7.0 Environmental assessment

7.1 Traffic and transport

A Traffic and Transport Impact Assessment (TTIA) was undertaken for the proposed modification to address potential construction and operational traffic and transport impacts. The TTIA is provided in full in **Appendix D** (Traffic and transport technical assessment).

7.1.1 Introduction

Table 7-1 sets out the SEARs relevant to the traffic and transport assessment and identifies where the requirements have been addressed in this section.

Table 7-1 SEARs – Traffic and transport

Desired Performance Outcome	SEAR	Where addressed within the Modification Report
1. Transport, Traffic and Movement Network connectivity, safety and efficiency of the transport system in the vicinity of the project are managed to minimise impacts. The safety of transport system customers is maintained. Impacts on network capacity and the level of service are effectively managed. Works are compatible with existing infrastructure and future transport corridors. The project is well-designed and enhances the environment where it is located, including improved accessibility and connectivity for communities and public spaces. The project contributes to greener places through the	1. Construction transport and traffic (vehicle, pedestrian and cyclists) impacts, including, but not necessarily limited to: a. a considered approach to route identification and scheduling of construction vehicle movements; b. the indicative number, frequency and size of construction related vehicles (passenger, commercial and heavy vehicles, including spoil management movements), including the indicative number and route of heavy vehicle movements outside of standard construction hours; c. construction worker parking, including the location and capacity of proposed parking facilities; d. the nature of existing traffic (types and number of movements) on construction access routes (including consideration of peak traffic times and sensitive road users, pedestrian and cyclist activities and on-street parking arrangements); e. access constraints and impacts on public transport (infrastructure and services), pedestrians and cyclists; f. the need to close, divert or otherwise reconfigure elements of the road, pedestrian and cycle network associated with construction of the project and the duration of these changes; and g. impacts to on-street parking, including to residents and businesses.	Traffic management and access is discussed in **Section 4.3.17**. Traffic impacts are discussed in **Section 7.1.5**

Desired Performance Outcome	SEAR	Where addressed within the Modification Report
enhancement and provision of green infrastructure.	2. Operational traffic related impacts of the project, including: a. forecast travel demand and traffic volumes for the project and the surrounding road, cycle and public transport network; b. travel time analysis; c. performance of key interchanges and intersections by undertaking a level of service analysis at key locations; d. wider transport interactions (local and regional roads, cycling, public and freight transport); e. induced traffic and operational implications for public transport (particularly with respect to strategic bus corridors and bus routes) and consideration of opportunities to improve public transport; f. impacts on cyclists and pedestrian access and safety; and g. an explanation of the scope of the modelled area, including justification of the nominated boundaries. *Note: The Traffic assessment must include consideration of changes to traffic volumes that would occur as a result of current and future strategic land use changes and road projects/upgrades within the road catchment which feeds into the project alignment.*	**Section 7.1.5**
	3. Identify Movement (accessibility and connectivity) principles, outcomes and actions for the project that facilitate improvements to movement, including in relation to: a. how the project considers the relationship between movement and place [including any issues and opportunities identified]; b. how the project contributes to more walking, cycling and public transport use including journey time comparisons for public and active transport for general traffic journey time improvements made, and the matters set out in the Healthy Urban Development Checklist TC1 and TC2 (NSW Health, 2009); c. how any walking, cycling or public transport improvements provided by the project integrates with wider active and public transport networks; and	**Section 7.1.5** Current active travel movements across and adjacent to the Westlink M7 corridor would be maintained, however the proposed modification does not directly improve active travel linkages and connections within the wider network surrounding the study area.

Desired Performance Outcome	SEAR	Where addressed within the Modification Report
	d. opportunities for refinements and improvements to the existing pedestrian and cycle routes adjacent to and across the M7 Motorway corridor, including in response to land use changes/development since the opening of the M7 Motorway (including access between key community focal points such as public transport nodes, public open space and community facilities);	

7.1.2 Method of assessment

Legislation and policy context

The following guidelines were referenced in carrying out this assessment:

- *Motorway Design Guide – Capacity Flow Analysis* (Transport, 2017)
- *Guide to Traffic Management–Part 3 Traffic Studies and Analysis* (Austroads, 2020)
- *Guide to Traffic Generating Developments Version 2.2* (NSW Roads and Traffic Authority, 2002)
- *Cycling Aspects of Austroads Guides* (Austroads, 2014)
- *NSW Bicycle Guidelines v1.2* (RTA, 2005)
- *Planning Guidelines for Walking and Cycling* (DIPNR, 2004)
- *NSW Sustainable Design Guidelines Version 3.0* (Transport, 2013)
- *Traffic Modelling Guidelines* (Transport, 2013)
- *Highway Capacity Manual* (Transportation Research Board, 2022).

Method of assessment - Construction

The construction TTIA assessment methodology involved the following key tasks:

- Assess the existing transport conditions within the study area
- Identifying the indicative construction strategy including:
  - Construction activities
  - Location of ancillary facilities
  - Staging and program
  - Hours of work
- Considering traffic management based on:
  - Construction workforce
  - Estimated construction traffic
  - Site access
  - Haulage routes
- Assessing potential construction traffic impacts of the proposed modification and categorising them as either:
  - Temporary road closures or diversions required for certain construction activities

  - Temporary increase in light and heavy vehicle traffic movements generated by construction activities.

- Recommending suitable mitigation measures to manage potential impacts.

The construction TTIA was prepared prior to the appointment of a construction contractor and as such, the construction strategy presented and assessed for the proposed modification aims to provide an assessment of probable construction methodologies, while retaining flexibility for the construction contractor to refine the construction methodology and detailed design following their appointment. The detail of the design and construction approach presented in the construction TIA is therefore indicative only and is subject to detailed design and construction planning.

Method of assessment - Operation

The operational TTIA assessment methodology involved the following process:

- Assess the existing transport conditions within the study area
- Predict the operational transport impacts of the proposed modification including cumulative impacts using a suite of traffic modelling tools including:
  - Transurban's Strategic Transport Model (TUSTM) to provide traffic demands and to understand the wider network impacts of the proposed modification
  - Microsimulation modelling to assess the impacts on the Westlink M7 mainline, ramps and interchanges with other motorways
  - Intersection modelling to assess the operational impacts of the proposed modification on the intersections directly adjacent and/or interfacing with the Westlink M7
- Assess the operational transport impacts of the proposed modification including cumulative assessment using the following key performance metrics:
  - Network performance criteria
  - Travel times
  - Roadway level of service
  - Intersection level of service.
- Identify mitigation measures that manage and minimise the risk of the identified impacts.

7.1.3 Study area

The study area for the TTIA broadly encompassed an area extending along the Westlink M7 from Camden Valley Way to Richmond Road, as well as the immediate or adjacent intersections and interchanges as shown in Figure 7-1. The study area was informed by forecast traffic and transport changes from TUSTM, that covers the Sydney metropolitan area, and was used in the operational modelling.

For the purpose of the assessment, the Westlink M7 was split into nine segments (from south to north), as summarised in Table 7-2.

Table 7-2 Assessed Westlink M7 segments

#	Westlink M7 segments
1	Camden Valley Way, Prestons to Bernera Road, Prestons
2	Bernera Road, Prestons to Cowpasture Road, Hinchinbrook / Len Waters Estate
3	Cowpasture Road, Hinchinbrook / Len Waters Estate to Elizabeth Drive, Cecil Hills / Abbotsbury
4	Elizabeth Drive, Cecil Hills / Abbotsbury to The Horsley Drive, Horsley Park
5	The Horsley Drive, Horsley Park to Old Wallgrove Road, Eastern Creek

#	Westlink M7 segments
6	Old Wallgrove Road, Eastern Creek to Great Western Highway, Eastern Creek / Bungarribee
7	Great Western Highway, Eastern Creek / Bungarribee to Woodstock Avenue, Rooty Hill / Plumpton / Glendenning
8	Woodstock Avenue, Rooty Hill / Plumpton / Glendenning to Power Street, Plumpton / Glendenning
9	Power Street, Plumpton / Glendenning to Richmond Road, Glendenning / Oakhurst

FIGURE 7-1: STUDY AREA USED FOR TRAFFIC AND TRANSPORT ASSESSMENT

N

0 1 2 km

AECOM

Legend

- Study area
- Motorway
- Primary road
- Local road

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7.1.4 Existing environment

Modes of travel

Overall, across the study area, the surrounding LGAs have a higher reliance on private vehicles than the Sydney Greater Metropolitan Area (GMA). On a typical workday, car-based travel equates to 75 to 83 per cent of trips generated by the Blacktown, Fairfield, and Liverpool local government areas (LGAs) compared to 41 per cent for the Sydney GMA.

