Melbourne Airport Rail Link

Sunshine Route

Strategic Appraisal

TRANSPORT FOR VICTORIA

Contents

Purpose

This strategic assessment supports the public announcement of the Melbourne Airport Rail Link –Sunshine Route (MARL).

It sets out the background for the State Government's selection of the Sunshine route and sets out the next steps for the detailed planning, development and implementation of the MARL project.

Introduction

Melbourne Airport is a key contributor to Victoria's economic growth. It is essential to the state's reputation for liveability.

Melbourne Airport connects Victorians to global business opportunities and brings the world to our state. This allows businesses and individuals to capitalise on growing domestic and international travel and trade markets.

In 2016-17, Melbourne Airport handled more than 35 million passenger movements - by 2038, this number will almost double to more than 67 million. Melbourne's population is growing and is expected to be home to almost 8 million people by 2051, with the overall population of Victoria rising to more than 10 million.

The Victorian Government is planning for this growth investing in new and existing public transport infrastructure to maintain Victoria's liveability and economic prosperity.

The Victorian Government has given the green light to progress the detailed business case for the MARL, which will provide a heavy rail connection to Melbourne Airport.

Following the latest assessment and comparative analysis of options, the Victorian Government has selected the Sunshine Route as its preferred route for the MARL for further development through the full business case process. This follows consideration of heavy rail route options which is consistent with the recommendation of the 2012 Public Transport Victoria study.

After careful consideration of the options the Government has selected the Sunshine Route having regard to a number of factors including:

- Superior connections to more areas of Melbourne through its integration with the Metro Tunnel.
- Superior connections to regional Victoria through an upgraded Sunshine interchange.
- Earlier deliverability at a lower cost.

The selection of the Sunshine Route enables the following next steps:

- Progress the development of the detailed Business Case for the Sunshine Route
- Commence stakeholder engagement to help inform the Business Case
- Commence detailed planning and development including investigation of economic, social and environmental impacts
- Determine the required statutory approval processes to enable the delivery of the MARL.

It is expected the full Business Case will be completed in 2019/20. Project delivery is targeted to commence in 2022, subject to the required statutory approvals.

The Case for a Melbourne Airport Rail Link

Melbourne Airport – Victoria's Gateway

Victoria is recognised for its prosperity and liveability. As Victoria's gateway to the world, Melbourne Airport is a key component of this success.

Melbourne Airport provides access to interstate and international markets. It connects our businesses and institutions to knowledge, education and innovation. It also brings people to Victoria, allowing the State to capitalise on growing domestic and international travel markets.

Melbourne Airport is vital to Victoria's ongoing prosperity, both for Melbourne and the regions.

It is Australia's second busiest airport in terms of passenger movements and freight volume.

In 2016-17, Melbourne Airport:

- Handled more than 35 million passenger movements
- 460,000 tonnes of freight
- Directly contributed some 3 per cent to the Victorian economy.

By 2038, airport passenger movements are expected to reach almost 70 million annually, which exceeds the numbers currently accommodated by Singapore Changi and rivals London Heathrow activity today.

Passenger forecast

35.2
million in 2016/17

67+
million in 2038

	Major International Airports						
	Sydney Kingford Smith Airport	New York JFK Airport	Singapore Changi Airport	Melbourne	Paris Charles De Gaulle Airport	Hong Kong International Airport	London Heathrow Airport
Approx current annual air passengers	43 million	59 million	62 million	35 million (68 million in 2038)	69 million	73 million	78 million
Transport Infrastructure	1 freeway 1 rail line	2 freeways 2 rail lines	1 freeway 1 rail line	1 freeway	2 freeways 2 rail lines	1 freeway 1 rail line	2 freeways 3 rail lines

The operation of Melbourne Airport directly supports 20,700 full time jobs, with an additional 20,900 jobs in business parks and employment centres surrounding the airport. Current forecasts suggest that the airport will become the largest employment hub in the western region, with an anticipated 23 per cent increase to over 51,000 employees by 2031.

Melbourne Airport's role as both a gateway and employment cluster underlines the importance of ensuring the airport maintains a high level of accessibility.

Melbourne Airport is well placed to capitalise on the growing labour markets of Melbourne's west. It is located approximately 22 kilometres north-west of Melbourne's CBD and is well connected to Melbourne's freeway and arterial road network.

Although the airport is geographically well positioned, it is heavily reliant on an arterial road network that is susceptible to fluctuating demand. As access is entirely road-based with limited public transport options, the employee catchment within a 45-minute commute will increase only moderately between 2016 and 2031.

The State Government is currently planning for this growth with significant investments in rail and road upgrades. This infrastructure program includes the CityLink Tulla Widening project and M80 Ring Road upgrade to provide capacity improvements and arrest declines in airport travel time reliability. The North East Link project will also connect Melbourne's freeway network between an upgraded Eastern Freeway from Springvale Road to the M80 Ring Road, increasing access to the airport from Melbourne's east. Other significant investments, such as the Metro Tunnel Project and Regional Rail Revival, are increasing capacity and connectivity on Victoria's rail network.

The Melbourne Airport is operated by Australia Pacific Airports Corporation on land owned by the Australian Government. Responsibility for planning of the state's transport network lies with the Victorian Government. As such, decisions regarding the development of long-term access strategies for Melbourne Airport are a shared responsibility.

Within the airport boundary, there are plans, developed by the airport, to accommodate continued growth in passenger numbers and freight volumes through investment in an additional runway, new terminal and upgraded road infrastructure.

Overall, to support such significant population and airport patronage growth, additional improvements to existing assets, further investment in public transport services and new infrastructure will be required.

Victoria's Growth

Victoria is amidst a sustained period of population growth, well above the Australian average.

In 2016, Victoria became home to around 400 new residents each day, double the number of the previous decade.

In the next 20 years, the population of Victoria is forecast to grow by 2.5 million people, reaching over 8.5 million people by 2038 and 10 million by 2051.

