WestConnex M4-M5 Link

Rozelle Interchange – Modification: The Crescent overpass and active transport links

Modification report

Appendix B

Traffic and transport assessment

Roads and Maritime Services

WestConnex - M4-M5 Link

Rozelle Interchange - Modification: The Crescent overpass and active transport links

Modification report

Appendix B Traffic and transport assessment

August 2019

Prepared for

NSW Roads and Maritime Services

Prepared by

AECOM Australia

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Glossary of terms and abbreviations

Term	Definition
A	
AM peak hour	Unless otherwise stated, this refers to vehicle trips arriving at their destination during the average peak one hour in the AM peak period between 7.00 am–9.00 am on a normal working weekday
AWT	Average Weekday Traffic
C	
Capacity	The nominal maximum number of vehicles which has a reasonable expectation of passing over a given section of a lane or roadway in one direction during a given time period under prevailing roadway conditions
Carriageway	The portion of a roadway used by vehicles including shoulders and ancillary lanes
Construction	Includes all physical work required to construct the project
Construction ancillary facilities	Temporary facilities during construction that include, but are not limited to construction sites (civil and tunnel), sediment basins, temporary water treatment plants, precast yards and material stockpiles, laydown areas, workforce parking, maintenance workshops and offices
Construction Traffic Transport and Access Management Sub-Plan	Traffic and Transport Construction Environmental Management Plan sub-plan
Cumulative impacts	Impacts that, when considered together, have different and/or more substantial impacts than a single impact assessed on its own
D	
DPIE	NSW Department of Planning, Industry and Environment
E	
EB	Eastbound
EIS	Environmental Impact Statement
Entry ramp	A ramp by which one enters a limited-access highway/tunnel
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
Exit blocking	Queuing traffic from a downstream link or intersection that blocks traffic from being able to travel through and exit an intersection
Exit ramp	A ramp by which one exits a limited-access highway/tunnel
F	
Footpath	The paved area in a footway
Footprint	The extent of the impact that a development (in plan-view) makes on the land
Footway	An area open to the public designated for the movement of pedestrians or has one of its main uses for pedestrians
Freeways	Fast, high volume, access-controlled roads that primarily link regional hubs and cities usually with grade separated intersections and without traffic lights
H	
h	Hour
HV (Heavy vehicles)	A heavy vehicle is classified as a Class 3 vehicle (a two-axle truck) or larger, in accordance with the Austroads Vehicle Classification System
I	
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment
L	
Local road	A road or street used primarily for access to abutting properties
LoS	Level of service. A qualitative measure describing operational conditions within a traffic stream or intersection and the perception by motorists and/or passengers

Term	Definition
M	
M4 East Motorway project	A component of the WestConnex program of works. Extension of the M4 Motorway in tunnels between Homebush and Haberfield via Concord. Includes provision for a future connection to the M4-M5 Link at the Wattle Street Interchange
M4-M5 Link	The project which is the subject of this modification. A component of the WestConnex program of works
Midblock	A general location on a road between two intersections
Motorway	Fast, high volume, access-controlled roads. May be tolled or untolled
N	
NB	Northbound
NSW	New South Wales
P	
PM peak hour	Unless otherwise stated, this refers to trips travelling on the network during the average peak one hour in the PM peak period between 3.00 pm–6.00 pm on a normal working weekday
Portal	The entry and/or exit to a tunnel
Project	A new multi-lane road link between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters. The project includes an interchange at Lilyfield and Rozelle (the Rozelle Interchange) and a tunnel connection between Anzac Bridge and Victoria Road, east of Iron Cove Bridge (Iron Cove Link). In addition, construction of tunnels, ramps and associated infrastructure to provide connections to the proposed future Western Harbour Tunnel and Warringah Freeway Upgrade project would be carried out at the Rozelle Interchange
Public transport	Includes train, bus (government and private), ferry (government and private) and light rail (government and private) services
R	
Roads and Maritime	NSW Roads and Maritime Services (formerly NSW Roads and Traffic Authority (RTA))
Roundabout	An intersection where all traffic travels in one direction clockwise around a central island
Rozelle Interchange	A new interchange at Lilyfield and Rozelle that would connect the M4-M5 Link Mainline Tunnels with City West Link, Anzac Bridge, the Iron Cove Link and the proposed future Western Harbour Tunnel and Warringah Freeway Upgrade project
S	
SB	Southbound
SPIR	Submissions and Preferred Infrastructure Report
STM	Strategic Travel Model, operated by Transport for NSW Transport Performance and Analytics
T	
Traffic efficiency	Measured by savings (and delays) in travel time
Transport infrastructure	Permanent installations including roads, rail, buildings and storage associated with transport
Transport for NSW	NSW Government Department Transport for NSW
V	
Veh	Vehicle
Veh/h	Vehicle per hour
V/C	Volume to capacity ratio, ratio of the traffic volume to the road capacity
W	
WB	Westbound
WRTM	WestConnex Road Traffic Model

1 Introduction

NSW Roads and Maritime Services (Roads and Maritime) is seeking to modify the existing project approval for the construction and operation of the WestConnex M4-M5 Link project (the project), which is part of the WestConnex program of works. Approval for the construction and operation of the project was granted on 17 April 2018 by the NSW Minster for Planning (application number SSI_7485). **Figure 1-1** provides an overview of the approved project.

1.1 Overview of M4-M5 Link project

The EIS for the project described construction and operation of the M4-M5 Link project in two stages:

- Stage 1[1]: A new multi-lane road link between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters (Mainline Tunnels)
- Stage 2[2]: An interchange at Lilyfield and Rozelle (the Rozelle Interchange) and a tunnel connection between Anzac Bridge and Victoria Road, east of Iron Cove Bridge (Iron Cove Link).

Stage 2 works commenced in 2019 with these components of the project anticipated to open to traffic in 2023.

A more comprehensive overview of the M4-M5 Link project, as well as other aspects of the WestConnex program of works is provided within the Environmental Impact Statement (EIS) and the Submissions and Preferred Infrastructure Report (SPIR).

[1] M4-M5 Link Stage 1 (the Mainline Tunnels)
[2] M4-M5 Link Stage 2 (the Rozelle Interchange and Iron Cove Link)

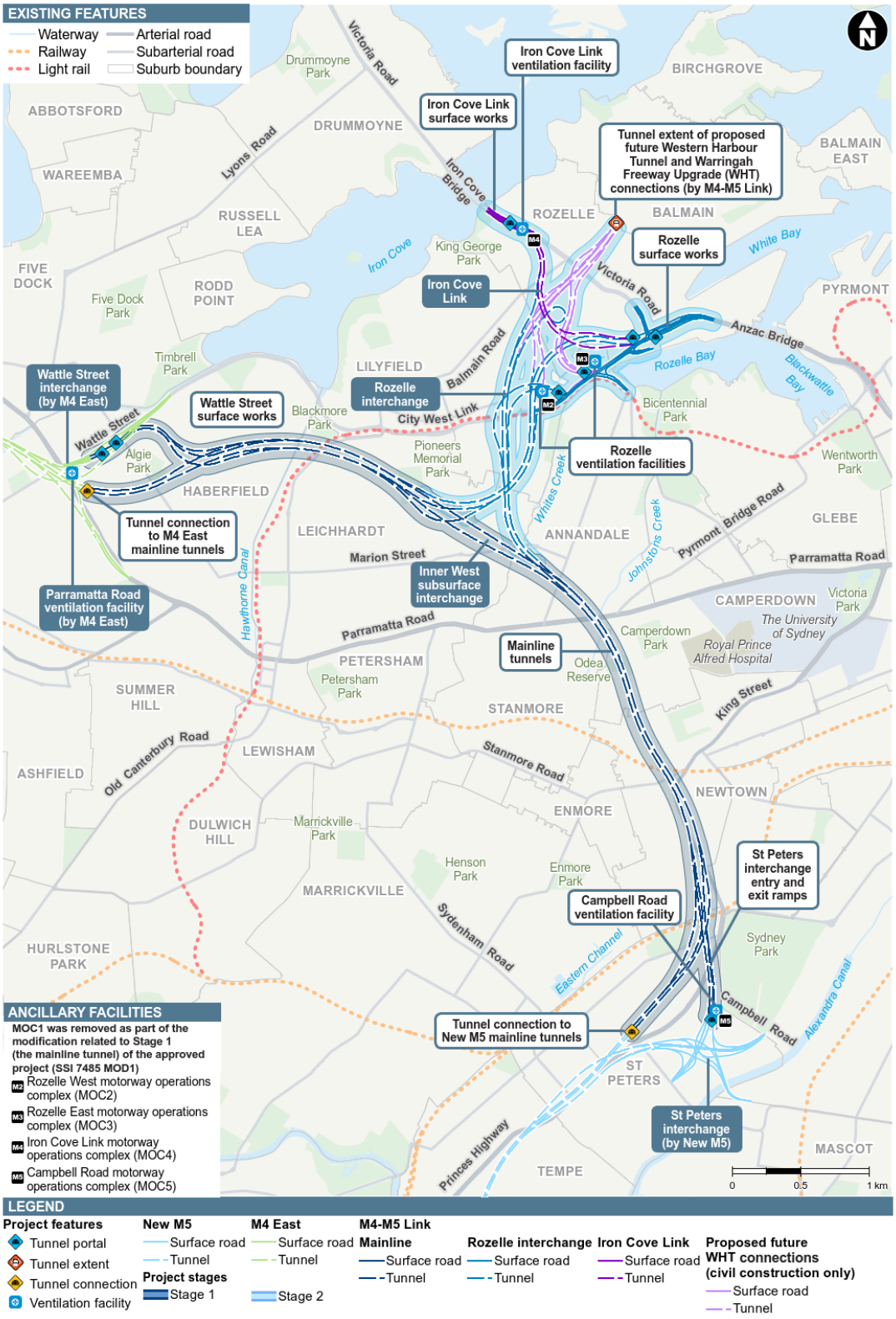

Figure 1-1 Overview of the M4-M5 Link project

1.2 Overview of proposed modification

Since Planning Approval (April 2018 Infrastructure Approval) was granted, a contractor has been appointed to construct Stage 2 of the approved project on behalf of Roads and Maritime. The contractor has reviewed the concept design for the approved project and in discussions with Roads and Maritime has identified a number of potential design and constructability improvements.

The proposed modification relates to Stage 2 of the approved project. The following key components are proposed as part of the proposed modification (refer to Figure 1-2):

- A new elevated vehicular overpass ('The Crescent overpass') that would allow eastbound traffic heading north on The Crescent from Annandale to bypass the signalised intersection at The Crescent / City West Link junction and continue east on The Crescent towards Victoria Road and the Anzac Bridge
- Modifications to the eastbound lanes of the City West Link and The Crescent on either side of the intersection and northbound lanes on The Crescent at Annandale to provide space for the tie-in of The Crescent overpass
- Upgrades to the intersection of The Crescent/Johnston Street/Chapman Road (including lane reconfiguration and marking, signal phasing, adjusting positions of traffic signals kerb works etc.)
- Realignment of the Pedestrian and Cycling Green Link ('green link') to the west of The Crescent, providing a connection between the Rozelle Rail Yards and the Rozelle Bay light rail stop
- A new shared user path bridge spanning The Crescent to the east of The Crescent / City West Link intersection. The shared user path bridge provides a connection between Rozelle Rail Yards and the shared user path to Bicentennial Park along the east side of The Crescent and adjacent to Rozelle Bay. The shared user path bridge and shared user path would provide the pedestrian and cyclist connectivity required by Conditions E120 and E121, albeit in a different arrangement to that shown in the EIS
- Minor changes to the layout of the approach roads leading to the Anzac Bridge from Victoria Road, The Crescent and the Rozelle Interchange to improve traffic merging arrangements.
- Use of a minor construction ancillary facility, established in accordance with Condition C24, as a construction ancillary facility. The proposed construction ancillary facility (C6a) is located on the south side of The Crescent to the west of James Craig Road and adjacent to Rozelle Bay. The proposed modification would allow use of the site for a limited number of additional purposes which are not permitted by Condition C24 including:
  - Light vehicle parking for workers (around 9 spaces) and
  - Material laydown areas and a limited number of associated vehicle movements (small delivery vans and rigid trucks).