Road network

Within the study area, the Westlink M7 is configured with two lanes in each direction separated by a wide landscaped median. It has a posted speed limit of 100 kilometres per hour, albeit reduced speed limits are often used during peak periods and incidents.

The key Westlink M7 road crossings and interchanges within the study area are shown on Figure 7-1 and include the following, listed from south to north:

- Camden Valley Way (A28) (in Prestons)
- M5 Motorway (in Prestons)
- Bernera Road and Jedda Road (in Prestons)
- Cowpasture Road (in Middleton Grange and Hoxton Park)
- Elizabeth Drive (in Cecil Park and Abbotsbury)
- The Horsley Drive (in Horsley Park)
- Wallgrove Road at Old Wallgrove Road (in Eastern Creek)
- M4 Motorway (at the Westlink M7/M4 Motorway (Light Horse) Interchange) (in Eastern Creek)
- Great Western Highway (A44) (in Eastern Creek and Blacktown)
- Woodstock Avenue (in Plumpton and Glendenning)
- Power Street (in Plumpton and Glendenning)
- Richmond Road (in the suburb of Dean Park).

Traffic volumes

Traffic volumes are generally higher in segments 1 to 6 (i.e. the southern sections of the study area) with segment 4 between Elizabeth Drive and The Horsley Drive carrying the highest traffic volumes, with approximately 87,200 vehicles per workday. The workday peak hour and daily traffic volumes for each of the nine Westlink M7 segments are summarised in Table 7-3.

Table 7-3 Workday traffic volumes on the Westlink M7 (May 2021)

#	Westlink M7 segments	Workday traffic volumes (vehicles)		
		AM peak hour	PM peak hour	Daily
1	Camden Valley Way to Bernera Road	6,130	6,520	84,340
2	Bernera Road to Cowpasture Road	6,110	6,450	84,680
3	Cowpasture Road to Elizabeth Drive	5,940	6,460	85,820
4	Elizabeth Drive to The Horsley Drive	6,080	6,330	87,140
5	The Horsley Drive to Old Wallgrove Road	6,120	5,990	86,230
6	Old Wallgrove Road to Great Western Highway	5,900	6,080	84,170

#	Westlink M7 segments	Workday traffic volumes (vehicles)		
		AM peak hour	PM peak hour	Daily
7	Great Western Highway to Woodstock Avenue	6,160	6,210	80,020
8	Woodstock Avenue to Power Street	4,970	4,970	65,390
9	Power Street to Richmond Road	5,550	5,460	71,250
Average		**5,880**	**6,050**	**81,000**

The AM peak hour, PM peak hour and average workday traffic volumes for the road network surrounding the Westlink M7, showed the following:

- Cowpasture Road and Richmond Road carry more than 30,000 vehicles per workday in each direction, having the highest traffic volumes of the adjacent roads
- Kurrajong Road, Hoxton Park Road, Elizabeth Drive, Great Western Highway, Francis Road, and Rooty Hill Road carry between 10,000 and 20,000 vehicles per workday in each direction
- The Horsley Drive, Wallgrove Road, Woodstock Avenue, Power Street, and Lamb Street all carry between 5,000 and 10,000 vehicles per workday in each direction.

Heavy vehicles

The Westlink M7 is a key freight route that facilitates access to surrounding industrial precincts and therefore up to 25 per cent of total traffic volumes are heavy vehicles.

Vehicles up to B-Doubles are permitted on the Westlink M7, and these are anticipated to be the largest common vehicle. Vehicles larger than this would be classified as a restricted access vehicle and require appropriate permits for use.

Active transport

The Westlink M7 shared path runs parallel and traverses the Westlink M7 providing an off-road facility for cyclists and pedestrians. Just under 40 kilometres long, it connects with the surrounding cycleway and footpath network. Cyclists are also permitted to use the Westlink M7 shoulder.

Cycle counts were undertaken across nine days (11 June 2022 to 19 June 2022) to understand the cycling behaviour along the mainline of the Westlink M7. Less than 20 cyclists per day were counted on a workday and a weekend.

Public transport

Rail use represents five to six per cent of workday travel in the surrounding Blacktown, Fairfield, and Liverpool LGAs.

Table 7-4 summarises the rail services and stations that service the study area.

Table 7-4 Rail services surrounding the study area

Line description	Nearby stations
T1 Western Line	Rooty Hill, Doonside, Blacktown
T2 Inner West and Leppington Line	Glenfield, Edmondson Park
T5 Cumberland Line	Glenfield, Edmondson Park

Bus passengers represent four to seven per cent of workday travel in the surrounding Blacktown, Fairfield and Liverpool LGA's. There are no bus facilities on the Westlink M7 Motorway. While no buses are scheduled to run along the Westlink M7 within the study area, bus services operate in the vicinity of

the study area as well as the motorway, with many bus routes using the surrounding road network including roads that also facilitate access to/from the Westlink M7 ramps.

Road network performance

Hourly average speed recordings along the Westlink M7 were obtained from permanent traffic detectors. The daily speed profiles show significant speed reductions during the AM and PM peak periods (about 6:00 am to 9:00 am and 2:00 pm to 6:00 pm) at most locations within the study area.

For northbound traffic, average travel speeds dropped to nearly 40 kilometres per hour in the AM peak period and 60 kilometres per hour in the PM peak period. Similarly, for southbound traffic, average travel speeds dropped to nearly 60 kilometres per hour in the AM peak period and 30 to 40 kilometres per hour in the PM peak period. Travel speeds are generally lower in the southern part of the study area than the northern part.

Table 7-5 presents the level of service for the 2021 AM and PM peak hour for the nine assessed segments of the Westlink M7. Most of the assessed segments currently operate with a Level of Service (LoS)[1] E or F during either the workday AM or PM peak hours. However, segments eight and nine operate with a LoS D during the workday AM or PM peak hours.

Overall, the roadway level of service assessment suggests that the Westlink M7 corridor is approaching capacity and some segments are currently operating at capacity during the workday AM and PM peak hours.

Table 7-5 Mid-block level of service of the Westlink M7 – 2021

#	Westlink M7 segment	Direction of travel	No of lanes	AM peak hour		PM peak hour	
				Density	Level of service	Density	Level of service
1	Camden Valley Way to Bernera Road	Northbound	2	37	F	21	D
		Southbound	2	22	E	19	D
2	Bernera Road to Cowpasture Road	Northbound	2	49	F	25	E
		Southbound	2	25	E	22	E
3	Cowpasture Road to Elizabeth Drive	Northbound	2	44	F	31	F
		Southbound	2	24	E	32	F
4	Elizabeth Drive to The Horsley Drive	Northbound	2	21	D	19	D
		Southbound	2	29	F	29	F
5	The Horsley Drive to Old Wallgrove Road	Northbound	2	20	D	21	D
		Southbound	2	41	F	57	F
6	Old Wallgrove Road to Great Western Highway	Northbound	2	20	D	26	E
		Southbound	2	39	F	55	F

[1] Level of service (LoS) is a measure to determine the operational conditions and efficiency of a roadway or intersection. There are six levels of service definitions for a freeway ranging from LoS A, representing optimum and free-flow operating conditions, to LoS F, representing breakdown in flow. Refer to Section 4.4 of **Appendix D** (Traffic and transport technical assessment) for a more detailed definition.

#	Westlink M7 segment	Direction of travel	No of lanes	AM peak hour		PM peak hour	
				Density	Level of service	Density	Level of service
7	Great Western Highway to Woodstock Avenue	Northbound	2	21	D	22	E
		Southbound	2	26	E	19	D
8	Woodstock Avenue to Power Street	Northbound	2	20	D	20	D
		Southbound	2	22	D	18	D
9	Power Street to Richmond Road	Northbound	2	20	D	19	D
		Southbound	2	21	D	16	D

Note: density values have been extracted from the operational model

Table 7-6 shows the existing 2021 intersection performance within the study area.