Based on historical projections, metropolitan Melbourne will grow from 4.6 million to almost 8 million people over this period and regional Victoria will be home to more than 2 million people.

It is forecast that 40 per cent of all regional population growth to 2031 will be in Geelong, Ballarat or Bendigo, which are among Australia's fastest growing regional cities.

Landside Growth

To accommodate the increasing population, growth areas in Melbourne's outer metropolitan region have been established. Over time the urban growth boundary has been expanded and now includes Pakenham, Werribee, Melton, Sunbury and Wallan.

In the past two decades new suburbs have been developed to now represent areas of significant population. Irrespective of the specific distribution of this growth, it is expected much will be accommodated in the areas to the west and north of the airport - in metropolitan growth areas or regional cities.

Through increasing investment in the regional transport networks and the policy decisions of State and Federal governments, growth could increasingly shift toward major regional centres surrounding Melbourne such as Geelong, Ballarat and Bendigo.

It is forecast that 40 per cent of all regional population growth to 2031 will be in these regional cities. Population change in these cities between 2011 and 2031 is among the highest in local government areas outside of metropolitan Melbourne.

Victoria's regional cities are increasingly offering jobs, education, health and other services. However, there is still a heavy reliance on Melbourne, with many regional residents preferring to commute to higher paid employment opportunities in the central city. This creates increasing competition for capacity on the same transport network currently servicing Melbourne Airport.

Airside Growth

The State's growing population, well-performing economy and destination status among international and domestic visitors are major factors behind the burgeoning passenger numbers and freight volumes moving through Melbourne Airport.

Between 2010 and 2014, international visitors increased by 8.1 per cent per annum, significantly above the Australian average of 6.5 per cent. Nearly 238,000 flights arrived at or departed from Melbourne Airport in 2016/17, an average of 650 flights each day accommodating 24.7 million domestic passengers and 9.2 million international passengers throughout the year.

The airport's capacity to sustain growth will benefit from its curfew free, 24-hours a day, seven days a week operation. This attracts over 38 airlines who operate flights to domestic and international destinations out of Melbourne.

Planned upgrades, such as a third and fourth runway as well as new infield terminals, leave the airport well placed to cater for Victoria's airside demand over the long-term.

The Challenges of Growth

Increasing demand to access the airport and significant population growth in the north and west will place increasing pressure on Victoria's transport network.

The combination of air passenger trips, employee trips and commercial vehicle trips to Melbourne Airport generate a significant level of demand.

On a typical weekday in 2016, this equated to 71,200 air passenger trips, 31,800 employee trips and 15,300 commercial trips, which equates to 118,300 daily trips to and from the airport, but this can increase to as many as 127,000 trips on a busy day.

High demand on roads and public transport can make trips longer, unreliable and uncomfortable. To help address this, major road and rail projects currently in planning or delivery will allow for greater frequency and reach of transit options, as well as increasing freight capacity. Road and rail projects included in the Victorian Infrastructure Plan aim to progressively meet the growing pressures on Victoria's transport network and unlock some of the biggest bottlenecks.

To put the growing pressures on the transport network into perspective, Infrastructure Victoria forecasts that by 2046 more than half of all car trips in the morning peak will occur in congested conditions, compared with 30 per cent today.

At this time Melbourne's western and northern suburbs will become more congested than inner Melbourne is today. Increasing congestion will impact Victoria's productivity and liveability, with congestion expected to cost every Melbourne resident $1,700 a year by 2030.

Across the network, the number of people travelling into the central city in the morning peak period (between 7am and 9am) is expected to grow by 65 per cent between 2015 and 2031. Over the past decade, the level of morning peak train loads rose significantly when compared to the vehicle kilometres travelled in inner Melbourne.

This shift has meant a sharp rise in demand on lines serving growth corridors in Melbourne's north, west and south east. This significant level of growth demonstrates the potential for rapid shifts from private vehicle to rail travel and the need for the rail network to increase its capacity to accommodate such shifts.


Platform 1
Customer Service
Irving Street

A Better Transport Service to Melbourne Airport – Benefits to Victoria

Increasing the capacity and reliability of the transport network servicing Melbourne Airport is expected to support the long-term prosperity of Victoria.

Enhanced travel experience to Melbourne Airport from across Victoria

Increasing the number of ways the airport can be reached and improving the certainty of travel time to the airport will enhance the journey experience for all travellers.

Through improvements in transport network connectivity the journey to the airport becomes more direct, making it easier for residents and businesses to reach the airport more efficiently and making Victoria more attractive to visitors.

An enhanced travel experience will improve the perceived convenience of airport access for travellers starting their journey in Melbourne or in regional centres.

Making public transport attractive to airport travellers will increase patronage of the connection.

More efficient ways of accessing the airport will also have added benefits of improving the overall performance of the transport network as the number of people making pick-up or drop-off trips to the airport decreases. Reducing demand on this infrastructure will benefit all modes accessing the airport.

Improved competitiveness of Victorian businesses

Lowering the cost of doing business is critical to Victoria's competitiveness.

By improving access and travel time reliability, input costs are reduced and Victorian businesses can be more competitive in interstate and international markets. Increasing the coverage of the transport network servicing Melbourne Airport will also mean more businesses from more locations can get access to markets outside of the State.

By shifting more in-and-outbound airport traffic to alternative routes and modes, the broader productivity and competitiveness of the State will also be improved.

Plan Melbourne sets out ambitions for Melbourne to position itself as "one of the world's foremost knowledge economies, powering the next generation of productivity and economic growth".

The State's 11 priority industries and sectors are expected to add more than $70 billion in additional economic output and more than 400,000 additional jobs by 2025.

However, many of these sectors are outward focused and deeply reliant upon integration with national and international markets. Efficient and reliable access to Melbourne Airport is key to their performance. The visitor economy will also benefit from more cost-effective and efficient access to and from the airport.