  These additional purposes would support the various construction activities at the C6 civil site.

As outlined in Chapter 1 (Introduction) of the Modification report, the proposed modification would:

- Improve intersection performance on this congested section of the road network including at the City West Link/The Crescent and The Crescent/Johnston Street/Chapman Road intersections
- Adjust the alignment of active transport links to avoid conflict with The Crescent overpass while improving the overall connectivity proposed within the EIS and Conditions of Approval (CoA) for the project by providing a direct connection between the suburbs of Rozelle and Annandale and public transport infrastructure including the Rozelle Bay light rail stop
- Improve the efficiency of construction and minimise the duration of construction impacts on nearby residents by reducing the need for further construction activities to accommodate the proposed Western Harbour Tunnel and Warringah Freeway Upgrade project (Western Harbour Tunnel project) at City West Link and The Crescent, should that project proceed in the future

- Improve capacity at the intersections so that they can maintain performance with traffic generation from future development proposed in the vicinity of the project including the Western Harbour Tunnel project if that future development proceeds.

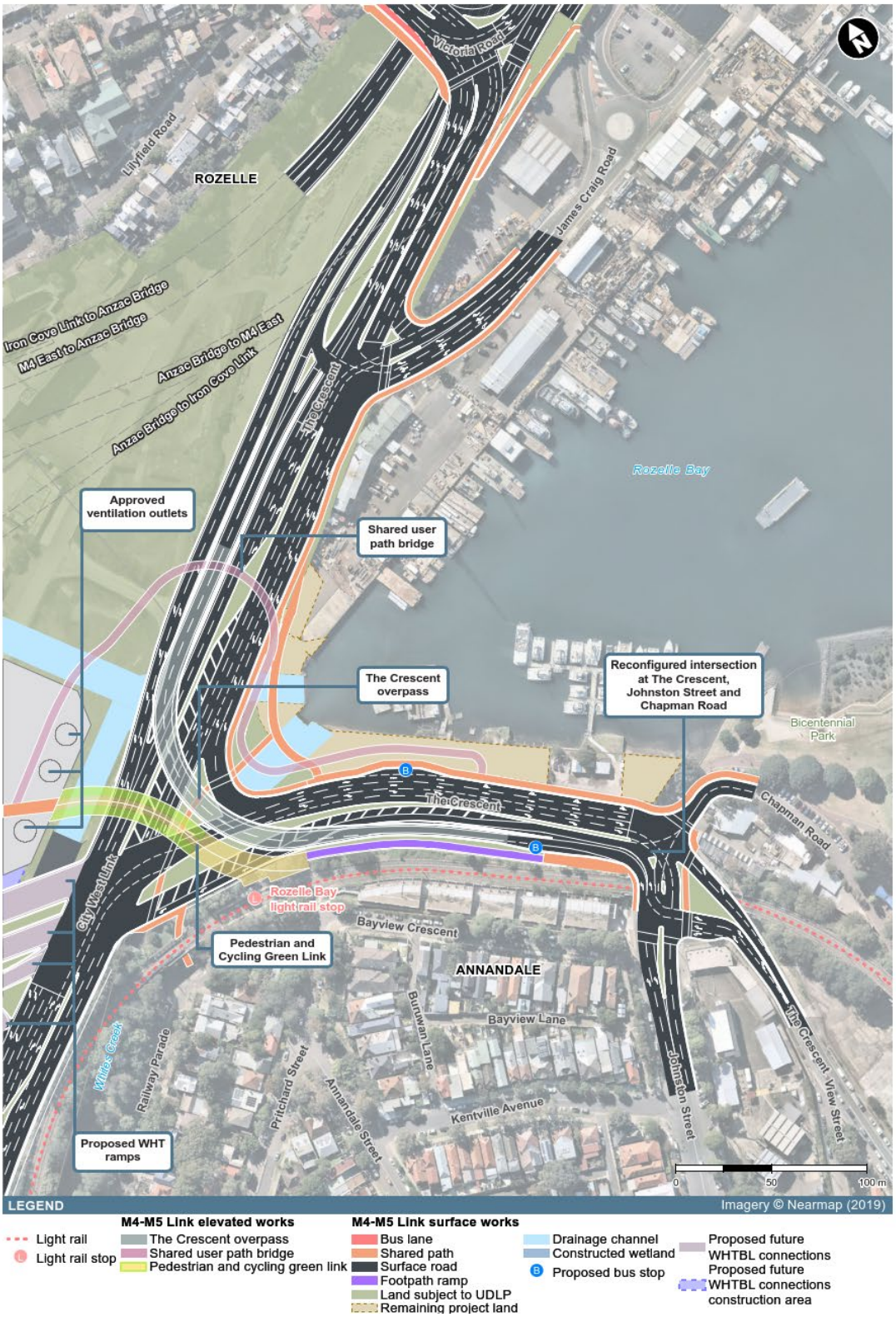

Figure 1-2 Overview of the proposed modification

1.3 Purpose of this report

The purpose of the traffic and transport assessment is to support the environmental assessment for the proposed project modification by assessing and reporting the future traffic and transport conditions under the proposed modification. Specifically, the assessment includes the following:

- Traffic, transport and access impacts associated with changes to proposed construction activities
- Impacts on operational performance during the AM peak and PM peak hours of the future road network around the Rozelle Interchange due to the proposed modification. This includes network performance, intersection levels of service and general traffic and public transport travel time analysis
- Impacts on active transport links and public transport stops due to the proposed modification
- Impacts on local property access and on-street parking due to the proposed modification
- Impacts on connectivity due to the proposed modification.

1.4 Assessment requirements

In preparing this assessment, the Secretary's Environmental Assessment Requirements (SEARs), issued for the proposed modification have been reviewed.

Environmental assessment requirements as proposed by Roads and Maritime for the M4-M5 Link Rozelle Interchange Modification: The Crescent overpass and active transport links as relevant to the Traffic and Transport Assessment, and where this report addresses these matters, are outlined in **Table 1-1**.

Table 1-1 How the assessment requirements have been addressed in this report

Requirement	Section where addressed in report
1. Construction transport and traffic impacts:	**Chapter 3**
(a) Confirmation that car parking arrangements for the construction workforce is as per the EIS and that construction vehicles would be parked in previously approved locations as provided in the EIS	**Section 3.3**
(b) In comparison with the assessment provided in the EIS, a quantitative assessment of the proposed modification's traffic impacts associated with the proposed heavy vehicle and light vehicle estimates during the AM and PM peak hours in the forecast peak construction year (2021) would be completed. This would be consistent with the construction traffic modelling methodology used for the EIS and the Preferred Infrastructure Report and would include assessment of mid-block road capacity and performance of signalised intersections in the vicinity of the proposed works	**Section 3.2**
(c) In comparison with the assessment provided in the EIS, quantitative and qualitative assessments of other potential traffic and transport impacts including access, on-street parking, pedestrians and cyclists, public transport services and infrastructure and traffic crashes	**Sections 3.4, 3.5, 3.6, 3.7 and 3.8**
(d) Outline the need to close, divert or otherwise reconfigure elements of the road, cycle and pedestrian network associated with construction of the modified design. Where the closure, diversion or reconfiguration would be temporary, provide an estimate of the duration of the altered access arrangements	**Section 3.6**
(e) A review of the potential cumulative traffic impacts of other key infrastructure projects preparing for or commencing	**Section 6.3.3 and 6.13.3 of the main EIS**

Requirement	Section where addressed in report
construction, including but not limited to other stages of WestConnex where potential impacts are likely to differ from those that were previously assessed under the EIS for SSI 7485	**report**
(f) Assessment of safety impacts associated with the construction of the three bridge structures for pedestrians and traffic (including public transport) using City West Link and The Crescent. This assessment would also consider the Rozelle Bay light rail stop	**Section 3.8**
(g) The construction traffic impact assessment must assess the potential impacts on traffic, parking and property access arising from road closures, road and intersection upgrades, road reconfigurations and diversions during construction. Any impacts to public transport must also be addressed.	**Section 3**
2. Operational transport and traffic impacts:	
(a) changes to the forecast travel demand and traffic volumes (expressed in terms of total numbers and heavy and light vehicle numbers) for the modified design and the surrounding road, cycle and public transport network relevant to the proposed modification	**Section 4 Sections 4.1.3, 4.1.7 and 4.1.8**
(b) travel time analysis compared to the approved project	**Section 4.1.5**
(c) performance of the modified intersection and road network in close proximity to the City West Link / Crescent Intersection by undertaking a level of service analysis at key locations, for peak periods	**Sections 4.1.3 and 4.1.4**
(d) the redistribution of traffic and impacts on traffic volumes and levels of service on the road network in close proximity to the Rozelle Interchange precinct resulting from the proposed modified design	**Sections 4.1.3 and 4.1.4**
(e) operational implications for existing and proposed public transport (particularly with respect to the Light Rail and bus services) and consideration of opportunities to improve access to public transport	**Sections 4.1.5 and 4.1.7**
(f) potential impacts on cyclist and pedestrian access and safety, including on known routes and future proposals in close proximity to the proposed modification.	**Sections 4.1.8 and 4.1.10**
The operational impact assessment must address the wider traffic and transport interactions.	**Section 4**

1.5 Structure of this report

This report has been structured as follows:

- **Chapter 2** presents the assessment methodology used
- **Chapter 3** considers the potential impacts associated with construction activities
- **Chapter 4** documents the impact assessment undertaken for the project only peak hour and the cumulative peak hour operational scenarios with the proposed modifications
- **Chapter 5** documents management measures that are proposed to mitigate impacts
- **Chapter 6** provides a conclusion to the assessment
- **Chapter 7** presents reference material used.

2 Assessment methodology

2.1 Relevant guidelines and policies

The following guidelines were used in carrying out this assessment:

- Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads 2013)
- Traffic Modelling Guidelines (Roads and Maritime 2013)
- Guide to Traffic Generating Developments Version 2.2 (NSW Roads and Traffic Authority (RTA) 2002).

2.2 Key assumptions

The following assumptions were made in the assessment:

- The assumptions in the WestConnex Road Traffic Model (WRTM v2.3) – the strategic traffic model used by Roads and Maritime to forecast traffic demands for future scenarios – were retained, ie land use and infrastructure assumptions were the same as that used in the EIS
- The forecast traffic from the construction sites associated with Stage 2 (Rozelle Interchange) of the project (as modified) remain as in the M4-M5 Link: EIS, as varied by the Submissions and Preferred Infrastructure Report (M4-M5 Link SPIR) (January 2018) except as discussed in **section 3.2**.

2.3 Methodology

The traffic impacts of the proposed road network components of the proposed modification were assessed using existing VISSIM traffic models previously used to assess operational impacts for the Rozelle Interchange in the EIS. The assessments were undertaken on the surrounding road network during the AM and PM peak hours in the forecast year 2023 and 2033. The VISSIM model area coverage is shown in **Figure 2-1**.

Four future year scenarios were modelled to assess the traffic impacts of the proposed modification in comparison to the approved project:

- **Future case with the project (2023)**: The future case 'with project' assumes the NorthConnex, M4 Widening, M4 East, King Georges Road Interchange Upgrade, New M5 and the M4-M5 Link are complete and open to traffic
- **Cumulative case (2023)**: Assumes NorthConnex, M4 Widening, M4 East, King Georges Road Interchange Upgrade, New M5 and the M4-M5 Link are complete and open to traffic, and in addition, the proposed future Sydney Gateway and Western Harbour Tunnel project are complete and open to traffic
- **Future case with the project (2033)**: The future case 'with project' includes NorthConnex, M4 Widening, M4 East, King Georges Road Interchange Upgrade, New M5 and the M4-M5 Link are complete and open to traffic, but the proposed future Sydney Gateway, Western Harbour Tunnel project and the F6 Extension are not operational
- **Cumulative case (2033)**: The future Cumulative scenario assumes NorthConnex, M4 Widening, M4 East, King Georges Road Interchange Upgrade, New M5 and the M4-M5 Link are complete and open to traffic and also assumes proposed future Sydney Gateway, Western Harbour Tunnel project and Beaches Link project and the F6 Extension are complete and open to traffic.

