# Melbourne Airport heavy rail line MAH

### Option type

New assets

### Location

Melbourne central subregion, Melbourne western subregion and Melbourne northern subregion

Melbourne Airport - north west state-significant corridor

### Sector

Transport

### Certainty of evidence

Medium

### **Direct option cost**

\$3 billion-\$5 billion

### **Option lead time**

5-10 years

# Contribution to meeting the need (assumes instantaneous implementation)

Need 10: Meet growing demand for access to economic activity in central Melbourne; and

Need 11: Improve access to middle and outer metropolitan major employment centres

Moderate	Moderate	Significant	Significant
0-5 yrs	5-10 yrs	10-15 yrs	15-30 yrs

### What is this option?

Delivery of a rail link between Melbourne (Tullamarine) Airport and the central city. The rail link is assumed to be via the existing Albion East reservation and services would run via the Melbourne Metro rail tunnel and through to the south-east. The new line would provide direct connectivity to the airport, with passengers able to easily access airport services via no more than one interchange for the vast majority of metropolitan lines. It is estimated that the journey would take 30 minutes between the CBD and the airport at a frequency of 10 minutes. This new link would increase reliability of services for staff and airline passengers to Melbourne Airport and could reduce the impact of congestion on the Tullamarine Freeway.

While the assumption has been made based on previous work that the Albion East alignment would be adopted and that services would operate via Melbourne Metro, there are projected to be significant capacity pressures on this line by 2046, suggesting an alternative network solution may be required.

## What is the level of community support?

There was a high level of discussion of this option during consultation. Responses were generally positive. This option was recommended by the regional citizen jury, but the metropolitan jury had mixed views.

### What do we think of this option and why?

This option was recommended in the strategy (ref. 10.9.2 and 11.4.2) because it makes a moderate to significant contribution to both need 10 and need 11 and delivers a positive cost-benefit result. However, upgrades to airport buses should be pursued first (ref. 10.9.1 and 11.4.1), as this is a more cost effective solution in the short-term, with delivery of the rail link within 15-30 years. We have not proposed a particular technical solution for this project, but note that existing plans are projected to face capacity challenges over the long term (further detail in *What do we think of this option and why? cont'd*).



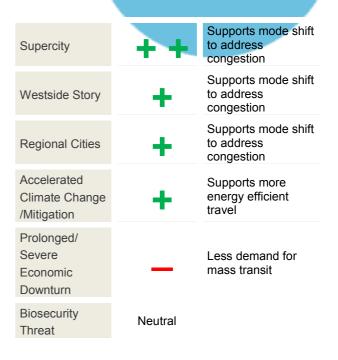
# How does this option relate to current state land use planning strategies?

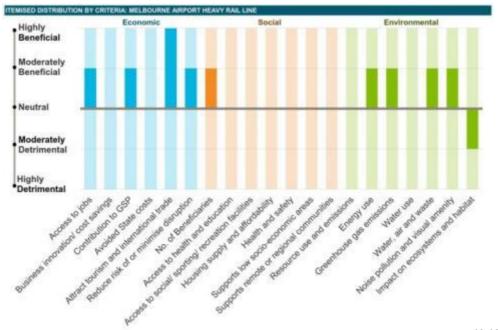


## How does this option work with others?

Current plans for this option make it dependent on Melbourne Metro (committed) and potentially supported by high capacity trains - 10 car (HCT2) and it is an alternative for Melbourne Airport bus dedicated road priority (MAB). This option's impact in terms of reduced congestion would be dependent on managing traffic flow on the Tullamarine Freeway (e.g. via transport network pricing (TNP) or advanced traffic management (ATM)).

# How does this option perform under different scenarios?





## What are the economic, social and environmental impacts of this option?



### What do we think of this option and why? (cont'd)

Further work is required to reconsider the longer-term metropolitan rail network configuration, but the most important features of an airport rail service are likely to be that it offers a reliable and frequent service to central Melbourne, minimising journey time, and preferably continuing on to the south east – a significant secondary origin and destination for many passengers.

While the existing plans for an Airport Rail Link have provided the basis for our assessment, we have not proposed a particular technical solution for this option, but note that existing plans for the rail link along the Albion East alignment and connecting to the south-east via the Melbourne Metro tunnel are projected to face capacity challenges over the long term, due to growth on the Melton and Sunbury lines which would share tracks with the airport line. A more enduring solution could require a different network configuration, potentially leveraging further capacity upgrades to the Sunshine and Werribee corridors (ref. 10.10.2), or by identifying a different corridor for the airport rail link – whether connected to the existing rail corridor or a separate dedicated link. Consideration could even be given to linking to regional rail corridors. However, caution is warranted in pursuing any options which would be materially higher cost than the current plans.