Most of the study area intersections currently operate with an overall LoS D or better. However, the minor roads at each intersection generally operate with higher delays and lengthy vehicle queuing, this includes the Westlink M7 ramps at several locations.

The Great Western Highway/Rooty Hill Road South/Wallgrove Road intersection currently operates at LoS E, suggesting that traffic demands currently exceed the available intersection capacity.

Table 7-6 AM and PM peak hour intersection performance - 2021

ID	Intersection	AM peak hour		PM peak hour	
		Average delay (seconds)	Level of service	Average delay (seconds)	Level of service
1	Camden Valley Way/M7/M5 northbound entry ramp/M31 exit ramp	33	C	31	C
2	Camden Valley Way/M5 southbound exit ramp	6	A	10	A
3	Bernera Road/Yarrawa Street/M7 exit ramp/M7entry ramp	47	D	17	B
4	Jedda Road/Bernera Road/M7 exit ramp/M7 entry ramp	20	B	16	B
5	Cowpasture Road/M7 exit ramp/M7 entry ramp	18	B	20	B
6	Elizabeth Drive/ M7 exit ramp/Wallgrove Road	38	C	42	C
7	Elizabeth Drive/ M7 entry ramp/M7 exit ramp	25	B	18	B
8	Elizabeth Drive/M12 entry Ramp/Wallgrove Road	Not applicable			
9	Wallgrove Road/Cecil Road				

ID	Intersection	AM peak hour		PM peak hour	
		Average delay (seconds)	Level of service	Average delay (seconds)	Level of service
10	The Horsley Drive/Wallgrove Road	46	D	48	D
11	The Horsley Drive/Wallgrove Road/M7 entry Ramp/M7 exit ramp	36	C	38	C
12	Wallgrove Road/Mini Link Road/M7 entry ramp/M7 exit ramp	32	C	44	D
13	Old Wallgrove Road/Wallgrove Road/M7 entry ramp/M7 exit ramp	35	C	29	C
14	Great Western Highway/Rooty Hill Road South/Wallgrove Road	59	E	63	E
15	Great Western Highway/M7 entry ramp	2	A	4	A
16	Great Western Highway/M7 exit ramp	12	A	9	A
17	Woodstock Avenue/M7 exit ramp	16	B	15	B
18	Woodstock Avenue/M7 entry ramp	8	A	9	A
19	Power Street/M7 entry ramp	2	A	1	A
20	Power Street/M7 exit ramp	10	A	10	A
21	Rooty Hill Road North/M7 exit ramp	27	B	22	B
22	Rooty Hill Road North/Richmond Road/M7 entry ramp/M7 exit ramp	31	C	43	D
23	Richmond Road/M7 entry ramp	26	B	37	C

Road safety and crash history

A total of 323 crashes were recorded along the Westlink M7 between Camden Valley Way and Richmond Road for the five year period between 1 October 2015 and 27 September 2020. Approximately 30 per cent of crashes on the Westlink M7 involved at least one heavy vehicle.

During the same five-year period, a total of 194 crashes were recorded at the intersections within the study area.

7.1.5 Impact assessment

Construction

Additional construction related traffic

Haulage of construction materials to and from the proposed modification would be via the Westlink M7, wherever possible. Where it is not possible to access the construction ancillary facilities directly from the Westlink M7, haulage would occur via roads in the adjoining residential/industrial areas. Some haulage would also take place within the construction footprint, generally within the central median.

Westlink M7

Existing traffic volumes and expected construction traffic volumes along the Westlink M7 are summarised in Table 7-7. Traffic volumes on the Westlink M7 are expected to increase by up to two percent per day or between one to three percent during the peak hours. These traffic volume increases are minor.

In addition, shuttle buses would be considered on an as needed basis to safely and efficiently convey workers from the zone construction ancillary facilities to the median sites. The use of shuttle buses would reduce the traffic volumes generated by the median sites and therefore further minimise impacts to the Westlink M7 operation.

Table 7-7 Existing Westlink M7 traffic volumes and proportional increases due to construction vehicles

#	Westlink M7 segment	Existing (2021) workday traffic volumes (vehicles)			Construction traffic volume estimates (vehicles)			
		Daily	AM peak hour	PM peak hour	Daily	%age change	Hourly	%age change
1	Camden Valley Way to Bernera Road	84,340	6,130	6,520	1,440	2%	150	2%
2	Bernera Road to Cowpasture Road	84,680	6,110	6,450	1,440	2%	150	2%
3	Cowpasture Road to Elizabeth Drive	85,820	5,940	6,460	1,920	2%	200	3%
4	Elizabeth Drive to The Horsley Drive	87,140	6,080	6,330	1,440	2%	150	2%
5	The Horsley Drive to Old Wallgrove Road	86,230	6,120	5,990	1,920	2%	200	3%
6	Old Wallgrove Road to Great Western Highway	84,170	5,900	6,080	960	1%	100	2%
7	Great Western Highway to Woodstock Avenue	80,020	6,160	6,210	1,440	2%	150	2%
8	Woodstock Avenue to Power Street	65,390	4,970	4,970	480	1%	50	1%
9	Power Street to Richmond Road	71,250	5,550	5,460	960	1%	100	2%

Surrounding road network

Table 7-8 summarises the construction traffic volume estimates that would use the surrounding road network to access each of the respective ancillary facilities and the percentage change from current traffic volumes (where available).

Of the local and regional roads, Wilson Road, Aviation Road and Blackbird Close would experience the greatest impact, with an additional 90 vehicles per hour expected to use Wilson Road and Blackbird Close and 140 additional vehicles per hour expected to use Aviation Road.

Aviation Road and Blackbird Close are in an industrial area, and therefore the additional construction related traffic volumes and minor increase to heavy vehicles would be expected to have minimal impact on the operation and safety of these roads.

Wilson Road provides local access between Hoxton Park Road and the local residential area in Hinchinbrook. No residential properties have frontages to the southern section of Wilson Road which is planned to be used for access to/from the construction ancillary facility, however several community facilities do. Therefore, use of Wilson Road should be coordinated to minimise concurrent timing with large gatherings that may occur at adjacent land-uses.

The remaining local and regional roads are expected to carry an additional 50 vehicles per hour which is expected to have minimal impact on the operation and safety of these roads, given that most are in industrial areas. Construction activities at the ancillary facilities accessed via residential streets would be minimised as much as practical to limit adverse impacts on the adjacent residents.

Traffic volumes on State roads could increase by up to six percent per day due to construction traffic accessing ancillary facilities. For most locations, this would be expected to have minimal impact on the operation and safety of these roads given the existing traffic volumes and road network conditions.

However, peak hourly traffic volumes on Wallgrove Road and Elizabeth Drive could increase by up to 18 and seven percent per hour, respectively. This is considered a more significant traffic volume increase which would likely result in increased peak period congestion and travel times along these roads.

