

Final Business Case Evaluation Summary

M12 Motorway – M7 Motorway to The Northern Road



July 2022

Contents

About this report.....	2
Strategic context	3
The Western Sydney City Deal.....	3
The Western Sydney Infrastructure Plan (WSIP).....	3
A Metropolis of Three Cities and the Western City District Plan.....	3
Future Transport 2056 Strategy and the Greater Sydney Services and Infrastructure Plan	3
Australian and NSW Government commitment.....	3
Project need.....	4
Road safety risk.....	4
Strategic risks due to future growth	4
Operational risks	4
Project objectives and design.....	5
Objectives	5
Design.....	5
Options identification and assessment	7
Preferred option.....	7
Economic evaluation.....	8
Costs.....	8
Benefits	8
The outcomes of the analysis.....	9
Sensitivity analysis	9
Deliverability	10
Procurement.....	10
Governance.....	10
Timeframe	10
Key risks and mitigation.....	10
The Infrastructure NSW view	11

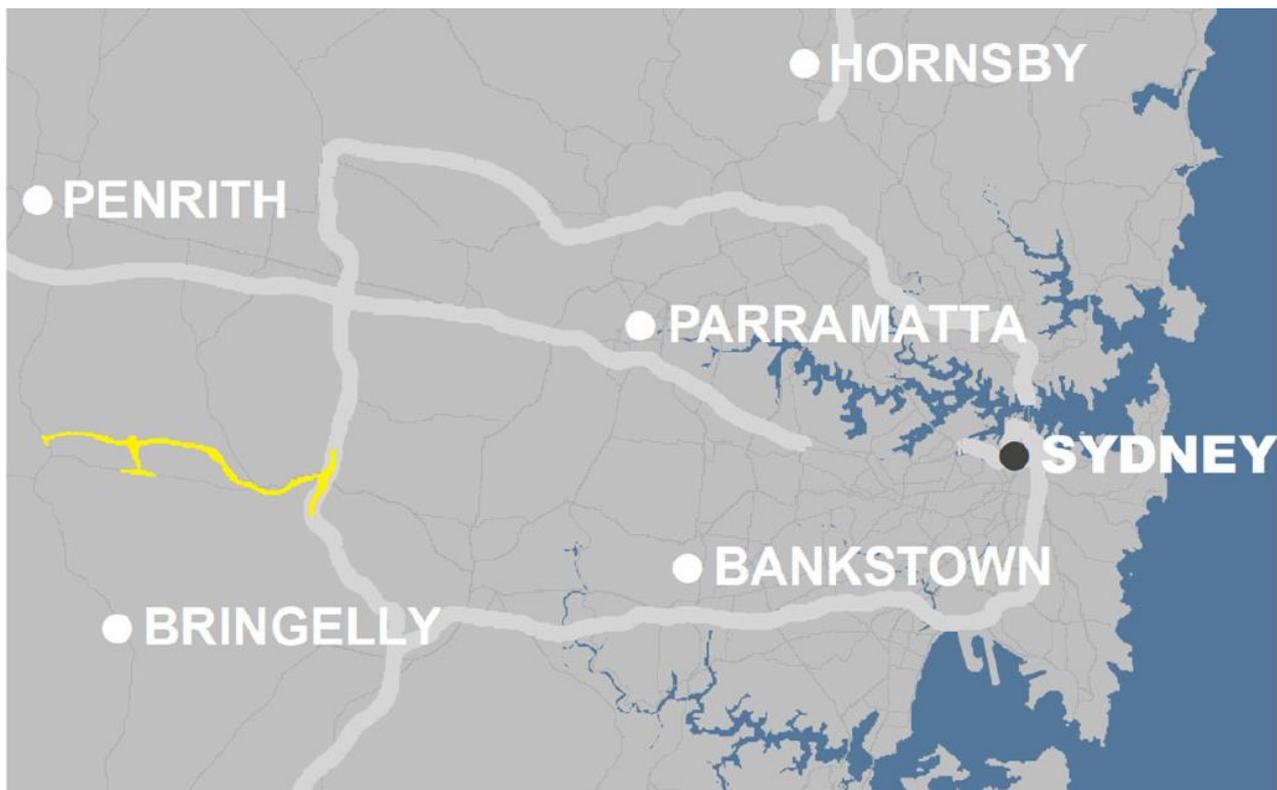
About this report

The Australian and NSW Governments are planning to deliver the M12 Motorway, a critical element of the Western Sydney Infrastructure Plan's (WSIP) road investment program.

The new M12 Motorway is proposed to span 16km between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham, will provide direct access to Western Sydney International Airport, Western Sydney Aerotropolis and the South West Growth Area, and support their connectivity.

The M12 Motorway location is illustrated in yellow in Figure 1.