Economic development of Melbourne's inner north-west

By improving connectivity to Melbourne Airport, surrounding suburbs can also gain significant benefit.

Greater public transport network coverage and capability will promote economic development of Melbourne's inner north-west by attracting commercial and residential development, leading to the greater availability of jobs locally and stimulating economic activity in the area.

The north-west is also an important catchment for airport employees. Employees who currently drive to work have limited alternative transport options that meet their access needs. And as new jobs associated with the growth of the airport are generated, they will need to be in reach of prospective employees.

Overall through increasing the level of development within existing suburbs and leveraging the capacity of new and existing infrastructure, Victoria can accommodate population growth more efficiently.

Planning for a Melbourne Airport Rail Link

History of investigations into rail links to Melbourne Airport

Various planning studies undertaken over previous decades have considered a Melbourne Airport Rail Link. These studies have identified and assessed potential corridors for the rail link.

The earliest investigations into an airport rail link were conducted prior to Melbourne Airport's opening. Construction of Melbourne Airport commenced in September 1964, with a bill introduced in Parliament in 1965 for the acquisition of land for a proposed rail link between Glenroy on the Broadmeadows (now Craigieburn) line and Tullamarine. Plans were never advanced.

A feasibility study for a monorail system for the central city to airport route was authorised in 1971. The 'Aerotrain', which included a possible extension to Sunbury was abandoned in 1975.

In the 1980s several airport access studies were completed, including another attempt to reserve land for a rail link from the Broadmeadows line to the airport. This rail link connecting the airport to the metropolitan network was to be delivered if it was necessitated by demand.

In 1991, a rapid transit link to the airport was flagged by the Victorian Government as one of five key projects to be developed in partnership with the private sector. Expressions of interest were received and public funds allocated for the assessment of privately funded projects, although development of the rapid transit link was never progressed.

Previous Planning Studies

The past two decades have seen the ongoing assessment of corridor and alignment options through two major studies - the Melbourne Airport Transit Link Study (2002) and the Melbourne Airport Rail Link Study (2012).

Responding to the high levels of projected growth in terms of airport patronage and population in the surrounding suburbs, Public Transport Victoria (PTV) in 2012 re-considered the investigations previously completed for an airport rail link. This conclusion is supported by Infrastructure Victoria's assessment of long-term airport access options.

The PTV study short-listed the Sunshine (Albion East) route as the base case, which was also the route adopted as the preferred route for the Airport Rail Link in 2002. At this time land was reserved between the Jacana rail corridor and the Melbourne Airport boundary for construction of this route in the future.

The PTV study considered three alternative routes to the Sunshine base case – the Maribyrnong Route, the Flemington Route and the Craigieburn Route.

The PTV study found that the Sunshine Route (Albion East) remained the best route for the development of an airport rail link, as originally determined in 2002.

The purpose of the PTV study was to:

- Identify all heavy rail options for a rail link between the Melbourne Airport and the central city
- Compare these options against agreed functional requirements and the Albion East base case
- Identify alternative route options
- Undertake a detailed assessment to determine if any of the alternative options were potentially better than the base case.

The study also considered whether the Sunshine Route remained the best option in light of upgrades to Victoria's rail system, such as the Regional Rail Link and the Metro Tunnel Project.

The work reviewed previous studies and related projects and followed national transport management guidelines to identify and assess all heavy rail options for a rail link to Melbourne Airport.

The key evaluation criteria used to assess route options were:

- Transport system benefits
- Cost and implementation
- Environmental and social impact.

The diagram below is an extract from the PTV study outlining its route options development and assessment process.

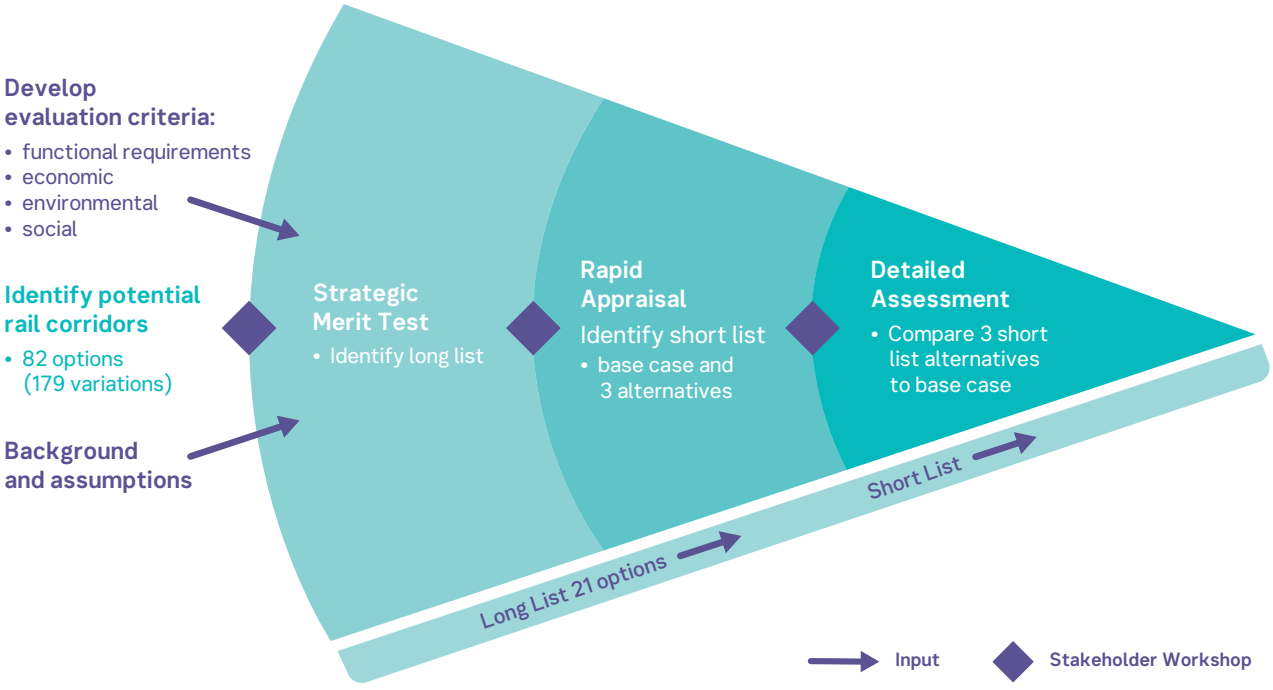


Figure 1: PTV study outlining route options development and assessment process

What has changed since 2012?

