redcliffe Station is located on State-controlled land, adjacent to the airport estate. This rail station will include a public transport interchange that provides links to local bus services and will focus on general metropolitan commuter passenger demand.



Figure 6-4 Forrestfield-Airport Rail Link

Source: Perth Airport



Figure 6-5 Planned METRONET rail network
Source: METRONET

SECTION 6: GROUND TRANSPORT PLAN

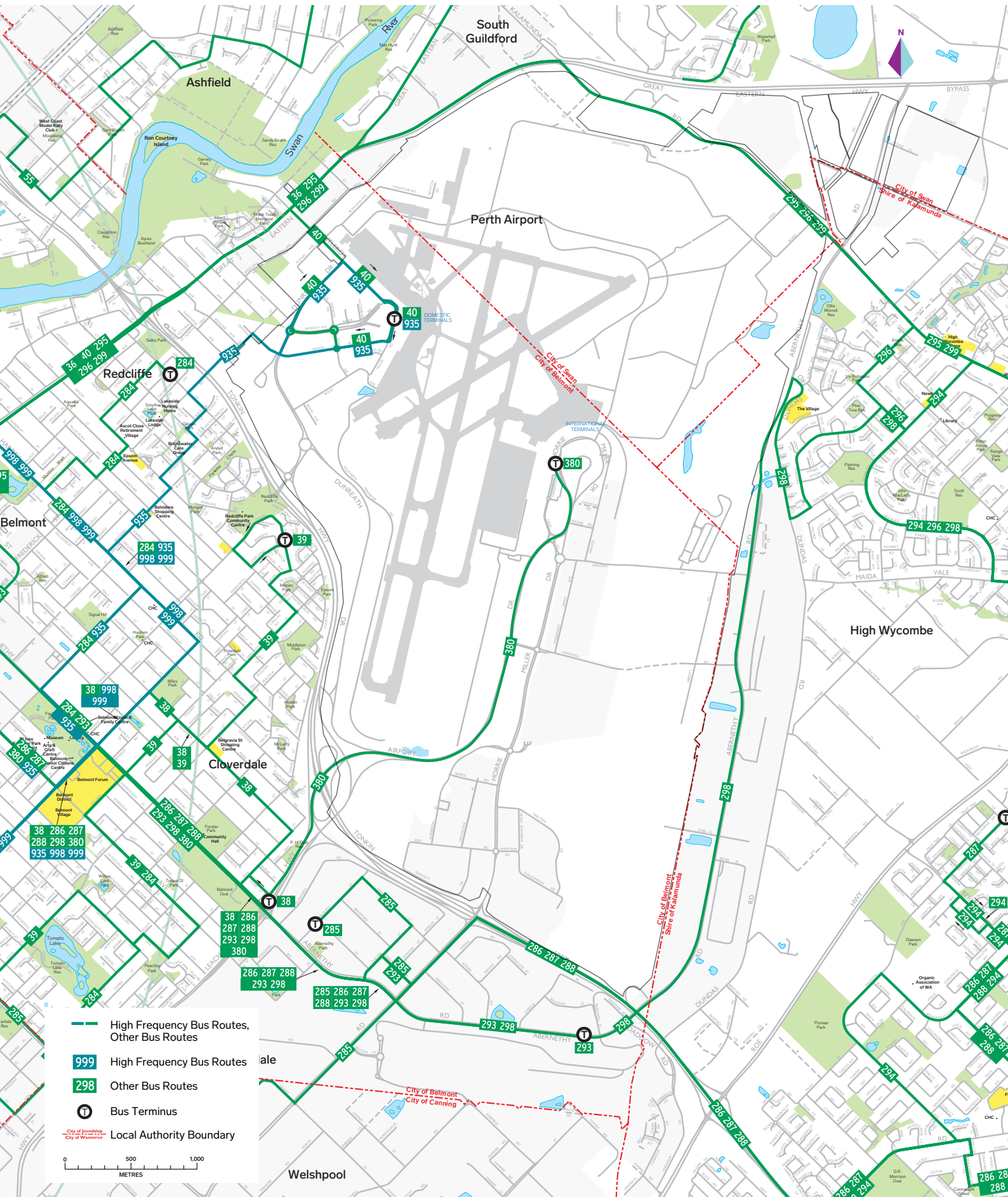


Figure 6-6 Bus routes on and around the airport
Source: Transperth

The associated bus interchange will significantly improve the catchment for public transport serving the area. The station is located less than 900m from T3 and T4 and will be connected by a footpath. After 2025, when all regular passenger transport services consolidate in the Central Terminal precinct, the station will primarily serve the needs of local residents and the Airport West retail and business park users.

In line with State Government and METRONET planning, the land in Airport West in the vicinity of the rail station will be developed along transit-oriented development principles to provide a range of jobs and services.

Perth Airport will continue to work with the Public Transport Authority, METRONET and Main Roads WA to ensure and improve connection to the station by various modes to nearby attractions and employment.

6.4.3.2 Airport Central Station

The Airport Central station is located in the core of the Airport Central Precinct and provides connectivity to the existing T1 and T2 forecourts and the future new terminal.

With the future consolidation of terminals to the Airport Central Precinct by 2025, the Airport Central Station will provide access for the majority of all regular passenger transport aviation services into and out of Perth. Integrating the rail station into the terminal and forecourt areas will provide an effective ground transport system and a high-quality passenger and visitor experience. Construction is nearing completion on Skybridge, a 280-metre elevated walkway connecting the Airport Central station to the terminal forecourts. In future, the Skybridge will also be able to provide elevated walkway links to the new terminal and the proposed future hotel (subject to demand and approval).

Longer term, underground walkways may also be considered for pedestrian access between the Airport Central Station and the new terminal to provide a grade separated access for rail passengers, as well as linking future commercial developments within the Precinct.

The rail link will provide an alternative to the current road-based access to the airport. Perth Airport will work with the Public Transport Authority to improve services to the airport and to seamlessly link the Airport Central Station with the surrounding facilities and nearby employment.

6.4.3.3 Forrestfield Station

Forrestfield Station is located on State controlled land, approximately 500m east of the estate boundary. The station will be a major transport interchange, with a park and ride facility with approximately 2,500 parking bays and a public transport interchange, with links to local bus services.

6.4.3.4 Bus Services

As shown in Figure 6-6, Airport Central is currently served by a Transperth public bus service that connects Perth Airport to the Perth CBD. Route 380 operates through the suburb of Belmont and along Airport Drive to service T1 and T2. The journey time is approximately 45 minutes between the airport and the Perth CBD. Upon completion of the Forrestfield-Airport Link this service is likely to become obsolete. Perth Airport will continue to work with the Public Transport Authority to reallocate these resources to better service those suburbs that are not served by the Midland line and Forrestfield-Airport Link.

While the ultimate services and routes are still to be finalised by the Public Transport Authority, Redcliffe Station and Forrestfield Station will incorporate bus interchanges to facilitate improved public transport connection to the airport from the surrounding suburbs. Perth Airport will continue to work with the PTA to confirm new and amended Transperth bus routes to and from the Airport Estate.



6.5 On Airport Traffic

The Ground Transport Plan caters for all activities on the estate including:

- passengers,
- employees,
- commercial development, and
- freight.

Almost 70 per cent of traffic on the estate is directly related to aviation activities, and the predominant mode of access to and from Perth Airport is road-based transport, both public and (primarily) private. Although the opening of the Forrestfield-Airport Link in 2021 and subsequent reallocation of bus services will have a significant impact on travel choice and behaviour to and from the airport, road-based transport is expected to remain the predominant mode for the next five years and throughout the planning period of this Master Plan 2020. Mode shares will change as the use of automated vehicles, ridesharing and Mobility as a Service (the shift away from personally-owned modes of transportation and towards mobility solutions that are consumed as a service) becomes widespread.

The 2015 mode split and projected change in passenger travel modes to and from Perth Airport for 2025 and 2045 are shown in Figure 6-7.

State and Local Governments are planning for and identifying opportunities to balance the transport mode share, which is currently dominated by car-based private vehicles in the Perth metropolitan area, towards more sustainable alternatives through initiatives including:

- investing in new infrastructure and services in road, rail and public transport,
- encouraging travel demand management for employees and contractors around key activity centres, and
- the provision of additional public transport options for both aviation passengers, and employees and contractors at Perth Airport.

Measures may include the provision of new infrastructure such as paths, shelters and end-of-trip facilities for cyclists and pedestrians, as well as improved access to public transport. Perth Airport will work with all relevant stakeholders to ensure a diverse range of transport infrastructure is available.

6.5.1 Emerging Technologies

Planning for the short and long-term needs to consider emerging technologies that are disrupting the more traditional ground transport options, in addition to the Forrestfield-Airport Link that will provide an alternative mode choice for accessing the airport from 2021.

The introduction of rideshare services has already seen changes in mode share, as more passengers choose to be dropped off on the forecourt as opposed to parking in the short or long term car parks. It is anticipated that this rate of change will increase.

Automated vehicles are expected to have an even greater impact. Fleet or privately-owned autonomous vehicles will be able to drive themselves to and from the airport, reducing demand for airport car parks but increasing the need for drop-off and pick-up facilities located close to the terminals.

The timing and scope of the developments and initiatives outlined in this ground transport plan are therefore flexible and will be determined by the close monitoring of ground transport trends and mode shares as they emerge.

Emerging technologies can also represent opportunities to improve ground transport and access to the airport. These are discussed in more detail in the following sections.