Figure 1: Project location



Source: Transport for NSW 2020, M12 Motorway Final Business Case.

The M12 Motorway Final Business Case was prepared by Transport for NSW in 2019. This Business Case Summary has been prepared by Infrastructure NSW, the NSW Government's independent infrastructure advisory agency.

Strategic context

The Western Sydney City Deal

The Australian Government, NSW Government and 8 local councils signed up to the *Western Sydney City Deal* in March 2018.¹ A key commitment of the *Western Sydney City Deal* is to increase infrastructure investment to unlock the economic potential of the region, reduce congestion and support local needs.

The Western Sydney Infrastructure Plan (WSIP)

The Australian and NSW governments have worked together to meet the demand in the Western Parkland City and accommodate the expected growth by investing in the WSIP – a 10-year, \$4.4 billion road investment program for Western Sydney.²

The M12 Motorway is a key part of the WSIP.

Alignment to government strategic plans

The M12 Motorway contributes to or aligns with several strategies and plans that focus on infrastructure investment in Western Sydney. Some of the strategies and plans include *A Metropolis of Three Cities*,³ the *Western City District Plan*,⁴ *Future Transport Strategy 2056*,⁵ and *Greater Sydney Services and Infrastructure Plan*.⁶

Australian and NSW Government commitment

In 2020-21, the Australian and NSW governments committed funding to the M12 Motorway.

The M12 Motorway was added as a High Priority Project to Infrastructure Australia's Infrastructure Priority List in June 2020.⁷

¹ Western Sydney City Deal 2021, *City Deal*.

² Australian Government 2021, *Western Sydney Infrastructure Plan*.

³ Greater Sydney Commission 2018, *Greater Sydney Region Plan – A Metropolis of Three Cities*.

⁴ Greater Sydney Commission 2018, *Western City District Plan*.

⁵ Transport for NSW 2020, *Future Transport Strategy 2056*.

⁶ Transport for NSW 2018, *Greater Sydney Services and Infrastructure Plan*.

⁷ Infrastructure Australia 2020, *M12 Motorway*.

Project need

The project's need for investment is driven by the following:

The need to improve road safety

Currently, road access to the site of the Western Sydney International Airport is via Elizabeth Drive, with connections at the M7 Motorway and The Northern Road. Elizabeth Drive is prone to vehicle crashes and incidents, resulting from non-separated carriageways, uncontrolled property access, a significant level of heavy vehicle usage, and poor intersection layouts. The crash rate on Elizabeth Drive has been approximately 28% higher than the crash rate on comparable roads.

Strong forecast growth in traffic volumes along Elizabeth Drive, stimulated by the Western Sydney International Airport and developments in the area, is likely to contribute to further crashes and incidents if left unaddressed.

Expected growth in traffic for Western Sydney needs to be catered for

The program of planning and infrastructure investments in Western Sydney is anticipated to significantly increase travel demand along the Elizabeth Drive corridor:

- Western Sydney International Airport – the airport, opening in 2026, is anticipated to increase visitor, freight and employee movements.
- Western Sydney Aerotropolis – the Aerotropolis is anticipated to increase freight and employee movements.
- South West Growth Area – a forecast 75% increase in population and over 20,000 new jobs will increase traffic volumes nearby.

Investment is needed along the Elizabeth Road corridor to secure its connectivity and function within the wider road network in Western Sydney, including connection to the future Outer Sydney Orbital.

Project objectives and design

Objectives

The project has the following objectives:

- Provide sufficient road capacity to meet traffic demand generated by investments in Western Sydney.
- Provide a high standard connection to the Western Sydney International Airport with capacity to meet future freight and passenger needs.
- Provide a road that supports and integrates with the broader transport network.
- Support the provision of an integrated regional and local public transport system.
- Preserve the access function of Elizabeth Drive.
- Provide active local transport within the east-west corridor.
- Make provision for connection to the future Outer Sydney Orbital.