These scenarios are consistent with what was assessed in the EIS, enabling a comparison in performance to be made to the approved project. The measures of performance or assessment criteria are consistent with those presented in the EIS.

As in the EIS, it is noted that this assessment has been based on forecast traffic demands derived from the WRTM and, consequently, the outcome may be affected by the limitations of the modelling process as described in the EIS.

The boundaries of the VISSIM operational model were reviewed. Based on the forecast changes in traffic volumes on the surrounding road network due to the project, the current model boundaries were considered adequate. Additional traffic is forecast on Johnston Street northbound, the majority is forecast to occur in off peak periods. A maximum additional 90 northbound vehicles is forecast during the 2033 AM peak hour. A sensitivity test was undertaken to test the significance of this increase on the VISSIM model peak period network performance, which indicated minimal impact. More detail is provided in **section 4.1.2**.

2.3.1 Interchange road network performance

The project involves interaction of wide, congested multi-lane carriageways and development of interchanges between at-grade and sub-surface road infrastructure. Given the complex nature of these interactions, it is important to understand the potential impact that the project would have on the road network. Of importance is merge behaviour at tunnel portals and potential blocking of entry and exit ramps. Such behaviour is best represented by microsimulation modelling.

Microsimulation software (VISSIM) was selected for detailed network and intersection analysis due to its ability to model individual vehicle interactions, traffic signal effects, overtaking manoeuvres, and queuing. The visual representation and interaction of individual vehicles is of importance where merge and weave behaviour, as well as differential lane utilisation, are expected to have an impact on traffic capacity. Updated analysis of the network performance impacted by the changes compared to the EIS performance is reported using the following modelling parameters collected and reported for the AM and PM peak hours in each scenario:

- Total vehicle demand – number of vehicles wanting to use the modelled network
- Vehicle kilometres travelled in network – total distance travelled by vehicles travelling through the modelled network
- Vehicle time travelled approaching and in network – the total time taken by vehicles to enter and drive through the modelled network
- Total vehicles arrived – the number of vehicles completing their journey on the network
- Total stops made by vehicles in the network, either due to intersection controls or congestion – the number of stops that vehicles make while travelling through the modelled network. Generally, the fewer stops, the less congested the network
- Average speed of vehicles – the average speed at which vehicles travel through the network. Calculated by dividing the VKT by the vehicle time travelled. Generally, the higher the speed, the better the network operates
- Travel time for typical cross-network trips – the time taken by vehicles to travel between two points in the network. Used as a comparison of how the network is performing, although with changes in the network, vehicles can take different routes between points
- Unreleased demand at the end of peak hour – the number of vehicles unable to enter the model due to congestion extending back to model entry points. The number of ‘unreleased’ vehicles is an indication of the effectiveness of the network. Generally, the lower the number of unreleased vehicles, the better the network can accommodate travel demand.

2.3.2 Intersection level of service

Average delay is commonly used to assess the operational performance of intersections, with level of service (LoS) used as an index. A summary of the intersection level of service criteria is shown in **Table 2-1**.

As in the EIS, for the analysis of intersection performance in this assessment, all exit blocking constraints, applied in the microsimulation models to reflect network congestion beyond the modelled network extents, were removed. This allows for an assessment of intersections within the modelled network, irrespective of any downstream queuing that would mask the actual operation of the intersection.

Table 2-1 Level of service criteria for intersections

LoS	Average delay/vehicles (sec/veh)	Traffic signals/roundabouts	Give way and stop signs
A	≤ 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents would cause excessive delays	At capacity; requires other control mode
F	>70	Roundabouts require other control mode	At capacity; requires other control mode

Source: *Guide to Traffic Generating Developments*, RTA 2002

Figure 2-1 VISSIM model area coverage

3 Potential impacts – construction

3.1 Proposed modification

As a result of updated construction planning, a number of changes that were not considered in the EIS are proposed as part of the proposed modification.

It is proposed to use a minor construction ancillary facility, established in accordance with Condition C24, as a construction ancillary facility. The proposed construction ancillary facility (C6a) is located on the south side of The Crescent to the west of James Craig Road and adjacent to Rozelle Bay. The proposed modification would allow use of the site for a limited number of additional purposes which are not permitted by Condition C24 including:

- Light vehicle parking for workers (around 9 spaces) and
- Material laydown areas and a limited number of associated vehicle movements (small delivery vans and rigid trucks).

These additional purposes would support the various construction activities at the C6 civil site.

The proposed construction ancillary facility (C6a) is shown on **Figure 3-1**. As the proposed C6a construction ancillary facility would include the provision of light vehicle parking spaces and material laydown areas with a limited number of associated vehicle movements, an assessment is required on the potential impacts during operation of this compound area.

In addition, detailed construction planning in the area of the approved realignment of The Crescent between The Crescent / Johnston Street / Chapman Road intersection and the City West Link / The Crescent intersection has identified that the construction activities would occur across area is broadly bounded by:

- The Crescent / Johnston Street / Chapman Road intersection in the south east
- City West Link / The Crescent intersection in the north west
- The light rail corridor in the south west
- Rozelle Bay in the north east.

This is shown in **Figure 3-1**.

The approved C6 civil site on The Crescent will continue to be managed through the implementation of the approved Construction Establishment Management Plan as required by Conditions C1-C4 of the CoA.

Most of the works for construction of The Crescent overpass, green link and shared user path bridge would occur in laydown areas, including bridge assembly. As described in the EIS, there would be temporary road and lane closures, especially related to bridge span lifts. Closures associated with The Crescent overpass, green link and shared user path bridge would be managed through the Construction Traffic, Transport and Access Management Sub-Plan of the Construction Environmental Management Plan, as described in Conditions C4-C8 of the CoA.

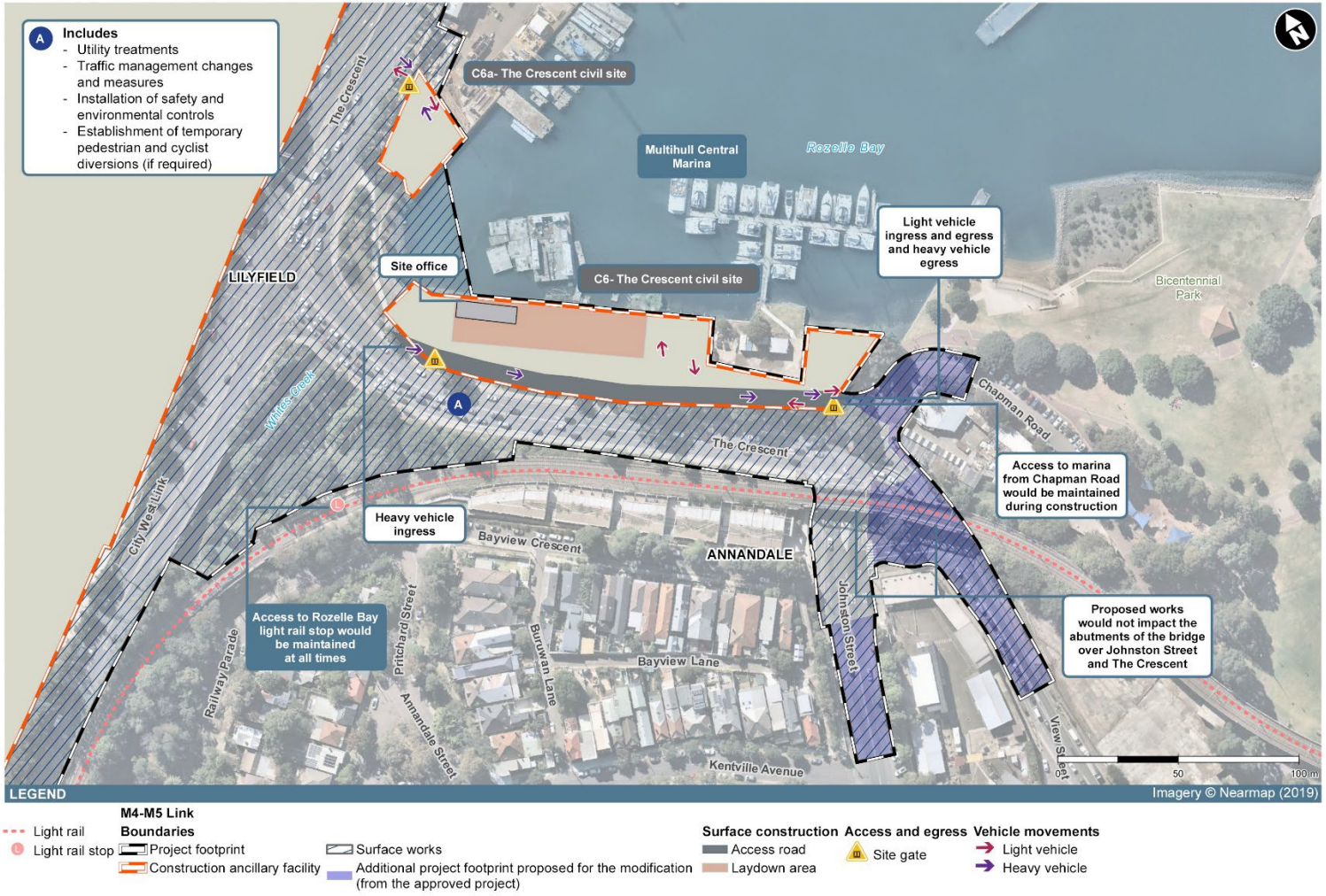

Figure 3-1 Proposed construction ancillary facility (C6a)

3.2 Impacts on construction traffic generation

No changes to construction traffic volumes from the construction sites as described in the EIS are proposed, which for the proposed construction ancillary facility (C6a) were:

- Daily: 10 heavy vehicles in and out (20 movements per day) and 20 light vehicles in and out (40 movements per day)
- AM peak hour: Two heavy vehicles in and out (four movements per hour) and no light vehicles in and out (zero movements per hour)
- PM peak hour: Two heavy vehicles in and out (four movements per hour) and five light vehicles out (five movements per hour).

No re-assessment of the 2021 construction traffic scenario was therefore required to be undertaken.

The proposed construction ancillary facility (C6a) on the southern side of The Crescent adjacent to Rozelle Bay and to the east of the City West Link / The Crescent intersection would be used for some light vehicle parking and material laydown areas (delivery and pick up).

Nine light vehicle parking spaces are proposed. In addition, small delivery vans and rigid trucks would access the material laydown areas although no more than 2-3 movements per hour would be expected between 6am and 6pm. Vehicles would access this site through a westbound left in, left out on The Crescent.

3.3 Impacts on construction workforce parking

Approved peak construction work estimates at the proposed construction ancillary facility (C6a) include up to 50 workers per shift. It is anticipated that the proposed modification would be undertaken within these approved worker numbers, and therefore there would be no change from the EIS. Worker carparking would be managed through the Construction Parking and Access Strategy, as required by Condition E54 of the CoA.

3.4 Impacts on construction access points and routes

The proposed construction ancillary facility (C6a) on the southern side of The Crescent adjacent to Rozelle Bay and to the east of the City West Link / The Crescent intersection would be accessed through a westbound left in, left out on The Crescent.

It is not anticipated that the low number of left-in, left-out light vehicles from this site would impact on traffic operations, especially as the peak hours for the construction sites are slightly different to the surrounding road network peak hours, i.e. the busiest periods on the general road network and at the construction sites do not coincide. With a shift start time of 7am, most light vehicle arrivals would occur before the road network AM peak hour at these locations. The end of the shift is more likely to coincide with the road network PM peak hour, although some vehicles would leave before the road network peak hour.