Table 7-8 Construction traffic volumes and proportional increases from existing traffic volumes

Potential access route	Daily construction vehicle estimates (vehicles)				Hourly construction vehicle estimates (vehicles)			
	Light	Heavy	Total	%age increase from 2021 [1]	Light	Heavy	Total	%age increase from 2021 [1]
Ash Road	300	80	**380**		40	10	**50**	
Jedda Road	300	80	**380**		40	10	**50**	
Bernera Road	300	80	**380**		40	10	**50**	
Yarato Road	320	160	**480**		40	10	**50**	
Wilson Road	490	120	**610**		70	20	**90**	
Aviation Road	790	200	**990**		110	30	**140**	
Blackbird Close	490	120	**610**		70	20	**90**	
Hoxton Park Road	705	220	**925**	3%	95	25	**120**	4%
Cowpasture Road	880	225	**1,105**	2%	125	31	**156**	3%
Dobroyd Drive	300	80	**380**		40	10	**50**	
Regentville Drive	300	80	**380**		40	10	**50**	
Redmayne Road	320	160	**480**		40	10	**50**	
M12 haul road [2]	490	120	**610**		70	20	**90**	
Elizabeth Drive	915	230	**1,145**	4%	135	32	**167**	7%
Wallgrove Road	698	235	**933**	6%	98	24	**242**	18%

Potential access route	Daily construction vehicle estimates (vehicles)				Hourly construction vehicle estimates (vehicles)			
	Light	Heavy	Total	%age increase from 2021 [1]	Light	Heavy	Total	%age increase from 2021 [1]
Great Western Highway	180	50	**230**	1%	30	2	**32**	1%
Mavis Street	180	50	**230**		30	2	**32**	
Rooty Hill Road South	320	160	**480**		40	10	**50**	
Woodstock Avenue	180	50	**230**	1%	30	2	**32**	3%

[1] No data is available if cells are blank
[2] M12 haul road, as approved as part of the M12 project

Reduced speed limits on the Westlink M7

Reducing the posted speed limit on the Westlink M7 from 100 kilometres per hour to 80 kilometres per hour during construction would result in a minor increase to travel times during off-peak periods of about four minutes. Travel times during peak periods are less likely to be affected due to the lower vehicle speeds and longer travel times that are currently experienced due to peak period congestion on the Westlink M7.

Some road users may choose to take alternative routes e.g., Wallgrove Road because of the lower posted speed limits on the Westlink M7 and increased travel times. However, this is expected mainly during the off-peak periods and/or at night when traffic flows across the surrounding network are usually free flowing and traffic volumes using the Westlink M7 are lower. Therefore, any off-peak traffic diversions could be catered for by the surrounding road network, without causing increased congestion.

The impacts of reduced speed limits on the Westlink M7 and associated traffic using alternative routes would be monitored throughout the construction period by the appointed contractor.

Temporary road closures

Westlink M7

Bridge widening works would require temporary lane closures and traffic detours on the Westlink M7. These traffic detours would only occur at night-time to allow critical construction activities that cannot otherwise be practically carried out without road or lane closures. Table 7-9 includes a summary of the Westlink M7 temporary night-time road closures, anticipated detour routes and the existing Westlink M7 traffic volumes that would be affected.

Up to 700 vehicles per hour including up to 180 heavy vehicles would use the identified detours in each direction, assuming the Westlink M7 closures would commence at 9:00 pm. Should the closures commence later at 10:00 pm, less than 550 vehicles per hour would use the identified detours.

Table 7-10 summarises the impacts of the required Westlink M7 closures on the respective detour routes, by comparing the estimated traffic volumes on the proposed detour routes during the night-time peak hours with the respective workday peak hour traffic volumes.

On most roads that would accommodate the detoured traffic, the estimated traffic volumes at 9:00 pm is less than or equal to the workday peak hour traffic volumes. Therefore, the surrounding road network and intersection performance during the Westlink M7 closures for most locations are expected to be similar to the existing workday peak hour performance, most of which perform with an overall LoS D or better.

The estimated traffic volumes at 9:00 pm would be more than the workday peak hour traffic volumes at the following locations:

- Kurrajong Road
- The Horsley Drive
- Wallgrove Road
- Woodstock Avenue
- Power Street.

During Westlink M7 closures, the performance of the above-mentioned roads and their intersections would be similar to the performance experienced during a workday peak hour. If the Westlink M7 closures were to commence after 10:00 pm, the total traffic volumes would be lower and road network and intersection performance better than workday peak periods.

Table 7-9 Westlink M7 temporary road closures and detour routes

Westlink M7 segment closed (requiring detour)	Direction of travel	Detour description	Diverted Westlink M7 traffic volumes (vehicles)					
			9:00 pm to 10:00 pm			10:00 pm to 11:00 pm		
			Light	Heavy	Total	Light	Heavy	Total
Between M5 Motorway and Bernera Road	Northbound	Camden Valley Way, Old Kurrajong Road, Kurrajong Road, Bernera Road and Bernera Road entry ramp to Westlink M7	500	180	**680**	350	170	**520**
	Southbound	Westlink M7 exit ramp to Bernera Road, Bernera Road, Kurrajong Road and Camden Valley Way	440	180	**620**	290	170	**460**
Between Bernera Road and Cowpasture Road	Northbound	Westlink M7 exit ramp to Bernera Road, Bernera Road, Jedda Road, Joadja Road, Hoxton Park Road, Cowpasture Road and Cowpasture Road entry ramp to M7	520	170	**690**	350	160	**510**
	Southbound	Westlink M7 exit ramp to Cowpasture Road, Cowpasture Road, Hoxton Park Road, Joadja Road, Jedda Road, Bernera Road and Bernera Road entry ramp to Westlink M7	450	160	**610**	300	160	**460**
Between Cowpasture Road and Elizabeth Drive	Northbound	Westlink M7 exit ramp to Cowpasture Road, Cowpasture Road, Elizabeth Drive, Wallgrove Road, and Wallgrove Road entry ramp to Westlink M7	490	180	**670**	330	160	**490**
	Southbound	Westlink M7 exit ramp to Elizabeth Drive, Elizabeth Drive, Cowpasture Road and Cowpasture Road entry ramp to Westlink M7	480	160	**640**	320	160	**480**
Elizabeth Drive at the Westlink M7	Northbound	Westlink M7 exit ramp to Elizabeth Drive, Wallgrove Road, Wallgrove Road entry ramp to Westlink M7	510	180	**690**	350	160	**510**
	Southbound	Westlink M7 exit ramp to Elizabeth Drive, Elizabeth Drive (eastbound), Windsor Road (southbound), Windsor Road/Edinburgh Circuit/Sandringham Drive roundabout, Windsor Road (northbound) Elizabeth Drive (westbound) and Elizabeth Drive entry ramp to Westlink M7	520	170	**690**	330	170	**500**

Westlink M7 segment closed (requiring detour)	Direction of travel	Detour description	Diverted Westlink M7 traffic volumes (vehicles)					
			9:00 pm to 10:00 pm			10:00 pm to 11:00 pm		
			Light	Heavy	Total	Light	Heavy	Total
Between Elizabeth Drive and The Horsley Drive	Northbound	Westlink M7 exit ramp to Elizabeth Drive, Wallgrove Road, The Horsley Drive and The Horsley Drive entry ramp to Westlink M7	510	180	**690**	350	160	**510**
	Southbound	Westlink M7 exit ramp to The Horsley Drive, The Horsley Drive, Wallgrove Road, Elizabeth Drive and Elizabeth Drive entry ramp to Westlink M7	520	170	**690**	330	170	**500**
Between The Horsley Drive and Old Wallgrove Road	Northbound	Westlink M7 exit ramp to The Horsley Drive, The Horsley Drive, Wallgrove Road, and Wallgrove Road entry ramp to Westlink M7	540	170	**710**	370	150	**520**
	Southbound	Westlink M7 exit ramp to Wallgrove Road, Wallgrove Road, The Horsley Drive and The Horsley Drive entry ramp to Westlink M7	530	160	**690**	350	160	**510**
Between Old Wallgrove Road and Great Western Highway	Northbound	Westlink M7 exit ramp to Wallgrove Road, Wallgrove Road, Great Western Highway, Great Western Highway entry ramp to Westlink M7	510	160	**670**	340	130	**470**
Between Old Wallgrove Road and Power Street	Northbound	Westlink M7 exit ramp to Wallgrove Road, Wallgrove Road, Rooty Hill Road South, Francis Road, Railway Street, Duke Street, Woodstock Avenue, Rooty Hill Road North, Power Street and Power Street entry ramp to Westlink M7	510	160	**670**	340	130	**470**
	Southbound	Westlink M7 exit ramp to Power Street, Power Street, Rooty Hill Road North, Woodstock Avenue, Duke Street, Railway Street, Francis Road, Rooty Hill Road South, Wallgrove Road, and Wallgrove Road exit ramp to Westlink M7	490	120	**610**	310	130	**440**