The further planning and investigation work should also consider the land use outcomes and impacts with the delivery of the airport heavy rail. This could consider the role that additional stations could play in developing housing density, access to employment around Melbourne Airport or connections to existing activity centres such as Essendon Fields. At the highest level, the strategic role of the airport rail as either a standalone shuttle for the benefit of air travellers or as a suburban rail corridor supporting access and employment in middle suburbs will need to be decided. We think its primary role should be for airport access, but options for additional stations should be tested.

The suitability of 10-car trains operating to the airport will also need further consideration. They may not be suitable for this route due to the potential excess capacity when running at a 10 minute frequency. Should the airport service operate via Sunshine and Melbourne Metro, it may be necessary to use 10-car trains in order to deliver a simple, metro style operation on this corridor.

Alternative access to the airport could potentially be provided via a dedicated link.

### **Risks and opportunities**

There are significant risks to scope based on the operating constraints of the network between Albion and the city. The project may need to provide greater capacity in this section which will be a significant increase in the scope of the project. This could include additional tracks between Albion and the CBD, an alternate alignment between the airport and the CBD (connecting to another rail line or dedicated tracks for the full route) or an alternate network configuration, for example taking advantage of the capacity created by Melbourne Metro 2 (MMS) should that project proceed. In addition, until detailed planning is undertaken between the state government, federal government and airport authorities, additional scope risk may be encountered within the airport planning area.

With the large supply of car parking areas at Melbourne Airport, there is a risk that the structure of the pricing and number of services may not attract people to leave their cars at home. This could lower the benefits from this option that involves a significant capital investment.

This option presents the opportunity to re-use a proportion of the existing airport car parking for more productive land uses such as hotels and other development plans to increase the ability to realise Melbourne Airport as a national employment centre.



### Funding

Should government choose to pursue this project, it will then need to consider funding options. Below is a range of potential funding mechanisms which could be examined to help fund the project.

#### Potential funding mechanisms

General government revenue	User charges	Beneficiary charges	Property development	Asset sales
$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	

Major beneficiary contributions from parties who will be significant beneficiaries from the Melbourne Airport heavy rail line could be explored. For example, a major beneficiary contribution from the Melbourne Airport owners could be negotiated, reflecting the direct benefits a new rail link would provide to its business.

Depending on the scope and design of the project, such as whether it includes new train stations that could serve travel other than to the airport, opportunities for other beneficiary charges could be examined if there is a substantial uplift in land values and business activity in the vicinity of the project. A betterment levy could be considered on commercial and/or residential property in defined catchment areas in the vicinity of new train stations. Developer contributions from new developments occurring near a new train station could also be considered. If betterment levies and developer contributions are both considered by government, it should ensure that new charges do not unfairly duplicate each other or any existing charges.

Property development could also be considered, for example, selling or leasing land and air rights surplus to government requirements at new train station sites for commercial, residential or retail development. Property development can assist in putting underutilised government land and space to higher and better uses, creating added value through improved amenity and access to services. There could also be opportunities to sell and/or lease land and air rights at existing train stations for complementary uses such as conference centres, 'downtown check-ins' or hotels.

General government revenue could be considered based upon any broader public benefit such as transport congestion relief and the increased attractiveness of doing business in Victoria. User charges, such as higher than standard public transport fares (especially for express services) for the new airport rail line, could be considered.

Infrastructure Victoria is examining transport network pricing as part of our research program. We think that the primary objective of a transport network pricing regime – where users pay to access and use the transport network – should be to manage demand, rather than to recover costs for infrastructure. We are focusing on examining road pricing regimes in metropolitan Melbourne as a first step towards a comprehensive transport network pricing regime that includes roads and public transport. Careful consideration must be given to the design of the regime to ensure it is efficient, fair and sustainable.

### Additional notes

### Changes to recommendations from the draft strategy

This option was recommended in the draft strategy. Since then we have clarified that delivery of this recommendation should occur before the capacity of the bus service is exceeded rather than after, as this was unclear in the draft recommendation.

