09

GROUND TRANSPORT PLAN

OVERVIEW

The Brisbane Airport 2020 Ground Transport Plan outlines planned initiatives for the continued provision of safe, reliable and high quality ground transport services.

Developed in consultation with industry stakeholders, government and airport users, current operations have been reviewed in the light of growth forecasts and identified trends in transport and in customer needs.

The Ground Transport Plan includes details of both short and longer-term initiatives designed to extend and improve the range of transport services offered.

THE IMPORTANCE OF EFFECTIVE PLANNING

As the airport continues to grow, effective planning is an ongoing and essential component of the continued delivery of safe, reliable and high-quality ground transport services. To ensure that every aspect of plans for the various services provided is explained in detail, the 2020 Ground Transport Plan includes individual review of the following key component parts:

- The Brisbane Airport road network plan.
- Facilities for moving people and freight.
- Linkages between those facilities, the road network and public transport systems on and off airport.
- Arrangements for working with state, local and other bodies.
- The capacity of the ground transport system to support airport operations.
- The likely effect of proposed developments on the ground transport system and traffic flows at, and surrounding, the airport.

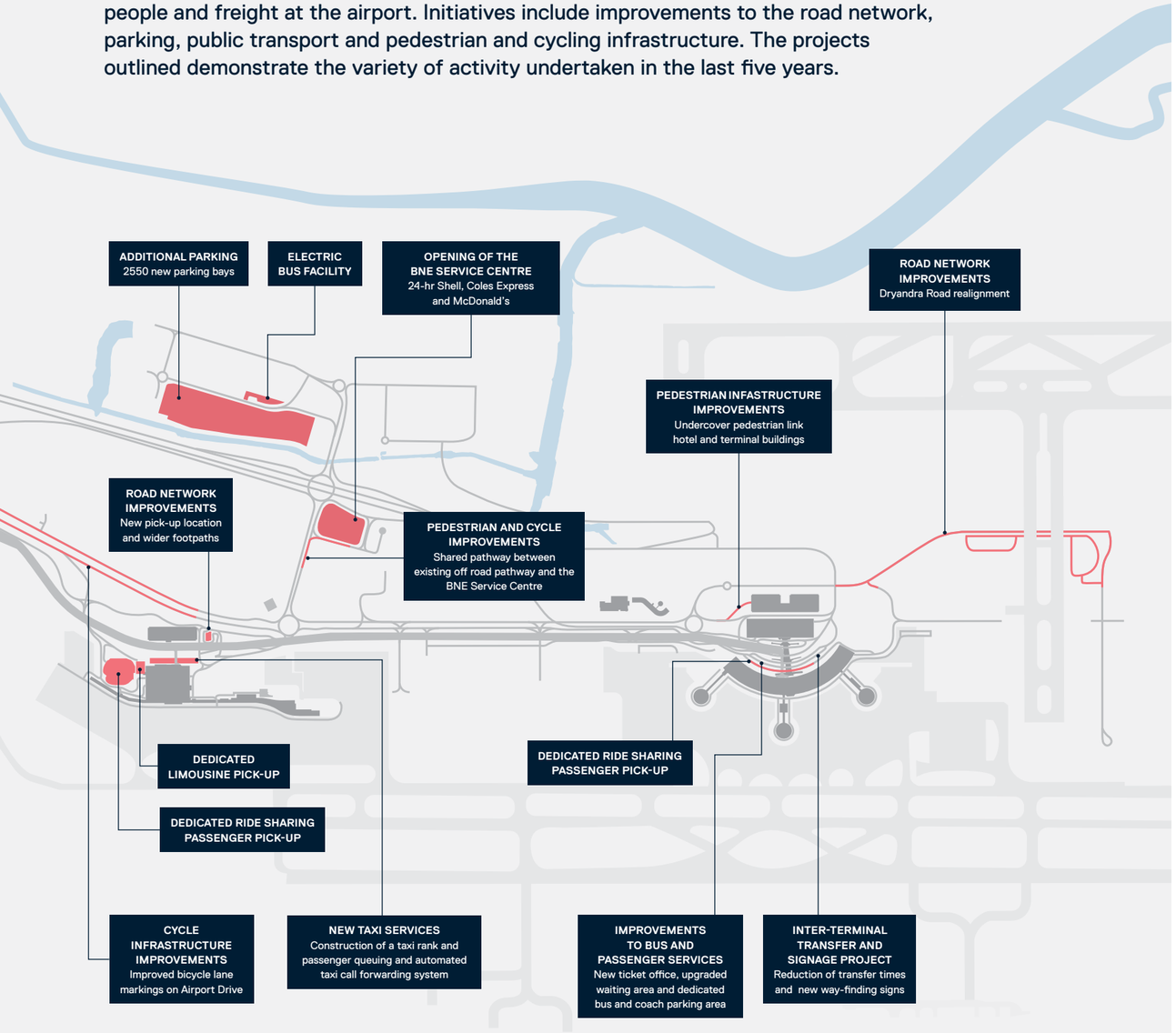
PLANNING FOR THE FUTURE

While the emergence of new technologies and new modes of transport is difficult to confidently predict, the Ground Transport Plan has been designed to continue to be flexible in reacting to new opportunities to improve services.

An important adjunct to the 2020 Master Plan, the initiatives proposed reflect regular and ongoing collaboration and dialogue with key stakeholders, including Brisbane City Council, the Australian and Queensland Governments, the aviation industry and with airport users.

GROUND TRANSPORT IMPROVEMENTS SINCE 2014

Since the publication of the 2014 Ground Transport Plan, Brisbane Airport Corporation has invested in a range of new initiatives to improve ground transport efficiency in alignment with the Master Plan 2014 vision to maximise the efficient movement of people and freight at the airport. Initiatives include improvements to the road network, parking, public transport and pedestrian and cycling infrastructure. The projects outlined demonstrate the variety of activity undertaken in the last five years.



OPENING OF THE BNE SERVICE CENTRE

Supports 2014 initiative to improve airport road network.

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

The Centre has created more than 200 new jobs and includes a 24-hr Shell Coles Express and a 24-hr McDonald's restaurant. The development, located between the Domestic and International Terminals, supported the creation of the Moreton Drive off ramp connecting to Nancy Bird Way.

NEW ELECTRIC BUS FLEET

Supports 2014 initiative to improve taxi, bus, coach and shuttle services.

In a $16.5 million contract with Carbridge, 2018 saw the introduction of Brisbane Airport's first fully electric landside bus fleet. the change is estimated to result in a reduction of 250 tonnes of carbon emissions each year.

With zero tail pipe emissions, the electric buses each have a driving range of 600 kilometres on a single battery charge.

A purpose-built facility for the parking, maintenance and charging of the new fleet has been built at a cost of almost $3 million.

The new buses have delivered improved connectivity between precincts and supported the creation of new parking areas and increased frequency of public transport services.

IMPROVED INFORMATION FOR PASSENGERS

Supports 2014 initiatives to improve taxi, bus, coach and shuttle services and improve information and signage for travel to, from and within the airport.

Information about the location of buses is now available through a new Real Time Passenger Information system, with digital signs on terminal bus stops and a 4G display inside the new buses. To ensure information is up-to-date, the fleet carries a GPS tracking system providing real-time updates. Enhancements also include a real-time monitoring system reporting on energy consumption.

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

The airport partners with the State Government and Brisbane City Council in regular dialogue to consider improvements to airport public transport services. Some of the outcomes are reflected in the pipeline of projects over the next five years.

NEW PEDESTRIAN AND CYCLING INFRASTRUCTURE

Supports 2014 initiatives to improve active transport facilities at the airport and link to the external network and encourage employees to use alternative modes.

Brisbane Airport Corporation continues to invest in pedestrian and cycling infrastructure with more than $3.5 million invested in new paths since 2014. This investment was in addition to a project to improve connectivity between hotels and the Domestic Terminal which also saw significant landscaping enhancements to the Domestic Terminal precinct.

INTER-TERMINAL TRANSFER FACILITY

Supports 2014 initiatives to improve taxi, bus, coach and shuttle services and improve information and signage for travel to, from and within the airport.

With more international travellers using Brisbane Airport as a gateway, the new Inter-terminal Transfer Facility completed in February 2018 has improved the efficiency of transferring between the terminals with increased processing facilities regular door-to-door bus transfers and helpful signage throughout the journey.

The project was designed to reduce minimum connection times between the terminals, providing improved experiences for transfer passengers and facilitating the ability of airlines to manage the entire passenger journey.

Brisbane Airport Corporation invested $7 million in the project which created 50 jobs during construction.

To reduce the minimum transfer times between terminals, this $7 million project included a wide range of measures, including:

- Increased processing capability at International Terminal Level 2 bag drop area.
- Redevelopment and upgrade of existing baggage handling systems at the International Terminal.
- New Transfer Check-in area on International Terminal Level 2 Arrivals.
- Location of bus stops at International Terminal Level 2.
- New passenger way finding.
- More bus services during peak periods.
- New check-in area.

These initiatives are complemented by the installation of weather protection along key pedestrian paths at a cost of $1.5 million and new digital way-finding signs in the forecourt area of the Domestic Terminal.

DEDICATED RIDE SHARING, AND PASSENGER PICK UP POINTS

Supports 2014 initiative encouraging use of alternative modes.

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

At the International Terminal, public pick-up was relocated from Level 2 to Level 1, providing an increase in the kerbside area of more than 300 per cent to better accommodate baggage trolleys and other bulky passenger luggage, releasing capacity on the terminal ramps.

IMPROVED PARKING BAYS

Supports 2014 to encourage passengers to use alternative modes.

To meet growing demand and in response to feedback about capacity, the number of parking bays at the International Terminal for ground transport operators was increased by 100 per cent by optimising the use of the existing space.

IMPROVED TAXI SERVICES

Supports 2014 initiatives to improve taxi, bus, coach and shuttle services.

To benefit passengers new to Brisbane, in 2018, new display screens were added to display advance estimates of taxi fares from the Domestic Terminal. Additonally, a new 'short fare system' now allows taxi drivers to skip the main queue and collect short trip and lower fare passengers.

2018 saw the installation of a $1.2 million automated taxi call forwarding system. In addition, Brisbane Airport has recently invested in a system that allows real-time monitoring of all zones, with the capacity to monitor wait and transit times, with text messaging allowing front line staff to respond quickly as problems arise.

REALIGNMENT OF DRYANDRA ROAD

Supports 2014 initiative to improve the on-airport road network

This project allows vehicles to travel under the taxiways for the new runway.

As part of a project with a construction value of $120 million, the new road services the General Aviation Zone, which includes the Royal Flying Doctor Service and Brisbane Airport's best viewing area for plane spotting.

BRISBANE AIRPORT GROUND TRANSPORT PLAN

As the airport grows, the ongoing provision of a choice of, reliable, safe and efficient ground transport services making people's journeys to and from the airport easy and enjoyable is central to successful operations.