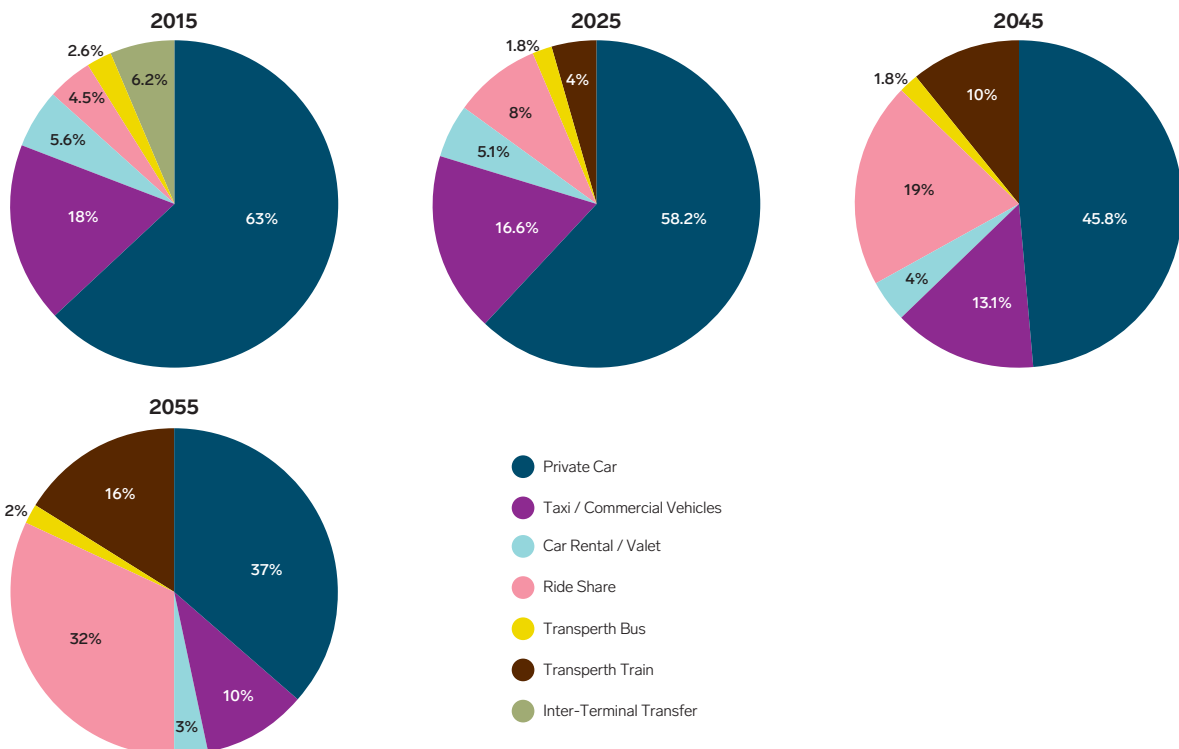


Figure 6-7 2015 and projected passenger travel modes to and from the airport
Source: Aurecon

6.5.1.1 Smart Traffic Management

In the short-term, additional smart traffic management measures are proposed to optimise the existing ground transport network. Harnessing the power of technology dramatically changes how Perth Airport operates and optimises transport networks. Rapid changes in how data can be collected and analysed in real time, will enable network operators to make informed operational decisions to improve network efficiency, safety and customer experience. Implementation of smart traffic management technology assists in managing transport networks under normal conditions, during periods of heavy congestion and when managing planned or unplanned incidents.

There are opportunities for Perth Airport to implement smart traffic management to further optimise the use of the road network and parking infrastructure, improving travel time for commuters and delaying the requirement for significant capital expenditure. The project opportunities of particular interest are:

- Foundation infrastructure – vehicle detector stations on each lane of the main access roads and key locations, which provide real-time information of traffic volumes and issues on the network. The fibre optic backbone would link back to Perth Airport operations centre, with associated control systems to monitor and display the information (see Variable Message Signs). Additional CCTV coverage would also be considered to allow visual validation of congestion or other issues on the network,
- Variable Message Signs (VMS) – digital signage is a practical example of smart traffic management that can improve customer experience and manage congestion. VMS allows airport operational staff to dynamically control messaging to road users to manage the traffic in a way that optimises traffic flow for a range of different conditions at the airport. Variable messaging on the airport road network and on the Perth Airport mobile app will be aligned with relevant Main Roads standards and guidelines as below.
- Smart parking sensors and/or use of existing CCTV can be used for pick-up and drop-off or in car parks, with end-to-end navigation to guide drivers to an available bay and smart matching between car size and bays. This concept can be extended to the use of ground positioning systems (GPS) to guide automated vehicles towards vacant spaces in car parks and on forecourts.

Standards and guidelines for smart traffic management have already been developed by Main Roads for the external road network. Smart traffic management at Perth Airport will be aligned with these standards to ensure a seamless journey for those travelling to and from the airport.

6.5.1.2 Rideshare Services

Since the introduction of Uber to Perth in 2014 and Ola in 2018, the proportion of people choosing to park their car at the airport has declined as passengers increasingly choose to use rideshare services.

The decline in demand for parking at Perth Airport and the corresponding rise in demand for drop-off and pick-up facilities will be closely monitored by Perth Airport to ensure that necessary infrastructure is available to accommodate these and other new rideshare services.

6.5.1.3 Automated Vehicles

Automation of vehicles is to emerge as a viable option within the next five years and will most likely be widely adopted within the 20-year planning horizon of this Master Plan 2020. By removing the driver, rideshare services may become significantly cheaper, resulting in an increase in the proportion of passengers accessing the airport this way. This would result in an increase in demand for pick-up and drop-off facilities.

Similarly, as private ownership of automated vehicles increases, the proportion of customers choosing to use pick-up and drop-off facilities and have their vehicle drive itself to and from their residence or nearby remote parking facility would increase. This remote parking may include Perth Airport car parks.

Although the development of MMTI facilities (including multi-storey car parks) represents an opportunity to increase the capacity of pick-up and drop-off facilities, Perth Airport will continue to monitor ground transport mode share and will consider demand management to ensure all ground transport modes are operating as efficiently as possible.

The automation of logistics delivery vehicles is also anticipated. Automated vehicles may rely on or have their operation enhanced by their ability to communicate with other vehicles, infrastructure and transport management systems and mobile devices. Further, automated vehicles may be facilitated by high-resolution digital mapping of the areas they operate in. Perth Airport will consider the technology required to facilitate this communication or other requirements of vehicle automation.

Automated vehicles are also likely to be used in place of the bus services currently used for long term car park and terminal transfers landside and for remote stand passenger transfer airside. Additionally, many of the airside vehicles servicing aircraft, such as cargo dollies and aircraft tugs could be automated.

6.5.1.4 Drone Technology

The use of drones is currently regulated by the Civil Aviation Safety Authority (CASA) under the Civil Aviation Safety Regulations 1998. These Regulations state that drones cannot be used within 5.5 kilometres of Perth Airport which precludes any freight, logistics or even passenger transfer operators from using drone technology at the airport. As such, there are no plans at this stage to dedicate any infrastructure for drone operations within this Ground Transport Plan.

Many companies are investigating drone technology for use in the long-term, particularly those in the freight forwarding and logistics industry. As drone technology matures to make their operation safer and more regular it is possible that the Regulations may be amended to facilitate their use around controlled aerodromes. This may present opportunities to operate drone-based, freight forwarding or passenger pick-up and drop-off to increase efficiency and diversify mode share. As many controlled aerodromes fulfil a significant freight forwarding and logistics function, Perth Airport will investigate drone use should the regulatory environment around drone technology evolve.

As the technology evolves, Perth Airport will continue to work with CASA and relevant stakeholders to ensure the ongoing safe operations of the airport and to explore future drone operations.

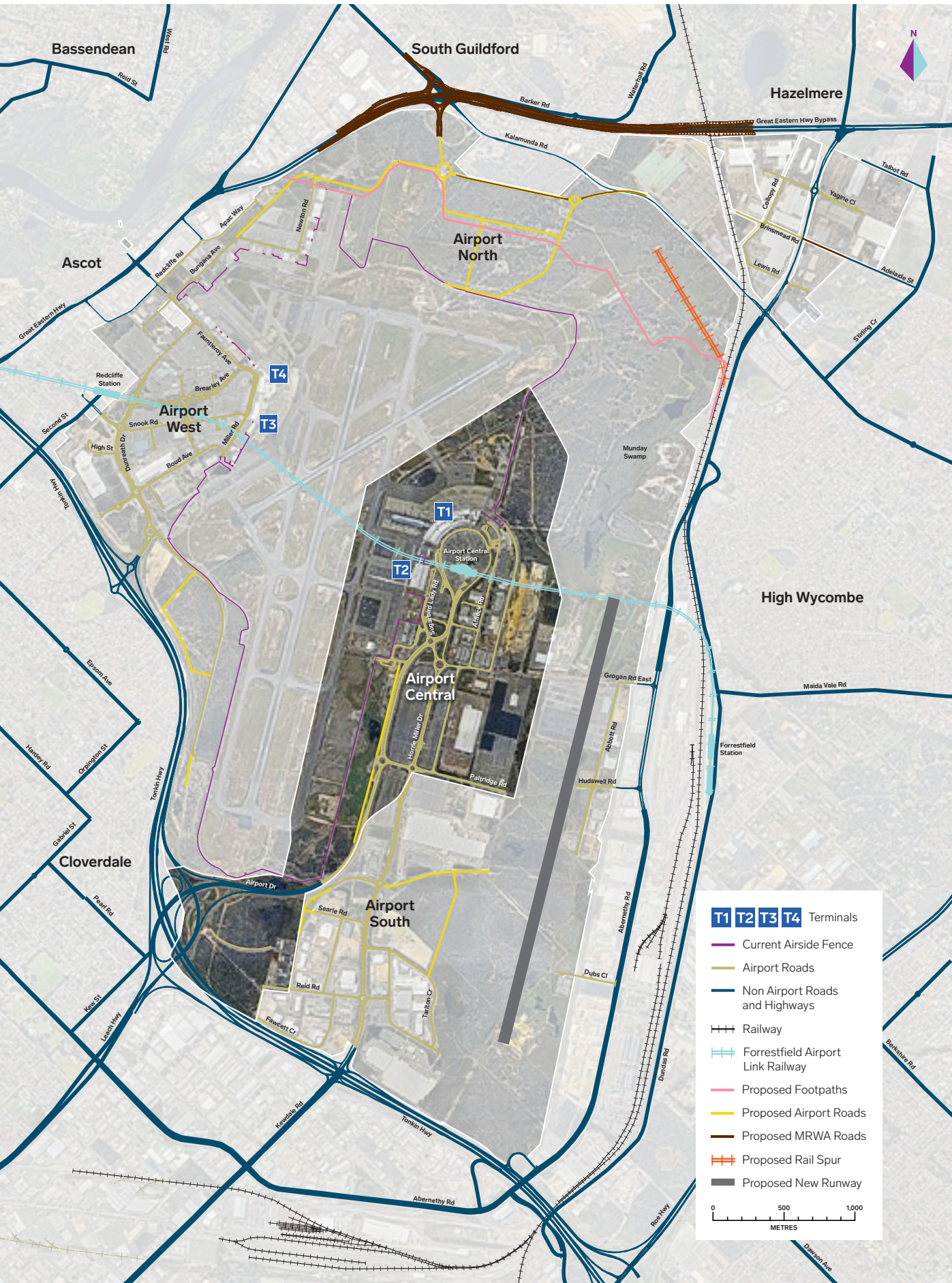


Figure 6-8 Proposed five year ground transport plan concept for Airport Central
 (Road layout to be confirmed during MDP development)
 Source: Perth Airport

6.6 Airport Central Precinct

The primary access to the Airport Central Precinct for terminal-related traffic is via Airport Drive, with freight traffic using Horrie Miller Drive.