The 2012 assessment and recommended delivery time-frame was largely based on operational and technical assessments of the rail corridor and the anticipated demand levels generated by airport passengers.

However, substantial growth in outer metropolitan areas north and west of the airport could have a significant impact on the performance of transport networks servicing the airport and are important considerations in the optimal timing of the project.

The 2012 assessment discussed integrated land use opportunities but this did not play a material role in the assessment of alternative routes. The potential accessibility improvements that an airport link could offer for the inner north-west could create significant additional economic benefits that could improve the feasibility of the project.

Projections of airport passenger growth have remained relatively consistent. The 2012 study was based on an assumption that Melbourne Airport passenger numbers would rise to almost 70 million by 2040, consistent with current expectations.

However, Victoria's population and the number of passengers being moved by the State's rail system are higher today than in 2012.

Rail passenger demand from outer metropolitan growth areas has exceeded expectations, meaning more services will be required in peak periods.

Increasing patronage on the Craigieburn line due to growth in the city's north is also increasing demand for new services. This may limit the number of pathways available for airport services on this line, at least until other interdependent projects are delivered that would increase the corridor's capacity.

Strategic Appraisal

Strategic Response and Options

The strategic response addresses the potential means by which the problems identified can be addressed and the potential benefits realised. The strategic response options represent alternative avenues of investment that government may pursue.

Each option is made up of a range of interventions that specifically address one or more of the identified problems.

Business as Usual / Do Nothing	1. Do Nothing
Manage Demand	2. Limit Melbourne Airport growth
	3. Alternative international airport
Improve Productivity	4. Improve performance of existing public and active transport services
	5. Facilitate urban and economic development in the north-west
	6. Optimise use of landside airport access capacity
	7. Optimise use of road network
Increase Supply	8. Enhance public transport accessibility in the north-west
	9. Mass transit link to Melbourne Airport
	10. New road access to Melbourne Airport

This approach is consistent with Victoria's Department of Treasury and Finance (DTF) guidelines.

Following the DTF approach, the types of interventions span a range of:

- Changing demand: measures intended to reduce or redistribute travel demand on the transport network servicing Melbourne Airport
- Improving productivity: measures intended to optimise the performance of existing assets and services that support Melbourne Airport; and
- Changing supply: measures intended to increase the capacity of existing transport connections or introduce new connections to meet increased airport travel demand.

Based on the strategic interventions, six options have been developed. A relative benefit weighting for each strategic intervention has been applied to each option, which reflects the importance of the strategic intervention to deliver the benefits.

The six options in summary are:

Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Business as usual (BAU)	Existing public transport focus	Airport mass transit focus	Road based focus	Alternative airport focus	Pricing / productivity focus

Option 1

Business as Usual

This option assumes there is no significant change to the current situation and continues to rely on the current avenues to access the Airport and the north west. It also assumes committed investments in the transport network by Government (including North East Link and West Gate Tunnel) and a continuation of approximately 85 per cent private / 15% public transport mode split to Melbourne Airport.

Option 2

Existing Public Transport Focus

This focus of this option is to improve the existing public transport linking the airport, greater Melbourne and regional Victoria.

At present there are multiple road-based public transport options (operated publicly or privately) servicing Melbourne Airport. Passengers using the heavy rail or tram networks are required to transfer to bus services in central Melbourne or a small selection of other suburban locations. The focus of this strategic intervention would be to optimise existing services and introduce new shuttle services that better connect the airport to the wider public transport network.

Given the existing and projected high demand on the Tullamarine Freeway and recent transport system upgrades (including the CityLink Tulla Widening project and deployment of Advanced Traffic Systems), this option assumes dedicated bus lanes are not possible on the Tullamarine Freeway.

Option 3

Airport Mass Transit Focus

This option would create a public transport corridor that is capable of transporting high volumes of passengers efficiently and reliably between Melbourne Airport and the central city. A key outcome would be to reduce reliance on the finite road capacity of the Tullamarine Freeway.

This option has the potential to include intermediate interchanges that connect the mass transit system to the existing transport network. This could support economic and urban development of surrounding areas in addition to servicing airport passenger demand between the airport and central Melbourne.

The key difference between Option 3 and Option 2 is the ability for mass transit to provide a public transport service that is more frequent and more reliable, and offers a shorter travel time to key destinations by avoiding the need to share existing road infrastructure.

Mass transit modes include heavy rail, light rail or bus rapid transit (BRT) with dedicated priority lanes.

Option 4

Road Based Focus

This option would expand the capacity of the road network servicing the airport and the north west to increase choice of routes, reliability and resilience.

Similar to Strategic Option 1, the freeway network (M1, M2, M3, M80 and North East Link) will remain the principal access corridors between the Airport, the central city, greater Melbourne and regional Victoria. Further investments in these key arterials and feeder roads could include widening, duplication and intersection grade separations to increase capacity.

New roads would be constructed to improve landside access to the airport and north west. Improved traffic flow management measures would also be introduced onto the road network.

Option 5

Alternative Airport Focus

This option would reduce travel demand to Melbourne Airport by redirecting a portion of the passenger load growth to an alternative airport.