Brisbane Airport endeavours to provide all airport visitors with a choice of ways of accessing the airport and constantly strives to make use of each mode of transport as streamlined and simple as possible.

The Ground Transport Plan shows that currently, the largest percentage of airport visitors choose to use their own vehicles, either using the different parking options at the airport or taking advantage of the passenger friendly pick up and drop-off facilities at the terminals.

The airport is also served by a rail service, the AirTrain, with stations at the International and Domestic Terminals and a range of taxi and ride-share services.

RESPONDING TO CUSTOMER NEEDS

Understanding that the needs of customers may change in future, an ongoing program of review and consultation with stakeholders including state and local government, industry groups and members of the public has been established to ensure that services continue to meet requirements and also to consider and respond to identified changes in demand.

For each transport option, this Ground Transport Plan outlines an overview of current usage and operations; details of initiatives proposed in the next five years and an assessment of potential issues and opportunities arising over the longer term.

RESPONDING TO NEW OPPORTUNITIES

It is recognised that technological advancements may continue to drive changes in passenger needs. In a changing world, BAC will continue to monitor and review all emerging opportunities to improve and extend the range of services offered with the goal of continuing to deliver the highest levels of customer satisfaction.

TRAVELLING TO THE AIRPORT

GROWTH IN PASSENGERS

Brisbane Airport has seen continued growth in passenger numbers over the last decade, with domestic passengers growing by an annual average of 2.4 per cent and international passengers by 3.7 per cent. In total, in 2018, 23.4 million passengers used Brisbane Airport. It is estimated that on average 115,000 vehicles access the airport each day, a number forecast to double by 2040.

PREFERRED MODE OF TRAVEL

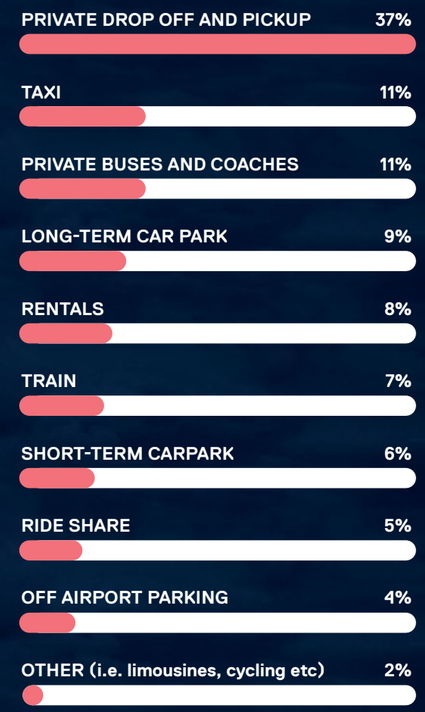
The popularity of different modes of transport varies according to location, time of day and day of the week. The chart opposite shows that the most commonly used services on an average day are to be the dedicated pick up and drop off facilities, followed by just over a quarter of all visitors taking advantage of the various parking options.

PEDESTRIAN AND CYCLE ACCESS

While there is currently a relatively low number pedestrians and cyclists accessing the airport, Brisbane Airport has an cycling access map to assist people planning their journey to and from the airport.

Brisbane Airport is committed to working with advocacy groups including Bicycle Queensland, Queensland Walks and Airport Bicycle User Group to improve pedestrian and cycle access on airport. Access to the airport has recently been significantly improved by the completion of the new River Walk structure including a riverside promenade and dedicated cycling path delivered as part of the Kingsford Smith Drive upgrade.

The Schneider Road to Viola Place connection, funded in the 2018/19 Brisbane City Council budget, will complete the missing link accessing the airport from the Gateway Bridge shared pathway and the River Walk network.

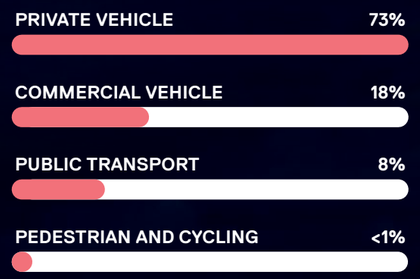


The chart above shows that the most commonly used services on an average day are the dedicated pick up and drop off facilities, followed by just over a quarter of all visitors taking advantage of the various parking options.

CHOSEN MODE OF TRAVEL (EMPLOYEES AND VISITORS)

This chart shows the mode of transport used to access areas of the airport other than the terminals.

The high percentage of private vehicle use is a consequence in part of limited public transport choices for employees travelling to the airport from home. Some airport precincts are served by public transport however costs and travel times are not generally competitive.



AIRPORT CAPACITY

	5am – 10pm			10pm – 5am
	CARS*	BUSES & COACHES	AIRTRAIN	CARS*
Person carry capacity*	612,000	11,000	50,000	252,000
Total passenger demands	139,100	5,800	4,200	13,500

The chart above shows that ample capacity currently exists in the airport network to meet demand, with well over double the capacity currently available in every segment and significantly larger levels of availability in others.

** based on a typical occupancy of 1.2; includes rentals, taxis and ride-share*

FUTURE PLANNING

Brisbane Airport Corporation is committed to continued investment in enhancing the experience of visitors using airport facilities and services. This Ground Transport Plan considers opportunities to further improve and broaden the range and frequency of services offered, to drive connectivity, improve efficiency and increase user satisfaction.

FUTURE PLANNING: THREE GUIDING PRINCIPLES

All planning decisions on future investments in ground transport facilities and infrastructure at Brisbane Airport will be governed by three guiding principles.

MEETING CUSTOMER NEEDS

VISION AND RESILIENCE

PERFORMANCE AND PARTNERSHIP

Each of the three principles are designed to align with and complement the strategic directions and intent of relevant national, state and local government policies.

MEETING CUSTOMER NEEDS

As Queensland's leading hub for travellers both arriving into and departing from the state, BAC plays a key role in meeting the needs of both the residents of Queensland and visitors to the state.

In line with Brisbane City Council's Brisbane Vision 2031 and Brisbane Transport Plan, a primary driver of all activities at the airport is to provide the highest level of satisfaction to all passengers, employees and visitors.

As part of a series of initiatives to ensure safe access for all, the airport has recently launched a program to support passengers travelling with a hidden disability.

A focus on accessibility for all remains paramount in all future investment decisions.

VISION AND RESILIENCE

Over time, new technologies and services including digitally connected smart infrastructure have the potential to significantly change the transport industry.

Recognising the likely pace of change and in line with the Queensland Government's State Infrastructure Plan, BAC will continue to explore solutions that address the emerging needs of the community while anticipating possible longer-term limitations.

Retaining a focus on customers, BAC will seek to address the needs of visitors and all members of the airport community when planning, designing and delivering future ground transport solutions.

PERFORMANCE AND PARTNERSHIP

The liveability and economic prosperity of any city is enhanced by a connected, flexible and sustainable transport network able to respond to changing needs.

The Australian Government's Smart Cities Plan and the Queensland Government's Shaping SEQ plan both promote the concept of the '30 minute city'.

Taking into account the location of schools, shopping and places of work, the key notion of the 30 minute city is that all services are available within 30 minutes of home.

In planning future ground transport services, BAC will work in continued partnership with Government bodies to advance the 30 minute city concept, discussed more fully at the end of this chapter.

BRISBANE AIRPORT ROAD NETWORK

Brisbane Airport benefits from relatively new road infrastructure both on and off airport. Analysis shows that the airport benefits from free flowing traffic connections even during peak periods.

The network of roads surrounding the airport is planned and controlled by the Queensland Department of Transport and Main Roads and by Brisbane City Council. Brisbane Airport is responsible for developing, operating and maintaining on-airport roads.

Access to and from the airport is provided by a modern road network which comprises:

- The Gateway Motorway
- Southern Cross Way
- East-West Arterial
- AirportlinkM7
- Kingsford Smith Drive
- Nudgee Road

The on-airport road network is built around Moreton Drive and Airport Drive, which directly services the Domestic and International Terminals. These roads provide a seamless connection to the external road network.

The other significant road corridor on-airport is Lomandra Drive, which connects to and from the south of Brisbane Airport and the future site of the Brisbane International Cruise Terminal at Luggage Point.

The convenient access provided by the road infrastructure encourages Brisbane Airport's passengers to use the kerbside areas at the International and Domestic Terminals.

The majority of trips to and from the airport use these kerbside areas which include facilities for taxi and ride-booking, buses and limousines, as well as people being dropped-off or picked-up by friends and family.

Easy access and an abundance of parking choices encourages the use of private vehicles for passengers and people travelling to and from places of employment and retailing centres at Brisbane Airport.