Airport Drive is the primary traffic route to T1 and T2 and ultimately to all terminals following relocation of Qantas operations to the Airport Central Precinct by 2025. It is currently constructed as a dual carriageway with two lanes in each direction and designed to be widened to three lanes as traffic volumes increase in the future. Major intersections on Airport Drive are currently roundabout controlled, as this facilitates turning movements and ensures the free flow of traffic to the terminals. The increased traffic volumes expected with the relocation of Qantas operations to Airport Central will require the upgrade of these intersections, with the ultimate configuration requiring grade separation.

With the relocation of Qantas operations into this precinct and the forecast growth in passenger numbers, vehicle traffic volumes will experience a step change in demand by 2025. Terminal-related traffic in Airport Central is projected to increase from 30,000 vehicles per day in 2018 to almost 50,000 vehicles per day in 2025, and to 90,000 vehicles per day by 2045. The majority of the increase will be passenger related traffic concentrated on Airport Drive.

Year	Million Passengers per Annum	Total Traffic		
		Airport Drive (Vehicles per day per direction)	Horrie Miller Drive (Vehicles per day)	Terminal-Related Traffic (Vehicles per day)
2018	8.2	30,000	13,500	30,000
2025	16.6	48,500	32,800	47,800
2035	24.1	64,000	42,200	65,300
2045	32.1	96,900	42,300	90,200

Table 6-1 Predicted terminal-related vehicle traffic using Airport Drive and Horrie Miller Drive

Source: Aurecon

To avoid congestion and ensure free flow to terminals within Airport Central at consolidation, the intersection of Airport Drive with Sugarbird Lady Road will be upgraded. As shown in Figure 6-8, within the next five years, traffic signals are planned to be installed on the roundabout. In the longer term, further improvement will be needed to signalise or grade separate the remaining intersections on Airport Drive as required, dependent on the observed trends in demand.

Perth Airport is committed to collaboration with Main Roads following consolidation, to monitor increase in demands on the Gateway WA network, including key interchanges. The joint Perth Airport / Main Roads Gateway WA Development Agreement identified the trigger mechanism to be used to inform any modifications or upgrades to the network to ensure they are delivered when needed and agreed responsibility for funding.

In the longer term there are also opportunities to achieve significant overall traffic capacity increase by using Airport and Horrie Miller Drives as a one-way loop, with inbound passenger traffic using Airport Drive and outbound traffic using Horrie Miller Drive and a new connecting road back to Airport Drive. In this scenario an additional road would be constructed as a freight route to ensure the segregation of passenger and freight traffic is maintained.

The consolidation and the integration of all domestic and international terminals within Airport Central will require relocation of pick-up and drop-off facilities away from the terminal forecourt road and into the car parks. To provide the required car parking and pick-up and drop-off facilities, two MMTIs are planned to be constructed to support the terminal consolidation. The MMTIs will include multi-storey car parks and facilities for drop-off and pick-up as well as all other ground transport modes, such as car rental, buses and small charter vehicles. As demand increases, non-essential facilities will be moved out of the car parks to locations more remote from the terminals.

With the rise of rideshare services and the mainstream adoption of automated vehicles, the future demand for drop-off and pick-up services close to the terminals is expected to increase. Extra drop-off and pick-up capacity can be achieved through the re-purposing of the MMTIs. When demand requires, the MMTIs could provide separation of drop-off and pick-up facilities on different floor levels. Future demand may also be managed through premium drop-off and pick-up facilities close to the terminals and a free service that operates from a satellite location, most likely in the southern portion of Airport Central or Airport South. This satellite area would be connected to the terminals, Airport Central Station, car parks and businesses by a transit system.

Perth Airport will continue to work with the State Department of Transport to ensure suitably located facilities are provided for all vehicles.

The timing of these developments will be informed by the close monitoring of traffic levels on main access routes to the airport as well as demand for pick-up and drop-off facilities.

6.6.1 Automated Mass Transit

To ensure reasonable levels of service for those passengers choosing to be picked up and dropped off at the future free satellite locations, Perth Airport will investigate the use of Automated Mass Transit systems such as automated buses, trackless trams and automated people movers to connect this location with the terminals and long-term car parks. Such a system could eventually replace the buses transporting passengers and visitors between the various car parks and terminals.

This system could also serve to connect Airport Central Station to the many businesses in other parts of the estate, particularly those in the southern portion of Airport Central and Airport South.

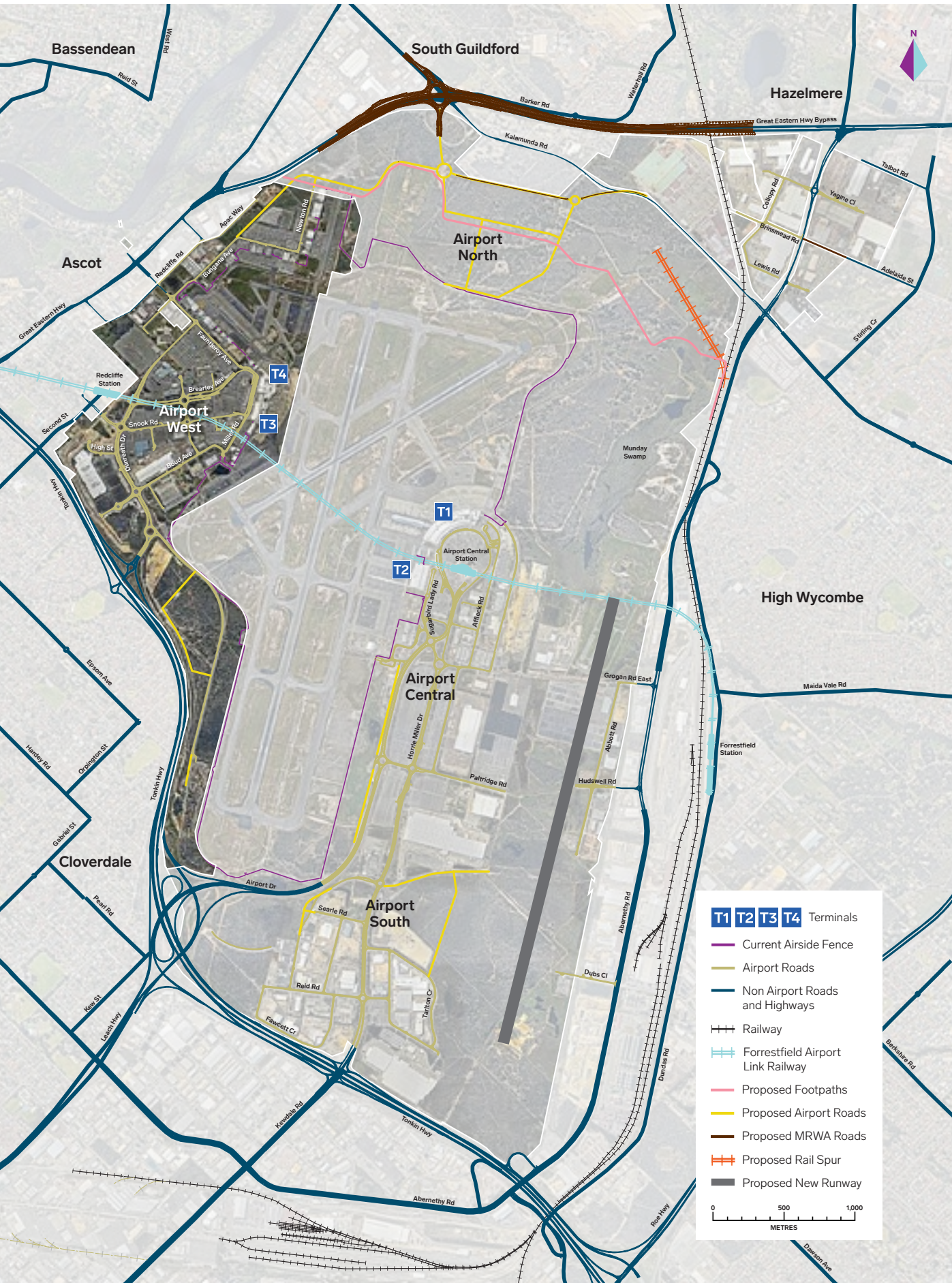


Figure 6-9 Proposed five year ground transport plan concept for Airport West
 (Road layout to be confirmed during MDP development)
 Source: Perth Airport

6.7 Airport West Precinct

The construction of Gateway WA in 2016 has dramatically changed the way Airport West is accessed. Where previously the main access was via Brearley Avenue off Great Eastern Highway, this road was closed in 2017 to make way for Redcliffe Station. The Tonkin-Dunreath interchange is now the primary access to the precinct with secondary access from Fauntleroy Avenue via Great Eastern Highway. To accommodate the terminal traffic that previously used Brearley Avenue, Perth Airport constructed three new roundabouts on Dunreath Drive at Fauntleroy Avenue, Snook Road and Boud Avenue, with this becoming the new route leading to T3 and T4.