At present the only alternative commercial passenger airport capable of hosting domestic and international flights is Avalon Airport, however a third airport (in the south east) could also be considered under this option.

Implementing measures that could shift flights and passenger numbers to an alternative airport has the potential to significantly reduce demand on the existing key transport corridors. Measures to drive demand to alternative airports could be pricing based (significant differentiation in landing taxes between airports) or regulatory based, such as a cap on total flights or limiting the number of flights during certain times (e.g. AM and PM commuter peak) to Melbourne Airport.

Significant investment would be required at the alternative airport and associated landside access via road or public transport. There is potential for the private sector to contribute funding towards alternative airports.

Option 6

Pricing / Productivity Focus

This strategic option would manage travel demand and transport network reliability primarily via behaviour change of users (including regulatory and market based measures). Types of demand that would be of particular focus would include low value or necessity trips such as pick-up and drop-off at the airport.

Regulatory measures could include restrictions within the airport boundary for passenger drop-off and pick-up. Alternative market based pricing mechanisms could include tolling existing landside access points, implementation of cordon pricing, pricing based on direction of peak travel and vehicle occupancy incentives, dynamic demand-based pricing or differential location-based tolling.

If an appropriate framework is set, regulatory and market pricing mechanisms have the potential to modify user behaviour towards transport choices that limit the requirement for additional supply side infrastructure interventions.

Response Options Assessment

A qualitative assessment was undertaken for each option based on their identified benefits, cost, delivery time and social and environmental risk.

On the basis of the qualitative assessment, the **Airport Mass Transit Focus** is the preferred option.

	BAU	Existing public transport	Airport mass transit	Increase road based access	Alternative airport	Pricing / productivity
Ranking	0.0	3.0	3.3	2.1	1.6	3.2

This assessment reflects the fact that a new mass transit link to Melbourne Airport:

- directly addresses issues of transport network resilience and will contribute to improvements in travel time and travel time reliability for all airport users
- can expand the airport's accessibility to middle and outer metropolitan and regional residents through efficient connections to and interchanges with the existing public transport network
- is viewed as less of a risk than demand-based options such as diverting passenger flight growth to an alternative airport (which relies on an appropriate response from airlines) or shifting low-value road-based trips to other times of day through more extensive road pricing (which could have substantial social impacts)
- could generate other city-shaping benefits such as changes in the distribution of urban growth and economic activity in ways that will enhance overall productivity and access to opportunity.

The purpose of a new mass transit link is to shift demand from existing road links and therefore reduce travel time and increase travel time reliability for all trips to and from the airport.

Mass Transit Mode Assessment

There are multiple forms that a mass transit link might take. At a high level, the mass transit link would need to be relatively direct, offer significant capacity, and be capable of running at relatively high frequencies.

The choice of transport mode for the mass transit link will influence the extent to which it can fulfil these criteria, realise the proposed benefits, and the complexity and cost of delivery.

Bus Rapid Transit

Bus rapid transit (BRT) refers to dedicated corridors, carriageways, or lanes that enable conventional or customised buses to run with greater reliability and at greater frequency. At the upper end of a typical BRT's capacity it could carry up to 10,000 passengers per hour with services running at frequencies of every minute.

Light Rail

Light rail is a tram system operating on an exclusive right of way or corridor. Light Rail is differentiated from a typical tram system by the fact that it does not mix with traffic and generally has priority at any level crossings. Light Rail can carry similar passenger loads as BRT systems with typical capacities of 15,000 passengers per hour

Stand Alone Heavy Rail

Heavy rail is the highest capacity public transport mode and generally forms the trunk of most metropolitan public transport networks. With implementation of high-capacity signalling system, as now being deployed on the Victorian rail network, heavy rail can operate at frequencies of up to 24 services per hour. With high-capacity trains typically being able to carry up to 1,100 passengers, this provides heavy rail lines with a theoretical capacity of up to 26,400 passengers per hour.

Integrated Heavy Rail

The presence of existing rail corridors in proximity to the airport create the opportunity to pursue a more integrated approach to the delivery of airport mass transit. An integrated heavy rail line has the major advantages of being able to leverage existing infrastructure and significantly expand the coverage of airport connections through efficient integration with other rail lines.

A qualitative assessment was undertaken for each mass transit option based on identified benefits, cost, time and social and environmental impacts.

Based on the outcomes of the qualitative assessment **Integrated Heavy Rail** is the recommended mass transit mode to 'support the growth of Melbourne Airport and north west'.

	BRT	Light Rail	Stand Alone Heavy Rail	Integrated Heavy Rail
Ranking	3.7	3.9	3.6	4.0

The differentiating factors are:

- The superior ability of this approach to integrate with the wider public transport network when compared to an express heavy rail solution
- The superior travel time when compared with bus or light rail solutions due to rail's ability to operate at higher speeds
- The superior travel time reliability when compared to bus or light rail solutions due to its ability to move more passengers across less services reducing the risk of disruption and its complete separation from the road network
- The ability to leverage existing rail corridors and assets which balances out the higher delivery costs of heavy rail over bus and light rail solutions, the latter of which do not benefit from the presence of existing corridors or networks.

Heavy Rail Route Options

Based on review of the 2012 PTV study for 2018, it is accepted that the four short listed routes represent the best combination of competitive travel times, optimal network integration, leveraging of existing corridors and assets, and delivery cost.

Those four options that form the four routes considered, are identified in Figure 2.

The assessment then provides a ranking of each option based on benefits and deliverability scores. These are used as the basis of route ranking which is compared with the outcomes of the 2012 PTV Study to determine whether any change in its recommendations is warranted.

Benefits

The benefits to be delivered are:

1. Enhanced travel experience to Melbourne Airport from across Victoria
2. Improved competitiveness of Victorian businesses, and
3. Economic development of Melbourne's inner north-west.

Deliverability

Deliverability considers the extent to which the corridor option is likely to facilitate efficient delivery of the connection.