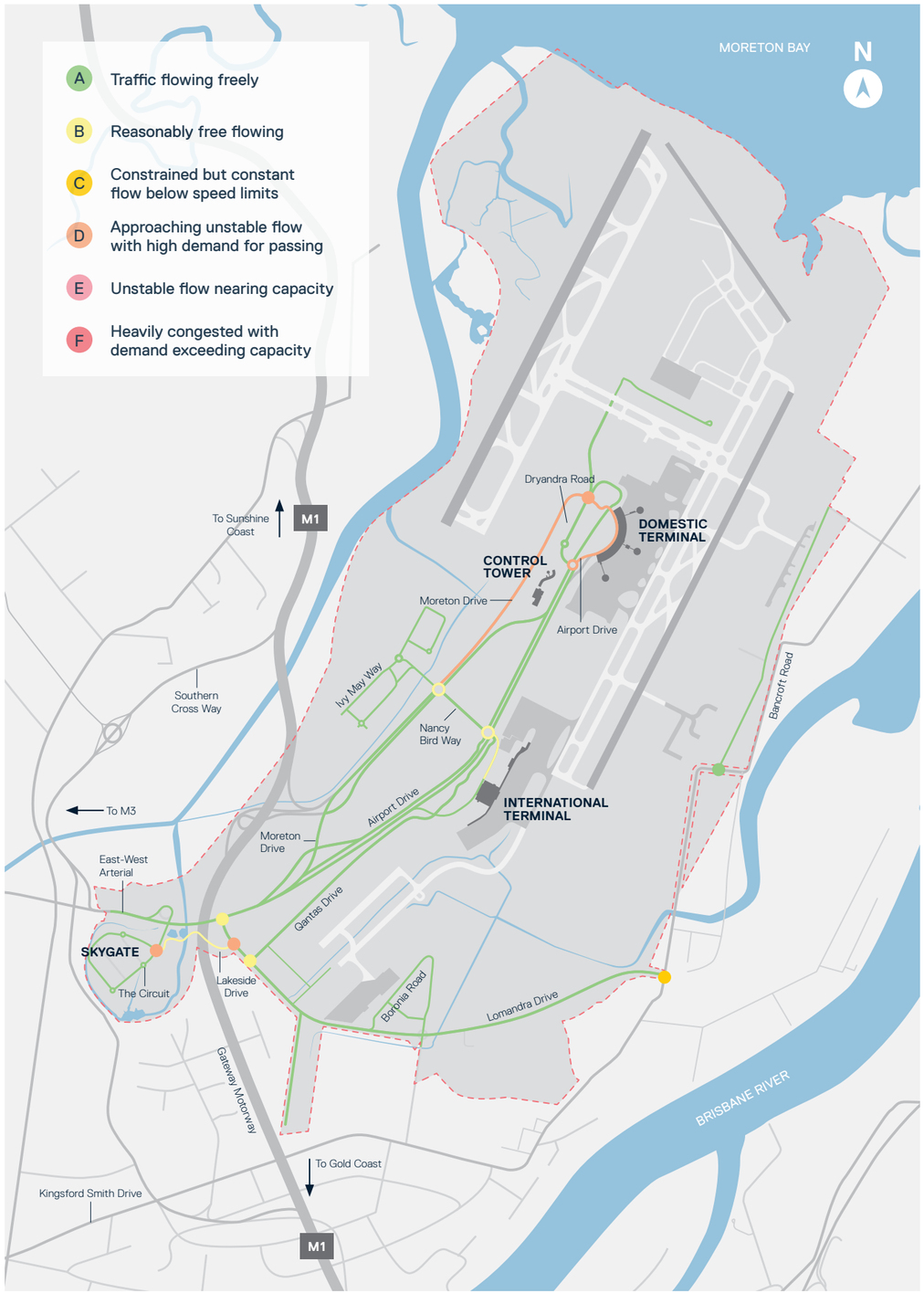
PEAK HOUR TRAFFIC FLOWS

The illustrated map opposite shows the flow of peak hour traffic on the airport. Traffic flow is measured using a six point scale, where flow illustrated in green denotes areas where traffic is flowing freely.

The illustration demonstrates that the highest areas of traffic flow, shown in orange, are the section of Airport Drive directly in front of the Domestic Terminal and the section of Moreton Drive close to the parking areas, plus two interchanges in the Skygate neighbourhood.

Despite higher demand at peak times, capacity still exists in these areas. Traffic around the International Terminal and all other roads on the airport are demonstrated to be largely free flowing during peak hours.

PEAK HOUR TRAFFIC ON BRISBANE AIRPORT ROADS



FORECASTS OF FUTURE ROAD USE

As part of the preparation of the Ground Transport Plan and in consultation with State and Local Government, Brisbane Airport carried out a performance assessment of existing and future internal and external road networks.

To forecast the potential impacts of increased airport traffic on the broader network, Brisbane Airport Corporation used the Brisbane Strategic Transport Model – Multi Modal, a transport trip demand model of the greater Brisbane area managed by the Queensland Department of Transport and Main Roads.

To assess the likely future impact of airport traffic on key intersections and facilities, Brisbane Airport Corporation used a combination of transport modelling platforms designed to aid in the evaluation of intersections and facilities by considering, amongst other things, the road environment, vehicle numbers, origin and destination statistics, driver behaviour, future land uses and other forecasts.

The results are shown in the tables opposite which lists the forecast daily volumes and volume to capacity ratios for key roads within and surrounding Brisbane Airport. NB: Volume to capacity ratios of under 75 per cent are regarded as operating satisfactorily under this modelling approach.

KEY ROADS OPERATING UNDER CAPACITY

Table two (opposite) summarises the peak volume to capacity ratios for the key roads. Roads with volume to capacity ratios of less than 75 per cent are regarded as operating satisfactorily, as this allows for variances within the transport models. Brisbane Airport will continue to work with government and key stakeholders on future plans to ensure there is adequate connectivity is maintained.

FUTURE CHALLENGES TO CAPACITY

The forecast model indicated that the Gateway Motorway and Southern Cross Way are likely to reach capacity by 2025, while Kingsford Smith Drive and the East West Arterial are forecast to reach capacity by 2040.

Brisbane Airport Corporation will continue to work with State and Local Government to ensure that the external road network and other viable transport alternatives continues to support the efficient operation of the airport.

INITIATIVES PROPOSED TO MANAGE INCREASED DEMAND:

Although airport roads are operating within appropriate capacity limits, some facilities and intersections are likely to require improvement within the next five years.

Initiatives proposed to manage demand include:

- New roads and intersections to service Airport Central and Airport Industrial Park
- New intersection to service the proposed International P2 Multi-Level Car Park
- Localised widening and improvements to Lomandra Drive
- Upgrade kerbside infrastructure at the Domestic and International Terminals
- Additionally, Brisbane City Council plans to undertake widening and intersection improvements, improved flood immunity and resurfacing of roads in Pinkenba to support the Brisbane International Cruise Terminal project
- Work with the Queensland Government on connected and autonomous vehicle opportunities at Brisbane Airport.

TABLE ONE: FORECAST DAILY VEHICLE DEMAND

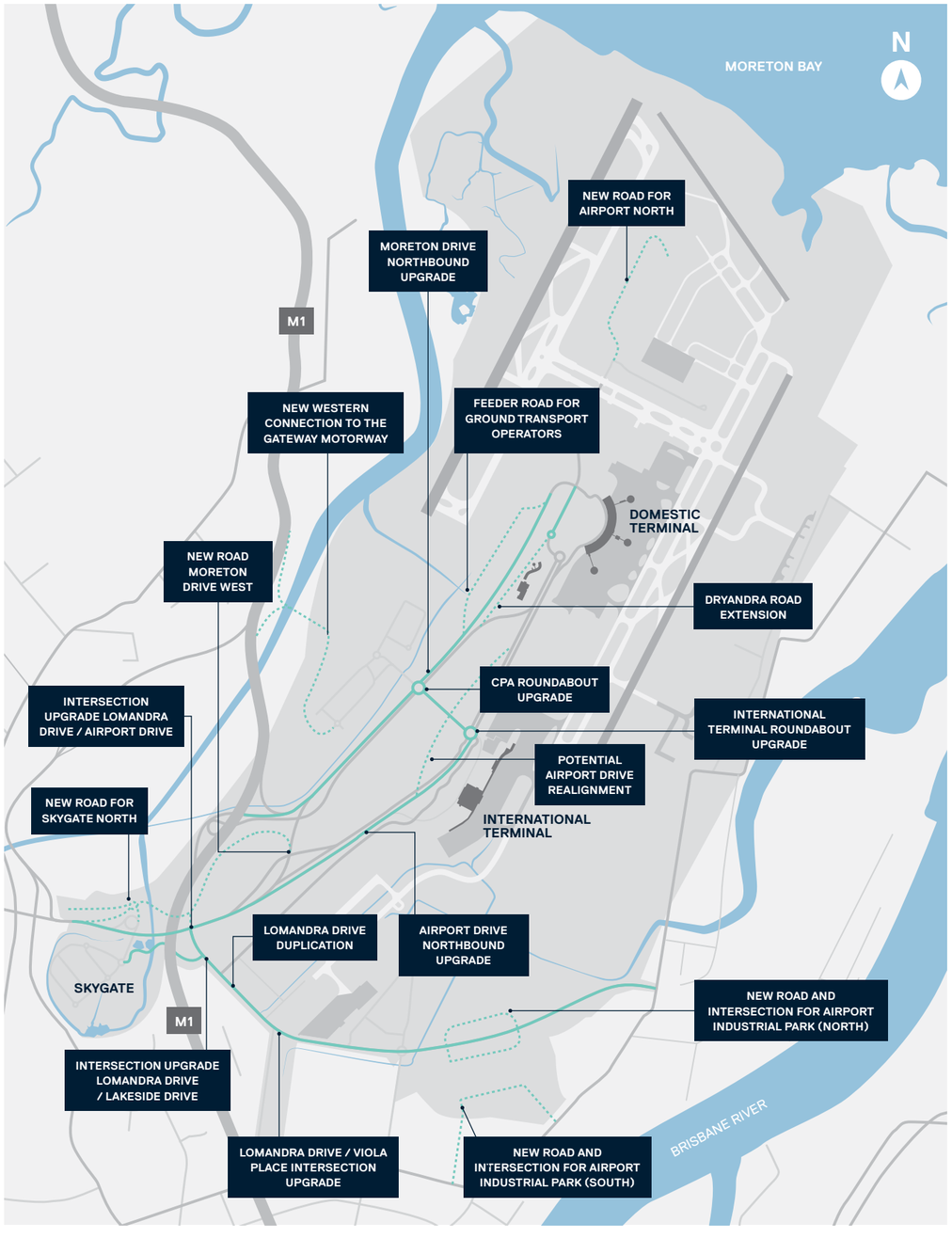
		DAILY VEHICLE DEMAND			
ROAD	LOCATION	2016	2020	2025	2040
Moreton Drive	West of Nancy Bird Way	61,000	64,000	78,000	85,000
Airport Drive	East of Lomandra Drive	35,000	37,000	45,000	69,000
Lomandra Drive	Between Qantas Drive and Airport Drive	19,000	22,000	26,000	29,000
Gateway Motorway	Brisbane River	119,000	141,000	162,000	196,000
Gateway Motorway	North of Southern Cross Way	76,000	97,000	112,000	112,000
Southern Cross Way	South of Airport Drive Interchange	55,000	60,000	66,000	74,000
Kingsford Smith Drive	West of Southern Cross Way	43,000	48,000	55,000	62,000
East-West Arterial	West of Airport Roundabout Flyover	54,000	65,000	81,000	113,000