Westlink M7 segment closed (requiring detour)	Direction of travel	Detour description	Diverted Westlink M7 traffic volumes (vehicles)					
			9:00 pm to 10:00 pm			10:00 pm to 11:00 pm		
			Light	Heavy	Total	Light	Heavy	Total
Between Woodstock Avenue and Power Street	Southbound	Westlink M7 exit ramp to Power Street, Power Street, Rooty Hill Road North, Woodstock Avenue, Woodstock Avenue entry ramp to Westlink M7	340	80	**420**	200	90	**290**
Between Woodstock Avenue and Richmond Road	Northbound	Westlink M7 exit ramp to Woodstock Avenue, Woodstock Avenue, Rooty Hill Road North, Richmond Road entry ramp to Westlink M7	450	110	**560**	260	70	**330**
	Southbound	Westlink M7 exit ramp to Richmond Road, Rooty Hill Road North, Woodstock Avenue, Woodstock Avenue entry ramp to Westlink M7	360	90	**450**	220	90	**310**

Table 7-10 Impacts of Westlink M7 closures on the surrounding road network

Location	Direction	Estimated traffic volumes during Westlink M7 closures (vehicles)							
		9:00 pm to 10:00 pm				10:00 pm to 11:00 pm			
		2021 traffic volumes	Detoured Westlink M7 traffic	Total	Percentage of peak hour traffic	2021 traffic volumes	Detoured Westlink M7 traffic	Total	Percentage of peak hour traffic
Kurrajong Road at Westlink M7	Eastbound	240	620	860	124%	180	460	640	93%
	Westbound	370	680	1,050	103%	280	520	800	78%
Hoxton Park Road	Eastbound	420	610	1,030	74%	270	460	730	53%
	Westbound	620	690	1,310	73%	460	510	970	55%
Cowpasture Road	Eastbound	890	690	1,580	57%	660	510	1,170	42%
	Westbound	1180	610	1,790	70%	950	460	1,410	55%
Elizabeth Drive	Eastbound	480	690	1,170	82%	420	500	920	65%
	Westbound	370	690	1,060	75%	300	500	800	57%
The Horsley Drive	Eastbound	220	690	910	103%	190	510	700	80%
	Westbound	170	710	880	154%	140	520	660	116%
Wallgrove Road	Eastbound	150	710	860	106%	130	520	650	80%
	Westbound	210	690	900	98%	210	510	720	78%
Great Western Highway	Eastbound	370	670	1,040	77%	320	470	790	58%
	Westbound	430	0 [1]	430	26%	380	0[1]	380	23%
Francis Road	Eastbound	380	610	990	102%	320	440	760	79%

Location	Direction	Estimated traffic volumes during Westlink M7 closures (vehicles)							
		9:00 pm to 10:00 pm				10:00 pm to 11:00 pm			
		2021 traffic volumes	Detoured Westlink M7 traffic	Total	Percentage of peak hour traffic	2021 traffic volumes	Detoured Westlink M7 traffic	Total	Percentage of peak hour traffic
	Westbound	380	670	1,050	96%	270	470	740	68%
Woodstock Avenue	Eastbound	150	670	820	116%	150	470	620	88%
	Westbound	140	610	750	101%	120	440	560	76%
Power Street	Eastbound	140	670	810	124%	110	470	580	89%
	Westbound	230	610	840	90%	180	440	620	66%
Rooty Hill Road	Eastbound	550	670	1,220	86%	400	470	880	62%
	Westbound	650	610	1,260	85%	510	440	950	64%

[1] Proposed detour routes do not travel westbound along Great Western Highway

Surrounding road network

In addition to the Westlink M7 closures, the construction of pier and abutment widening structures at bridge widening locations would require temporary lane closures and full road closures on the following roads:

- Hoxton Park Road and Wilson Road (in Hoxton Park and Hinchinbrook)
- Cowpasture Road (in Middleton Grange, Hinchinbrook and Hoxton Park)
- Elizabeth Drive (in Cecil Park and Abbotsbury)
- Great Western Highway (in Eastern Creek and Minchinbury)
- Woodstock Avenue (in Plumpton and Glendenning).

These road closures would typically be for short durations, at workday nights or on weekends and would require vehicles to take detours along alternative routes for the duration of the closure.

Local detours are available for most of these road closures. However, no local detours are available for the Elizabeth Drive and Cowpasture Road closures. Therefore, strategic road diversions via the broader arterial road network would be needed to facilitate closure of these roads.

Table 7-11 and Table 7-12 include a comparison of the existing traffic volumes during the workday night-time peak hours and weekend peak hour with the respective workday peak hour traffic volumes.

The detoured traffic volumes at night-time would vary significantly depending on the location. The Cowpasture Road closure would likely have the largest impact, with 1,100 to 1,800 vehicles to be detoured per direction at 9:00 pm. The operation and safety of all other roads with night time road closures are expected to detour less than 500 vehicles, representing 20 to 35 percent of the workday peak hour traffic volumes.

Weekend peak hour traffic volumes are higher than the workday night-time traffic volumes and are expected to have a greater impact on the surrounding road network than the night-time closures.

Table 7-11 2021 workday traffic volumes at 9:00 pm and 10:00 pm

Road closure location	Direction	Estimated traffic volumes affected by road closures (vehicles)							
		9:00 pm to 10:00pm				10:00pm to 11:00pm			
		Light	Heavy	Total	%age of workday peak hour	Light	Heavy	Total	%age of workday peak hour
Hoxton Park Road	Eastbound	400	20	420	30%	260	10	270	19%
	Westbound	600	20	620	35%	450	10	460	26%
Cowpasture Road	Eastbound	840	50	890	32%	630	30	660	24%
	Westbound	1,100	80	1,180	46%	890	60	950	37%
Elizabeth Drive	Eastbound	450	30	480	34%	400	20	420	29%
	Westbound	350	20	370	26%	290	10	300	21%
Great Western Highway	Eastbound	330	40	370	27%	290	30	320	24%
	Westbound	360	70	430	26%	320	60	380	23%
Woodstock Avenue	Eastbound	140	10	150	21%	140	10	150	21%
	Westbound	130	10	140	19%	110	10	120	16%

Table 7-12 2021 weekend peak hour traffic volumes

Road closure	Direction	Estimated traffic volumes affected by road closures (vehicles)			
		Light vehicles	Heavy vehicles	Total vehicles	Percentage of workday peak hour
Hoxton Park Road	Eastbound	860	40	900	65%
	Westbound	1,000	50	1,050	59%
Cowpasture Road	Eastbound	1,940	130	2,070	75%
	Westbound	1,840	110	1,950	76%
Elizabeth Drive	Eastbound	850	50	900	63%
	Westbound	860	50	910	64%
Great Western Highway	Eastbound	990	90	1,080	80%
	Westbound	970	100	1,070	65%
Woodstock Avenue	Eastbound	360	20	380	54%
	Westbound	390	10	400	54%

Public transport

Road closures required during construction would affect bus services using the surrounding road network. Table 7-12 summarises the impacts of the proposed road closures on the existing bus services along affected roads.

Table 7-13 Summary of bus services and potential impacts due to road closures

Road closure location	Route	Workday	Weekend
		Impact	Impact
Hoxton Park Road	853	Detour routes required	Detour routes required
	854	Detour routes required	Detour routes required
Cowpasture Road	827	Detour routes required	Detour routes required
Elizabeth Drive	801	No impact	No impact
The Horsley Drive and Elizabeth Drive	813	No impact	Detour routes required
Great Western Highway	723	Detour routes required	No impact
	729	Detour routes required	Detour routes required

Rail possessions would be required in one location during construction where the existing Westlink M7 bridge intersects the Main Western Railway Line near Rooty Hill Station (B8245/B9901). The works would occur during the available rail possession windows, in consultation with Transport and relevant stakeholders and therefore would have minimal impact on the rail network.

Active transport

To address potential safety risks to cyclists during construction, the proposed modification would introduce restrictions which would prohibit cycling on the Westlink M7 mainline between the M5 Motorway and Richmond Road during construction and operation. Cyclists would need to use the

signed alternative route via the existing shared path or alternative routes across the surrounding road network. In addition, construction of the proposed modification would require temporary closures of sections of the existing Westlink M7 shared path.