The concept for the ground transport network over the next five years within the Airport West Precinct is shown in Figure 6-9 (road layout to be confirmed during MDP development).

Currently the Airport West road network is focused on through-traffic to facilitate access to T3, T4 and the GA Area.

The ground transport plan for Airport West will evolve as land use changes in this precinct. The consolidation of all commercial air services to Airport Central will occur by 2025, and the closure of T3 and T4 will greatly decrease demand on the road network and car parking facilities within the precinct. The modes of transport required will change as priorities for ground transport shift from ensuring passenger access to T3 and T4 to becoming a transit-oriented development that meets the needs of the GA Area and the future business and retail park that is planned. At this time, the road network will be assessed to identify opportunities for repurposing roads and improve amenity in the precinct. For instance, Brearley Avenue may not require four lanes when it no longer facilitates terminal access and two of the lanes could be converted into a linear park retaining the existing spine of established trees in the median strip. Similarly, the roundabouts on Dunreath Drive may be replaced by traffic signals to reflect the changing needs of those accessing the precinct and improve connectivity to the GA Area, nearby businesses, residences and public transport.

The Direct Factory Outlet (DFO) and Costco in Airport West are the first steps towards the development of this precinct into a retail and business park post-consolidation. To reduce the impact on terminal traffic of the DFO commercial development, temporary traffic management was implemented on opening days as well as other high use sale-days. These measures will be maintained in the coming years.

Development Area 6 (DA6) is located in Redcliffe and includes land within the City of Belmont and the Perth Airport estate. It is bounded by Tonkin Highway, Great Eastern Highway, Coolgardie Avenue, Redcliffe Road, Fauntleroy Avenue and the Airfield Precinct. DA6 has been identified as a significant redevelopment area and has been investigated for development by the City of Belmont since 2003. With the construction of the Forrestfield-Airport Link, strategic planning is progressing to maximise the access benefits of Redcliffe Station. Perth Airport will continue to collaborate with the City of Belmont, the PTA and METRONET to ensure good connection between the public transport node at Redcliffe Station, the residential community in DA6 and any proposed developments in the area.

In addition to Perth Airport, METRONET and City of Belmont plans for this precinct and surrounding areas, Main Roads has undertaken a planning review for the portion of Great Eastern Highway to the northwest of this precinct; between Tonkin Highway and the Great Eastern Highway Bypass. Consolidation represents an opportunity to engage with all of these stakeholders to ensure overall ground transport and land use planning is undertaken harmoniously.



6.8 Airport North Precinct

The Airport North Precinct is currently being developed to provide industrial and mixed-use businesses. It is serviced by Kalamunda and Abernethy Roads, both of which form part of the metropolitan regional road freight network.

The portion of land to the south and west of Kalamunda Road, within the Airport North Precinct, will be developed as an industrial, freight and logistics area. Perth Airport will be progressing developments in this area within the next five years as outlined in Section 5 (subject to approval).

Three access points off Kalamunda Road are planned, with the locations to be determined as a part of a broader project re-aligning Kalamunda Road.

Perth Airport has worked with the State Department of Planning, Lands and Heritage, Main Roads, the City of Swan and the City of Kalamunda, as well as the Metropolitan Cemeteries Board, to establish a road layout plan that meets the needs of all stakeholders. This is important to limit the exposure of the nearby residential communities of Hazelmere and High Wycombe to through-traffic. The plan shown in Figure 6-10 is a starting point for a possible future layout, which will be confirmed through the MDP process. The layout shown broadly services the interests of each of the key stakeholders, including:

- Main Roads, to facilitate a high wide load corridor to service heavy industrial businesses on Great Eastern Highway,
- the Cities of Swan and Kalamunda, to facilitate local businesses and to segregate industrial traffic from their nearby residential areas,
- the Metropolitan Cemeteries Board, to remove the bisection of South Guildford Cemetery, and
- Perth Airport, to facilitate RAV7 traffic to service the industrial, freight and logistics developments planned in Airport North.

Perth Airport will continue to work with all stakeholders to develop and evolve the road network options in this area to achieve a mutually beneficial outcome.

Perth Airport will also continue to support the role of Adelaide Street (as identified in the State Government's Hazelmere Enterprise Area Structure Plan) to provide a separation function between future industrial and existing residential/ rural-residential areas, subject to an appropriate arrangement being reached.

Access to the Airport North precinct will be further improved by the planned Lloyd Street southbound extension from Midland by the City of Swan which will intersect with the Great Eastern Highway Bypass at Abernethy Road to ultimately form a diamond interchange in line with current State Government planning. Main Roads is also currently undertaking a detailed road planning study to determine the ultimate layout for Great Eastern Highway Bypass between Great Eastern Highway in South Guildford and Roe Highway in Hazelmere. This concept includes a raised interchange at Kalamunda Road, with Great Eastern Highway Bypass travelling above Kalamunda Road. Perth Airport is continuing to work closely with Main Roads to ensure that the intersection does not constrain the proposed extension to the main runway.

An important consideration for ground transport infrastructure for this precinct is the proximate location of the residential areas of Hazelmere and High Wycombe, and in particular, access to future developments.

The extension of Bungana Avenue to form a new intersection with Kalamunda Road, will provide access to the Airport North Precinct as well as improve the traffic flow in the GA Area and reduce demand on Fauntleroy Avenue and its intersection with Great Eastern Highway within Airport West. The attractiveness of this route to provide an alternative through-route for non-airport traffic is recognised and will be factored into the ultimate design and road layout. This access point will be complemented by two additional access points off Kalamunda Road that will be required for the long-term development of the precinct.

The Midland Freight Rail line currently runs along the eastern boundary of the estate and provides the opportunity for a future private rail access spur for the direct delivery of freight by rail into the eastern portion of Airport North. While Master Plan 2014 identified that the future aviation fuel facility was likely to be located within the southern aviation support precinct, further planning is progressing on an alternate potential site in Airport North. The potential rail spur is an opportunity to diversify the modes by which fuel is delivered, further improving the resilience in the fuel supply system to the airport. Although the existing pipeline will remain the primary source of fuel for the airport, a fuel facility in Airport North that can be serviced by road and rail via the intermodal facility would ensure redundancy in the delivery of this vital commodity. Planning for a potential rail spur will include consultation with the PTA and Arc Infrastructure who are the current lessee for operating the WA freight network. The final decision on the preferred location for the future aviation fuel facility is anticipated in late 2019.

Other than the planned access arrangements outlined above and as endorsed by the Local Government and Main Roads, there will be no additional direct lot access onto Kalamunda or Abernethy Roads, which are designated as Other Regional Roads in the Metropolitan Region Scheme, without prior approval.

In the longer term, as Airport North develops, road access will be provided to the GA Area.

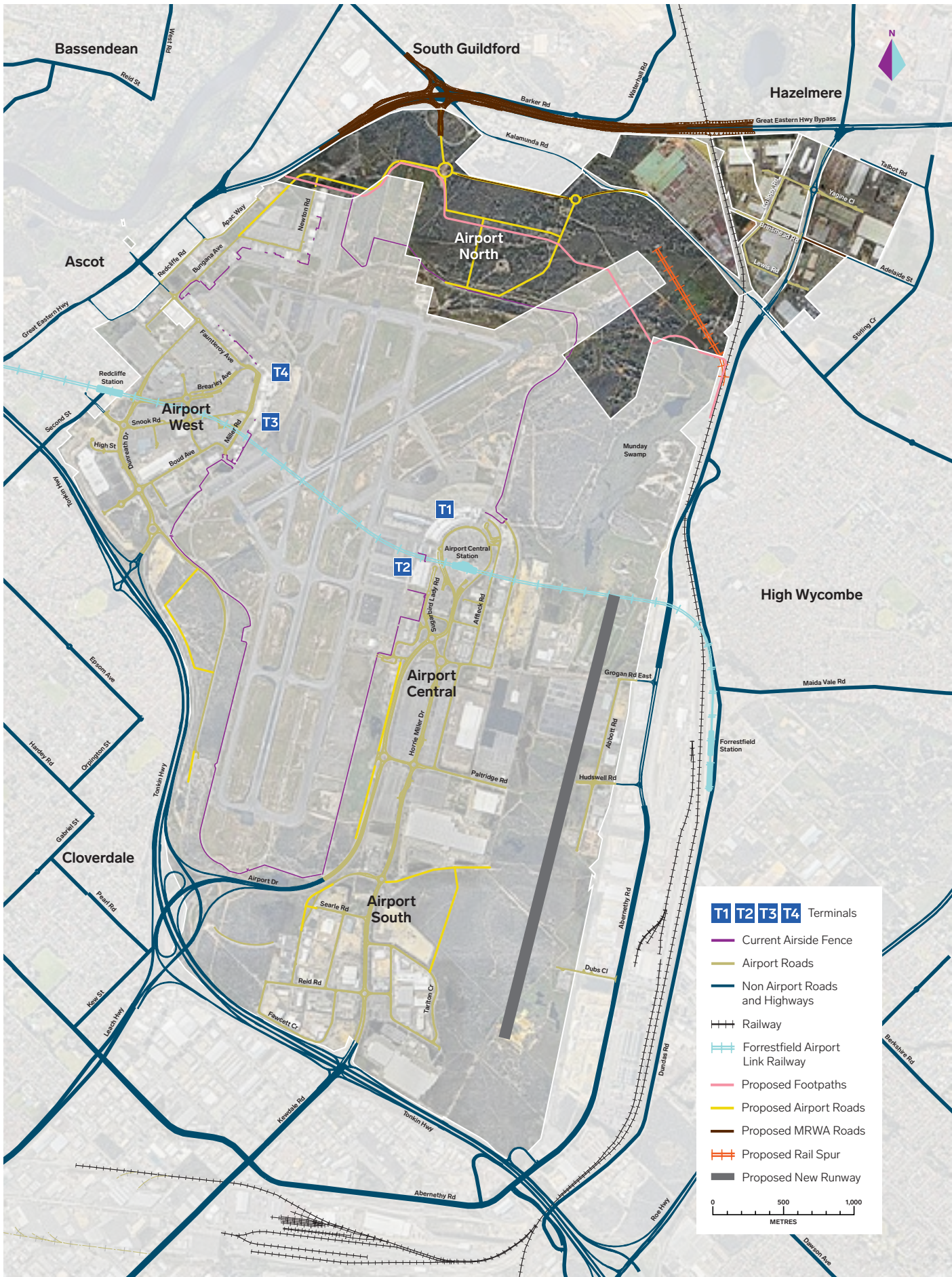


Figure 6-10 Proposed five year ground transport plan concept for Airport North
 (Road layout to be confirmed during MDP development)
 Source: Perth Airport