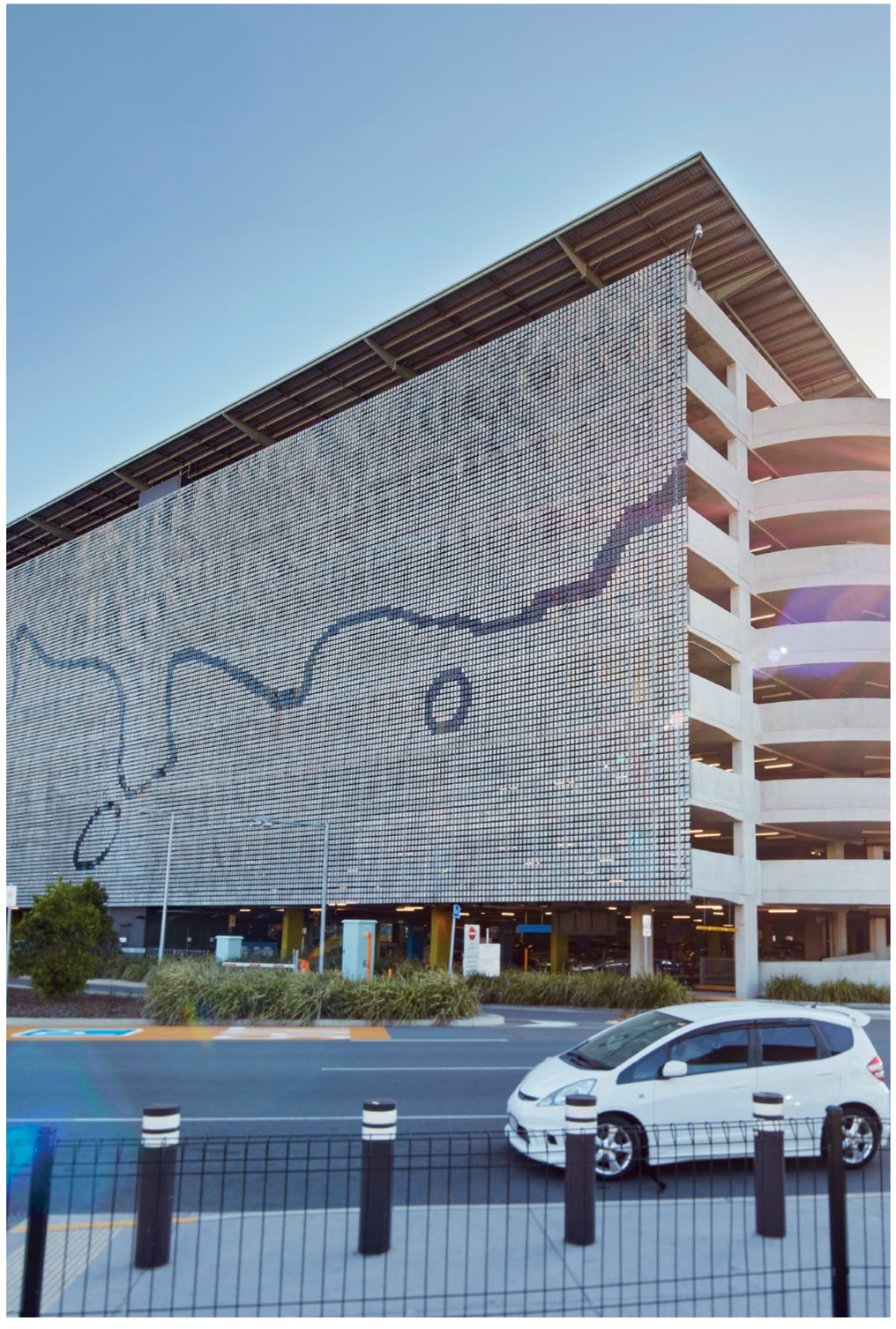
TABLE TWO: PEAK VOLUME TO CAPACITY RATIOS ONROADS

		PEAK VOLUME / CAPACITY RATIO			
ROAD	LOCATION	2016	2020	2025	2040
Moreton Drive	West of Nancy Bird Way	25%	27%	33%	37%
Airport Drive	East of Lomandra Drive	26%	28%	36%	56%
Lomandra Drive	Between Qantas Drive and Airport Drive	61%	65%	71%	76%
Gateway Motorway	Brisbane River	57%	65%	75%	91%
Gateway Motorway	North of Southern Cross Way	67%	99%	101%	102%
Southern Cross Way	South of Airport Drive Interchange	83%	80%	90%	100%
Kingsford Smith Drive	West of Southern Cross Way	57%	69%	81%	96%
East-West Arterial	West of Airport Roundabout Flyover	62%	68%	82%	108%

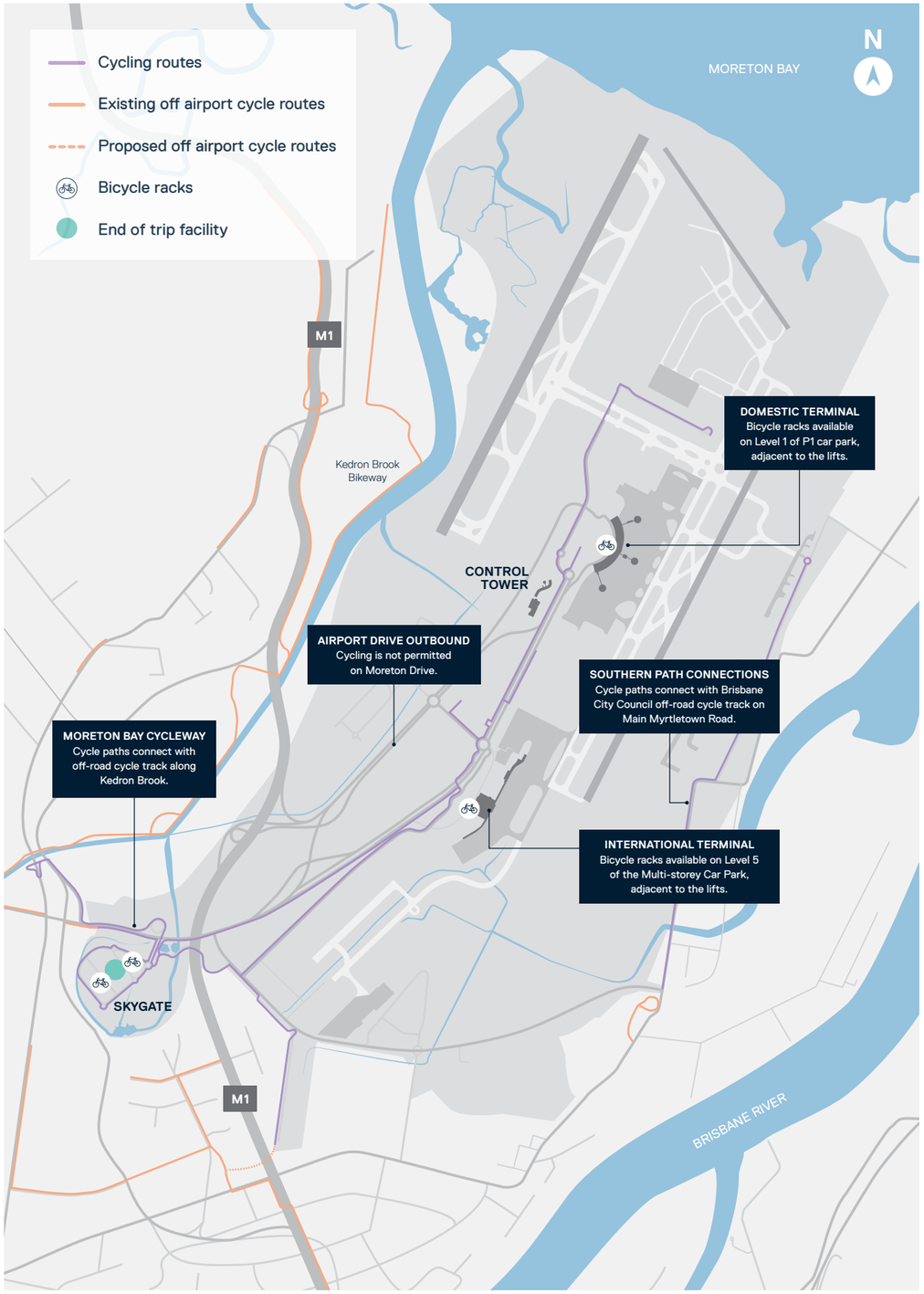
BRISBANE AIRPORT GROUND TRANSPORT PLAN FUTURE INITIATIVES

Beyond 2025, new roads and intersection upgrades will be delivered to support property development and terminal expansion projects. These upgrades will improve network resilience, safety and capacity. The plan illustrates some of the future projects under consideration.





BICYCLE ACCESS AT BRISBANE AIRPORT



BRISBANE AIRPORT PEDESTRIAN AND CYCLING NETWORK

A defining characteristic of Brisbane Airport is its scale. Responding to feedback from the cycling community and in response to increased demand, the last five years has seen Brisbane Airport Corporation invest in developing on-road and off-road cycle paths, and end of trip facilities for cyclists and pedestrians.

The map on the facing page shows the location of the most recently added initiatives. An overarching focus in the planning of these facilities has been to enhance the ease of connection between key services and each of the primary employment areas on the airport.

Brisbane Airport's pedestrian and cycling network now includes:

- Off-road facilities connecting the Kedron Brook Bikeway within the Skygate precinct.
- Off-road facilities connecting the BNE Service Centre, the International Terminal and Central Parking Area with off and on-road facilities.
- Off-road facilities along sections of Pandanus Avenue.
- On-road facilities on sections of Airport Drive and Qantas Drive.
- Off-road facilities along Lomandra Drive.

Visitors can now travel to the terminals from the northern suburbs of Brisbane on a combination of on-road and dedicated bike paths. As previously mentioned, it is likely that a key missing link to the south of the airport new connections will soon be added addressed by Brisbane City Council in line with their investments in cycle networks.

Recognising the increasing popularity of cycling, Brisbane Airport is exploring opportunities to enhance experiences through the provision of supporting infrastructure such as signage, shade, water, bicycle parking, end of trip facilities and bicycle assembly areas for airline passengers.

FUTURE VISION

As part of building a safe, relaible and efficient transport system Brisbane Airport supports sustainable forms of transport include walking and cycling.

The emergence of new automated forms of cycling including e-bikes and other rideables is seeing cyclists riding further, at higher speeds, over steeper gradients. These and other emergent innovations will be considered in designing and building paths for pedestrians and cyclists.

Further, Brisbane Airport will continue to stay abreast of best practice in pedestrian and cycling infrastructure design in order to ensure investments have a positive impact on the Brisbane Airport transport system and its users.

Ultimately, Brisbane Airport Corporation aspires to have a combined on and off-road cycling network, with high quality and accessible end of trip facilities and well connected pedestrian infrastructure.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS INCLUDE:

- Work with the Queensland Government to investigate the feasibility of electric bicycle or scooter shared schemes at Brisbane Airport.
- New cycle paths between Viola Place and Kingsford Smith Drive (BCC initiative) and Viola Place and Sugarmill Road.
- A pedestrian and on-road cycle network at the BNE Auto Mall.
- Investigation of future improvements in consultation with user groups including Bicycle Queensland and the Airport Bicycle User Group.

BRISBANE AIRPORT GROUND TRANSPORT OPERATIONS

As part of a commitment to providing a range of accessible and reliable ground transport choices, BAC supports the operations of a growing range of ground transport operators.

These operations are supported by extensive infrastructure across airport, including remote holding areas to enable passenger collection, driver rest and refreshment areas and generous dedicated kerbside areas close to the terminals to enable convenient passenger pick-up and drop-off.

FUTURE VISION

BAC has a proven history in responding promptly to changes in kerbside demand. In 2016, within a month of Uber being legalised in Queensland, a dedicated pick-up zone and waiting area had been created and exclusively earmarked for use by ride-share companies.

While the future of technology driven change is hard to reliably forecast, it is reasonable to assume that improved services may emerge in the next five years with a similarly disruptive effect on the transport industry, particularly in relation to the ride share economy.

BAC will continue to work with government and key stakeholders in monitoring and assessing changes to car usage, including the emergence of automated vehicles and the growth of the ride-share segment.