1. The social and environmental risk profile,
2. Constructability and delivery timeframe, and
3. Likely cost during the planning, approvals and construction phase of the project.

Route Options

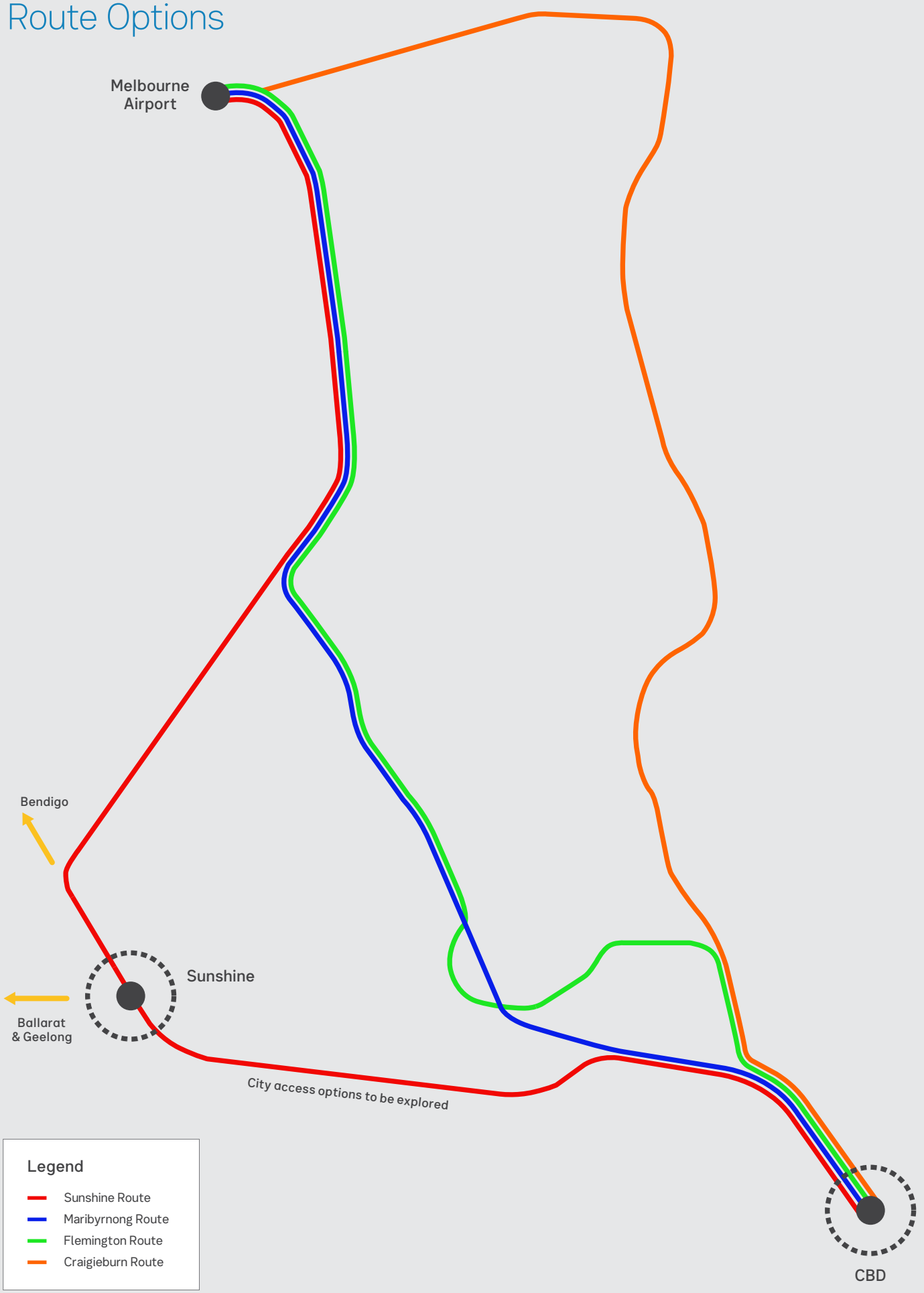


Figure 2: Route options

Strategic Appraisal Selection Criteria

Key identified benefits, cost ranges, delivery time-frame and potential social and environmental impacts are outlined below. Each route option is assigned a combined benefit and deliverability ranking which enables comparison of the options for the purposes of route selection.

Consistent with the findings of PTV's 2012 study, the **Sunshine route** is the preferred option for providing a rail connection to Melbourne Airport.

	Route option			
	Sunshine	Maribyrnong	Flemington	Craigieburn
Combined Relative Benefit and Deliverability Ranking	4.3	3.5	3.6	4.1

Sunshine Preferred Route

While all four short-listed route options performed relatively well against key criteria, the findings reflect the fact that, on the basis of the respective scopes considered, the differentiating factors were that the Sunshine Route:

- **Offers superior connections to more areas of Melbourne through its integration with the Metro Tunnel.** While travel times to central Melbourne are longer via the Sunshine Route than the Maribyrnong and Flemington routes, travel times to other employment clusters and middle and outer metropolitan suburbs were better as airport services can more efficiently connect to Melbourne's south-east and a higher number of other lines.
- **Offers superior connections to regional Victoria through an upgraded Sunshine interchange.** Passengers from Warrnambool, Geelong, Ararat, Maryborough, Ballarat, Swan Hill, Echuca, and Bendigo will all realise minimum 30 minute savings when accessing Melbourne Airport via public transport and no longer need to travel all the way into the city.
- **Could be delivered earlier and at a significantly lower cost than other route options that offered a comparable level of benefit.** Use of existing rail corridors for the majority of the route means that the Sunshine Route is between 1.5 and more than 2 times cheaper than the Flemington and Maribyrnong routes respectively.