3.5 Impacts on on-street parking and local access

The proposed The Crescent / Johnston Street / Chapman Road intersection upgrade would temporarily remove four on-street parking spaces on the northern side of Chapman Road during construction. However, once construction works are completed these spaces would be relocated in the immediate vicinity resulting in no permanent loss of on-street parking as part of the proposed modification. The proposed The Crescent / Johnston Street / Chapman Road intersection upgrade would also result in the loss of two permanent on-street parking spaces at the very northern end of the northbound carriageway of Johnston Street.

Local access to 300 Johnston Street, just south of The Crescent / Johnston Street / Chapman Road intersection, would be within the construction zone for the proposed The Crescent / Johnston Street / Chapman Road intersection upgrade. No significant construction works are proposed adjacent to 300 Johnston Street and access to this property would be maintained and managed in accordance with Conditions E46 and E47, which relate to property access. Construction works could be up to 12 months duration at The Crescent / Johnston Street / Chapman Road intersection.

3.6 Impacts on pedestrians and cyclists

No changes to pedestrian and cycle provision during construction are proposed to that described in the EIS. Safe pedestrian and cyclist access would be maintained during construction in accordance with Condition E57 and road safety audits would be carried during detailed design to assess the safety performance of new or modified road and pedestrian and cyclist infrastructure (including around construction ancillary facilities).

3.7 Impacts on public transport

As there are no changes proposed to construction traffic from the construction sites as described in the EIS, there would be no additional impact on buses during construction. As described in the EIS, the bus stops on The Crescent (northbound and southbound) near the intersection with City West Link would be moved south towards Johnston Street to allow for construction along The Crescent. The northbound bus stop would be permanently moved south to accommodate the new alignment. The southbound bus stop would be reinstated in generally the same location. No additional temporary impact on bus stops is expected to occur due to the proposed modification.

Access to the Rozelle Bay light rail stop during construction is also consistent with that described in the EIS, namely that pedestrian access would be maintained during construction and alternative access from The Crescent to the Rozelle Bay light rail stop would also be provided.

3.8 Impacts on road safety

As there are no changes proposed to the construction traffic from the construction sites, there is not expected to be an additional impact on road safety in the study area due to additional construction vehicles.

There is still a risk with construction traffic interacting with general traffic, with elevated risk when construction-related vehicles are entering and leaving construction sites. The C6a construction ancillary facility site proposed on the southern side of The Crescent adjacent to Rozelle Bay introduces a westbound left in movement on The Crescent just prior to The Crescent / City West Link intersection. The left in movement would take place in the demarcated left turn lane on the approach to this intersection. Other motorists would need to be made aware of this possible movement, as they would currently expect the left turn movement to happen at the intersection and not prior to it, which may raise the risk of rear-end crashes at this location.

Any foreseen impacts on road safety for all users during construction, including the safety impacts of the construction of the three bridge structures for pedestrians and traffic using City West Link and The Crescent, would be mitigated as much as practicable through the provision of tailored construction traffic management plans and other measures as detailed in the M4-M5 Link SPIR and in the Construction Traffic, Transport and Access Management Sub-Plan that will be prepared for the project, as required by Condition C4 of the CoA. Maintaining safe pedestrian and cyclist access around work sites during construction is also a requirement of Condition E57 of the CoA.

4 Potential impacts – operational

4.1 Assessment of operational traffic impacts in 'with project' scenario

This section discusses the potential traffic impacts of the proposed modification during the 'with project' scenarios. Two scenarios were modelled to assess the potential operational traffic impacts:

- **Future case 'with project' (2023)**: The future case 'with project' assumes the NorthConnex, M4 Widening, M4 East, King Georges Road Interchange Upgrade, New M5 and the M4-M5 Link are complete and open to traffic
- **Future case 'with project' (2033)**: The future case 'with project' includes NorthConnex, M4 Widening, M4 East, King Georges Road Interchange Upgrade, New M5 and the M4-M5 Link are complete and open to traffic, but the proposed future Sydney Gateway, Western Harbour Tunnel project and the F6 Extension are not operational.

4.1.1 Changes to road network

Figure 4-1 shows the modelled 'with project' Rozelle Interchange network. Changes proposed in the modification model compared to the EIS design are:

- **The Crescent / Johnston Street / Chapman Road** intersection (refer to **Figure 4-2**) – southern leg of The Crescent is one-way southbound, with northbound traffic using an existing slip road to a new signalised intersection on Johnston Street, where vehicles can turn left or continue northbound along The Crescent. Northbound vehicles on Johnston Street can turn left onto The Crescent or straight ahead to Chapman Road. The right turn from Johnston Street into The Crescent is no longer available. Left turning vehicles from Johnston Street can continue onto The Crescent overpass to turn right at City West Link or continue at grade to turn left onto City West Link. The Crescent southbound approach is expanded from three lanes to four lanes, allowing two right turn lanes, one through lane and one shared through and left turn lane. Vehicles exiting Chapman Road can turn left onto The Crescent (southbound), right onto The Crescent (northbound) and access The Crescent overpass, or continue straight onto Johnston Street (southbound).
- **The Crescent / City West Link intersection** with The Crescent overpass (refer to **Figure 4-3**) – the overpass connecting the northbound and eastbound carriageways of The Crescent heading towards Victoria Road and the Anzac Bridge removes the at grade right turn from this intersection. All other movements remain. Vehicles travelling eastbound along City West Link and on to The Crescent would travel either side of the exit from overpass depending on their destination, with Anzac Bridge-bound vehicles travelling to the left and Victoria Road or James Craig Road-bound (right turn) vehicles travelling to the right of the overpass.
- **The Crescent / James Craig Road intersection** (refer to **Figure 4-4**) – with The Crescent overpass coming to ground on the eastbound approach to the intersection, vehicles can travel straight to Anzac Bridge or straight to Victoria Road. A right turn into James Craig Road from the overpass is not available. The Crescent eastbound bifurcates around the overpass with Anzac Bridge-bound vehicles travelling to the left and Victoria Road or James Craig Road-bound (right turn) vehicles travelling to the right of the overpass.
- **Approach to Anzac Bridge** (refer to **Figure 4-5**) – three lanes from Iron Cove Link / M4 merge to two lanes, while two lanes from Victoria Road merge to one lane and then merge with two lanes from The Crescent. These lanes then continue as four lanes on Anzac Bridge. This differs from the EIS, which had three lanes from Iron Cove Link / M4, one lane from The Crescent and one lane from Victoria Road merging into four lanes on Anzac Bridge. The proposed layout eliminates the zipper merge proposed in the EIS design.