Irrespective of the nature and impact of future changes, BAC will continue to work with partners and stakeholders to monitor travel demand and performance.

The most recent performance assessments for ground transport operators concluded that infrastructure is performing adequately, even in the morning and afternoon peaks.

With a steady growth in passenger numbers forecast, the airport will continue to review performance in all areas and consider initiatives to maintain the current high quality of services.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS INCLUDE:

- Upgrade kerbside infrastructure at the Domestic and International Terminals.
- Improve the capacity of holding areas at the Central Parking Area.
- Monitor the performance of the ground transport operators' area at the International Terminal.

BRISBANE AIRPORT PARKING

Part of a $250 million investment over the last decade, Brisbane Airport offers a range of parking facilities at the Domestic and International Terminals and in the Central Parking Area, with in excess of 17,000 car parking spaces available.

NEW BUDGET PARKING SERVICE

Brisbane Airport's newest car park, Airpark, the subject of a $41 million investment was built to answer a demand for budget long-term parking. 2,550 parking bays are linked to a free shuttle bus service that takes passengers to the terminal doors.

DEMAND MANAGEMENT

Demand for parking at Brisbane Airport continues to increase.

During peak travel periods, the International P1 multi-level and outdoor car parks experience high demand, sometimes in excess of capacity. As a result, a Major Development Plan was developed, proposing to build a second Multi-level Car Park at the International Terminal, to be operational in 2020.

New facilities and products are continually being trialled and tested with the public. Airport parking utilisation is monitored to provide facilities that reflect factors including price and duration of stay.

It is likely, and following consultation with stakeholders, that the next five years may see continued infrastructure investment to continue to deliver high-quality services to passengers and visitors to the airport.

FUTURE VISION

Brisbane Airport Corporation, in partnership with key stakeholders, will continue to develop data collection and analytics techniques to inform planning and to maintain the highest levels of efficiency in the transport system.

The future provision of parking facilities will be developed in line with customer demand and will be cognisant of emerging trends and technologies, including the accommodation of electric and automated vehicles.

Complimentary electric vehicle charging points have already been installed in both terminal car parks and in the Multi-level Car Park at Skygate.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS INCLUDE:

- Development of International P2 Multi-Level Car Park.
- Development of new parking facilities around the Domestic Terminal.
- Development of additional bays at the Central Parking Area.

BRISBANE AIRPORT FREIGHT NETWORK

Brisbane Airport's road network supports the quick and efficient movement of freight within, to and from the airport.

Freight warehousing and distribution centres within Airport South, Export Park and Da Vinci neighbourhoods are primarily serviced by Lomandra Drive.

Heavy vehicles accessing these centres generally use the Gateway Motorway, either via Airport Drive, or via Sugarmill Road and Kingsford Smith Drive. The Gateway Motorway is the only Priority 1 Freight Route through Northern Brisbane.

The map on the facing page shows details of current freight transport access routes to, from and within Brisbane Airport.

FUTURE VISION

AUTONOMOUS TRUCKS AND ON DEMAND SERVICES

Brisbane Airport is aware of the disruption to overseas logistics markets emerging from the increased use of autonomous trucks and on-demand freight services. Brisbane Airport will continue to work with the Queensland Government and the National Heavy Vehicle Regulator to plan for the efficient and safe movement of freight at Brisbane Airport, noting the potential implications for future infrastructure.

USE OF DRONES

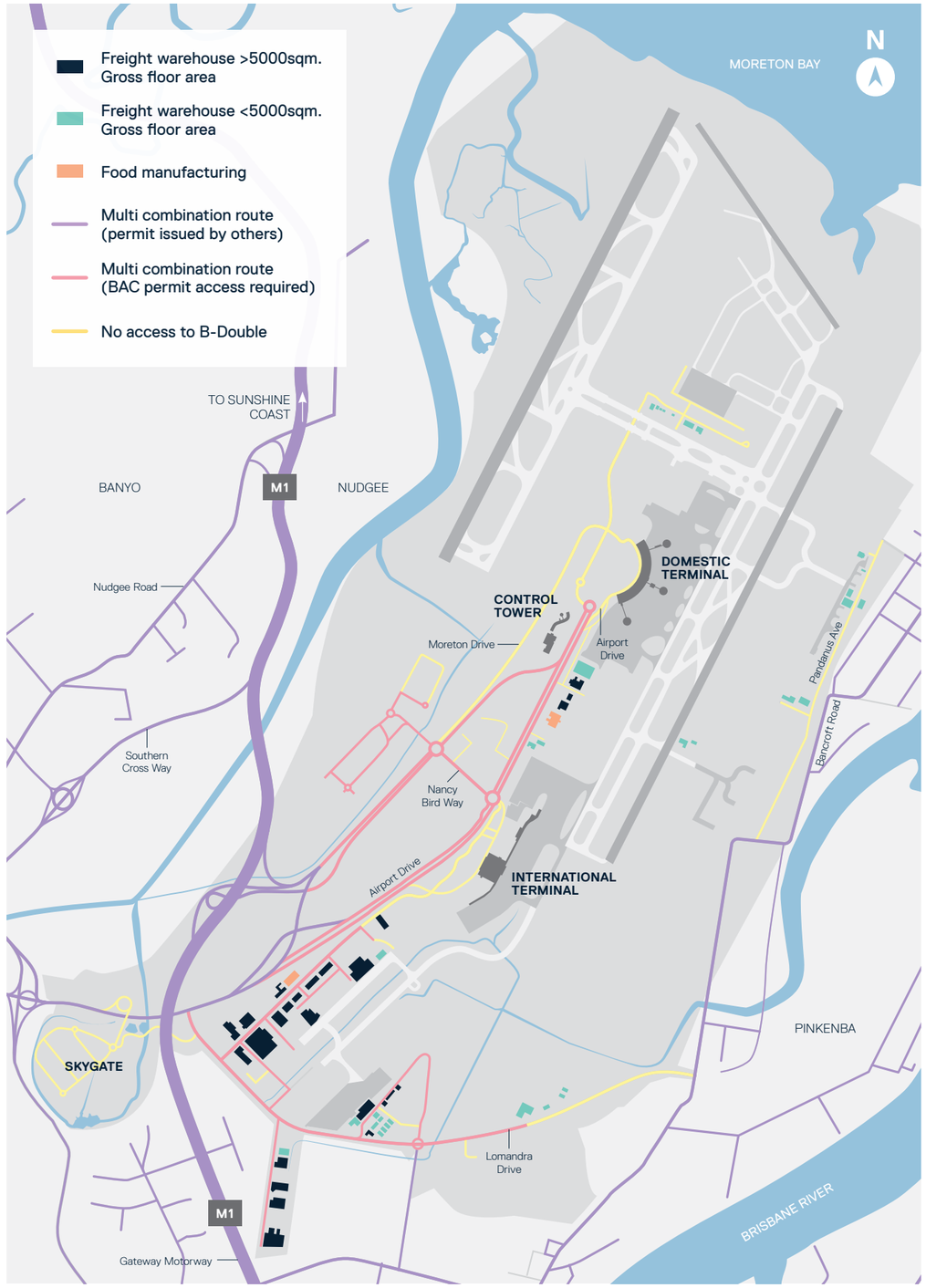
The increased use of drones in the distribution and logistics market presents challenges for Brisbane Airport where the safety of passengers and the protection of airspace for commercial aircraft is paramount.

Brisbane Airport is committed to working with regulators to seek long term solutions to permitting the use of drones.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS:

- Partner with Queensland Department of Transport and Main Roads and Brisbane City Council on strategic freight initiatives.
- Continue to review applications on pre-approved B double and consignment routes.
- Upgrade the Lomandra Drive and Main Myrtletown intersection to facilitate B-double movements.

GROUND TRANSPORT PLAN - FREIGHT



BRISBANE AIRPORT PUBLIC TRANSPORT NETWORK

Public transport options at Brisbane Airport include the Airtrain, with railway stations at both terminal's and a range of different bus services.

AIRTRAIN SERVICES

Airtrain connects to the Brisbane CBD and to the Gold Coast line via Eagle Junction. Weekday services commence at 5am, running every 15 minutes during peak morning and afternoon. times and every 30 minutes for the remainder of the day.

Airtrain is managed through an agreement between the Queensland Government and Airtrain extending to the year 2036. The agreement includes contract conditions that restrict the introduction of competitive public transport services.

Government and key industry stakeholders agree that the development of a new Airtrain station at Skygate would be likely to increase the attractiveness of catching public transport to commercial and industrial areas at the airport.

More information, including details of modelling work demonstrating the potential extra public transport catchment area of a new station can be found later in this chapter.

BUS AND TRANSFER SERVICES

Translink bus services also access the airport and its environs. On some weekdays, the 590 service caters for more than 650 passengers. While patronage on the 303 service is lower, it is the only service to cover the Australia Trade Coast area, a major location of employment.

On the airport, there are a number of complimentary transfer services servicing the terminals, Skygate and Airpark. The terminal transfer bus service commences at 4 am, the Skygate loop commences at 6.20am with services every 30 minutes and the Airpark transfer bus service runs on a 24 hour basis.

Eleven electric buses offer free transport between the terminals, Skygate and Airpark.

Brisbane Airport will continue to partner with government and industry stakeholders to improve public transport access and services. Research continues to show that any new public transport offerings need to have comparable speed, convenience and overall cost to be a viable alternative to private vehicle access.

FUTURE VISION

With technological innovation continuing to drive changes in transport options and passenger preferences, Brisbane Airport will maintain a flexible approach to the provision of services, designed to adapt and augment current operations as demand increases or new opportunities emerge.

As an early adopter of electric buses and currently managing the largest electric bus airport fleet in Australia, Brisbane Airport continues to review emerging developments in ground transport including automated mass transit.

Additionally, it remains a clear planning goal to provide safe, resilient and adaptable transport systems across the airport made up of frequent high-quality public transport services connecting the terminals, Skygate and the Central Parking Area.

Supporting Brisbane Airport Corporation's mass transit aspirations, the Queensland Government and Brisbane City Council have advanced plans to develop Cross River Rail and Brisbane Metro. These modern, high-frequency mass transit systems will further facilitate the efficient movement of people throughout the region, supporting economic and population growth.