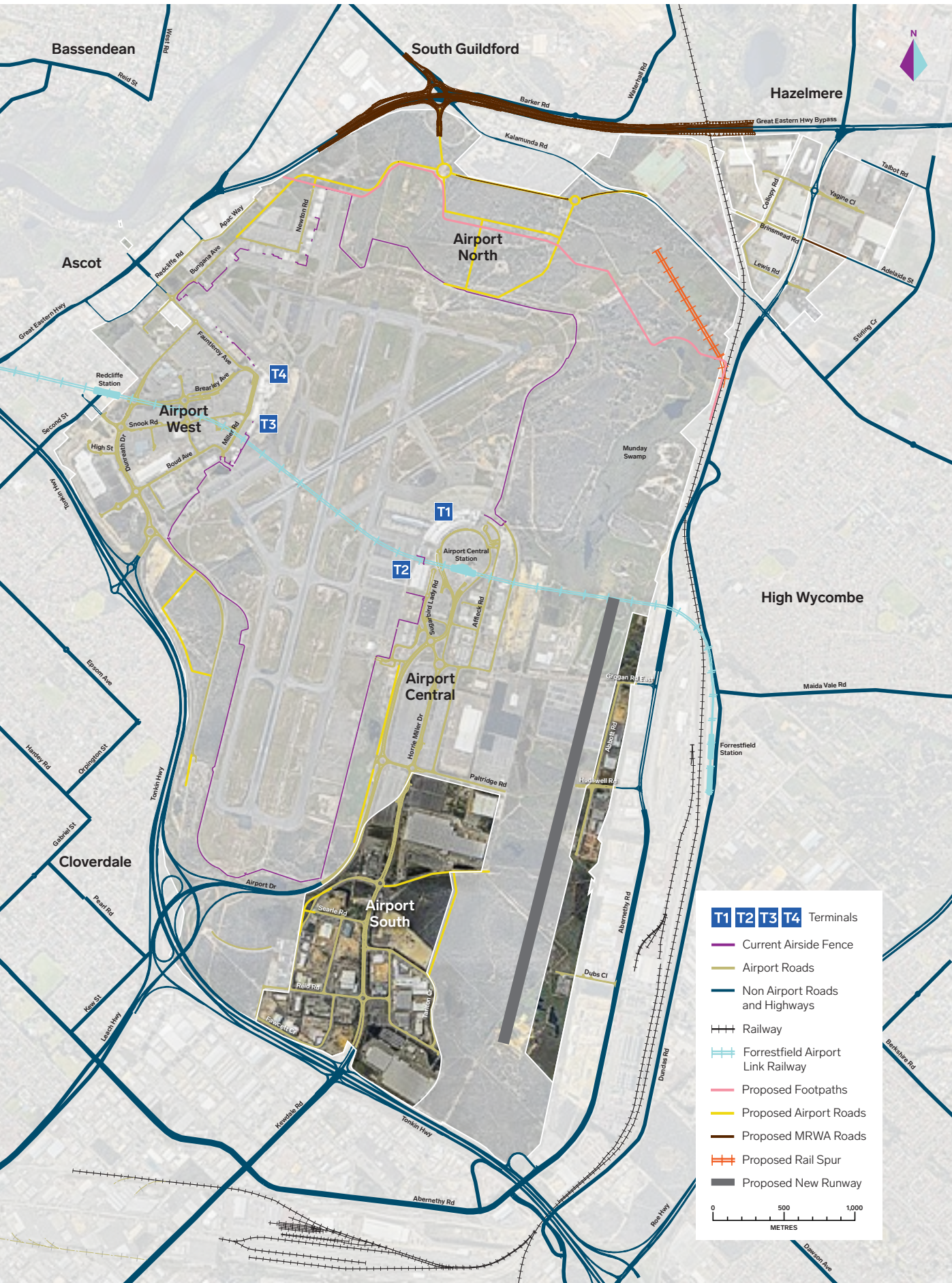


Figure 6-11 Five-year ground transport plan concept for Airport South
 (Road layout to be confirmed during MDP development)
 Source: Perth Airport

6.9 Airport South Precinct

The Airport South Precinct is primarily accessed via Horrie Miller Drive from the intersection with Tonkin Highway and Kewdale Road. Dunreath Drive previously provided secondary access, connecting this precinct to Airport West, but following the Gateway WA project this road now terminates at the public viewing area to the west of the main runway. Airport South and Airport West are now well connected by Tonkin Highway and Airport Drive with highway-to-highway connections. Perth Airport maintained the precinct connectivity previously provided by Dunreath Drive by extending Anderson Place to connect with Horrie Miller Drive, with a further link proposed to complete the internal road network.

Horrie Miller Drive is a dual carriageway with two lanes in each direction and roundabouts at intersections. Following the construction of Airport Drive, it now functions as the main access for Airport South and as the route for the long-term car park shuttle buses. The long-term plan along Horrie Miller Drive includes the conversion of the current at-grade car parks to multi storey car parking, potentially with integrated commercial development and the increased use of Horrie Miller Drive as a transit spine to the terminals and the Airport Central Station.

In the eastern portion of Airport South, Hudswell Road and Dubs Close will continue to provide freight vehicle access from Abernethy Road, with the remaining portion of Grogan Road also providing access to Abbott Road.

The Transperth 380 bus route runs along Airport Drive. There are currently no Transperth bus stops on Horrie Miller Drive to serve the Airport South Precinct. Perth Airport will work with the Public Transport Authority to establish better public transport connections to this area as it develops into an employment hub, including exploring how the catchment of Airport Central Station could be extended to this area and more remote parts of the estate.

The five year ground transport plan for Airport South can be seen in Figure 6-11.



6.9.1 Re-Closure of Grogan Road

Early planning for the future new runway identified the desire to maintain an eastern access to Airport Central. This was via a tunnel under the new runway, aligned with Grogan Road.

During concept design for the new runway project, the alignment of the tunnel was moved further south to allow for the construction of the future passenger terminal and apron for Qantas operations, and to achieve the necessary runway clearances and tunnel approach and exit gradients. This route, shown in Figure 6-12, makes the route less attractive to the traffic accessing the terminals, being more than 3.1 kilometres longer than the current route along Grogan Road. The associated infrastructure and management requirements for the tunnel also increased significantly. Traffic modelling identified that the performance of the wider regional road network would be similar to that without the tunnel constructed, and the cost-benefit for construction of a tunnel to serve the low volume of traffic bound for locations on the airport estate that would use it could not be justified.

Monitoring and modelling of traffic shows that during the metropolitan road network peak traffic times, the majority (more than 60 per cent) of vehicles using Grogan Road are not bound for destinations on the airport and are instead using the airport road network to access Tonkin and Leach Highways in preference to the regional road network. The alternative to using Grogan Road involves the use of Abernethy Road and Kewdale Road or Roe Highway and Tonkin Highway, depending on the point of origin and ultimate destination. As regional roads, these are all designed to accommodate higher volumes of traffic and are designed for higher speeds.

Many of the businesses that are accessed by this portion of Grogan Road are due to be relocated either when the new runway or the new terminal are constructed, further reducing the airport related traffic demand for such a road connection.

Although the intersection of Roe and Tonkin Highways is currently partially managed by traffic signals, a further upgrade to a full highway to highway interchange is planned for the future. Perth Airport strongly supports this project to further improve access to Welshpool, Forrestfield, Kewdale and the airport estate for those vehicles coming from the eastern suburbs.

A second option being investigated for a permanent alternative to Grogan Road instead of a tunnel, is for an extension of Abbott Road to form a loop-road around the southern end of the new runway. This road would need to be sunk below ground level to avoid interference with the High Intensity Approach Lighting utilised by aircraft approaching the new runway from the south. This route however, presents an even longer route to access Airport Central and the terminals than the tunnel and is not considered to be a viable route to access the terminal from the east. Figure 6-12 shows the options considered.

Perth Airport recognises the importance of the route for network connectivity for regional traffic, but notes that any of the options for replacing Grogan Road would primarily benefit external traffic travelling through the airport, rather than traffic related to terminals or other tenants on the estate. Perth Airport will continue to work with Main Roads WA to investigate the provision of an alternative connection to the east to Abernethy Road.





Figure 6-12 Options considered following the future re-closure of Grogan Road
Source: Perth Airport

6.10 Car Parking

Between 2010 and 2014, Perth Airport significantly expanded the number of car parking bays available to passengers, staff and visitors across the estate. However, the end of the resource sector construction peak and the increase in rideshare services in recent years has seen demand for car parking decline, as shown in Figure 6-13.

Perth Airport has more than 26,000 car parking bays for passengers, visitors and staff across the estate. Current car parking options are shown in Figure 6-14 and Figure 6-15 and include:

- Perth Airport and airline partner valet parking,
- fast track parking, which is premium, covered, extra-wide bays located a one-minute walk from the T3 and T4 check-in areas,
- short-term parking, located immediately outside each terminal, and
- long-term parking, with free regular bus services to each terminal.

With the increasing use of rideshare, automated vehicles and improved public transport connection through the Forrestfield-Airport Link and other potential services, the future demand for car parking is difficult to forecast. Current modelling predicts that by 2040 between 15,000 and 24,000 additional car parking bays could be required, depending on which mode share scenario eventuates.

Although it is consistent with proper planning to restrict parking supply to encourage the use of public transport, this is not always possible for terminal facilities which operate 24/7. However, Perth Airport will consider management of supply and price to optimise and respond to changes in mode share, particularly for purely commercial developments.