Design

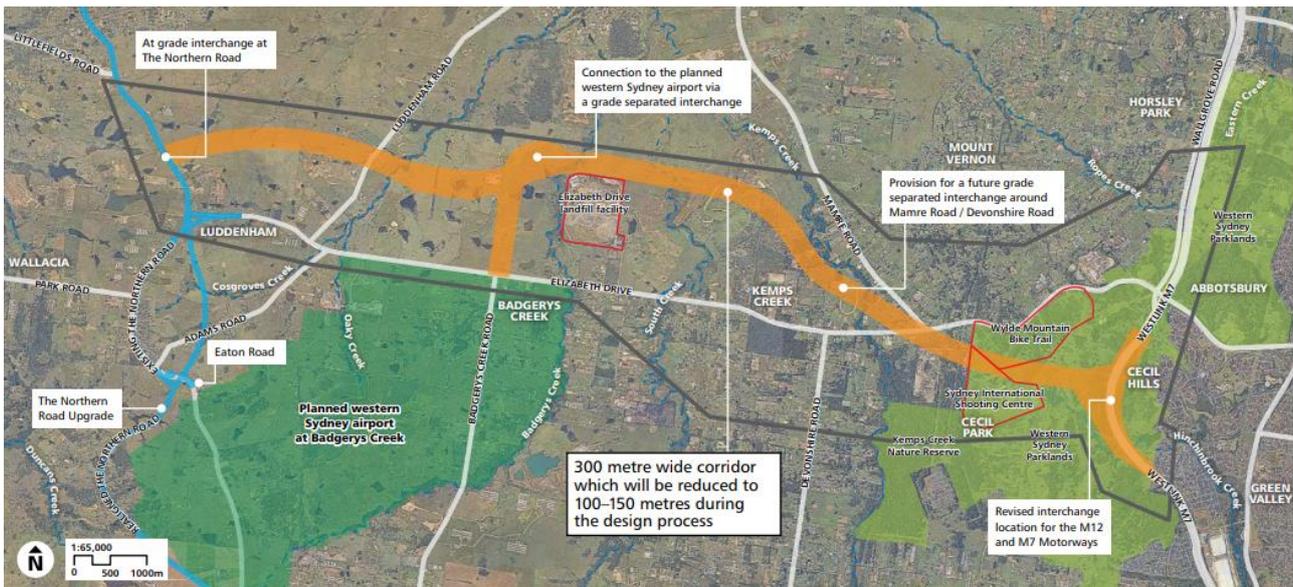
The proposed new east-west M12 Motorway, linking the M7 Motorway at Cecil Hills and The Northern Road at Luddenham, will provide direct access from the M7 to the planned Western Sydney International Airport and the Western Sydney Priority Growth Area.

The project design includes the following features:

- A 16km dual-carriageway motorway with 2 lanes in each direction and a central median. There will be capacity for future expansion to 6 lanes.
- Motorway access via:
 - motorway-to-motorway grade separated interchange with the M7 Motorway
 - an optional connection to Elizabeth Drive near the M7
 - a grade separated (from Elizabeth Drive) entry to the Western Sydney International Airport
 - an at-grade signalised connection to The Northern Road.
- Bridge structures over water bodies and grade separated interchanges.
- Inclusion of active transport (pedestrian and cyclist) facilities, including shared paths and access points.
- Modifications to the local road network, as required, to facilitate connections across and around the M12 Motorway.
- Supporting activities including utilities relocation, roadside barriers and property adjustment.

Figure 2 illustrates the preferred alignment of the M12 Motorway, located north of the existing Elizabeth Road alignment.

Figure 2: M12 Motorway preferred alignment



Source: Transport for NSW 2016, M12 Motorway preferred corridor route (noting minor refinement of the alignment has occurred since 2016, reflecting stakeholder and community feedback)

Options identification and assessment

Transport for NSW considered a long list of design and staging options. The options were assessed in many internal workshops including value management, safety, design, and cost considerations and shortlisted as presented in below table.

Table 1: Shortlist of project options

Options	Key Features
Accelerated Elizabeth Drive upgrade	<ul style="list-style-type: none"> • M12 Motorway is not constructed. • By 2026, Elizabeth Drive is upgraded to a 4 lane divided carriageway between the M7 Motorway and the Western Sydney International Airport. • By 2036, Elizabeth Drive is upgraded between Western Sydney Airport and the Northern Road.
Staged M12 Motorway with connection to Elizabeth Drive	<ul style="list-style-type: none"> • By 2026, staged delivery of the M12 Motorway between the M7 Motorway and Western Sydney Airport. • Remainder of M12 Motorway from Western Sydney Airport to The Northern Road is deferred to a later stage. • Upgrade of Elizabeth Drive from The Northern Road to Western Sydney International Airport would also be required.
M12 Motorway with connection to Elizabeth Drive	<ul style="list-style-type: none"> • By 2026, the M12 Motorway is constructed between the M7 Motorway and The Northern Road. • Connections to Elizabeth Drive and Western Sydney International Airport.
M12 Motorway without connection to Elizabeth Drive	<ul style="list-style-type: none"> • By 2026, the M12 Motorway is constructed between the M7 Motorway and The Northern Road. • The M12 Motorway will provide access to the Western Sydney International Airport, however, there will be limited connections to Elizabeth Drive.

Source: Transport for NSW 2020, M12 Motorway Final Business Case.

The 'M12 Motorway without connection to Elizabeth Drive' option has been identified as the preferred option as this solution:

- meets the project objectives most comprehensively without the additional costs for access from the M12 Motorway to Elizabeth Drive near the airport
- offers the highest Benefit Cost Ratio (BCR) compared to the other options
- Enhances the capacity for the network to meet the growing traffic volume in 2026 and 2036, including adequate east west capacity.

