



Sunshine-Albion rail access options assessment report summary

August 2022

Melbourne Airport Rail will deliver a long-awaited rail connection between Melbourne Airport and the CBD in around 30 minutes, integrating seamlessly with the existing network via Sunshine and the Metro Tunnel.

When developing a major infrastructure project such as Melbourne Airport Rail, rigorous assessments and reviews are undertaken on options for key aspects of the design, as experts work to systematically eliminate options that are not feasible, compare options and ultimately land on a recommended solution.

Each option is assessed against stringent performance criteria and project requirements set by the Department of Transport and verified against network performance outcomes. Assessments also consider a range of other factors including constructability, safety, existing local conditions, cost and program impacts, disruption to existing services, environment and the community.

A key part of Melbourne Airport Rail is creating a new pathway through the Sunshine-Albion area for airport services.

Complex rail environment

The rail corridor between Sunshine and Albion is a highly complex and constrained active rail environment. It contains up to five tracks at any one point, accommodating regional and metropolitan passenger services as well as ARTC-operated freight services.

There is also a critical jet fuel pipeline along the rail corridor from Sunshine Station through to Albion Junction and up the Albion-Jacana freight corridor, as well as major roadways to consider at Anderson Road, Ballarat Road and St Albans Road.

Options assessed

Various options to enable airport services to travel through this area were identified and then reduced to four options for further comparative assessment. These options were:

- an underground tunnel option that would pass under Albion Station
- a rail trench option where tracks would decline on the city side of Ballarat Road and pass under existing Sunbury Line tracks
- a hybrid option with most tracks remaining at ground level, and a single-track section of elevated rail for Melbourne Airport Rail services
- an elevated rail option for Melbourne Airport Rail services, passing next to Albion Station.

This document summarises the assessment of each of these options, noting the elevated rail option is recommended as the best outcome for Melbourne Airport Rail in the Sunshine-Albion area.



Australian Government



Rail tunnel option

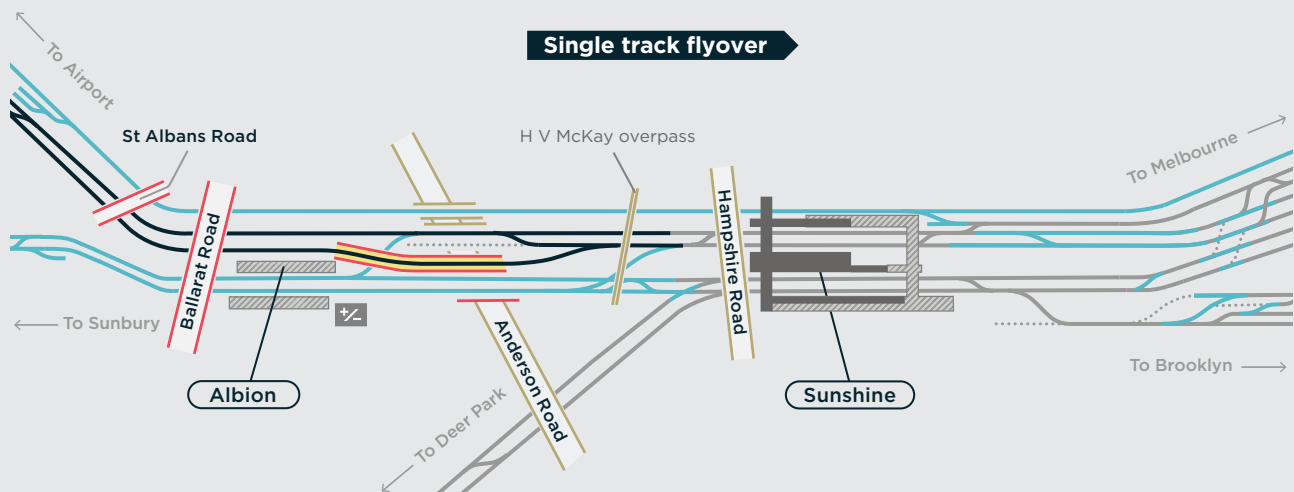
The project team considered a rail tunnel option in the Albion Station area running underneath the Sunbury Line at a depth of about 20 metres.