The Airport Central Precinct development plans includes a combination of car parking facilities. Car parks servicing the precinct will be located broadly in the same locations as the existing at-grade car parks. It is envisaged that these existing at-grade car parks will be progressively replaced with multi-storey car parks over time to meet demand, with two MMTIs (including two multi-storey car parks) planned to support the consolidation of terminals to Airport Central. These car parks will function as ground transport facilities that also provide space for ground transport service operators, pick-up and drop-off, buses, rideshare and taxis. Where feasible, the MMTIs will be linked to

the terminal buildings with elevated walkways. Underground walkways may be considered in the longer term. The remote long-term parking will be connected to the passenger terminals initially by bus and ultimately by the Automated Mass Transit system. A premium long-term car parking product will continue to be available close to terminals, with (non-premium) long-term parking to be located further from the terminals, possibly in Airport South serviced by connecting buses and the Automated Mass Transit system. Opportunities to install electric car charging in both short and long term parking will be investigated during any parking upgrade project.

Car rental facilities are currently located proximate to the terminals and may eventually be provided within the future MMTIs. In the longer term, traffic levels and demand for car parking may trigger relocation of car rental pick-up and drop-off facilities to a location closer to the highway interchanges, at which point they may also be serviced by the Automated Mass Transit system.

The Airport West development plans include the continuation of at-grade car parks within the precinct to meet the needs of any commercial developments, but may ultimately require multi-storey car parks. There is sufficient parking available within the GA Area.

Developments within the walkable catchment of the Redcliffe Station will not be provided with the same number of spaces as those in locations more remote from public transport.

After consolidation of commercial air services to Airport Central by 2025, it is expected that the demand for car parking proximate to T3 and T4 will be significantly lower. The extent to which existing car parks within Airport West are decommissioned will depend on:

- activities that will ultimately be located in this area as Airport West develops,
- the impact that the Forrestfield-Airport Link has on private car travel mode share, and
- the demand for car park sites.

As shown in Figure 6-16, Perth Airport will continue to develop and provide a range of car parking products to meet passenger, visitor and employee needs and preferences. This range of car parking products will continue to include hourly, premium short-term, short-term, premium long-term and long-term car parking bays.

Land may be progressively converted from car parking to facilitate property development as demands change.