Economic evaluation

A Cost Benefit Analysis (CBA) of the project options was completed in the Final Business Case. The CBA followed Transport for NSW's economic appraisal guidelines and review processes, alongside additional guidance from the NSW Treasury and the Australian Transport Assessment and Planning.

Costs

Key elements of the cost estimate include:

- construction costs, including materials and labour
- cost contingency and nominal escalation
- operating and maintenance costs over 30 years.

Benefits

The M12 Motorway is expected to deliver a range of quantifiable benefits to road users and the community, including:

- travel time savings for every day road users and visitors to Western Sydney International Airport
- improved travel time reliability
- vehicle operating cost savings including fuel, maintenance and depreciation
- reduction in crash costs
- residual value of motorway assets.

Environmental externality cost savings associated with airborne pollution and greenhouse gases emissions and noise were not identified as minor increases in these costs are anticipated as the M12 Motorway supports increasing traffic flow in Western Sydney.

Qualitative benefits have also been identified. Examples of these benefits include improved access to major transport hubs and Western Sydney International Airport, active transport connectivity and integration with the surrounding road network.

The outcomes of the analysis

A discount rate of 7% was used to calculate the present value of future costs and benefits of a 30-year evaluation period. All costs and benefits are presented in 2019-20 dollar terms (June 2020).

The preferred project option has a positive Net Present Value (NPV) of \$1,171 million and a BCR of 1.8, demonstrating the project benefits are expected to exceed the costs. This supports the rationale for investment by the Australian and NSW Governments.

The results from the project's CBA are summarised in Table 2.

Table 2: Costs and benefits (\$ million, 2019-20 dollar terms)

	\$ millions, Present Value
Costs	
Total construction and maintenance costs	1,440
Benefits	
Travel time savings	1,877
Vehicle operating cost savings	612
Asset Residual Value	87
Crash cost savings	52
Travel time reliability	23
Externalities savings (e.g. airborne pollution)	-41
Total benefits	2,611
Outputs	
NPV, \$ million (P50)	1,171
BCR	1.8

Source: *Transport for NSW 2020, M12 Final Business Case (noting minor variances are due to rounding).*

Sensitivity analysis

Sensitivity tests were completed to account for risk and uncertainty in the CBA and road network assumptions. Key tests included changes in the discount rate, increase in costs, and decreases in expected benefits.

For most scenarios, the NPV was positive and the BCR above 1. Traffic growth of 0% and 50% would make the project unviable, noting these growth scenarios were deemed unlikely to materialise.

Deliverability

The M12 Motorway will be delivered by the Western Sydney Project Office within Transport for NSW.

Procurement and timeframe

The delivery of the M12 Motorway is planned through 3 separate packages:

- The Western and the Central packages, to be respectively procured under Construction Only contracts.
- The Eastern package, to be procured under a Design and Construct (D&C) contract.

The construction of the project is expected to commence in early 2022. Final delivery timeframes will be known following engagement with the construction industry to determine the best delivery strategy and construction timeframes.

Governance

The governance structure for the project includes a Project Executive Steering Committee, with representatives from divisions across Transport for NSW and the Commonwealth Department of Infrastructure, Transport, Regional Development and Communications (DITRDC).

Key risks and mitigation

Key risks have been identified through a series of workshops with key stakeholders. These risks include:

- property acquisition costs exceeding current estimates
- constructability, coordination, interface issues with adjoining projects and stakeholders
- project scope and utility scope creep to meet requirements from stakeholders.

A risk management plan has been developed, including the implementation of a process to manage and mitigate project risks.

The Infrastructure NSW view

In February 2020, Infrastructure NSW undertook a review of the M12 Motorway Final Business Case.

In Infrastructure NSW's view, the Final Business Case demonstrated:

- a strong case for the construction of the M12 Motorway as the development of Western Sydney International Airport, the Aerotropolis and associated new business parks cannot be serviced by the existing road network, even if it were to be upgraded
- the M12 Motorway project has strong economic viability with a BCR of 1.8 and an NPV of \$1,171 million
- the procurement strategy and implementation of three separate construction contracts were suitable
- a high level of confidence that the M12 Motorway could be delivered effectively and in accordance with the NSW Government's objectives.

Whilst Infrastructure NSW noted the delivery program was achievable, it was also recognised that factors such as planning approvals, interfaces with the M7 Motorway and utilities relocation could cause delays, therefore requiring close management and monitoring of progress.

Infrastructure NSW understands the project's scope has since been refined as follows:

- The option to connect the M12 Motorway to Elizabeth Drive near the M7 has been exercised.
- The motorway-to-motorway grade separated interchange with the M7 Motorway is subject to an unsolicited proposal to widen the M7.