Sunshine is a National Employment and Innovation Cluster (NEIC) and will benefit significantly from the direct airport connection via the Sunshine route. Parkville is also a NEIC and connects directly to Sunshine via the Metro Tunnel.

Sunshine Station, as a connecting hub for multiple services to the city and Melbourne's south-east, Geelong, Ballarat and Bendigo, presents significant value capture and creation opportunities.

There are a number of available options for future improved public transport to the Maribyrnong precinct which include heavy and light rail.

			Route option			
Benefit	Criteria	Weight	Sunshine	Maribyrnong	Flemington	Craigieburn
Enhanced travel experience to Melbourne Airport from across Victoria	More efficient journeys to the airport	10%	5.0	4.8	4.6	4.5
	Public transport use by airport travellers	20%	4.7	5.0	4.8	4.4
Improved competitiveness of Victorian businesses	Travel time reliability on key links servicing the airport	30%	4.8	5.0	4.7	4.4
	Travel time to key economic centres	20%	5.0	4.8	4.4	3.7
Economic development of Melbourne's inner north-west	Redevelopment opportunities and accessibility along the corridor	20%	2.5	4.2	5.0	0.9
Deliverability	Criteria	Weight				
Deliverability	Potential social and environmental impact	20%	5.0	4.5	3.0	3.5
	Constructability and delivery timing	20%	5.0 *7-9 years*	1.6 *10-12 years*	2.9 *8-10 years*	4.8 *7-9 years*
	Indicative order of magnitude capital cost (risk adjusted)	60%	3.6 *$8-13b*	1.7 *$20-25b*	2.1 *$15-20b*	5.0 *$5-10b*
Combined Relative Benefit and Deliverability Ranking			4.3	3.5	3.6	4.1

Key - Ranking

- Very High
- High
- Medium
- Low
- Very Low

Sunshine National Employment and Innovation Cluster

Sunshine is one of seven National Employment and Innovation Clusters identified in Plan Melbourne. The clusters are distributed across suburban Melbourne in key strategic areas that have the right attributes and specialised activities to foster innovation and to grow knowledge based employment to complement the array of existing industries in support of a sustainable economy.

The Sunshine Cluster is located within Brimbank City Council, about 12-14 km west of Melbourne's CBD. The cluster is developing as an economic hub that provides a central service function for Melbourne's west. It is a significant contributor to the national economy, supporting approximately 14,600 jobs across a diverse range of industries stretching between the suburbs of Sunshine and St Albans.

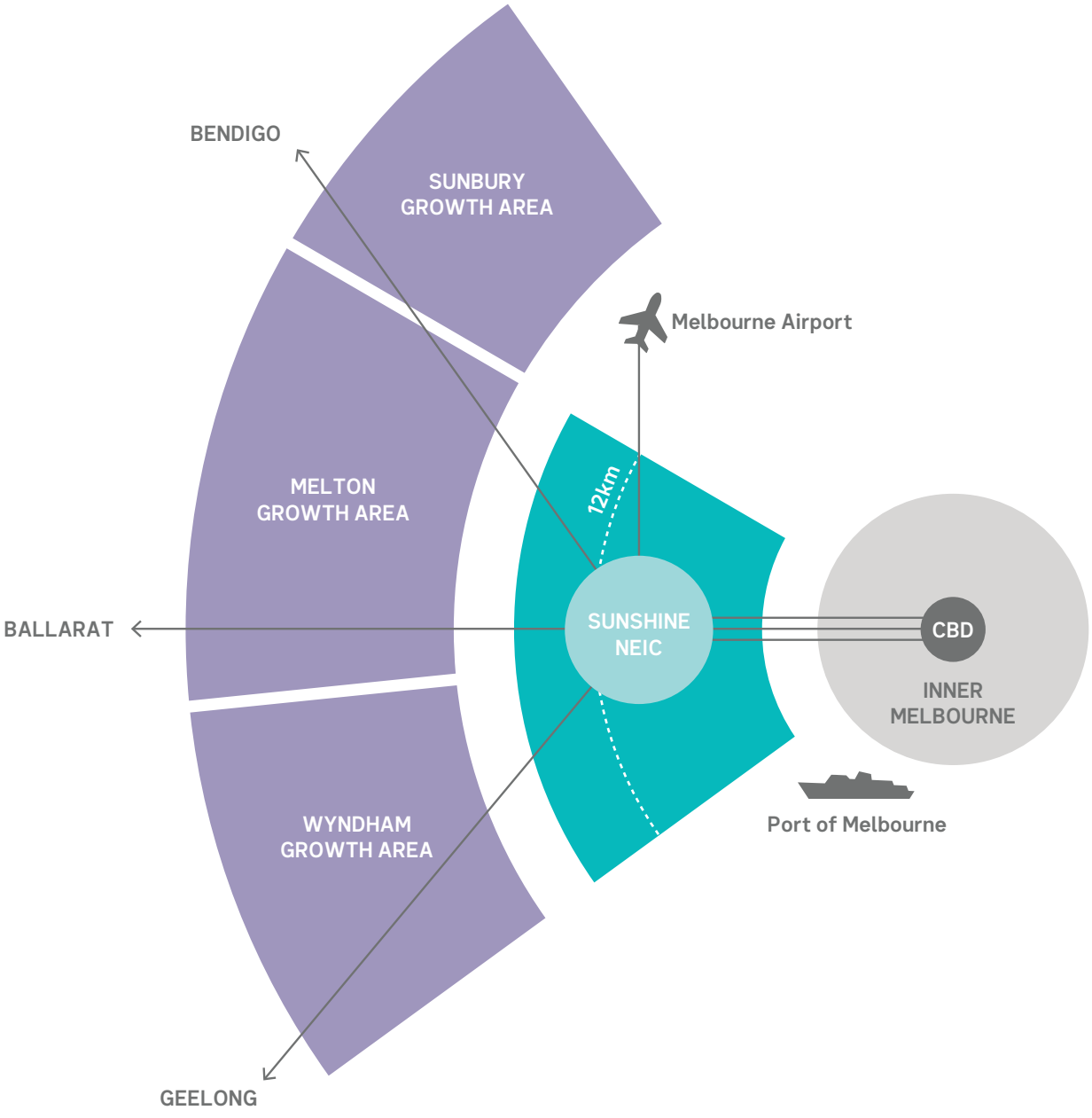
There is significant opportunity for the Sunshine Cluster to develop as a focal point for health and education services, building upon its well established facilities and services as outlined in the figure below.