Identified detours would result in increased travel distances ranging between 200 meters and 1.3 kilometres for each closure. If multiple shared path closures occur simultaneously, travel distances would increase accordingly. The impact of the shared path closures and the respective detours would vary depending on the user, and the extent and duration of the closure. Users that don't rely on the shared path for access may use alternative routes (self-identified) if practical.

The timing, extent and duration of shared path closures and respective detours would be confirmed once the construction contractor has been appointed and would be influenced by the final construction methodology as well as feedback from stakeholders, councils and Transport.

Property access

The construction of pier and abutment widening structures at bridge widening locations would require temporary lane closures and full road closures on the following property access roads:

- Austral Bricks access road
- Suez Waste Management site access road.

Access closures would require temporary alternative driveways to be constructed prior to closures to provide continuity of access to affected properties.

Parking and access

No direct impacts to on-street parking have been identified due to the construction of the proposed modification. However, localised impacts to on-street parking may be identified during detailed design once the ancillary facilities and their designs are developed. In addition, construction workers may use any available on-street parking.

Road safety

There is an increased risk associated with construction traffic interacting with general traffic especially where the construction vehicles are entering and exiting ancillary facility sites. However, the severity of these risks would be reduced with reduced speed, particularly along the Westlink M7 which would have a reduced speed limit of 80 kilometres per hour.

Operation

Road network

Traffic volumes and patterns

Without the proposed modification, traffic volumes along the Westlink M7 are forecast to increase from approximately 80,000 vehicles per workday in 2021 to approximately 90,000 vehicles per workday in 2026 (average across the nine segments) and 100,000 vehicles per workday in 2036.

In 2026, with the proposed modification, the Westlink M7 is anticipated to carry an additional 2,000 to 8,500 vehicles per workday in each direction compared to without the modification. That is an additional five to 10 per cent of vehicles per workday, depending on the Westlink M7 segment.

Similarly, in 2036, the Westlink M7 is anticipated to carry an additional 3,000 to 14,500 vehicles per workday with the proposed modification compared to without the modification. That is an additional 5 to 30 per cent vehicles per workday, depending on the Westlink M7 segment.

These increases in traffic with the modification are likely as a result of the Westlink M7 drawing traffic in from the surrounding network.

The change in traffic volumes associated with the proposed modification across the wider road network is largely restricted to the immediate intersecting roads between Camden Valley Way and Richmond Road.

Figure 7-2 and Figure 7-3 show the TUSTM forecast difference in traffic volumes under the 'with modification' scenarios for the 2026 AM and PM peak periods. The figures show only positive changes, i.e., where the expected traffic volumes with the proposed modification are higher than without the proposed modification by more than 100 vehicles.

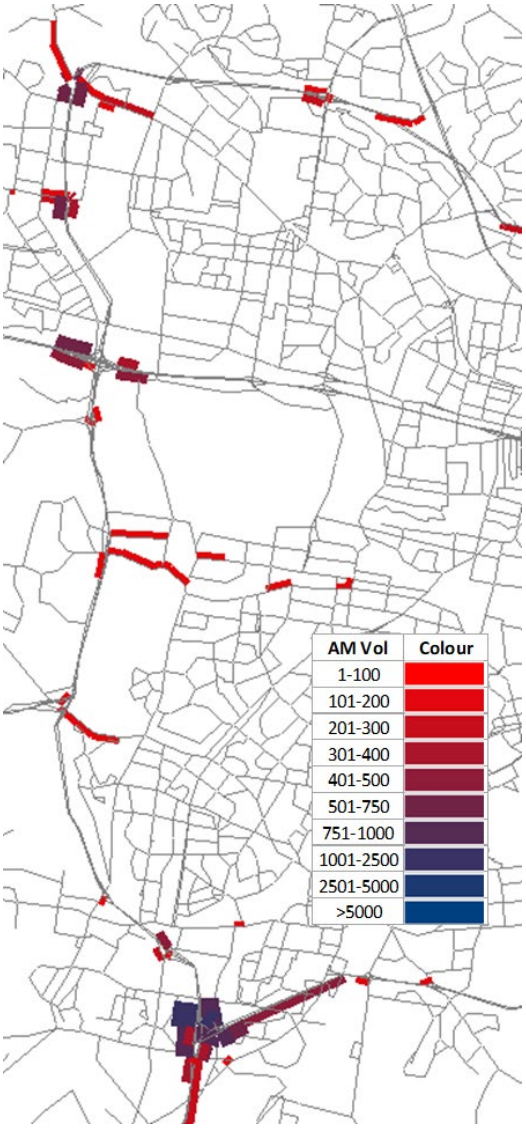

Figure 7-2 Change in traffic volumes in 2026 for the with and without proposed modification – AM peak period

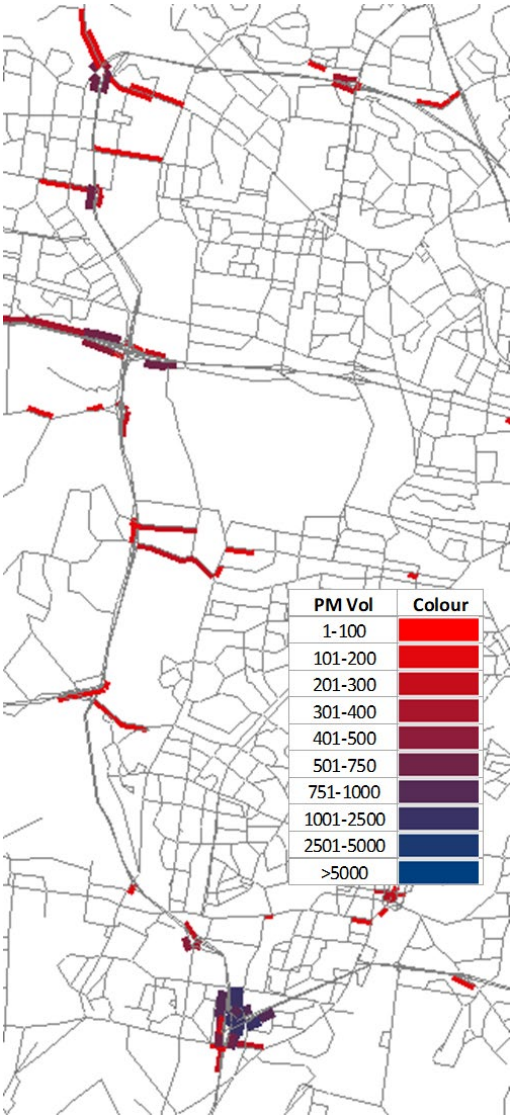

Figure 7-3 Change in traffic volumes in 2026 for the with and without proposed modification – PM peak period

Network performance

Without the proposed modification, the network would progressively get more congested in 2026 and 2036 due to background urban population and traffic growth. The harmonic speed would decrease from 70 kilometres per hour in 2021 to less than 60 kilometres per hour in 2036. Similarly the total number of stops would increase from nearly 170,000 in 2021 to around 380,000 stops in 2036.

The network performance of the Westlink M7 within the study area would substantially improve with the proposed modification in both 2026 and 2036 based on the following findings:

- Vehicle kilometres travelled would increase by approximately 11 per cent and 13 per cent in 2026 and 2036, respectively

- The total serviced demand[2] would increase by approximately 23,500 and 31,700 vehicles (10 and 12 per cent) in 2026 and 2036, respectively
- Vehicle hours travelled would decrease by approximately 2,000 and 9,000 hours (five and 15 per cent) in 2026 and 2036, respectively. This suggests that vehicles would spend significantly less time on the network with the proposed modification
- The harmonic mean speed[3] would increase by eight and 16 kilometres per hour (11 and 28 per cent) in 2026 and 2036, respectively
- The network density would decrease by three and five vehicles per kilometre (22 and 30 per cent) in 2026 and 2036, respectively
- The total number of stops would decrease by approximately 98,000 and 207,000 (55 and 54 per cent) in 2026 and 2036, respectively. This suggests that traffic conditions would be less stop-start with the proposed modification.

Based on the above, the additional capacity of the proposed modification would substantially improve the overall network performance of the Westlink M7 corridor.