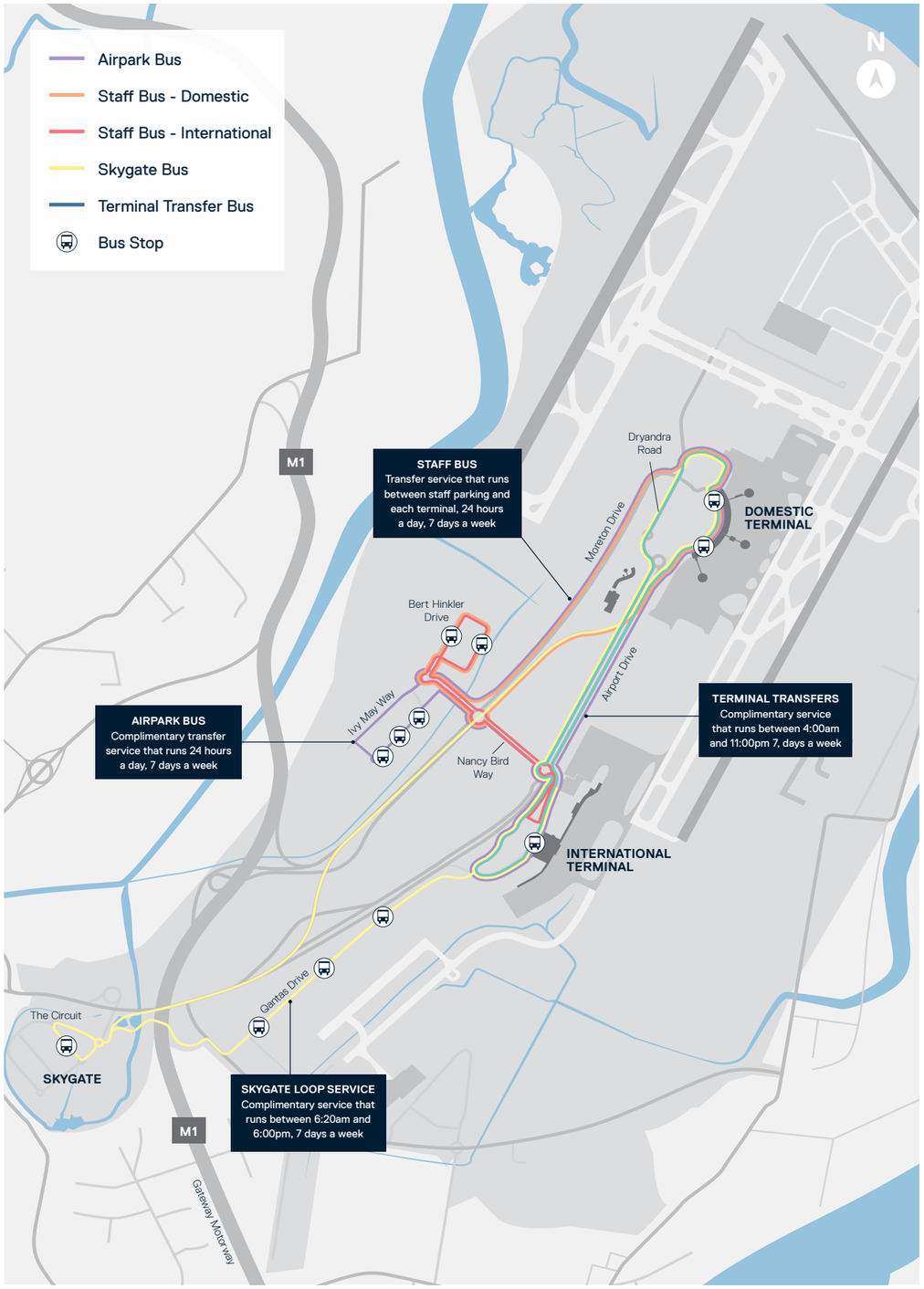
Brisbane Airport will continue to partner with key stakeholders, including the Queensland Government, Brisbane City Council and Airtrain to support innovation in public transport access to the airport and its precincts.

KEY INITIATIVES PROPOSED FOR THE NEXT FIVE YEARS INCLUDE:

- **Progress planning for a new rail station at Skygate, in partnership with the Queensland Government and Airtrain.**
- **Ongoing review of potential improvements in consultation with the Brisbane City Council and the Queensland Department of Transport and Main Roads (DTMR).**
- **Improve passenger awareness of the existing transport options available between Skygate and the Brisbane CBD (DTMR initiative).**

BRISBANE AIRPORT PUBLIC TRANSPORT NETWORK

ON AIRPORT BUS SERVICES PROVIDED BY BRISBANE AIRPORT



GROWING THE USE OF PUBLIC TRANSPORT

The liveability and economic prosperity of a modern city can be dramatically enhanced by a connected and sustainable transport network that has the flexibility to respond to the changing needs of the community.

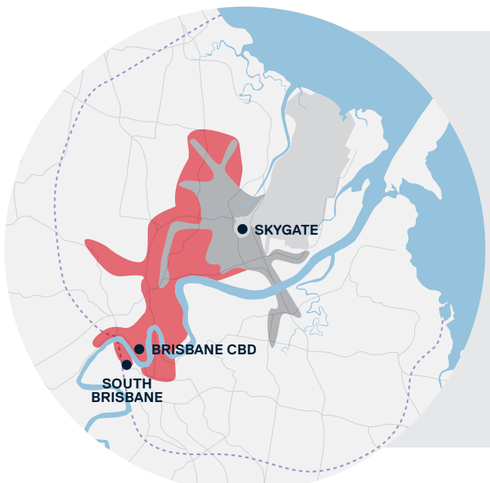
BAC is committed to providing facilties that reduce vehicle traffic and encourage the use of public transport. Recent years have seen the emergence of the notion of the “30 minute city”. Described in both the Australian Government’s Smart Cities Plan and the Queensland Government’s Shaping SEQ plan, The core idea of a ’30 minute city’ concept is that people have ready access to jobs within a 30-minute commute of where they live and access services.

City and town planners increasingly advocate building cities where residents can easily find jobs, schools, shopping and recreation facilities within 30 minutes of their homes.

BAC will work with partners to explore opportunities for advancing the ’30 minute city’ concept for Brisbane, by facilitating widespread access to the airport by public transport without inconvenient or lengthy waiting times. Consideration will also need to be given to ensuring that services are affordable and user friendly, with appropriate levels of capacity within the transport network,

A potential example of the type of initative that could drive this change is the addition of a new rail station at Skygate. Modelling indicates significant potential benefits.

The map below illustrates the ways in which a new station, combined with the development of the Brisbane Metro and Cross River Rail projects, could allow passengers to reach suburbs including Woolloongabba and South Brisbane and large parts of the Brisbane CBD within half and hour of leaving Skygate, removing their dependency on motor vehicles and avoiding peak hour traffic.



SKYGATE BY PUBLIC TRANSPORT

(Future Zone of 30 minutes travel time to/from Skygate)

Existing 30 Minute Catchment

Future 30 Minute Catchment
(includes combination of travel on Airtrain to new Skygate Station, and potential travel times through Brisbane CBD via Brisbane Metro and Cross River Rail)

By Car

A TRAIN STATION FOR SKYGATE

THE OPPORTUNITY

The addition of a new train station serving the Skygate precinct has the potential to be a key catalyst in the future growth of Brisbane Airport. The addition of a station with connections to the existing rail network has the potential, not only to offer new ways to access the popular retail precinct, but also to extend access to connected parts of the precinct including the childcare centre, offices, golf central and the Novotel hotel.

Already a popular shopping destination, the delivery of improved public transport access to a wider catchment area is likely to drive further investment in the Skygate precinct and lead to the creation of new jobs and greater prosperity for the people of Brisbane and South east Queensland.

The provision of viable transit options, beyond the use private vehicles, will enable Skygate Precinct to realise its full potential.

THE SKYGATE PRECINCT

The Skygate precinct is a recognisable multi-use destination serving a higher order economic function within the region. It is a 24/7, multi-use centre integrating a range of activity generating uses comprising commercial, retail, government, service, entertainment, leisure and community and cultural activities.

The density, scale and diversity of services located within the precinct provides opportunities for improved connectivity.

Feedback from potential Skygate tenants indicates that public transport connections can be a major consideration when selecting a location for their commercial or retail activities.

As a result, the Skygate precinct could be seen to be currently hindered in terms of its potential to contribute to economic activity and to provide additional employment opportunities in the region.

80%

of visitors and employees said a Skygate train station would be appealing

61%

of visitors and employees said they would likely to use the proposed Skygate train service.

** Colmar Brunton 2016*

A TRAIN STATION FOR SKYGATE

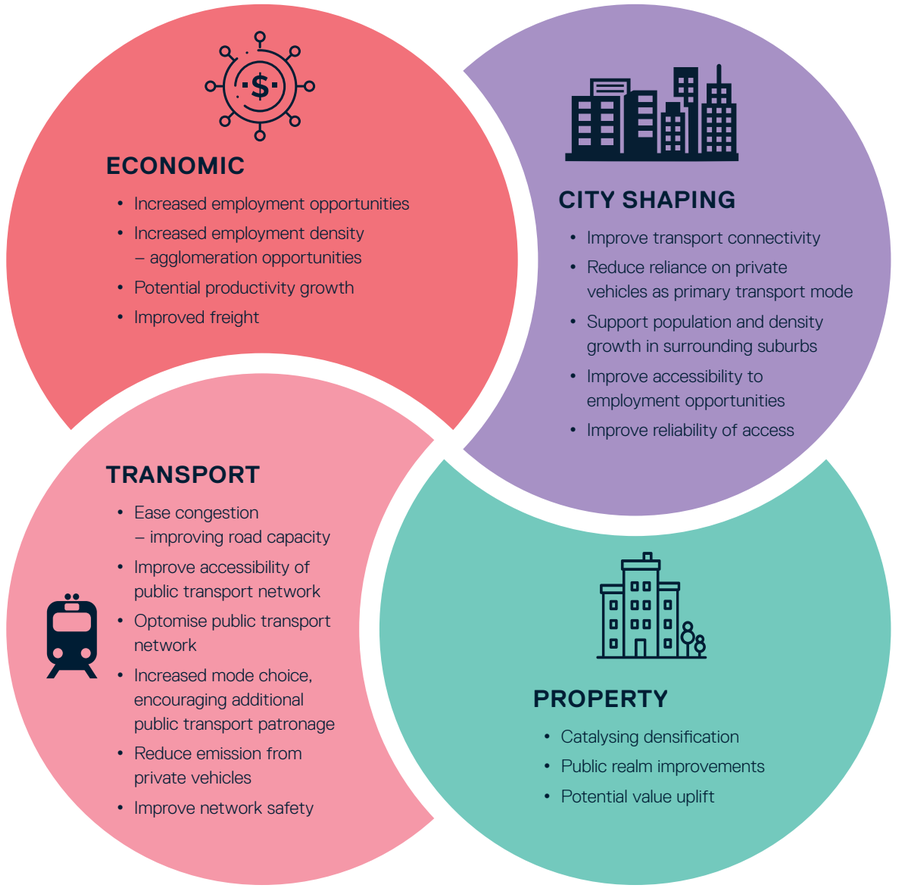
Public transport plays a vital role in facilitating the sustainable growth of cities, and has the potential to shape urban land use patterns. Accessibility to transport links is a contributing factor influencing the location decisions of both firms and individuals.