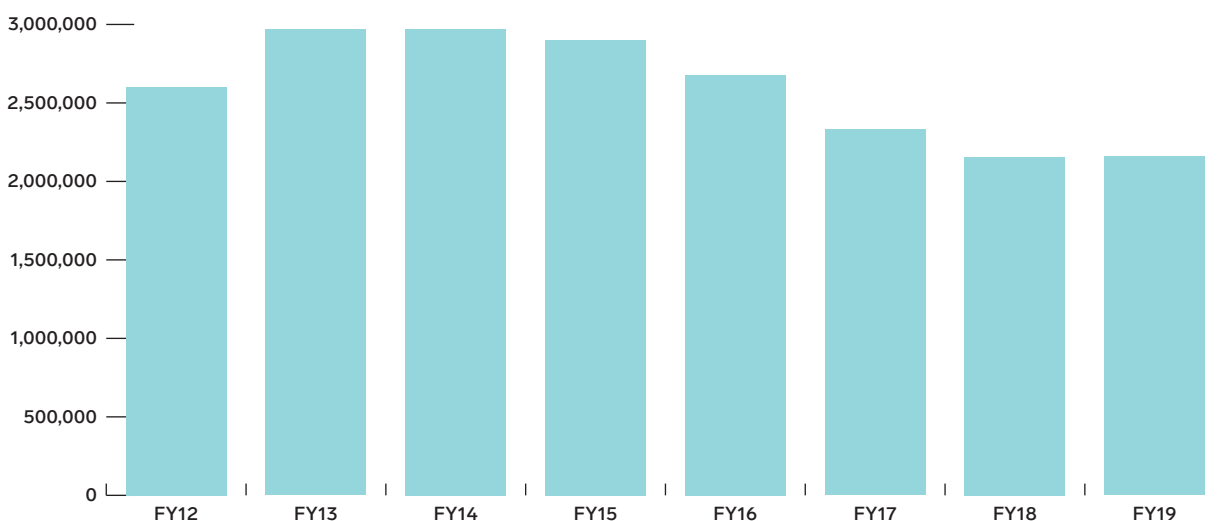


Figure 6-13 Annual Car Parking Transactions
Source: Perth Airport

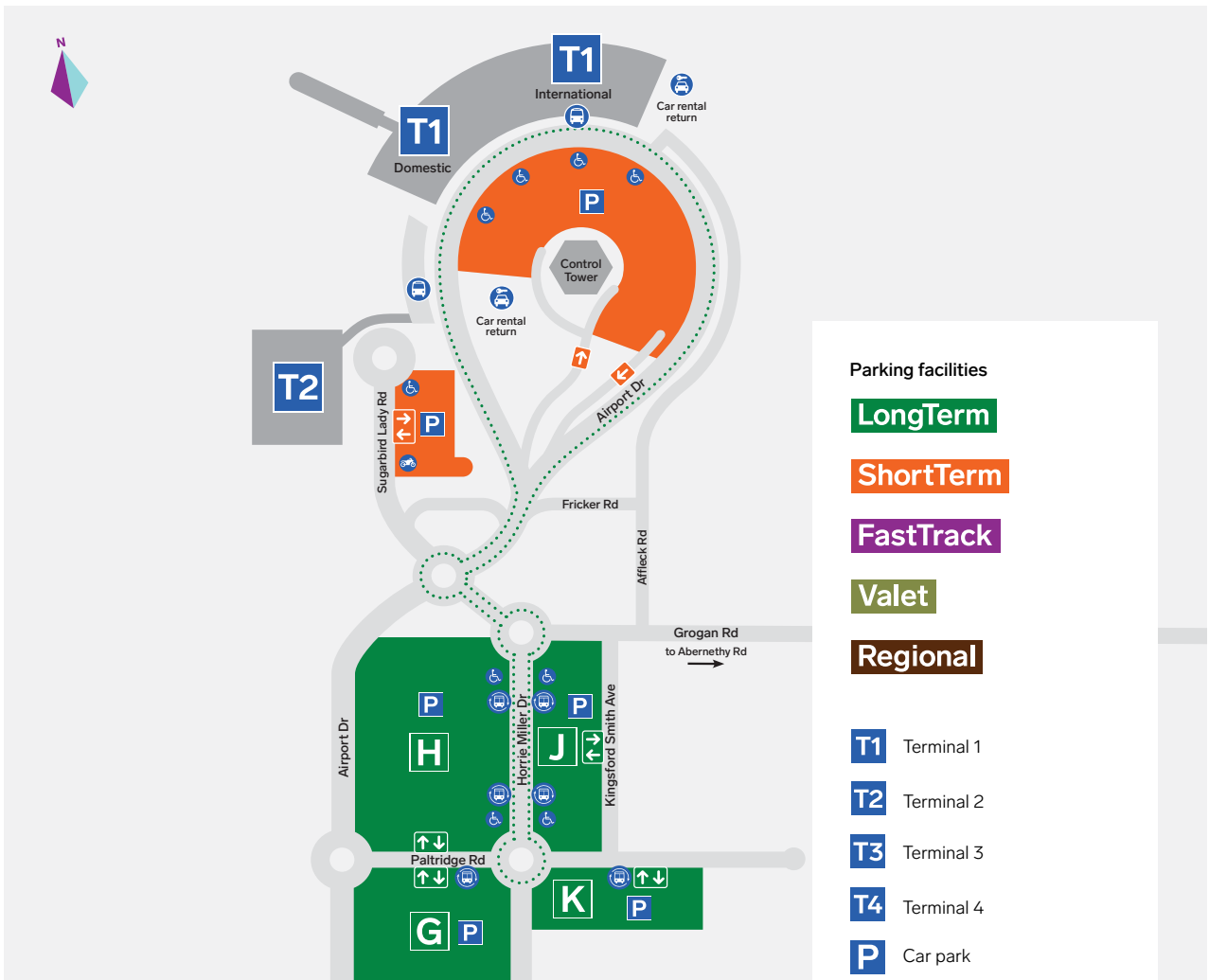


Figure 6-14 T1 and T2 Parking and Transport
Source: Perth Airport

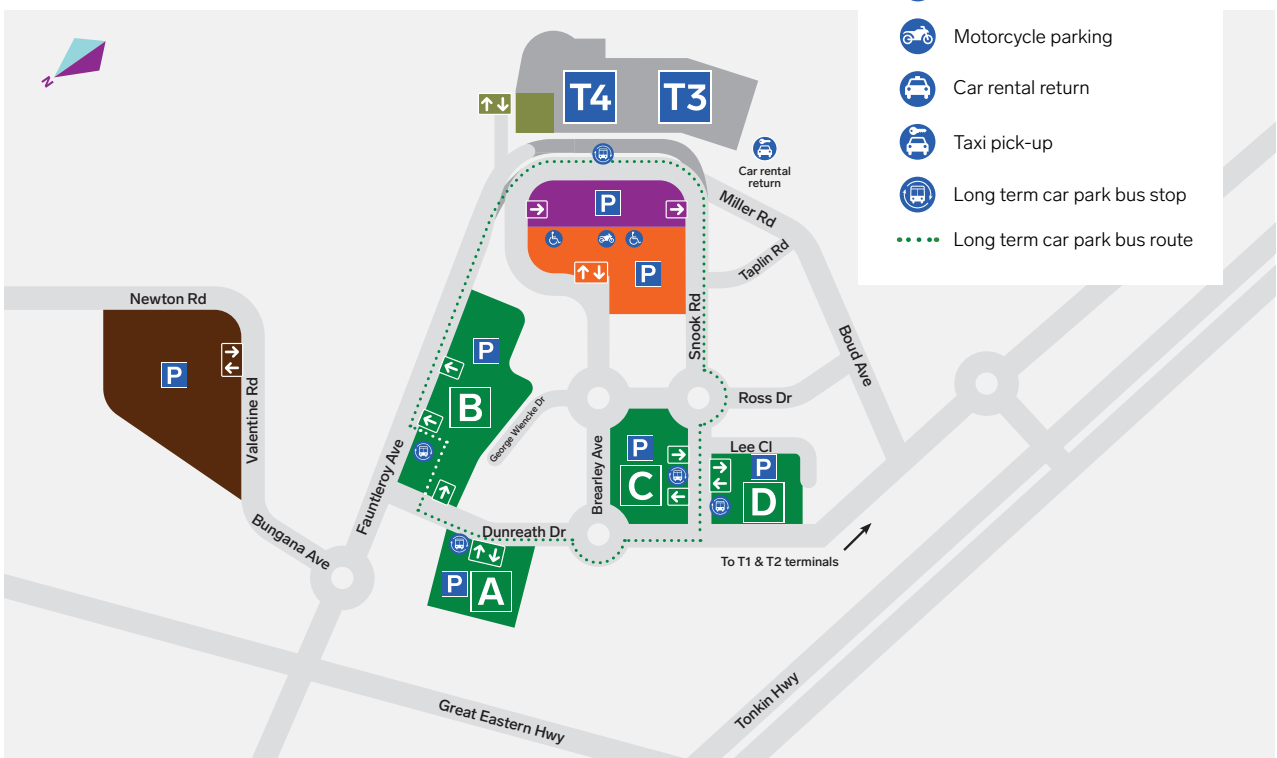


Figure 6-15 T3 and T4 Parking and Transport
Source: Perth Airport

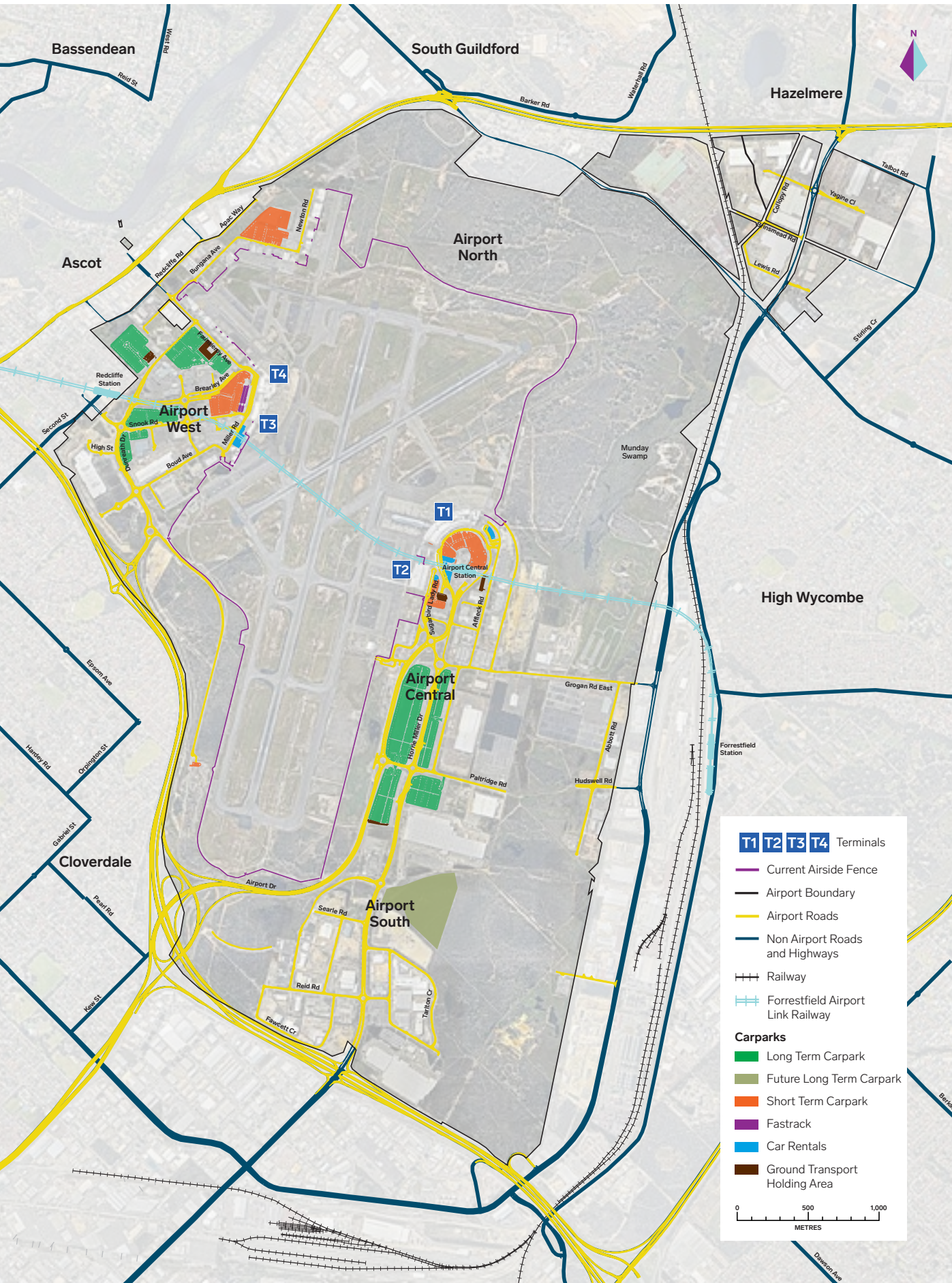


Figure 6-16 Projected car parking across the Perth Airport estate
Source: Perth Airport

6.11 Commercial Vehicle Facilities

Designated areas within the short-term car parks, proximate to each of the terminals, are currently provided for commercial vehicles. Construction of the planned MMTs in Airport Central will allow upgraded commercial vehicle facilities

6.12 Taxi Facilities

Each of the terminal buildings are serviced by taxis and rideshare services. The taxi facilities include pick-up ranks, dedicated traffic lanes, and staging and assembly areas. The planning principles for the taxi facilities are to provide:

- taxi ranks servicing T1 International, T1 Domestic, T2 and the future new terminal for Qantas operations,
- taxi forward staging areas, and
- remote taxi holding areas.

The taxi facilities required will undertake a significant change when consolidation of Qantas operations to Airport Central occurs, with new taxi pick-up ranks provided within the ground transport facilities.

6.13 Rideshare Facilities

In 2016, Perth Airport implemented measures to provide better facilities for rideshare services to the airport. These include rideshare waiting areas and designated drop-off and pick-up areas at terminal forecourts, similar to those provided for taxi services. The rideshare waiting area for T1 and T2 has 70 bays and is located at the end of long-term car park G, accessible via Horrie Miller Drive. The T3 and T4 rideshare waiting area is located on Fauntleroy Avenue within long-term car park A and has 148 bays.

Perth Airport monitors levels of rideshare usage to ensure appropriate facilities are available.





Figure 6-17 Pedestrian and cycle access
Source: Perth Airport

6.14 Shared Path and Cycleway Facilities

Cycling and walking facilities are predominantly used by employees working within the estate and these facilities will continue to be provided, including end-of-trip facilities in commercial developments.

T1 and T2 are serviced by a principal shared path that runs along Airport Drive before connecting to the shared path along Tonkin Highway. The Airport South Precinct is accessed by a shared path that connects to the principal shared path that runs along Tonkin Highway and terminates at Reid Road. This cycleway will eventually be extended to intersect with the principal shared path on Airport Drive. Both of these cycleways were constructed as part of the Gateway WA project.

Airport West is also served by bicycle routes, with access provided to T3, T4, the GA Area, and retail and commercial areas.

Perth Airport will continue to improve its pedestrian and cycle networks to promote active transport modes as seen in Figure 6-17.





Figure 6-18 Regional road directional signs for terminal access
 Source: Perth Airport

6.15 Wayfinding

Wayfinding is important to ensure the effective movement of vehicles, pedestrians and cyclists within the estate as part of a passenger's journey. Wayfinding will continue to be provided across the estate.

Within the estate, Perth Airport will review opportunities to install advanced car park and forecourt vacancy signs on key roads to allow passengers to select the most appropriate car park and have visibility of where there is vacancy for drop-off and pick-up. The car park bus service will continue to have active signs at bus stops to advise passengers of the arrival time for the next bus.

Perth Airport will continue to work with Main Roads to provide intelligent signage on key road access routes to inform traffic leaving the airport of any incidents off airport to allow drivers to modify their journey, if required. There are opportunities to provide similar information for public transport services that Perth Airport will explore with the Public Transport Authority. Wayfinding for the FAL will be provided within the terminals and Skybridge.

The existing messaging for road directional signs to the airport is shown in Figure 6-18.



6.16 Five Year Ground Transport Implementation Plan

The projects associated with the ground transport implementation plan over the next five years are provided in Table 6-2 and shown in Figure 6-19.

With Airport Drive providing access for passenger-related traffic, Horrie Miller Drive will continue to be dedicated to commercial traffic accessing the passenger terminals, freight handlers and non-aviation commercial developments located within Airport South and Central. This Ground Transport Plan proposes to retain this segregation of passenger and commercial traffic on Airport and Horrie Miller Drives respectively. However, resilience will be built into the road network by improving the connection between Horrie Miller and Airport Drives to ensure network redundancy and business continuity in the event of an incident.

Works within the Airport West Precinct are associated with the completion of the Redcliffe Station in 2021 and improved connection to the business and retail developments.