Travel times and average speed

Table 7-14 displays the differences in AM peak hour and PM peak hour travel times for the Westlink M7 corridor between the M5 Motorway and Richmond Road. Without the proposed modification, the travel times would increase for all scenarios between 2021, 2026 and 2036, due to increased background traffic growth and associated congestion along the Westlink M7.

The travel times with the proposed modification would generally be similar in 2026 to 2036, except for southbound traffic in the PM peak hour - the forecast travel times in 2036 are expected to be nearly seven minutes slower than in 2026.

Table 7-14 AM and PM peak hour travel time between M5 Motorway and Richmond Road with and without the modification

Peak hour	Direction	Travel time (minutes)								
			2026				2036			
		2021	Without modification	With modification	Difference		Without modification	With modification	Difference	
AM	Northbound	26	27	19	-8	-30%	27	19	-8	-28%
	Southbound	22	18	16	-2	-9%	23	21	-2	-9%
PM	Northbound	25	28	18	-9	-34%	28	20	-8	-28%
	Southbound	27	30	16	-13	-45%	34	23	-12	-34%

In 2026 without the proposed modification, vehicle speeds for northbound traffic are expected to slow to between 25 and 50 kilometres per hour throughout the AM and PM peak periods at the southern extent of the study area between the M5 Motorway and Elizabeth Drive. Similar vehicle speeds are expected in 2036 without the proposed modification albeit extending across most of day.

[2] Vehicles completing their trips through the Westlink M7 Subnetwork. Generally, the higher the demand, the better the network operates

[3] The mean speed at which all vehicles travel through the Westlink M7 Subnetwork. Generally, the higher the speed, the better the network operates

These vehicle speeds would increase in 2026 and 2036 with the proposed modification, including:

- Between 85 and 100 kilometres per hour throughout the day for segments between the M5 Motorway and Cowpasture Road
- Between 65 and 80 kilometres per hour throughout the day for segments between Cowpasture Road and Elizabeth Drive.

Overall, the proposed modification would improve vehicle speeds for the sections of the Westlink M7 that would be widened. However, vehicle speeds for the northern and southern extents outside the proposed widening would experience increased traffic demands, as more vehicles would be attracted to the Westlink M7 with the proposed modification. This would result in slower vehicle speeds in the areas outside the proposed modification along the Westlink M7. Potential impacts to vehicle speeds beyond the proposed modification extents should be investigated by Transport during detailed design.

In addition to the travel time savings and increased vehicle speeds discussed above, the proposed modification would also deliver improvements in travel time reliability on the Westlink M7. This benefit would be derived in two parts:

- The increased lane capacity provided by the proposed modification would result in a smoother traffic flow without the stop / start conditions currently experienced
- The additional lanes would also provide spare capacity so that traffic should be delayed to a lesser extent by minor incidents such as break downs and minor crashes.

Roadway level of service

The LoS along the Westlink M7 would improve for some segments or be maintained with the proposed modification.

Intersection performance

The modelled future intersection performance for key intersections within the study area with and without the proposed modification are compared in Table 7-15 and Table 7-16 for the 2026 and 2036 workday AM and PM peak hours.

Nine of the 23 study intersections would operate at an unsatisfactory LoS E or worse by 2026 and/or 2036 without the proposed modification, reflecting forecast traffic demands that exceed available capacity at most of these intersections for the AM or PM peak hours.

Most intersections would continue to operate with the same LoS in both 2026 and 2036 with and without the proposed modification. The LoS at the following seven intersections would decline from a satisfactory level (LoS A to D) to an unsatisfactory level (LoS E or F) due to the proposed modification:

- AM peak
  - Bernera Road/Yarrawa Street/M7 exit ramp/M7entry ramp
  - Old Wallgrove Road/Wallgrove Road/M7 entry ramp/M7 exit ramp
  - Rooty Hill Road North/M7 exit ramp
- PM peak
  - Cowpasture Road/M7 exit ramp/M7 entry ramp
  - The Horsley Drive/Wallgrove Road/M7 entry Ramp/M7 exit ramp
  - Great Western Highway/Rooty Hill Road South/Wallgrove Road
  - Rooty Hill Road North/M7 exit ramp
  - Rooty Hill Road North/Richmond Road/M7 entry ramp/M7 exit ramp.

Five of these seven intersections would also operate with an unsatisfactory LoS in either the AM or PM peak hours in 2026 and/or 2036 without the proposed modification. Limited road capacity and high demand mean that LoS E and F are regularly experienced by Sydney motorists at pinch points on the existing strategic road network in during peak periods. The proposed modification would bring forward the need to consider solutions for these areas to cater for forecast increases in traffic volumes

associated with population and employment growth and to a lesser degree the proposed modification. Details of these locations are provided in **Section 7.1.5** of **Appendix D** (Traffic and transport technical assessment).

Table 7-15 AM peak intersection performance – 2026 and 2036 with and without proposed modification

ID	Intersection	2026 without modification		2026 with modification		2036 without modification		2036 with modification	
		Average delay (seconds)	Level of service	Average delay (seconds)	Level of service	Average delay (seconds)	Level of service	Average delay (seconds)	Level of service
1	Camden Valley Way/M7/M5 northbound entry ramp/M31 exit ramp	35	C	35	C	110	F	90	F
2	Camden Valley Way/M5 southbound exit ramp	8	A	9	A	12	A	14	A
3	Bernera Road/Yarrawa Street/M7 exit ramp/M7entry ramp	64	E	160	F	34	C	112	F
4	Jedda Road/Bernera Road/M7 exit ramp/M7 entry ramp	20	B	20	B	20	B	21	B
5	Cowpasture Road/M7 exit ramp/M7 entry ramp	65	E	106	F	236	F	313	F
6	Elizabeth Drive/northbound M7entry ramp/M7 exit ramp	10	A	12	A	9	A	11	A
7	Elizabeth Drive/southbound M7 entry ramp/M7 exit ramp	13	A	14	A	12	A	15	B
8	Elizabeth Drive/M12 entry Ramp/Wallgrove Road	17	B	17	B	18	B	19	B
9	Wallgrove Road/Cecil Road	7	A	7	A	7	A	7	A
10	The Horsley Drive/Wallgrove Road	62	E	106	F	73	F	76	F
11	The Horsley Drive/Wallgrove Road/M7 entry Ramp/M7 exit ramp	34	C	44	D	45	D	54	D
12	Wallgrove Road/Mini Link Road/M7 entry ramp/M7 exit ramp	34	C	39	C	37	C	43	D
13	Old Wallgrove Road/Wallgrove Road/M7 entry ramp/M7 exit ramp	46	D	55	D	44	D	58	E
14	Great Western Highway/Rooty Hill Road South/Wallgrove Road	65	E	63	E	92	F	108	F
15	Great Western Highway/M7 entry ramp	3	A	3	A	3	A	3	A

ID	Intersection	2026 without modification		2026 with modification		2036 without modification		2036 with modification	
		Average delay (seconds)	Level of service	Average delay (seconds)	Level of service	Average delay (seconds)	Level of service	Average delay (seconds)	Level of service
16	Great Western Highway/M7 exit ramp	12	A	13	A	12	A	15	B
17	Woodstock Avenue/M7 exit ramp	18	B	18	B	17	B	18	B
18	Woodstock Avenue/M7 entry ramp	5	A	6	A	5	A	6	A
19	Power Street/M7 entry ramp	6	A	6	A	6	A	6	A
20	Power Street/M7 exit ramp	10	A	10	A	9	A	9	A
21	Rooty Hill Road North/M7 exit ramp	30	C	33	C	47	D	70	E
22	Rooty Hill Road North/Richmond Road/M7 entry ramp/M7 exit ramp	82	F	79	F	147	F	147	F
23	Richmond Road/M7 entry ramp	33	C	36	C	43	D	46	D

Table 7-16 PM peak intersection performance – 2026 and 2036 with and without proposed modification