Similarly, public transport underpins the efficient and timely movement of employees to and from their place of work, and provides accessibility to employment opportunities for many disadvantaged people who do not have or cannot use a car.

Survey results indicate of those employees and visitors currently travelling to the Skygate Precinct by bus, 27% do not have access to a car or are not driving. (source: Colmar Brunton research: 2016). An improvement in the choice of transport options available to the community, acts as an enabler for additional labour force participation amongst the most vulnerable members of society, providing accessibility to employment opportunities that they otherwise would not have access to. This has the potential to improve employment outcomes amongst disadvantaged cohorts and contribute to improvements in broader social inclusion and cohesion.

The enhancement to SEQ's existing public transport network offered by the new train station has the potential to support future growth in the region, and improve accessibility to the employment opportunities Skygate can offer. Building a new station not only provides this key transport link, but offers an efficient and sustainable transport option with broader benefits to society and the economy.

BENEFITS OF A TRAIN STATION AT SKYGATE



BAC sees great potential in the establishment of a new train station at Skygate, adding to and complementing existing services, providing a wider choice of travel options for visitors, shoppers, passengers and people who work in or nearby the precinct to leave their cars at home and enjoy the benefits of the connected rail networks to reach suburbs in Brisbane and further afield.

To achieve the best outcome for customers and for the region of South East Queensland, BAC is actively seeking support from the Queensland Government and Airtrain to progress to the next stage of investigation for delivery.

The project to build a new train station at Skygate presents an opportunity for true partnership in delivery, with each of the three parties able to separately meet their key priorities.

Together the 'sum of the parts" is a unique and landmark opportunity for creating a significant and bold investment in infrastructure likely to deliver value to all for decades to come.

THE EVOLUTION OF MASS TRANSIT AT BRISBANE AIRPORT

OVERVIEW

In the 2014 Master Plan, BAC recognised that the increasing demand for flexible ground transport choices would require development of a new range of efficient and accessible future solutions.

The addition of an electric bus fleet and expanded inter-terminal transfer services, plus incremental changes in the services offered to ride share users in the succeeding years demonstrates BAC's intention to retain the flexibility to add services as demand continues to grow.

A key challenge faced in the future will be managing growing the demands on access to and between the precincts. As part of the creation of the 2014 Master Plan, the airport reviewed a number of local and international people mover systems including heavy gauge rail, light rail, monorail, guided and pneumatic tyre track options, this resulted in the identification of a future Mass Transit System (MTS) corridor.

As BAC investigates potential mass transit options that represent the next evolution after electric buses, a key consideration in choosing between options is carrying capacity.

Of the options considered, guided and pneumatic tyre track systems were judged to be the most appropriate choice beyond buses based on their constructibility and passenger carrying capacity.

CHANGES SINCE 2014

The potential MTS outlined in the 2014 Master Plan considered options for transporting people between terminals and major parking facilities and considered the following criteria:

- The ability to carry a large number of passengers,
- The level of automation
- Passenger comfort on the journey
- Passenger comfort at stations
- Journey times

Additionally, it recognised the option where the MTS could be expanded to connect the Airport Central neighbourhood to other parts of the airport, catering for the demands for transportation from, terminals and remote parking facilities to the retail, entertainment and commercial centres.

The 2020 Master Plan has further tested and benchmarked the position taken in the 2014 plan to consider the implications of changes in mode share use, customer needs, airport development and technology driven changes, plus the emergence of new modes of transport including rideshare.

In 2018, Brisbane Airport undertook a benchmarking study of MTS solutions used by a range of global airports equivalent in terms of passenger profile and growth, split terminal operations, and spatial considerations to Brisbane Airport.

Based on that case study assessment a summary of typical airport MTS commitment rationale and results of MTS implementation can be seen in the table below.

TYPICAL AIRPORT MTS COMMITMENT RATIONALE	TYPICAL RESULTS OF MTS IMPLEMENTATION
Vital part of terminal complex concept to provide reasonable walking distances and travel times	Most MTS successfully provided intended services
Addition of new terminal(s) with significant inter-terminal volumes, such as international/domestic transfers	Reduction in trip times and walking distances
Expansion of key airlines into multiple terminals needing quick, secure on-line transfers	Addressed passenger separation issues
Addition of remote gate concourses with significant origin and destination and transfer volumes	Offered continuous secure environment among terminals for both origin and destination and transfer passengers and staff
Addition or expansion of remote landside facilities with high volumes to/from terminal(s)	Extended useful land use beyond immediate terminal areas
Need to reduce kerbside congestion to buses	Enabled reduction of road and kerb traffic near terminals

MASS TRANSIT MODELS

The 2018 benchmarking study compared four systems:

- Typical rubber tyred automatic people mover. This system had the highest passenger capacity.
- Cable drawn shuttle. This system was not considered a viable solution at Brisbane Airport, as it would not provide adequate capacity for the alignment with two stations at the Domestic Terminal in future.
- Personal rapid transport. This system could be appropriate for first and last mile movements, supporting a higher capacity model.
- Bus systems. This is the current MTS for Brisbane Airport, which is supported by the train line.

CASE STUDY: CALGARY AIRPORT'S YYC LINK PASSENGER SHUTTLE

Calgary Airport's YYC LINK Passenger Shuttle is an example of personal rapid transport. The YYC LINK Passenger Shuttle connects four stations on a dedicated route, each seating 10 passengers.

Personal rapid transport features small automated vehicles operating on a network of specifically built guideways. The range of potential vehicles using the system varies from larger vehicles for large groups to smaller, more individual systems.

Brisbane Airport Corporation will continue to keep abreast of personal rapid transport technological advancements and consider application on airport where feasible.

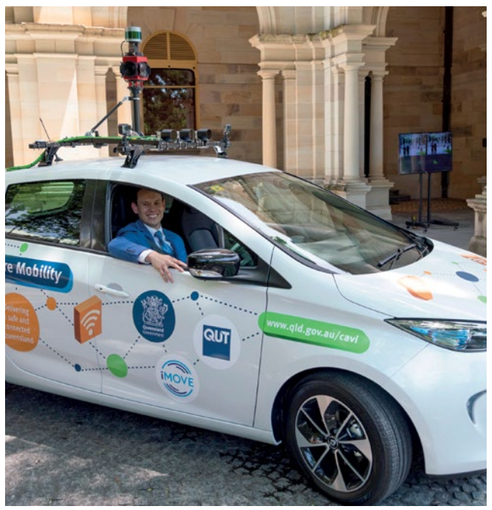
CASE STUDY: BRISBANE METRO

Brisbane City Council's Brisbane Metro will deliver a 'turn-up-and-go' MTS with Metro services every three minutes in peak periods. As part of Brisbane Metro, a new fleet of 60 bi-articulated Metro vehicles will be introduced, each able to carry up to 150 customers, boosting the capacity of the busway by up to 22,000 people per hour.

Brisbane Metro will evolve the bus network from a largely direct service model to a hybrid model, meaning Metro services will operate as the primary service along the existing busway and will be supported by numerous feeder routes. Following the introduction of Brisbane Metro, some high-frequency bus routes will continue to operate on the busway, providing a network of reliable city-to-suburbs services for residents across Brisbane. Other bus services will provide regular, frequent connections from the suburbs to high-frequency Metro services at busway stations.

Over time, as technology advances, similar bi-articulated vehicles could become autonomous and combined with a signalling system that would provide a flexible, efficient and reliable transportation solution. The model would be suited to a wide variety of applications at Brisbane Airport.

Image courtesy of Brisbane City Council. Artist's impression only.



CASE STUDY: CONNECTED AND AUTOMATED VEHICLES

The Queensland Government, in collaboration with iMOVE Cooperative Research Centre and Queensland University of Technology, are currently undertaking connected and automated vehicle research to help prepare for the arrival of new vehicle technologies with safety, mobility and environmental benefits on Queensland roads. A current trial is ZOE1, which although not an automated vehicle, is fitted with a range of sensors and radars likely to be found on automated vehicles. The vehicle trial will look at how the vehicles adapt to Australian road conditions in four main areas – lane markings, traffic lights, street signage, and overcoming the limitations of GPS systems in built-up areas and tunnel for vehicle positioning.

Connected and automated vehicles are expected to form a large part of future urban ground transport, including at airports. IATA has identified more than 40 potential uses for connected and automated vehicles at airports including aircraft pushback tugs, passenger loading bridges and baggage vehicles.

Brisbane Airport will work with the Queensland Government and industry on connected and autonomous vehicle opportunities at Brisbane Airport.

Image courtesy of the Queensland Department of Transport and Main Roads

POTENTIAL FUTURE MASS TRANSIT CONCEPT AT BRISBANE AIRPORT

A potential ultimate airport precinct development option could be a transport system comprising of:

- An airside MTS connecting the Terminals
- A new rail station at Skygate to link to the existing rail line connecting the terminals to the Brisbane CBD
- A feeder bus shuttle service to ancillary airport precinct locations to provide onward connectivity to car parks and car rental centres, the Auto Mall and Skygate.

In this option, the Brisbane Airport Rail Link is utilised to provide an efficient landside transfer between the key origins and destinations within the airport precinct (both airport terminals, the Auto Mall development, and the Skygate precinct). This also provides a direct, seamless onward public transport connection to the city of Brisbane and beyond.

An airside MTS provides the necessary connectivity for passengers interchanging between international and domestic flights and potential multiple stops throughout the new terminal developments. Initially, this may be provided by way of a redeployed landside bus fleet to the new airside route. IATA recommends that the use of connected and automated vehicle systems, such as light rail, should be considered when more than 3,000 passengers per hour need to be transported across a distance of more than 0.75km.

BAC has preserved a MTS corridor to enable connection between all terminals in future once this threshold has been reached. The ultimate layout plan will connect the existing international and domestic terminals to the future northern and western terminals, with stations for each terminal to assist with the efficient movement of passengers both airside and landside between each location.

Further, the ultimate layout also includes a landside connection between the terminals and the Central Parking Area, which will enable the efficient movement of passengers and staff whilst distributing the demand on ground transport facilities.

When an airside MTS is implemented the airside bus could be redeployed to focus on providing more reliable and potentially on-demand services linking airport precinct hubs such as remote parking the passenger and General Aviation terminals, Auto Mall development and the Skygate precinct).

OPERATIONAL CHARACTERISTICS AT BRISBANE AIRPORT

Typically a connected and automated vehicle based MTS uses exclusive guide ways, whether elevated, at-grade, or in cuttings and tunnels, so the capacities are not affected by the alignment. However, a connected and automated vehicle based MTS may also operate in either a dedicated or undedicated road lane.

Systems that mix with surface traffic in an undedicated environment can have significant capacity impacts due to delays from conflicting road and pedestrian traffic, if not properly managed.