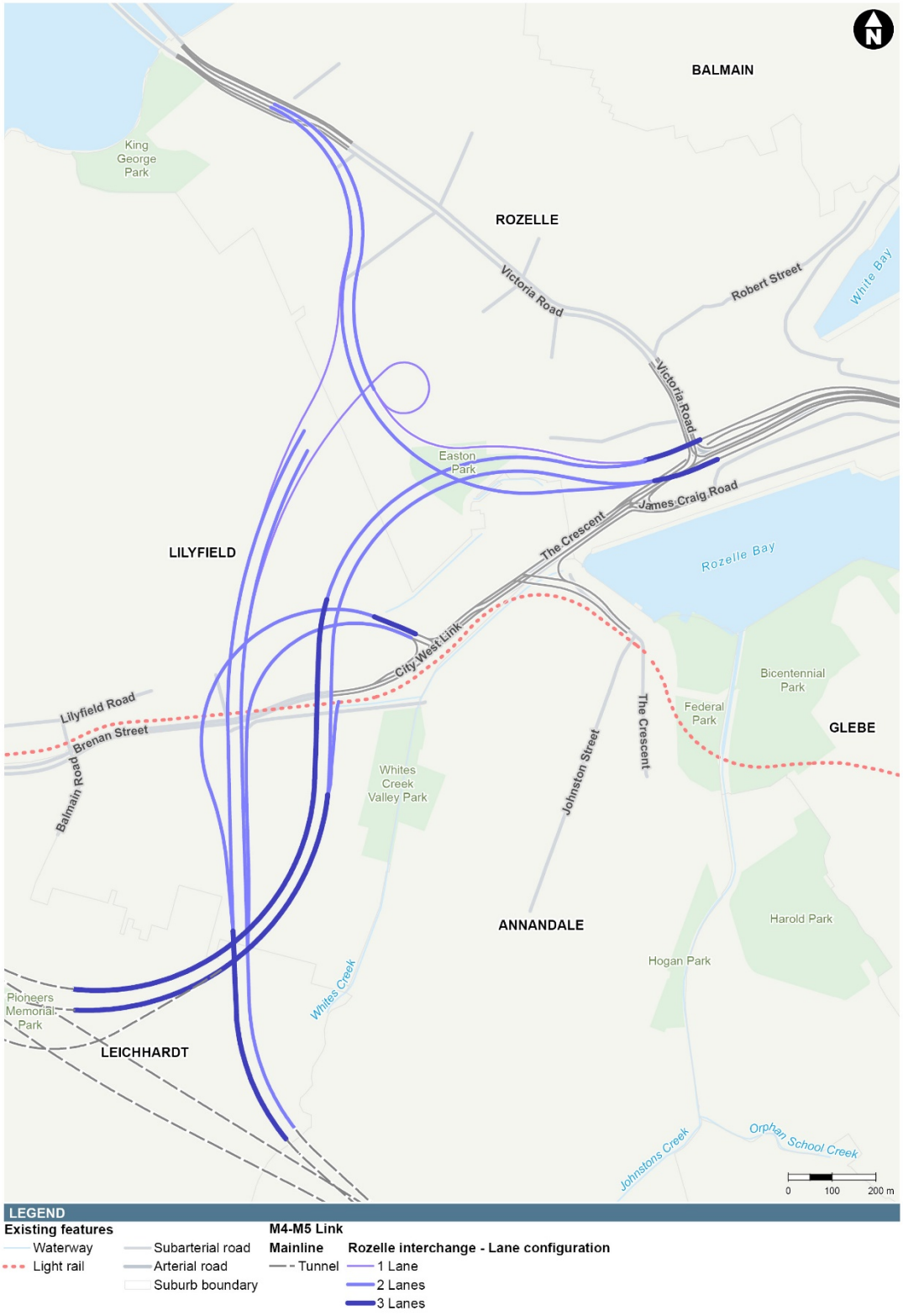

Figure 4-1 Rozelle Interchange: 'with project' road network

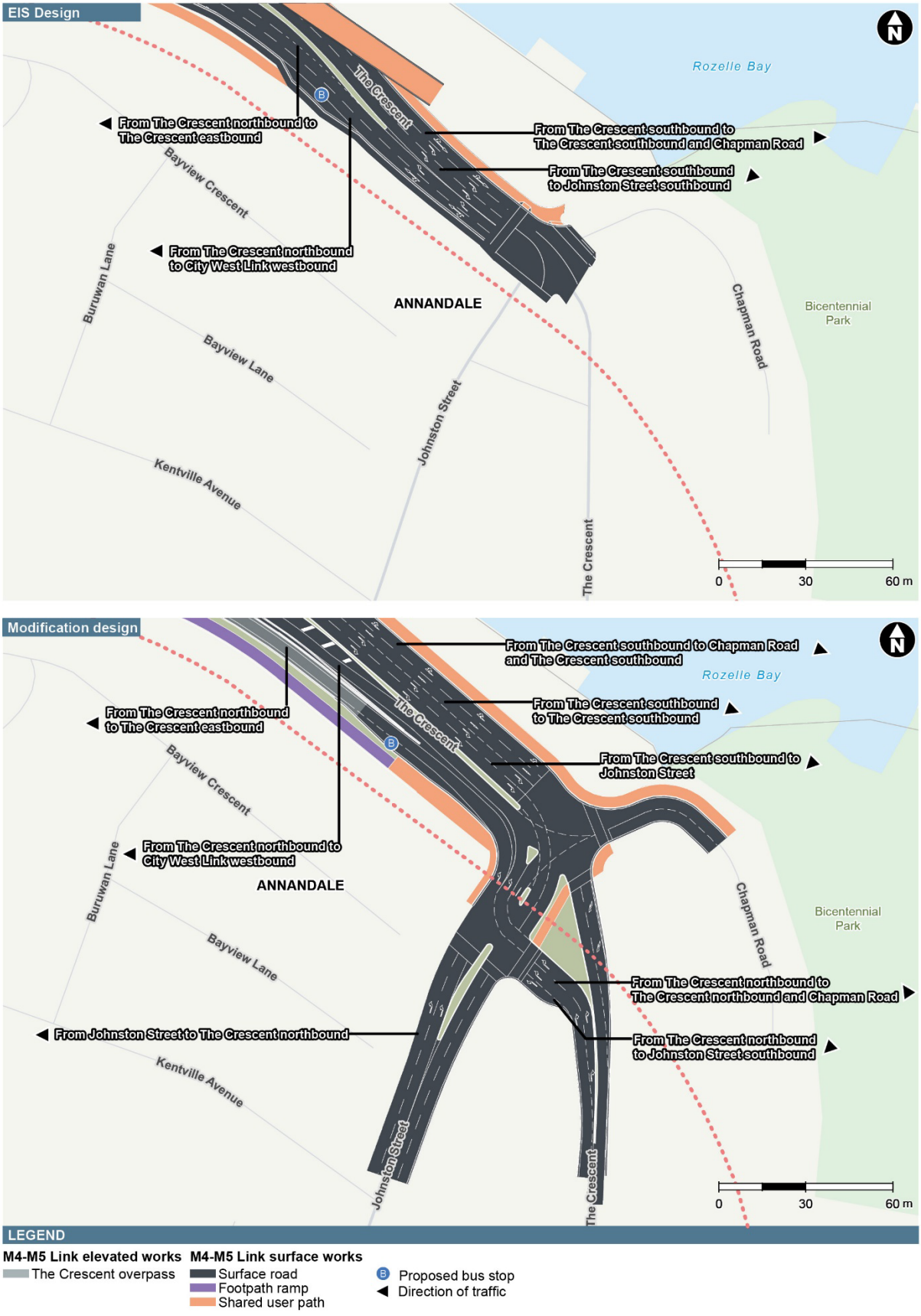

Figure 4-2 **The Crescent/Johnston Street/Chapman Road layout in EIS and proposed modification model**

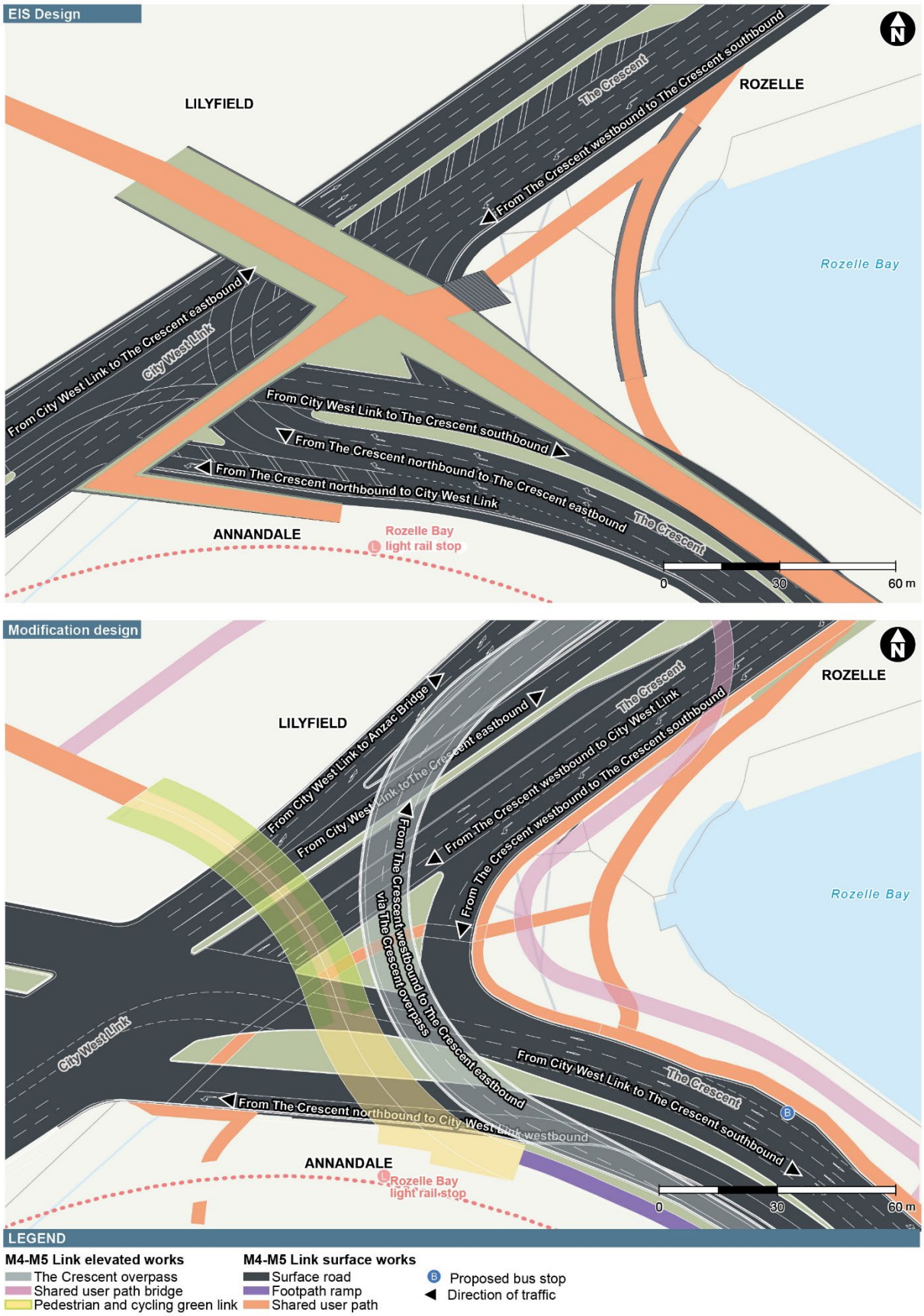

Figure 4-3 City West Link/The Crescent layout in EIS and proposed modification model

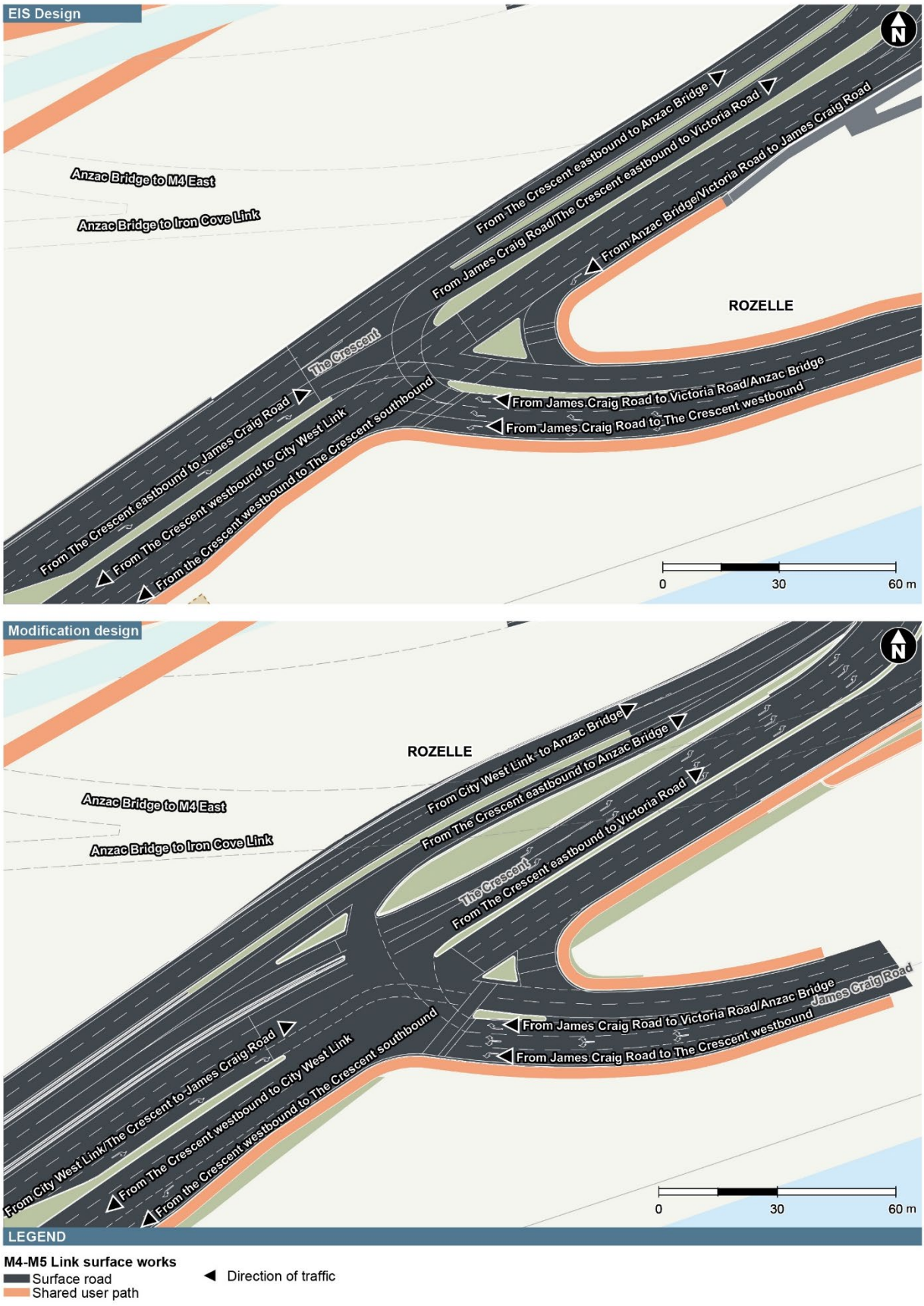

Figure 4-4 The Crescent/James Craig Road layout in EIS and proposed modification model