### Scope change

Complementary transport services to provide access to employment throughout the Melbourne Airport precinct will be important even with a rail link, as the preliminary modelling showed a risk that this option could reduce access to employment if accompanied by a withdrawal of bus services.



The identification of the south-east as a substantial catchment, albeit secondary to central Melbourne, is partly driven by the assumption under current plans that services will operate direct across the city to the south-east. However, there is some logic to this market particularly benefiting from a direct service, considering the high density of both knowledge intensive services sector businesses (likely to attract interstate and international travel) and employees (more likely to travel for business). It is therefore preferable that further network planning include consideration of the benefits of such a direct cross-town link.

#### Transport modelling and economic analysis

Infrastructure Victoria commissioned KPMG, Jacobs and Arup to undertake transport modelling for a number of options being considered for the strategy, including a variety of 'build' and 'non-build' transport options. This allowed major transport projects to be quantitatively assessed alongside several technology, policy and reform options. In addition, economic analysis was undertaken for the 'build' options to estimate a cost benefit ratio, including for this option. The options were modelled individually, mostly on a standalone basis, with a number of options then also tested in various combinations.

This analysis was undertaken on a different basis and produced different results to what is presented throughout the options book, which was prepared by AECOM/PWC with the intention of allowing a mixture of qualitative and quantitative assessment across the full range of options, across all sectors and needs. While on the face of it these two analyses reference similar metrics, different assumptions and methodologies have been applied. In particular, the KPMG/Jacobs/Arup assessment provided purely relative ratings of each option's contribution to the needs, with the ratings scale set by the performance of only the select range of options modelled. This had the result of showing some transport options as making a "high" contribution to Need 18 (transition to lower carbon energy supply and use) simply because they were the highest of the options modelled; however, in Infrastructure Victoria's judgement most transport sector options will make a much lower contribution than energy sector options, as transport comprises a much smaller proportion of total carbon emissions. It provides a useful assessment for sorting the relative contribution of the options modelled, but should not be taken as an absolute assessment. In contrast, the assessments developed in the AECOM/PwC assessment considered the full range of options identified for each need and provided more of an 'absolute' assessment.

With these caveats in mind, however, the results of this alternative analysis are helpful inputs into Infrastructure Victoria's 'global' assessment, and in preparing the strategy we have come to a considered view based on the totality of evidence available to us.

In terms of the KPMG/Jacobs/Arup analysis of this option, the Melbourne Airport heavy rail link was modelled in two ways – as an extension of the Sunbury line and as a direct link between the CBD and the Airport. This modelling found that it had a number of benefits. Because the project connects to Melbourne Metro 1, it would enable passengers to travel by rail directly from the Cranbourne/Pakenham corridor to Melbourne Airport, reducing traffic on both the Tullamarine and Monash Freeways. It would also provide minor relief to crowding for passengers travelling on Melbourne Metro 1 due to the extra services provided on these corridors.

Accessibility metrics generally improve slightly, albeit with a decline in accessibility to the Sunshine NEC. This is due to the reduction in services along the Sunbury corridor associated with the project. It is worth noting that the accessibility measures used to address IV's transport related needs are based on employment. In reality a new rail connected to the airport would provide significant advantages for travellers and people accessing Melbourne Airport for leisure purposes.

In terms of the economic analysis, the cost benefit ratio for the Melbourne Airport heavy rail link was estimated as being between 1.0 and 1.4 without WEBs, and 1.2 - 1.6 including WEBs. This suggests the Melbourne Airport heavy rail link is an economically viable project and worthy of detailed investigation. In particular, there are multiple uncertainties with modelling transport links to the airport which warrant further investigation.

It is worth noting that the modelling assumed that the airport bus will be replaced with the rail service. The analysis found that the increase in demand for passengers accessing the airport using public transport (airport bus or rail) is not that



significant. Consequently, detailed consideration will need to be given to airport bus service planning if Melbourne Airport heavy rail link was pursued.

For more detail, consult the 'Economic appraisal and demand modelling' report to Infrastructure Victoria.

### Evidence base

AECOM/PwC, Assessment 3: Technical report to support Infrastructure Victoria's draft 30-year infrastructure strategy, 2016

KPMG/Arup/Jacobs, Economic appraisal and demand modelling, 2016

Melbourne Airport, Melbourne Airport master plan, 2013

Public Transport Victoria, Melbourne Airport rail link study, 2013

Public Transport Victoria, Network development plan: Metropolitan rail, 2012

