

6 The options



About this chapter

This chapter provides an overview of the initial set of rail options identified to service Western Sydney and the proposed Western Sydney Airport.

How the initial options were selected

An initial set of rail options have been identified to service Western Sydney and the proposed Western Sydney Airport. The selection of these options was informed by projected customer demand and population growth and ideas presented by the community and other stakeholders in public forums. The Australian and NSW governments encourage you to provide feedback on these initial options, and to let us know whether there are other rail service options that we should consider.

The options are presented in this chapter according to whether they:

- Connect directly to the proposed airport (Options 1-6)
- Provide new or enhanced connections between the Western Sydney region and other parts of Sydney (Options A-E).

It is important to note that the benefits of each set of options are not mutually exclusive. An airport rail service could provide benefits for the Western Sydney region and a Western Sydney rail service could benefit the airport. All options will be considered individually and in various combinations (as indicated in Figure 15).

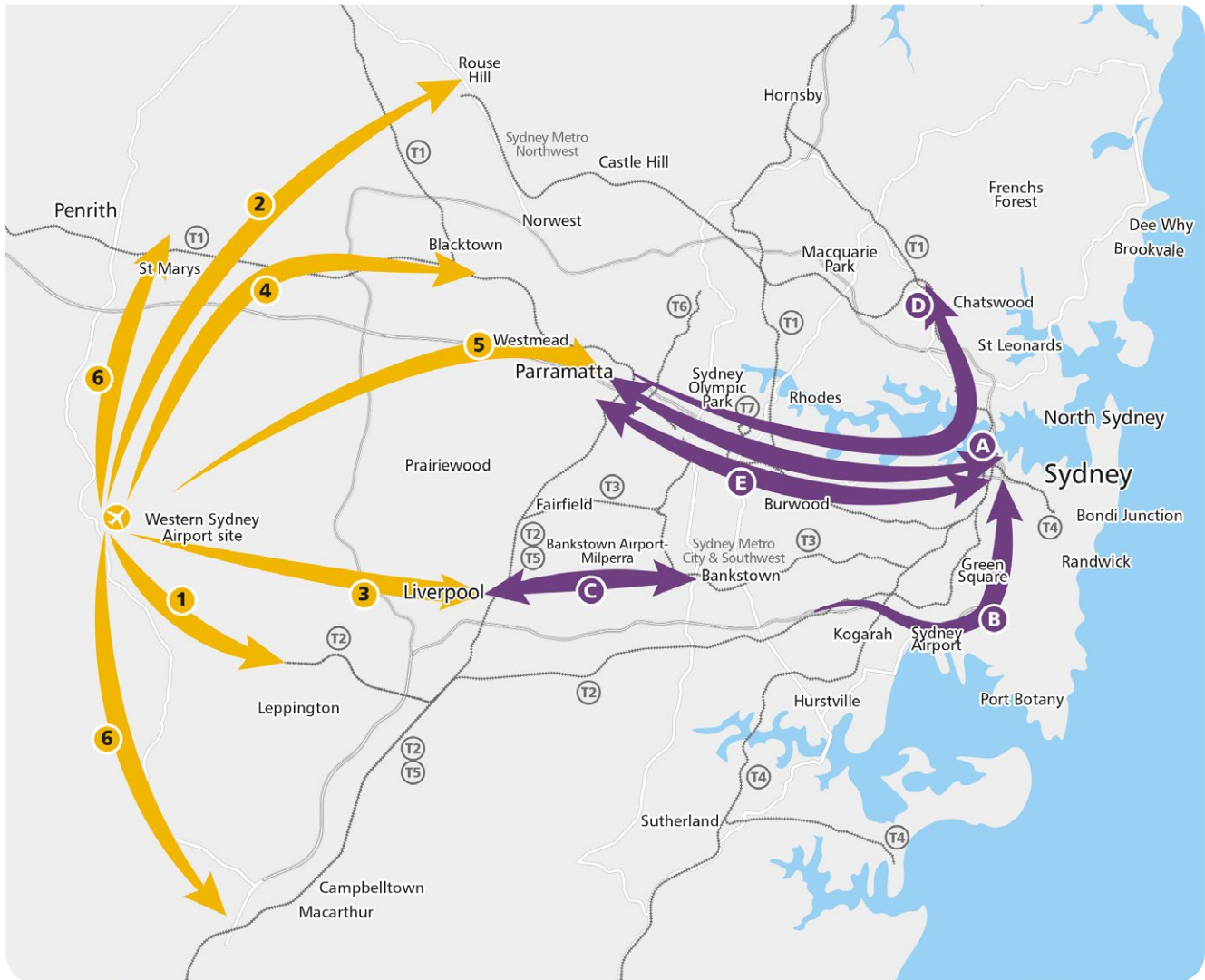
This study will assess the viability of each of these options, and other options identified through the consultation process, to determine which have the most merit and should be recommended for more detailed investigation. The final outcome of this assessment may be the selection of several preferred options or combinations of options delivered in different time frames.