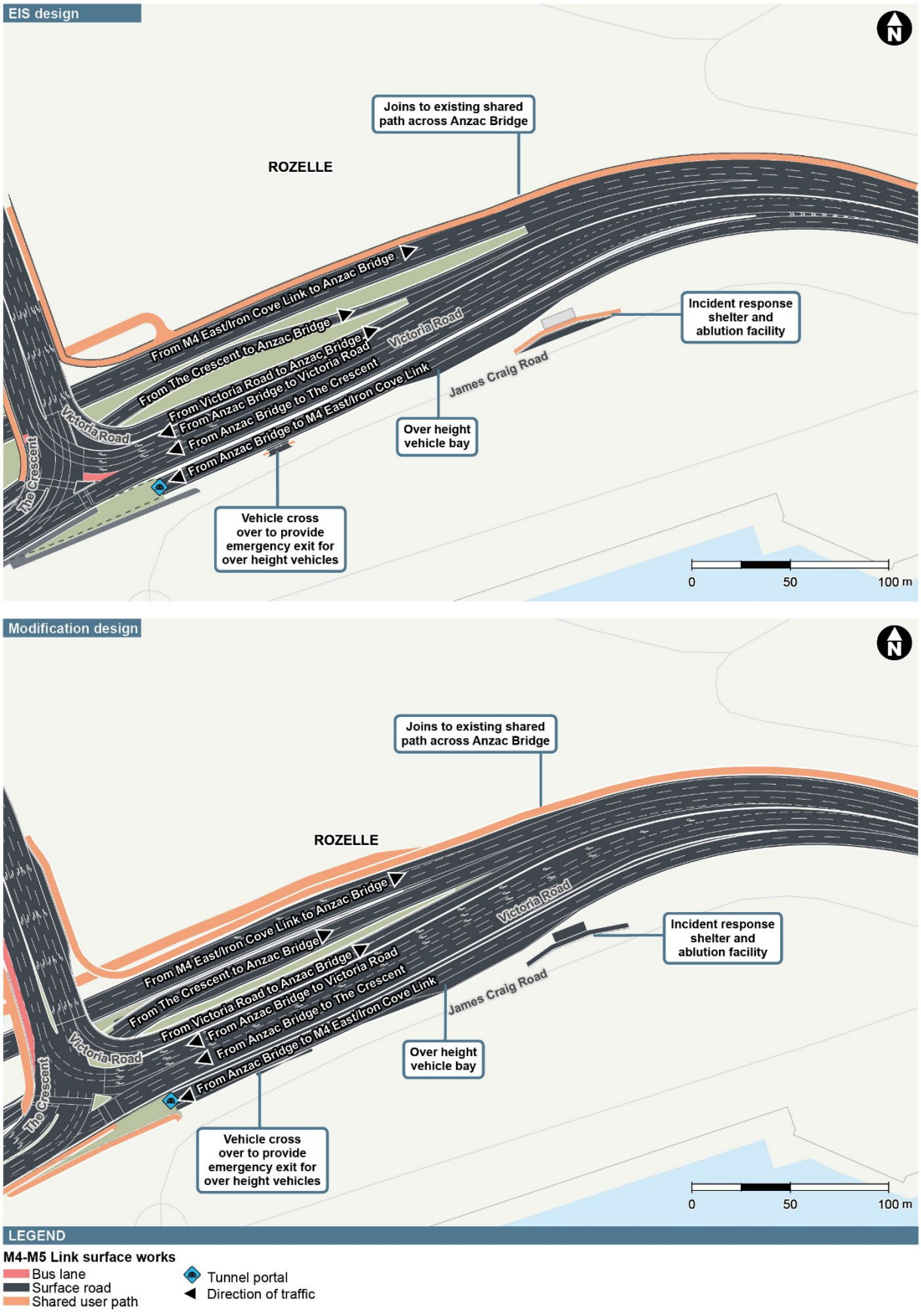

Figure 4-5 Approach to Anzac Bridge layout in EIS and proposed modification model

4.1.2 Impacts on Sydney metropolitan road network

This section details the traffic demand changes forecast by the WRTM due to the modifications in a 'with project' scenario using forecast traffic volumes for 2023 and 2033.

'With project' (2023)

Figure 4-6 shows bandwidth plots illustrating the forecast change in daily traffic volumes between the 2023 'with project' EIS scenario and 'with project' modification scenario. The changes shown represent differences in the forecast Average Weekday Traffic (AWT) between the modelled scenarios. Roads that are expected to carry less traffic in the future 2023 'with project' modification scenario are shown in green and roads where traffic volumes are predicted to increase are shown in red. These forecast traffic volumes include both fixed and induced traffic demand.

With the inclusion of the proposed modification, there is minimal change in the daily traffic forecast on the wider network. The thick red line at the City West Link/The Crescent intersection indicates the traffic shifting from the at grade intersection to the new overpass. About 17,500 vehicles per day are forecast to use the overpass in 2023, with a resultant reduction in volume at the at grade intersection.

A small increase in daily demand is forecast in 2023 on Anzac Bridge eastbound (about 1,500 vehicles per day) and on Johnston Street northbound (about 2,500 vehicles per day). As the northbound traffic on Johnston Street is a forecast increase in demand into the VISSIM operational models, a review of the forecast peak hour volumes was undertaken. This indicated that most of the forecast increase would occur in off peak periods, with only an additional 70 northbound vehicles per hour forecast during each of the AM and PM peak hours. A sensitivity test was undertaken to test the significance of this increase on the VISSIM model peak period network performance, which indicated the increase had minimal impact.

'With project' (2033)

Figure 4-7 shows bandwidth plots illustrating the forecast change in daily traffic volumes between the 2033 'with project' EIS scenario and 'with project' modification scenario. The changes shown represent differences in the forecast AWT between the modelled scenarios. Roads that are expected to carry less traffic in the future 2033 'with project' modification scenario are shown in green and roads where traffic volumes are predicted to increase are shown in red. These forecast traffic volumes include both fixed and induced traffic demand.

Like the 2023 scenarios, with the inclusion of the proposed modification, there is minimal change in the daily traffic forecast on the network. Again, the thick red line at the City West Link/The Crescent intersection indicates the traffic shifting from the at grade intersection to the new overpass. About 19,000 vehicles per day are forecast to use the overpass in 2023, with a resultant reduction in volume at the at grade intersection.

A small increase in daily demand is forecast on Anzac Bridge eastbound (about 1,500 vehicles per day) and on Johnston Street northbound (about 2,500 vehicles per day). A review of the forecast peak hour volumes was undertaken. This indicated that most of the forecast increase would occur in off peak periods, with only an additional 90 northbound vehicles per hour forecast during the AM peak hour and an additional 20 northbound vehicles per hour forecast during the PM peak hour. A sensitivity test was undertaken in the AM peak hour to test the significance of this increase on the VISSIM model peak period network performance, which indicated the increase had minimal impact.

Source: WRTM v2.3, 2019

Figure 4-6 Difference in AWT between 2023 'with project' EIS and 'with project' modification scenarios

Source: WRTM v2.3, 2019

Figure 4-7 Difference in AWT between 2033 'with project' EIS and 'with project' modification scenarios

4.1.3 Impacts on network performance

2023 'with project' scenario

Table 4-1 and **Table 4-2** present a comparison of the performance of the road network, between the 2023 EIS and modification models for the AM and PM peak hours, produced using microsimulation modelling.

AM peak hour

The 2023 EIS and modification models have the same demand, however, the proposed changes at The Crescent/Johnston Street/Chapman Road intersection along with The Crescent overpass at City West Link/The Crescent intersection allow more traffic into the network. This is reflected in the drop in unreleased vehicles i.e. those unable to enter the network due to congestion.

Network performance metrics indicate an improvement in the modification model compared to the EIS model. In both models, the AM peak citybound movements remain affected by the queues back from the Bathurst Street/Cross City Tunnel exit ramp and the downstream exit blocking from Sydney Harbour Bridge on the Western Distributor. As in the EIS model, the congestion on the Western Distributor and Anzac Bridge is forecast to cause some queuing in the Iron Cove Link and on the M4 exit ramp in the modification model. This is not forecast to extend back to the M4-M5 Link mainline.

Table 4-1 Rozelle Interchange network performance – AM peak hour (2023 'with project' EIS vs 'with project' modification scenario)

Network measure	2023 'with project' (EIS)	2023 'with project' (Modification)	Percentage change
All vehicles			
Total traffic demand (veh)	25,327	25,327	0%
Total vehicle kilometres travelled in network (km)	73,188	73,426	<1%
Total time travelled approaching and in network (hr)	6,308	5,763	-9%
Total vehicles arrived	23,799	24,070	1%
Total number of stops	274,030	266,585	-3%
Average per vehicle in network			
Average vehicle kilometres travelled in network (km)	3.1	3.1	0%
Average time travelled in network (mins)	9.8	9.5	-3%
Average number of stops	10.1	9.7	-4%
Average speed (km/h)	18.8	19.4	3%
Unreleased vehicles			
Unreleased demand (veh)	2,309	1,663	-28%
% of total traffic demand	9%	7%	-

PM peak hour

In the PM peak hour, the overall network performance is forecast to improve slightly compared to the 2023 EIS network. The number of stops has decreased compared with the EIS models and average speeds are slightly higher than before with fewer unreleased vehicles.

Table 4-2 Rozelle Interchange network performance – PM peak hour (2023 'with project' EIS vs 'with project' modification scenario)

Network measure	2023 'with project' (EIS)	2023 'with project' (Modification)	Percentage change
All vehicles			
Total traffic demand (veh)	28,109	28,109	0%
Total vehicle kilometres travelled in network (km)	80,108	81,127	1%
Total time travelled approaching and in network (hr)	5,091	5,112	<1%
Total vehicles arrived	24,261	24,472	1%
Total number of stops	179,138	169,063	-6%
Average per vehicle in network			
Average vehicle kilometres travelled in network (km)	3.3	3.3	0%
Average time travelled in network (mins)	7.9	7.8	-1%
Average number of stops	6.4	6.0	-6%
Average speed (km/h)	25.1	25.5	2%
Unreleased vehicles			
Unreleased demand (veh)	2,655	2,529	-5%
% of total traffic demand	9%	9%	-

2033 'with project' scenario and **Table 4-4** present a comparison of the performance of the road network (as shown in **Figure 4-1**), between the 2033 EIS and modification models for the AM and PM peak hours, produced using microsimulation modelling.

AM peak hour

Similar to the 2023 analysis, the 2033 EIS and modification models have the same demand, and the two networks have similar performance metrics. More vehicles reach their destinations in the modified network with less unreleased demand with negligible change in average speeds. The proposed changes at The Crescent/Johnston Street/Chapman Road intersection along with the Crescent overpass at City West Link/The Crescent intersection allow more traffic into the network. This is reflected in the reduction in unreleased vehicles i.e. vehicles unable to enter the network due to congestion.

In the modification model, the Western Distributor is forecast to be slightly more congested compared to the EIS model. The citybound movements are likely to be affected by the queues from the Bathurst Street/Cross City Tunnel exit ramp and the downstream exit blocking from the Sydney Harbour Bridge, which cause flow breakdown on Anzac Bridge. This congestion on the Western Distributor and Anzac Bridge is forecast to cause queuing in the Iron Cove Link, and on the M4 exit ramp. Again, this is not forecast to extend back to the M4-M5 Link mainline.

Table 4-3 Rozelle Interchange network performance – AM peak hour (2033 'with project' EIS vs 'with project' modification scenario)

Network measure	2033 'with project' (EIS)	2033 'with project' (Modification)	Percentage change
All vehicles			
Total traffic demand (veh)	28,023	28,023	0%
Total vehicle kilometres travelled in network (km)	77,690	77,169	-1%
Total time travelled approaching and in network (hr)	7,221	7,050	-2%
Total vehicles arrived	25,794	25,888	<1%
Total number of stops	272,544	272,460	<1%
Average per vehicle in network			
Average vehicle kilometres travelled in network (km)	3.0	3.0	0%
Average time travelled in network (mins)	9.3	9.2	-1%
Average number of stops	9.2	9.2	0%
Average speed (km/h)	19.4	19.4	0%
Unreleased vehicles			
Unreleased demand (veh)	2,719	2,609	-4%
% of total traffic demand	10%	9%	-

PM peak hour

In the PM peak hour, the overall 2033 network performance is forecast to deteriorate slightly compared to the EIS network. In the 2033 PM modified network more traffic is released into the network and as a result, more traffic is able to travel northbound on Victoria Road because of the improvements at the Victoria Road / The Crescent intersection. This results in longer travel times in the northbound direction on Victoria Road with a slight drop in average speeds and slight increase in average travel times. These small changes do impact the overall network performance which shows a slight deterioration compared with the EIS models. There is still queuing back from Sydney Harbour Bridge but it is not as extensive as in the 2023 PM peak. Overall, the network performance for this scenario is very similar to the EIS models.

Table 4-4 Rozelle Interchange network performance – PM peak hour (2033 'with project' EIS vs 'with project' modification scenario)

Network measure	2033 'with project' (EIS)	2023 'with project' (Modification)	Percentage change
All vehicles			
Total traffic demand (veh)	30,259	30,259	0%
Total vehicle kilometres travelled in network (km)	86,924	86,873	<1%
Total time travelled approaching and in network (hr)	5,286	5,362	1%
Total vehicles arrived	27,082	26,917	-1%
Total number of stops	92,817	99,419	7%
Average per vehicle in network			
Average vehicle kilometres travelled in network (km)	3.2	3.2	0%
Average time travelled in network (mins)	6.1	6.4	5%

Network measure	2033 'with project' (EIS)	2023 'with project' (Modification)	Percentage change
Average number of stops	3.1	3.3	6%
Average speed (km/h)	31.3	30.3	-3%
Unreleased vehicles			
Unreleased demand (veh)	2,974	2,991	1%
% of total traffic demand	10%	10%	-

4.1.4 Impacts on intersection performance

Table 4-5 presents the modelled AM and PM peak hour Level of Service (LoS) for key intersections in the modelled Rozelle Interchange network. The intersection performance is based on an 'unconstrained' network which allows the full demand to reach the intersections. This methodology is used to ensure that the intersections have sufficient capacity to meet future predicted demands and was also used in the EIS.