Precinct	Project	Responsible Authority	Expected Delivery Period
All	Investigate options for implementing smart traffic management	Perth Airport	2020 onwards
Central	Investigate a new bus route to link Airport Central Station with the Armadale rail line	Public Transport Authority	2020 onwards
Central	Construct Skybridge linking Airport Central station to terminals	Perth Airport	2020
West	Upgrade Tonkin Highway Dunreath interchange	Main Roads WA	2020
Central and West	Forrestfield-Airport Link constructed and operating	Public Transport Authority	2021
West	Improve shared path connection to Redcliffe Station	Perth Airport	2021
Central	Construct a Multi-Modal Transport Interchange incorporating pick-up and drop-off facilities	Perth Airport	2022
Central	Construct Southern Aviation Support Access Road	Perth Airport	2023
Central	Upgrade intersection of Airport and Sugarbird Lady Drive	Perth Airport	2023
South	Extension of Airport south cycleway	Perth Airport	2023
Central	Construct a second Multi-Modal Transport Interchange, incorporating pick-up and drop-off facilities	Perth Airport	2025
North	New internal commercial development roads	Perth Airport	2025
North	Lloyd Street extension	City of Swan	2025
North	Kalamunda Road Realignment	Perth Airport	2025
Central	Re-closure of Grogan Road	Perth Airport	2023-2028 (dependent on new runway project)
Central	Eastern Connection to Abernethy Road	Main Roads WA	2023-2028 (dependent on new runway project)
North	Adelaide Street	Main Roads WA, City of Kalamunda, City of Swan	2021

Table 6-2 Five-year Ground Transport Implementation Plan

Source: Perth Airport

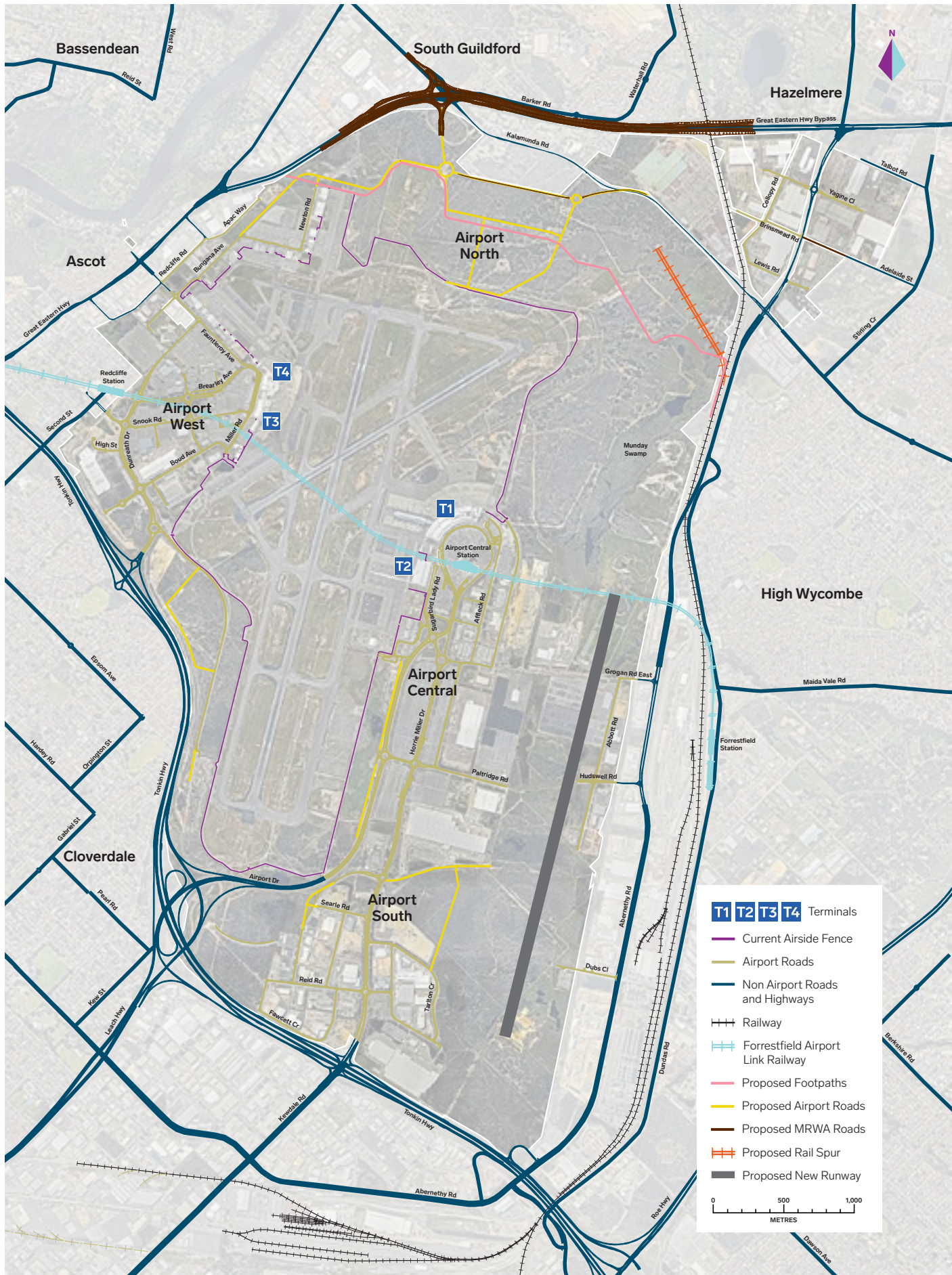


Figure 6-19 Perth Airport estate five-year ground transport plan concept
 Source: Perth Airport

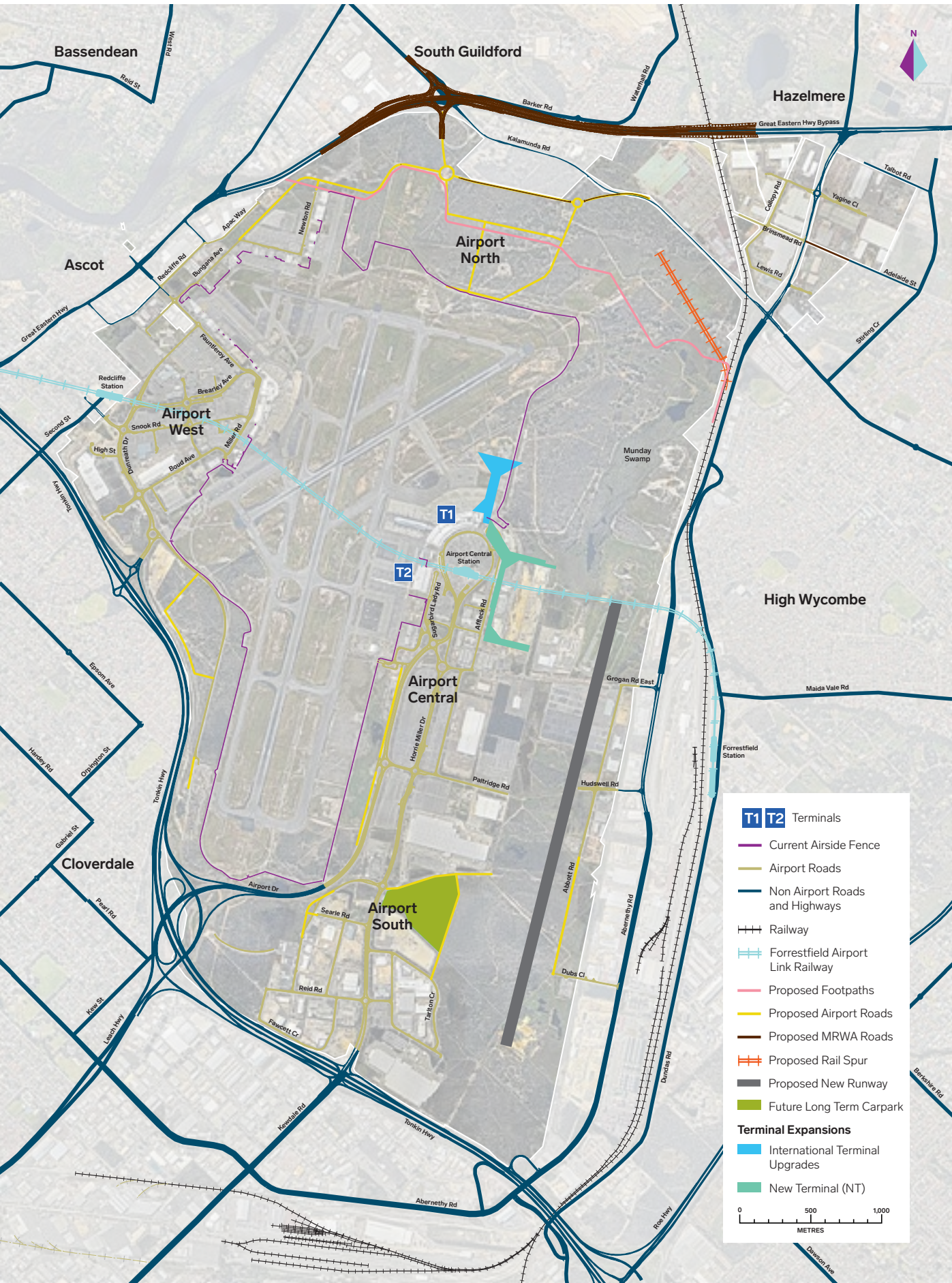


Figure 6-20 Perth Airport estate twenty-year ground transport plan concept
 Source: Perth Airport

6.17 Twenty-Year Ground Transport Implementation Plan

The projects associated with the ground transport implementation plan over the next twenty years are provided in Table 6-3 and shown in Figure 6-20.

The segregation of passenger and freight traffic within Airport Central will be maintained. Demand on Airport and Horrie Miller Drives will be monitored to ensure appropriate timing of intersection upgrades and the possibility of using both roads as a one-way loop for passengers. Under this scenario a separate road will be constructed to maintain segregated freight access.

Changes will occur in Airport West following the closure of T3 and T4 by 2025, when Qantas operations relocate to the Airport Central Precinct. Changes to the ground transport network will be made to reflect the change in road use and future development of the terminal site.

Precinct	Project	Responsible Authority	Expected Delivery Period
Central	Additional multi storey car parks if required	Perth Airport	2030-2040
Central	Expand pick-up and drop-off in Multi-Modal Transport Interchanges if required	Perth Airport	2030
Central	Relocation of non-essential transport services out of Multi-Modal Transport Interchanges if required	Perth Airport	2030
South	Construction of satellite pick-up and drop-off	Perth Airport	2030
Central	Further upgrade Airport Drive Sugarbird Lady Road and Grogan Road intersections	Perth Airport	2035
Central	Construction of eastern freight road	Perth Airport	2035
Central	Upgrade Horrie Miller Road intersections	Perth Airport	2035
Central and South	Automated Mass Transit to service remote terminal facilities	Perth Airport	2035
Central	Implement one-way loop of Airport and Horrie Miller Drive	Perth Airport	2040

Table 6-3 Twenty-year Ground Transport Implementation Plan

Source: Perth Airport