This option was rejected as the depth of the rail tunnel – needed to avoid impacts on critical existing infrastructure near Anderson Road – make building a connection at Sunshine Station incredibly difficult and lead to significant impacts. The Sunshine Station connection is a crucial part of Melbourne Airport Rail, as it allows regional passengers from Geelong, Bendigo and Ballarat to easily transfer to an airport service or vice versa, so eliminating this connection would heavily affect the benefits of the project.

Tunnelling would also mean digging into basalt rock, found at an average depth of six metres below ground level. Basalt rock is incredibly dense and strong, so digging through this would delay the construction program and increase construction costs, to a point where it would not be financially viable to pursue this option when considering the overall project budget.

While a rail tunnel option would have less visual and heritage impacts than other options considered, the benefits do not outweigh the impacts of this option.

Hybrid option (ground/elevated)



The project team considered a hybrid option, comprising mostly ground-level tracks and a single-track section of elevated rail for Melbourne Airport Rail services, built on the Sunbury Line side of Anderson Road and travelling over existing Sunbury Line services.

The hybrid option was rejected due to the significant impacts it would have on existing infrastructure and the flow-on effects to major roads, rail services and project costs. This option did not accommodate all existing and future planned freight service operational moves and frequencies.

To accommodate the new tracks within an already constrained rail corridor, Ballarat Road and St Albans Road would have to be rebuilt, resulting in costly and disruptive extended or ongoing closures to these major arterial roads.

There would also be flow-on disruptions and costs associated with signalling changes and around a 6-month closure and rebuild of Albion Station.

With a significant increase to construction timelines and many hundreds of millions of dollars more in costs compared to the elevated rail option, the hybrid option would also be a worse outcome from a financial and program perspective.

A wholly ground level option was also considered but was deemed unfeasible and not assessed further because it would cause significant bottlenecks and conflicts for train services on the Sunbury and Airport corridors. This would lead to unreliable travel times and a poor timetable outcome, given strict safety requirements around trains passing one another.

Rail trench option

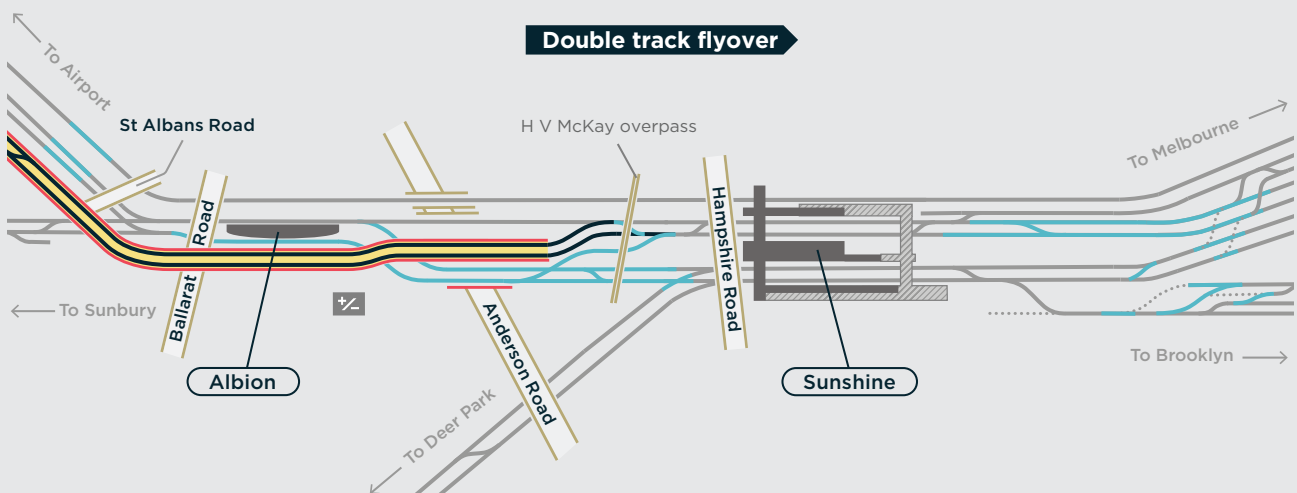
The project team considered a rail trench option, which would see tracks gradually lower from the city side of Ballarat Road to pass under the Sunbury Line tracks, before rising again at the Albion-Jacana corridor.