ID	Intersection	2026 Without Modification		2026 With Modification		2036 Without Modification		2036 With Modification	
		Average delay (seconds)	Level of Service	Average delay (seconds)	Level of Service	Average delay (seconds)	Level of Service	Average delay (seconds)	Level of Service
1	Camden Valley Way/M7/M5 northbound entry ramp/M31 exit ramp	33	C	35	C	33	C	33	C
2	Camden Valley Way/M5 southbound exit ramp	20	B	21	B	93	F	93	F
3	Bernera Road/Yarrawa Street/M7 exit ramp/M7entry ramp	17	B	17	B	18	B	18	B
4	Jedda Road/Bernera Road/M7 exit ramp/M7 entry ramp	15	B	18	B	16	B	19	B
5	Cowpasture Road/M7 exit ramp/M7 entry ramp	25	B	44	D	54	D	125	F
6	Elizabeth Drive/northbound M7entry ramp/M7 exit ramp	10	A	12	A	10	A	12	A
7	Elizabeth Drive/southbound M7 entry ramp/M7 exit ramp	15	B	16	B	12	A	15	B
8	Elizabeth Drive/M12 entry Ramp/Wallgrove Road	32	C	30	C	23	B	20	B
9	Wallgrove Road/Cecil Road	6	A	6	A	7	A	8	A
10	The Horsley Drive/Wallgrove Road	47	D	51	D	60	E	66	E
11	The Horsley Drive/Wallgrove Road/M7 entry Ramp/M7 exit ramp	47	D	71	F	47	D	69	E
12	Wallgrove Road/Mini Link Road/M7 entry ramp/M7 exit ramp	43	D	43	D	46	D	47	D
13	Old Wallgrove Road/Wallgrove Road/M7 entry ramp/M7 exit ramp	37	C	41	C	47	D	49	D
14	Great Western Highway/Rooty Hill Road South/Wallgrove Road	56	D	57	E	68	E	71	F
15	Great Western Highway/M7 entry ramp	4	A	4	A	5	A	4	A

ID	Intersection	2026 Without Modification		2026 With Modification		2036 Without Modification		2036 With Modification	
		Average delay (seconds)	Level of Service	Average delay (seconds)	Level of Service	Average delay (seconds)	Level of Service	Average delay (seconds)	Level of Service
16	Great Western Highway/M7 exit ramp	10	A	10	A	10	A	11	A
17	Woodstock Avenue/M7 exit ramp	16	B	17	B	16	B	18	B
18	Woodstock Avenue/M7 entry ramp	9	A	10	A	9	A	10	A
19	Power Street/M7 entry ramp	5	A	5	A	5	A	5	A
20	Power Street/M7 exit ramp	10	A	10	A	9	A	9	A
21	Rooty Hill Road North/M7 exit ramp	27	B	57	E	63	E	109	F
22	Rooty Hill Road North/Richmond Road/M7 entry ramp/M7 exit ramp	56	D	58	E	104	F	90	F
23	Richmond Road/M7 entry ramp	50	D	33	C	93	F	67	F

Heavy vehicles

The number of heavy vehicles along the Westlink M7 in 2026 would be similar to 2021, with approximately 16,000 vehicles per workday forecast (average across the corridor). In 2036, the number of heavy vehicles is expected to increase to nearly 20,000 vehicles per workday (average across the corridor).

In 2026, the Westlink M7 is anticipated to carry an additional 300 to 1,300 heavy vehicles per workday in each direction with the proposed modification compared to without the modification. That is an additional six to 15 per cent vehicles per workday, depending on the Westlink M7 segment.

Similarly, in 2036, the Westlink M7 is anticipated to carry an additional 700 to 2,300 heavy vehicles per workday with the proposed modification compared to without the modification. That is an additional nine to 22 per cent vehicles per workday, depending on the Westlink M7 segment.

With travel times shown to decrease on the Westlink M7 as a result of the proposed modification, heavy vehicles would benefit from these travel time savings, improving their connectivity and reliability particularly for longer distance freight movements.

Active transport

No operational changes are proposed to the location or overall alignment of the Westlink M7 shared pedestrian and cycle path as part of the proposed modification.

The proposed modification would however create a dual lane exit to the M4 Motorway on the northbound carriageway, which is considered an unacceptable safety risk for cyclists using the shoulder of the Westlink M7.

To address potential safety risks to cyclists, the proposed modification would introduce restrictions which would prohibit cycling on the shoulder of the Westlink M7 mainline between the M5 Motorway and Richmond Road during both construction and operation. Instead, cyclists would use the designated Westlink M7 shared path that runs parallel to the Westlink M7. This is consistent with road safety best practice, in that there are inherent safety risks in allowing cyclists to travel alongside high-speed traffic travelling at 100 kilometres per hour. Cyclists would instead be required to use the signed alternative route via the existing shared path.

The continued operation of the shared path was considered in the options assessment for the proposed modification, finding that widening into the median rather than the road shoulder would have less impacts to the shared path. However the proposed modification does not directly improve active travel linkages and connections within the wider network surrounding the study area, although the current active travel movements across and adjacent to the Westlink M7 corridor would be maintained.

Public transport

The proposed modification could support more efficient connections to public transport corridors in the region. Improved efficiency in the road corridor would help to support connections to public transport corridors, including to the existing T1 Western train line service between Central Station and Emu Plains. The proposed modification would support future planned city-serving high-frequency services between Liverpool to Austral (north) and from Bonnyrigg to Western Sydney International Airport. Rapid bus connections between Western Sydney International Airport and Blacktown (which would intersect with the Westlink M7) are also currently being investigated.

Parking and access

The proposed modification is unlikely to have any operational impacts to property or business access and on-street parking, as the Westlink M7 is a separated motorway corridor.

Road safety

The frequency of crashes on the Westlink M7 would be expected to increase should traffic demand, density and congestion continue to grow with no increase in the existing capacity of the corridor. In congested conditions, drivers can become frustrated as their ability to travel at their desired speed is impaired; often more risks are taken and crashes occur more frequently as a result.

As discussed above, the proposed modification would generally lead to increased vehicle speeds and less congestion along the Westlink M7. Therefore, it is expected that the crash rates per vehicle kilometre travelled would decrease with the proposed modification.

7.1.6 Management and mitigation

Measures to manage potential traffic and transport impacts during the construction and operation of the proposed modification are provided in Table 7-17.

The implementation of mitigation measures to address other environmental impacts would require traffic management in some instances, for example when mobilising to construct/adjust noise walls, and installing temporary water, soil and erosion controls. These activities would be accounted for in the preparation of the Construction Traffic and Access Management Plan (mitigation measure T1 below). Construction vehicles required for the implementation of other measures have also been accounted for in the vehicle numbers used in this assessment.

Table 7-17 Mitigation measures

Impact	ID	Mitigation measure	Responsibility	Timing
Construction related traffic	T1	A Construction Traffic and Access Management Plan (CTAMP) will be prepared as part of the Construction Environmental Management Plan (CEMP) in consultation with Transport, relevant local councils and in accordance with relevant guidelines including consideration for: • staggering shift times to minimise the hourly traffic generation • encouraging the use of alternative transport modes, carpooling, measures that minimise traffic generation associated with worker arrival, departures and movements between sites • using shuttle buses to move workers between sites • minimising road closures that would likely have large impacts to the network • pedestrian and cyclist access management plan • parking and access management plan.	Construction contractor	Construction
	T2	Temporary changes to bus routes and bus stops will be implemented in consultation with Transport, local councils and bus operators. These will consider measures to minimise impacts to buses such as delaying road closures to avoid bus detours, if possible.	Construction contractor	Detailed design Construction
	T3	Movements of haulage vehicles will be planned to minimise movements on the road network during the AM and PM peak periods where practicable.	Construction contractor Transport	Detailed design Construction

Impact	ID	Mitigation measure	Responsibility	Timing
	T4	An active transport strategy will be developed to document planned shared path detours and recommend upgrades to the surrounding shared path/footpath network to safely accommodate shared path users.	Construction contractor	Detailed design Construction
Operational capacity	T5	Potential impacts to vehicle speeds outside the proposed modification extents should be investigated.	Transport	Detailed design
	T6	Solutions should be investigated to cater for forecast traffic volumes associated with population and employment growth and to some degree the proposed modification, at the following locations: • Bernera Road • Cowpasture Road • The Horsley Drive • Great Western Highway • Old Wallgrove • Rooty Hill Road • Richmond Road.	Transport	Detailed design