In the AM peak hours, the intersection performances are forecast to be comparable or better when compared with the EIS. The most noticeable improvement is at the Victoria Road/Robert Street intersection in the 2033 AM peak hour, which is forecast to improve from LoS F to LoS C.

In the 2023 PM peak hour, all intersections are forecast to perform the same or better when compared with the EIS, especially The Crescent/Johnston Street/Chapman Road intersection, where a better LoS is forecast, and more vehicles can be accommodated. In the 2033 PM peak hour, the Victoria Road/Darling Street intersection is forecast to perform slightly worse than in the EIS model due to a higher total intersection demand. The average delay in the EIS model was at the high end of the LoS D band and the additional traffic has pushed it into the LoS E band.

Table 4-5 Rozelle Interchange: key intersection performance (LoS) – Peak hour ('with project' EIS vs 'with project' modification scenario)

Key intersections	2015 Base	2023 'with project' (EIS)	2023 'with project' (Modification)	2033 'with project' (EIS)	2033 'with project' (Modification)
AM peak hour					
Victoria Road/Wellington Street	D	C	C	D	C
Victoria Road/Darling Street	F	F	F	F	F
Victoria Road/Robert Street	D	C	C	F	C
Victoria Road/The Crescent	B	C	B	D	C
The Crescent/James Craig Road	A	B	A	B	B
City West Link/The Crescent	B	C	B	D	C
The Crescent/Johnston Street	C	C	B	C	C
The Crescent/M4-M5 link ramps	–	B	A	B	B
PM peak hour					
Victoria Road/Wellington Street	B	B	B	C	B
Victoria Road/Darling Street	F	D	D	D	E
Victoria Road/Robert Street	F	C	C	C	C

Key intersections	2015 Base	2023 'with project' (EIS)	2023 'with project' (Modification)	2033 'with project' (EIS)	2033 'with project' (Modification)
Victoria Road/The Crescent	F	C	C	C	C
The Crescent/James Craig Road	B	A	A	A	A
City West Link/The Crescent	D	B	B	C	B
The Crescent/Johnston Street	F	F	C	F	E
The Crescent/ M4-M5 link ramps	–	B	A	B	A

4.1.5 Impacts on travel times

Like in the EIS analysis, to assess travel times through the network, exit blocking constraints were retained to reflect network congestion at intersections beyond the modelled network extents. Average travel times along Victoria Road and City West Link onto Anzac Bridge, between the same extents as in the EIS analysis, are presented in **Figure 4-8** and **Figure 4-9**.

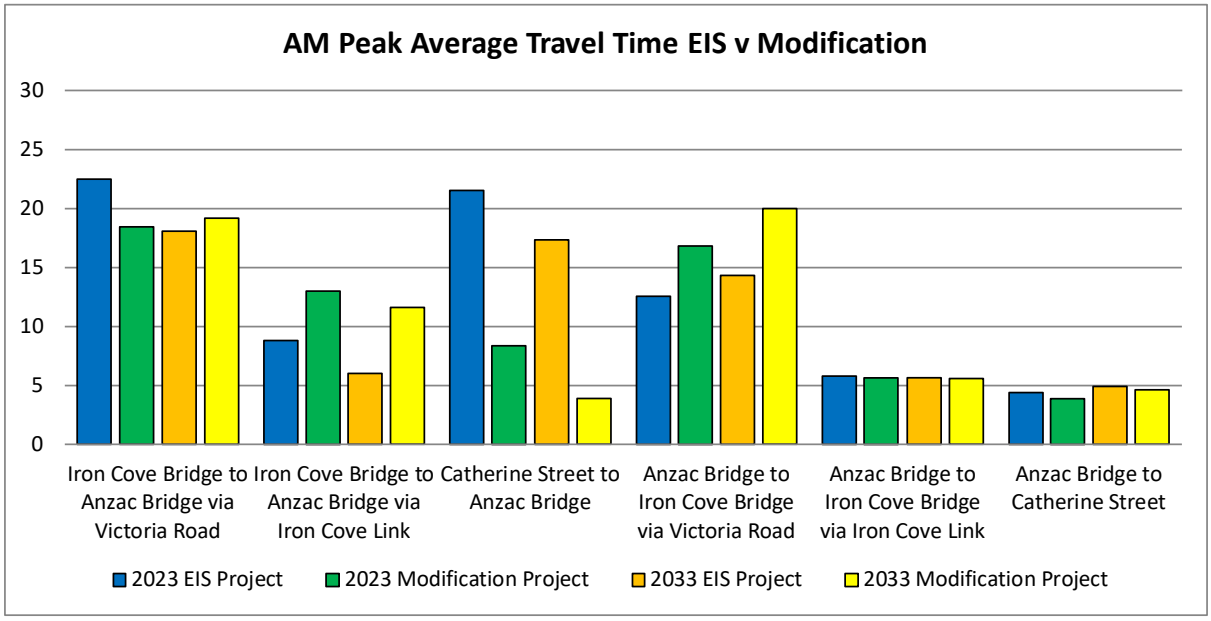

Figure 4-8 **Rozelle Interchange: average travel time (mins) – comparison between AM peak hour 'with project' EIS and 'with project' modification scenarios**

During the AM peak hour, the model shows similar travel times compared to the EIS model. However, the model suggests that increased travel times in the peak direction on Iron Cove Link (inbound to the city) and on Victoria Road (outbound from the city) can be expected in 2023 and 2033.

The demand from Iron Cove Link and the M4 is at or just over the capacity of the merge on the eastbound approach to Anzac Bridge which causes queues to form on Iron Cove Link and impact inbound travel times. Once vehicles have passed the merge and are on the Anzac Bridge, the citybound traffic remains affected by the queues back from the Bathurst Street/Cross City Tunnel exit ramp and the downstream exit blocking from Sydney Harbour Bridge on the Western Distributor similar to the EIS model.

In the modification model, three lanes from Iron Cove Link / M4 merge to two lanes, while two lanes from Victoria Road merge to one lane and then merge with two lanes from The Crescent. These lanes then continue as four lanes on Anzac Bridge. This differs from the EIS, which had three lanes from Iron Cove Link / M4, one lane from The Crescent and one lane from Victoria Road merging into four lanes on Anzac Bridge. The proposed layout eliminates the zipper merge proposed in the EIS design. A schematic diagram of the Anzac Bridge approach in both models is shown in **Figure 4-5**.

In the EIS model, the traffic from City West Link / The Crescent and Victoria Road exceed the capacity of the merge arrangement with the traffic from Iron Cove Link and the M4. As a result, this traffic queues back on City West Link to past the M4-M5 Link ramp and Balmain Road. The congestion means that vehicles on City West Link / The Crescent with destinations on Victoria Road are delayed getting to the Victoria Road / The Crescent intersection.

In the modified network, the proposed layout improves the flow of traffic from City West Link / The Crescent and Victoria Road effectively removing the congestion on City West Link. As a result, traffic from City West Link travelling to Victoria Road is no longer delayed by queuing. However, this means that there is more northbound traffic on Victoria Road compared with the EIS model. This in turn increases the congestion on Victoria Road that extends back from the AM peak capacity constraint (tidal flow arrangement) on Victoria Road in Drummoyne and negatively impacts the northbound travel times on Victoria Road. The queues that form on Victoria Road during the AM peak take longer to dissipate than in the EIS models and this is reflected in the Anzac Bridge to Iron Cove Bridge via Victoria Road travel times.

Removing the congestion on City West Link in the modified model results in a significant improvement in travel times on City West Link for inbound traffic (to the city).

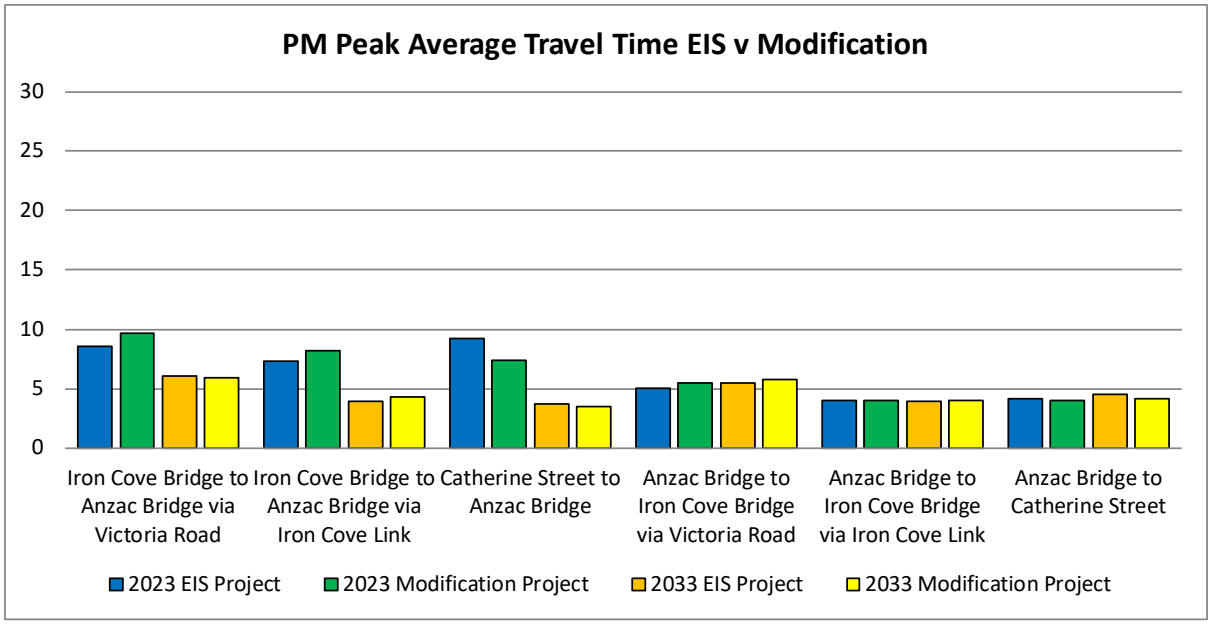

Figure 4-9 **Rozelle Interchange: average travel time (mins) – comparison between PM peak hour 'with project' EIS and 'with project' modification scenarios**

During the PM peak hour, the modified model results are similar to those in the EIS model. There appears to be slight increases in travel times from Iron Cove Bridge to Anzac Bridge via both the Iron Cove Link and Victoria Road. These changes are minimal and not considered to be significant.

4.1.6 Impacts on road safety

The frequency of crashes is expected to change relative to the forecast traffic volume changes. In the EIS, potential future crashes were calculated using the historical crash rates and applied to the forecast average daily traffic flows. Reviewing the forecast daily changes in traffic volumes from the WRTM indicates a minimal change in daily volumes across the network. Based on these forecasts, a minimal change in crashes is also forecast on the roads assessed in the EIS.

The proposed grade separated right turn overpass from The Crescent (northbound) to The Crescent (eastbound) at the City West Link/The Crescent intersection would remove the at grade right turn movement, which would remove safety issues with conflicting movements at the intersection.

4.1.7 Impacts on public transport services

The bus bay on the west side of The Crescent, currently located just south of the City West Link intersection, would be relocated slightly further south on The Crescent to just north of the Johnston Street intersection. This bay will be indented and given the low frequency of the buses using this stop (9-12 minutes in the AM peak period and 5-12 minutes in the PM peak period), the expectation is that the performance of The Crescent / Johnston Street / Chapman Road intersection would not be impacted. No change to the location of the bus stop on the east side of The Crescent is proposed.