This option was rejected as digging a trench to at least 12 metres would mean hitting the tough basalt rock, leading to delays to the construction program and increased costs.

The rail trench would trigger a relocation of several crucial underground services and modifications to the busy Ballarat Road and St Albans Road bridges. These factors would make the building rail trench a difficult and expensive process.

Unlike the elevated rail option, most of the rail trench could not be built with passenger services still operating, resulting in more rail shutdowns, a longer construction program and higher costs. The trench option would also be prone to flooding given the rail corridor's proximity to a flood zone, meaning a high number of pumping stations and additional maintenance challenges and costs.

Elevated rail option (recommended)



The project team considered a dedicated section of elevated twin tracks - a flyover - rising at Anderson Road and passing next to Albion Station, over Ballarat Road and over St Albans Road, before returning to ground level along the Albion-Jacana corridor.

In considering the project requirements and the assessment criteria, the elevated rail option provides the best overall outcome in comparison to the other options. This option has fewer impacts on existing infrastructure (road, rail and utilities) and is less disruptive and costly. It provides an opportunity to develop a new public forecourt area on the western side of Albion Station and does not preclude future upgrades to Albion Station or rebuild of the existing road network

Unlike other options, the elevated rail option can largely be built while road and rail services are still

running, meaning it is less costly and requires fewer disruptive shutdowns. It avoids major rebuilds of Ballarat Road and St Albans Road, and provides a simpler reconfiguration of tracks and less complex signalling, meaning better reliability, passenger and freight services. This option also accommodates existing and future planned freight service operational moves and frequencies.

While the elevated rail option would have some visual impacts, most sight lines can be maintained and any potential impacts on nearby heritage buildings can be appropriately managed

Overall, the elevated rail option is less disruptive and more financially viable, its configuration better integrates with the existing rail network and it can be built faster than other options assessed.

Legend		Tracks		Grade separation	
	Train station		Track works - MAR		Existing
	Platform/concourse - existing		Track works - other		Proposed
	Station/concourse - proposed		Existing track		MAR flyover
	Heritage sub station		Track removal		

Project requirements	
Requirement 1	Connect regional and extend metro train lines – including the Metro Tunnel
Requirement 2	Pave the way for improved regional rail services from Geelong and Ballarat
Requirement 3	Facilitate greater economic development of Melbourne’s inner north-west
Requirement 4	Enhance the Sunshine National Employment and Innovation Cluster (NEIC)
Requirement 5	Maximise land use value inc. urban, commercial and industrial development
Requirement 6	Improve local amenity to further facilitate the liveability of the precinct

Summary of options assessment

Assessment criteria	Elevated rail	Hybrid	Rail trench	Rail tunnel
Construction program	✓	✗	✗	✗
Cost	✓	✗	✗	✗
Disruptions	✓	✗	✗	✗
Environmental and heritage impacts	✗	✗	✗	✓
Futureproofing the infrastructure	✓	✗	✓	✗
Rail network integration/ improvement	✓	✗	✗	✗
Safety	✓	✓	✓	✓

Next steps


The twin track elevated rail solution at Albion has been included in the project’s reference design. The design will be refined through consultation with key stakeholders and the community and finalised through the appointed contractors prior to construction starting.

Work around Albion is part of the Sunshine Systems work package, one of several works packages which will deliver the project.

Construction on Melbourne Airport Rail is expected to start in 2022, subject to planning and government approvals.

More information

 airportrail.vic.gov.au

 1800 105 105
(24 hours a day, 7 days a week)

Rail Projects Victoria
PO Box 2392, Melbourne, VIC 3001



Interpreter Service (03) 9209 0147

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