Legend

- Precincts
- Education facility, precinct
- Industrial precinct
- Land use to be determined
- Commercial & residential uses
- Health facility, precinct
- Rail network
- Level crossing removal
- Major activity centre
- Metropolitan activity centre
- Neighbourhood activity centre
- Rail stations
- Waterways
- Key bus route
- Road network

Sunshine Connectivity to Growth Areas and Regional Centres

Sunshine is a key junction of the rail and road networks connecting the Melton, Wyndham and Sunbury growth areas and the major regional centres of Geelong, Ballarat and Bendigo.



Regional Centre	Approximate rail journey times to Sunshine Station (mins)
Geelong	**45**
Ballarat	**65**
Bendigo	**95**

Growth Area	Approximate rail journey times to Sunshine Station (mins)
Wyndham	**25**
Melton	**25**
Sunbury	**25**

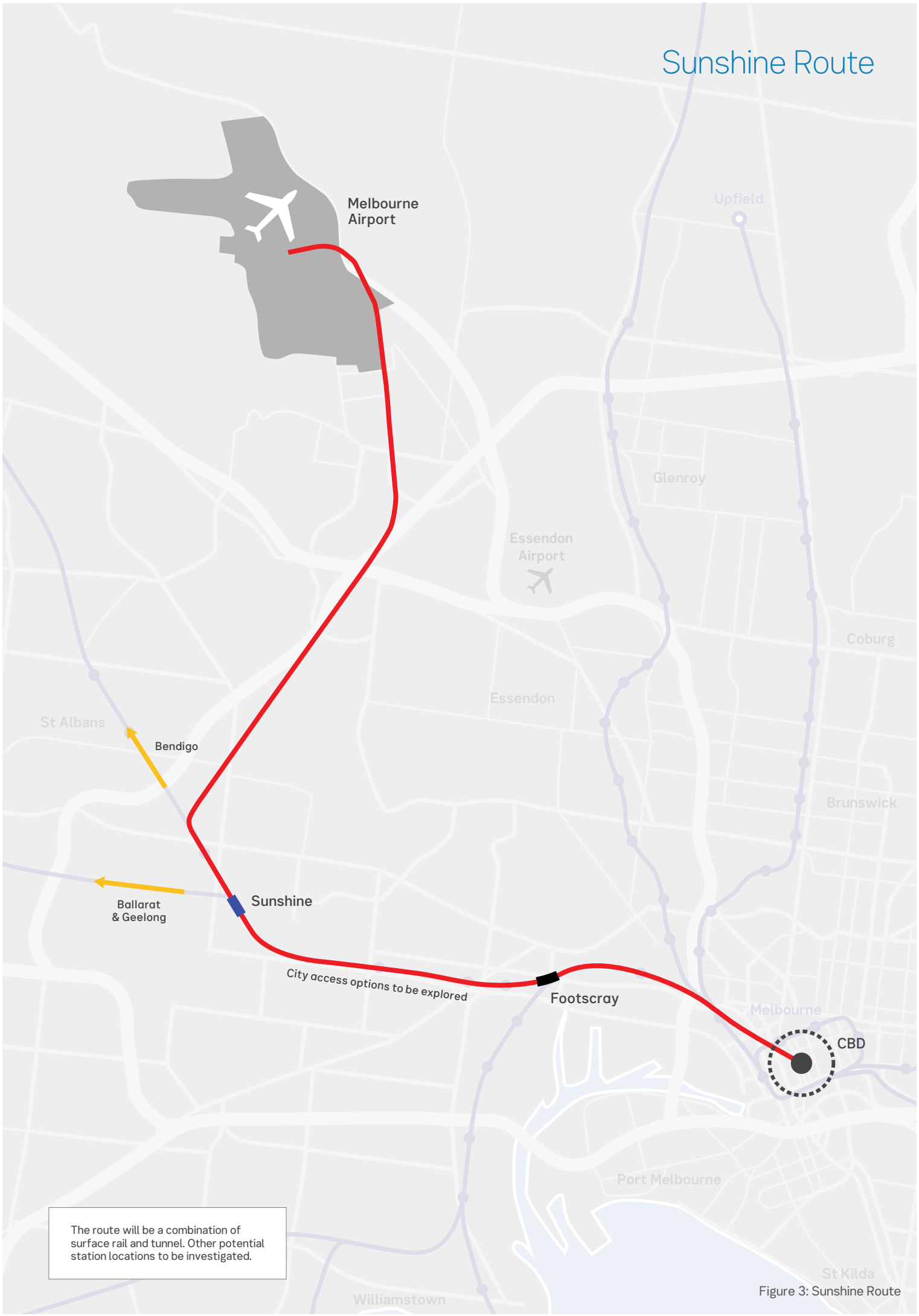


Figure 3: Sunshine Route

Next Steps

Full Business Case

This strategic assessment will now inform the development of a full Business Case. It is expected the Business Case will be complete in 2019/20.

Stakeholder Consultation

Stakeholder consultation will now commence to seek input from Local Government, peak bodies and the wider community.

Planning and Development

Detailed technical planning and development including investigation of economic, social and environmental impacts will also now commence. This will help inform the appropriate planning and approval processes to enable the delivery of the MARL.

Subject to required statutory approvals, project delivery is targeted to commence in 2022.

ARP0019

TRANSPORT FOR VICTORIA