The rail service options

The map below shows the initial set of options under consideration by the Scoping Study. Additional options may emerge through the feedback received during the consultation period. Both the options indicated in Figure 15 and any additional options identified through consultation will be assessed against the assessment criteria presented in chapter 7 of this discussion paper.

Figure 15 Western Sydney rail options



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| 1 WSA to the South West Rail Link | A New western metro-style service | T1 North Shore, Northern and Western Line |
| 2 WSA to Sydney Metro Northwest | B Converting the T2 Airport Line between Revesby and Sydney CBD to a separate metro-style service | T2 Airport, Inner West and South Line |
| 3 WSA to Liverpool | C Extending the Sydney Metro City & Southwest | T3 Bankstown Line |
| 4 WSA to the T1 Western Line via St Marys | D Increase capacity of existing network | T4 Eastern Suburbs and Illawarra Line |
| 5 Direct rail express service: WSA to Parramatta | E New higher speed tunnel linking Parramatta and the Sydney CBD | T5 Cumberland Line |
| 6 A north-south link: Macarthur-WSA-St Marys-Schofields | | T6 Carlingford Line |
| | | T7 Olympic Park Line |
| | Western Sydney Airport (WSA) site | |



How much will these services cost to build?

Although no detailed cost estimates have been prepared, it is anticipated that the most expensive single option presented in Figure 15 could cost up to about \$25 billion if delivered today. The government is interested in hearing from the public and industry about innovative ways of reducing the costs of rail connections for Western Sydney and ways of funding the expenditure. See chapter 8 for more detail on funding.

Options that connect to the proposed Western Sydney Airport

Below are the service options under consideration for rail in Western Sydney that include a connection to the proposed Western Sydney Airport (WSA). In line with *Sydney's Rail Future*, when considering each of these options we need to understand how they will integrate with the operation of the existing network. See Table 4 for indicative journey times of these rail options from the proposed airport to the Sydney and Parramatta CBDs.

1. WSA to the South West Rail Link

The simplest way to provide a train service to the proposed Western Sydney Airport would be to extend the South West Rail Link from Leppington via Bringelly to service the airport site using the double-deck suburban trains. This could provide good connections to Sydney's south-west including Campbelltown through to Liverpool and ultimately to places such as Parramatta and Sydney. This service also offers the potential to support additional developments at new stations between Leppington and the proposed Western Sydney Airport. In 2014-15, the NSW Government conducted community consultation for the corridor preservation of the South West Rail Link extension. Feedback from this consultation will be considered as part of this study.

2. WSA to Sydney Metro Northwest

A new line from the proposed Western Sydney Airport to link with the Sydney Metro Northwest could provide connections to the existing rail network at places such as St Marys and Schofields. This could also provide rail connections for housing and employment developments at intermediate locations such as the Penrith Education and Health Precinct and Marsden Park. The line could run as a separate, stand-alone, metro-style service.

3. WSA to Liverpool

If the Sydney Metro City & Southwest was extended from Bankstown to Liverpool (as described in option C) then a connection could be constructed to service the proposed Western Sydney Airport. This could provide good metro connections from the airport to the Liverpool to Bankstown area, and ultimately through to the Sydney CBD. This line also offers the potential to support additional developments at new stations between the proposed Western Sydney Airport and Liverpool.

4. WSA to the T1 Western Line via St Marys

A branch of the existing T1 Western Line to the proposed Western Sydney Airport could enable suburban double-deck services to start at the airport and travel up to St Marys/Mt Druitt and then run express to Blacktown, Parramatta and Sydney. Combined with a new tunnel from Parramatta to Sydney (see option E), this line could provide a reasonably direct link from the airport to Parramatta and Sydney. This line also offers the potential to support additional developments at new stations between the proposed Western Sydney Airport and the T1 Western Line.

5. Direct rail express service: WSA to Parramatta

This option would include a direct rail express service from the proposed Western Sydney Airport to Parramatta and through to Sydney CBD. This line would require a new tunnel as it approaches Parramatta and from Parramatta through to the Sydney CBD. This service offers the potential for the fastest service between the airport and these two major centres, but would be comparatively expensive to construct. Initial assessments indicate that such a line could achieve journey times of 15 minutes from the proposed Western Sydney Airport to Parramatta and 12 minutes from Parramatta to the Sydney CBD based on a maximum speed of 160 kilometres per hour. While such a service would provide a short travel time to the broader Sydney basin and CBD, it would not necessarily service the population who are expected to work at and use a Western Sydney Airport in the short-term.

6. A north-south link: Macarthur-WSA-St Marys-Schofields

A north-south link of the T2 Inner West and South Line through to the T1 Western Line would provide north-south connectivity, and a useful connection between the proposed Western Sydney Airport and the existing rail network. As well as serving the airport, this link could open up a large part of Western Sydney for further development including Narellan, Oran Park, Bringelly, Badgerys Creek and the Penrith Education and Health Precinct. This rail service could potentially run as a stand-alone shuttle service using single-deck trains.