At Brisbane Airport, most of the length of an alignment between the terminals would be at grade along the line between airside and landside, with appropriate fencing to ensure a safe, exclusive right-of-way. It could be elevated as needed, at stations and airside access points, with vertical transitions back to grade where possible.

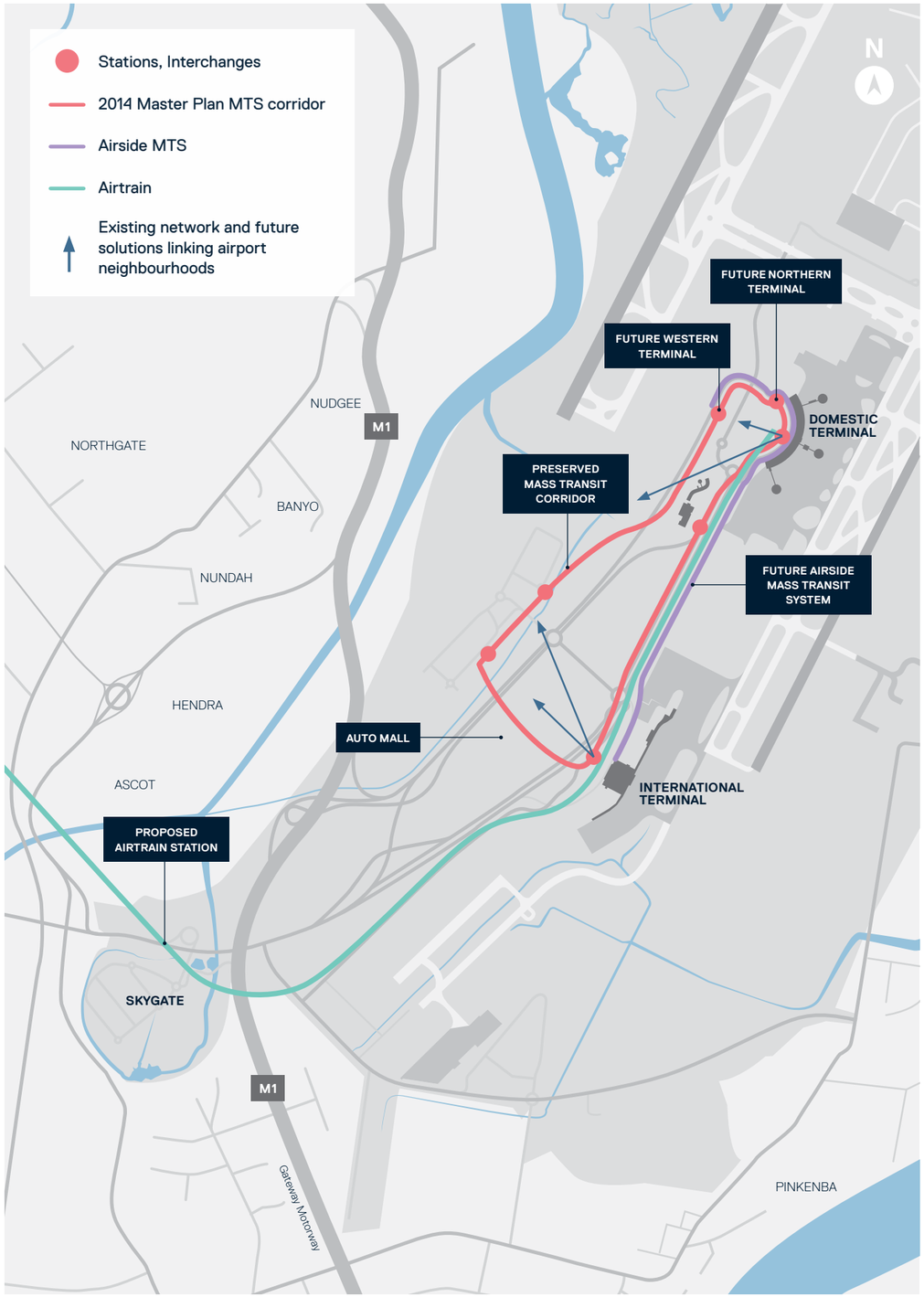
IN SUMMARY

In order to provide flexibility for future development, BAC will preserve an MTS corridor connecting the passenger terminals and key landside precinct hubs.

The MTS corridor identified in the 2014 Master plan will be retained to provide optionality in the future however Brisbane Airport recognises that a new rail station at Skygate could also facilitate movement of passengers and airport staff/employees between the Terminals, Skygate, and the Brisbane CBD, allowing feeder shuttle buses at the rail stations that can then provide access to ancillary locations such as car parks, car rental centres, Skygate, and Auto Mall.

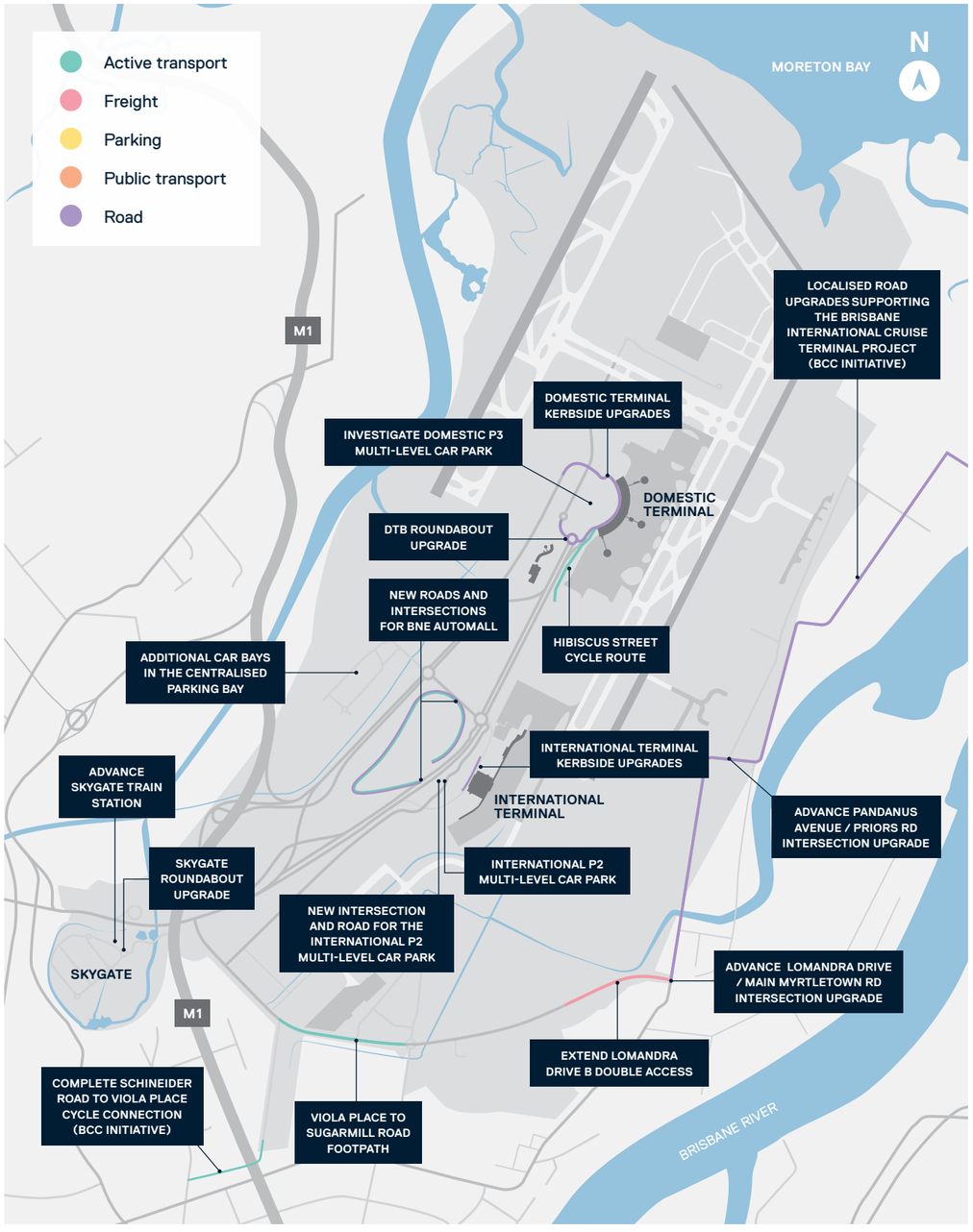
Connected and automated vehicle technology for the MTS and/or shuttle buses can potentially provide further efficiencies and enhance the passenger experience.

FUTURE MASS TRANSIT OPPORTUNITIES



BRISBANE AIRPORT GROUND TRANSPORT PLAN INITIATIVES 2020–2025

Over the next five years, Brisbane Airport Corporation will expand and enhance the network to support terminal activities and new developments, such as BNE Auto Mall and the International P2 Multi-Level Car Park. Providing a network that meets the needs of all stakeholders is paramount to the initiatives identified in the plan below.



COLLABORATIVE PARTNERSHIPS

Strong collaborative partnership arrangements with the aviation industry and government at all levels are essential in the long term provision of effective, safe and reliable services.

BAC seeks to be a major catalyst in the formation of strong collaborative partnerships to develop a co-ordinated and pragmatic approach to ground transport planning,on and off the airport. In line with commitments in the 2014 Ground Transport Plan, BAC has chaired the Brisbane Airport Ground Transport Working Group, containing representatives from Brisbane City Council, the Queensland Department of Transport and Main Roads and Translink since 2015.

The Working Group has shared ideas, engaged on collaborative projects and advanced a series of key initiatives from the previous Ground Transport Plan. This ongoing engagement has also informed the commentary and commitments in this plan.

Going forward, BAC will continue to engage with government stakeholders through regular working group meetings. These forums will be used as a platform to explore opportunities for data sharing and future investigations of potential projects such as the new rail station for Skygate, potential new bus routes and interchange points and the next iteration of BAC's new passenger transport initiatives.

BAC also recognises the role of interested parties including Airtrain, Queensland Rail, Transurban and the Bicycle User Group on-airport and will continue to liaise with these groups.

AGILITY FOR FUTURE GROWTH

Technology driven changes in the way people live, work and travel are disrupting traditional planning practices across all industries and business.

In the transport sector, the emergence of new services including ride sharing and continued advances in the development of autonomous vehicles, combined with the increased use of mobile devices by passengers to access real time information are all factors influencing decisions on future ground transport service provision.

BAC has a strong track record of being agile in decision making and planning, quickly adapting to changes in demand and the introduction of new services.

It is likely that over the period of this Master Plan, technology or innovation driven events or circumstances may require BAC to consider unforeseen additional investments in services and infrastructure to support the efficient operation of the ground transport network.

Where those investments have not been specifically prescribed in the 2020 Ground Transport Plan, they will be guided by the same overarching goals outlined in this plan, to ensure that services are co-ordinated, resilient and created with the needs of the customer in mind.