Table 4 Indicative journey times for WSA rail options

Option	In-vehicle train time (mins)*	
	WSA to Parramatta	WSA to CBD**
1. WSA to the South West Rail Link	52	55
2. WSA to Sydney Metro Northwest	35	57
3. WSA to Liverpool	49	64
4. WSA to the T1 Western Line via St Marys	33	48
5. Direct rail express service: WSA to Parramatta	15	27
6. A north-south link: Macarthur-WSA-St Marys-Schofields	35	55

Notes:

* In-vehicle time is the time by the fastest train service between WSA and Parramatta and Sydney CBD

** CBD is assumed to be Central Station in options 1, 2, 3 and 6, and Wynyard in options 4 and 5

Options that connect Western Sydney to other areas in Sydney

Below are high-level descriptions of options for new rail services offering improved connections between Western Sydney and the Sydney CBD and other parts of Metropolitan Sydney. These options do not include a connection to the proposed Western Sydney Airport. However, as indicated in Figure 15, some of these options could be combined with Western Sydney Airport options.

A. New western metro-style service

This line requires a tunnel to be built between Sydney and Parramatta/Westmead with stations located every few kilometres. It could operate as a stand-alone, metro-style, all-stops service using high-capacity single-deck trains with the potential to transport 40,000 extra passengers per hour. It could potentially provide journey times between Sydney and Parramatta of around 30 minutes and relieve some demand on the existing network.

This could also support opportunities for new developments at locations such as Olympic Park, Five Dock and The Bays Precinct.

B. Converting the T2 Airport Line between Revesby and Sydney CBD to a separate metro-style service

The line from Revesby to Sydney via the Kingsford Smith Airport could be separated from the suburban network and operated as a metro-style shuttle terminating at a new station located in the Sydney CBD. This could allow an additional 12 trains per hour on the City Circle and an additional 7,000 passengers per hour between the Leppington/Campbelltown area and Sydney. This service could also provide a train more suited to customers with luggage travelling to and from Kingsford Smith Airport.

C. Extending the Sydney Metro City & Southwest

A separate study is assessing the options for extending the Sydney Metro City & Southwest from Bankstown to Liverpool. A direct connection to the metro line could provide faster journey times between Liverpool and Sydney and could free up additional capacity on the suburban trains that travel through Liverpool. It also offers the potential to support additional developments at new stations between Bankstown and Liverpool. Feedback received from consultation on the Sydney Metro City & Southwest Bankstown to Liverpool extension will be considered as part of the Scoping Study.

D. Increasing the capacity of the existing suburban network

Introducing advanced train management systems has the potential to increase the number of trains on each line by up to 20 per cent. This would provide capacity on double-deck suburban trains for an additional 4,000-5,000 passengers every hour per line.

E. New higher speed tunnel linking Parramatta and the Sydney CBD

This line would require a tunnel to be built between Sydney and Parramatta, with stations that could include The Bays Precinct and Olympic Park. This line could provide a quick connection between these two CBDs and could enable express services from the Blue Mountains and Western Sydney to the Sydney CBD, potentially doubling the capacity for services from Western Sydney and providing for an additional 25,000-30,000 passengers per hour.

What is high-speed rail and what are direct rail express services?

A direct rail express service, such as the combination of Option 5 with Option E, is different to a long-distance high-speed rail service. The Scoping Study is not considering long-distance high-speed rail as this would require a detailed analysis of the needs of long-distance journeys far outside of the study area.

Direct rail express service

The direct rail express considered in this Scoping Study, through the combination of Option 5 with Option E, would provide an efficient service primarily for customers to the proposed Western Sydney Airport to/from the Sydney and Parramatta CBDs. This service could have the major co-benefit of efficiently connecting Sydney's two CBDs for residents and workers.

High-speed rail

High-speed rail is a mode of rail transport capable of moving people at speeds of at least 250 kilometres per hour, usually over long distances on dedicated tracks (with some systems using conventional rail for short distance sections to access some stations). The most recent Australian study of high-speed rail, from 2013, proposed a dedicated track.

Internationally, high-speed rail is used between major cities but also provides opportunities for stops in regional areas and fast commuter rail services from outer metropolitan areas. High-speed rail stations are typically located within city centres, close to population and business centres.





Questions

- 6 What rail services should be delivered as the highest priority to service a Western Sydney Airport?
- 7 What other rail options should be considered in this study to service a Western Sydney Airport?
- 8 What is the highest priority rail service required for the Western Sydney region?
- 9 What other rail options should be considered in this study to service other parts of the Western Sydney region?
- 10 Should rail services to a Western Sydney Airport be prioritised over services to other Western Sydney locations? Why?
- 11 If a rail connection is provided to the proposed Western Sydney Airport, should it be provided when the airport opens or when there is sufficient demand?
- 12 Is it more important to be able to travel (by rail) to the proposed Western Sydney Airport or to other locations in Western Sydney? Why?