The realignment of the green link to the west of The Crescent would provide an improved connection between the Rozelle Rail Yards and the Rozelle Bay light rail stop. No other impacts to light rail is forecast.

Figure 4-10 and **Figure 4-11** show the comparison in AM and PM peak hour travel times for buses in the 'with project' scenarios. The main bus route on Victoria Road, Anzac Bridge and the bus lanes to and from Druitt Street is presented.

The results show comparable citybound bus journey times in the AM peak. In the outbound direction in the AM peak, bus travel time is forecast to increase for the same reasons that affect the general traffic travel times i.e. the additional traffic on Victoria Road northbound, as discussed in section 4.1.5. The increased traffic volumes on Victoria Road means that the queue caused by the capacity constraint to the northern end of Victoria Road in Drummoyne is longer and takes longer to dissipate. In 2023, bus travel times are forecast to increase from about 17 minutes to about 20 minutes, while in 2033, bus travel times are forecast to increase from about 19 minutes to about 25 minutes.

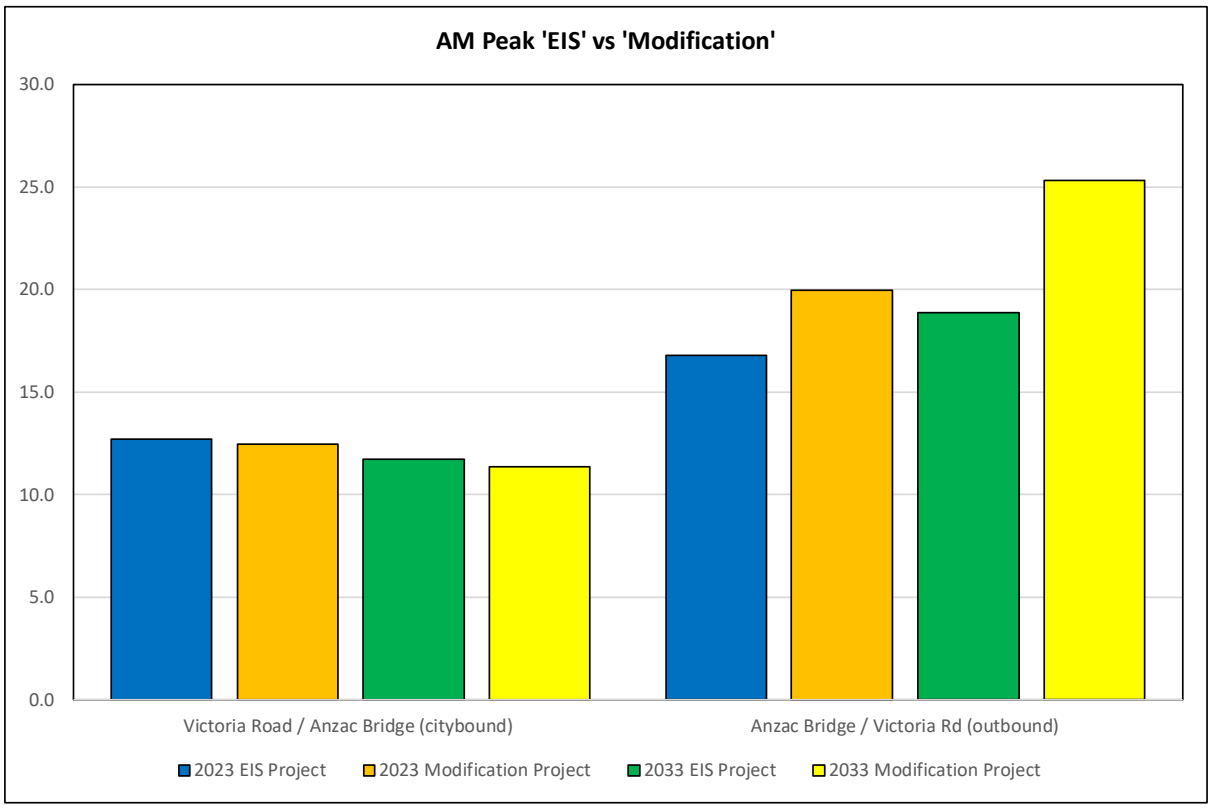

Figure 4-10 Rozelle Interchange: average travel time for buses – comparison between AM peak hour 'with project' EIS and 'with project' modification scenarios

In the PM peak hour, the citybound travel time is forecast to increase slightly but is comparable to the bus travel times in the EIS model.

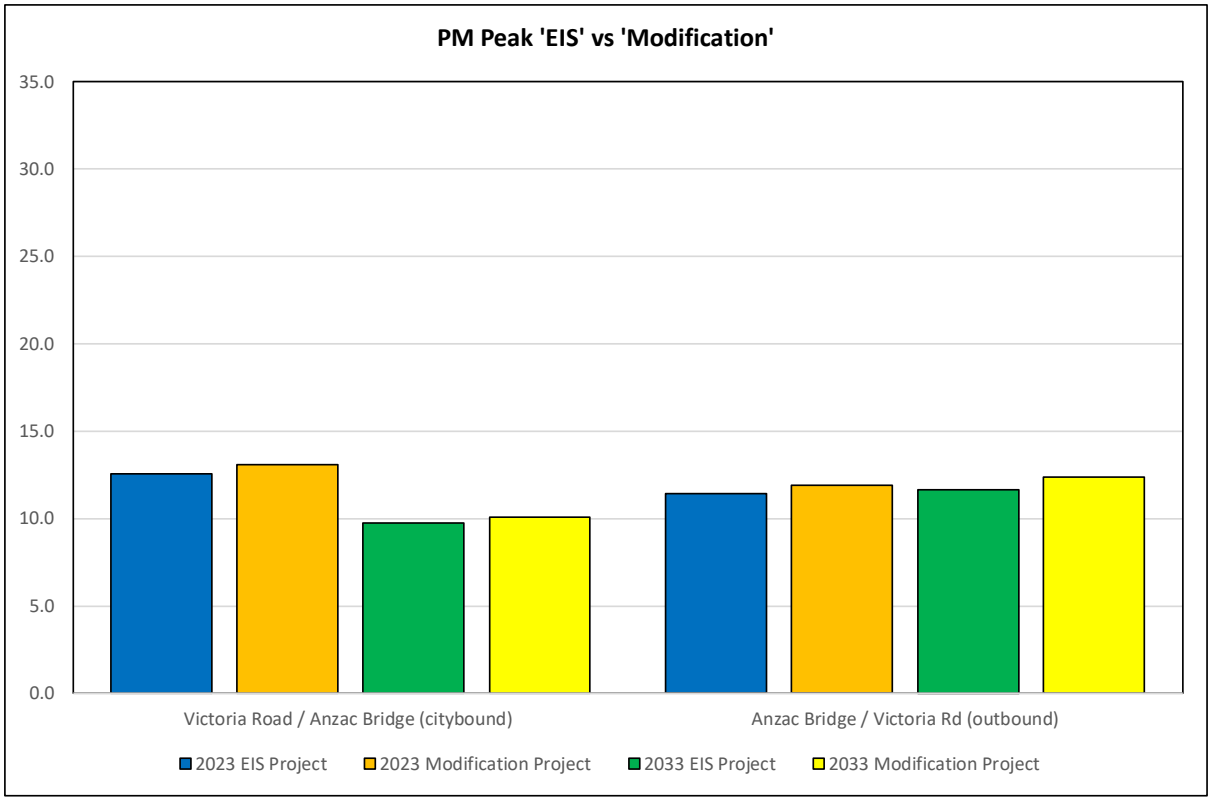

Figure 4-11 **Rozelle Interchange: average travel time for buses – comparison between PM peak hour 'with project' EIS and 'with project' modification scenarios**

4.1.8 Impacts on active transport facilities

The green link and shared user path bridge would provide the same connectivity as described in the EIS for pedestrians and cyclists from the Rozelle Rail Yards to the existing Rozelle Bay light rail stop, Rozelle Bay foreshore and Bicentennial Park. With the green link realigned to the west of The Crescent, travel times to the light rail stop are likely to be shorter, while slightly longer travel times to Bicentennial Park are likely via the shared user path.

As part of the proposed upgrade of The Crescent / Johnston Street / Chapman Road intersection, the existing signalised pedestrian crossing on the western leg will be relocated to the eastern side of the intersection. Pedestrians currently accessing Bicentennial Park from Johnston Street would be required to use the new signalised pedestrian crossing, which would not provide as direct an access to Bicentennial Park. The total number of traffic lanes crossed on The Crescent would be the same as presented in the EIS (five lanes), but moving it to the eastern side, would split the crossing into two sections – one crossing of three lanes and one crossing of two lanes.

4.1.9 Impacts on local property access and on-street parking

There is very little direct impact on local property access in the suburbs of Rozelle and Annandale as part of the proposed modification. Local access to 300 Johnston Street just south of The Crescent / Johnston Street / Chapman Road intersection would be affected and needs to be incorporated into the junction design. The movement of vehicles into and out of the property is unlikely to affect the intersection performance and is an operational matter that would be addressed during detailed design.

The proposed The Crescent / Johnston Street / Chapman Road intersection upgrade would temporarily remove four on-street parking spaces on the northern side of Chapman Road. However, these would be relocated, so there would be no permanent loss of on-street parking on Chapman Road as part of the proposed modification. The proposed The Crescent / Johnston Street / Chapman

Road intersection upgrade would also result in the loss of two permanent on-street parking spaces at the end of the northbound carriageway of Johnston Street.

4.1.10 Impacts on connectivity

The proposed The Crescent / Johnston Street / Chapman Road intersection upgrade would remove the right turn from Johnston Street (northbound) onto The Crescent (southbound). Depending on their origin and destination, motorists that would have made this right turn would in the future travel through Annandale, east of Johnston Street, to access The Crescent / Minogue Crescent / Ross Street or use Parramatta Road, if their origin or destination is further south. Traffic surveys indicate fewer than 100 vehicles currently make this right turn in the AM peak hour and fewer than 50 vehicles in the PM peak hour.

The proposed grade separated right turn overpass from The Crescent (northbound) to The Crescent (eastbound) at the City West Link / The Crescent intersection would remove the ability for motorists to turn right from The Crescent (northbound) onto The Crescent (eastbound) and then turn right onto James Craig Road. Motorists wanting to access James Craig Road from the south would need to use another route to access City West Link from the west and then turn right into James Craig Road or access the Anzac Bridge from the east to then turn left into James Craig Road. The maximum forecast peak hour demand from Johnston Street and The Crescent (south) to James Craig Road in the 'with project' scenario is about 40 vehicles in the 2033 AM peak hour. The impact of these vehicles relocating to other routes is likely to be minimal, especially if they are spread across more than one route.

4.2 Assessment of operational traffic impacts in 'cumulative' scenario

This section details the potential traffic impacts of the proposed modification during the 'cumulative' scenarios. Two scenarios were modelled to assess the operational traffic impacts:

- **Cumulative case (2023)**: Assumes NorthConnex, M4 Widening, M4 East, King Georges Road Interchange Upgrade, New M5 and the M4-M5 Link are complete and open to traffic, and in addition, the proposed future Sydney Gateway and Western Harbour Tunnel are complete and open to traffic
- **Cumulative case (2033)**: The future Cumulative scenario assumes NorthConnex, M4 Widening, M4 East, King Georges Road Interchange Upgrade, New M5 and the M4-M5 Link are complete and open to traffic and also assumes proposed future Sydney Gateway, Western Harbour Tunnel project and the F6 Extension are complete and open to traffic.

4.2.1 Changes to road network

Figure 4-12 shows the modelled 'cumulative' Rozelle Interchange network. The proposed future Western Harbour Tunnel project (in 2023) and Beaches Link (in 2033) would connect to:

- The M5 to the south providing a north–south through route
- The M4 to the west providing an east–west through route.

Like the EIS, this operational assessment does not assume there are surface connections between the proposed future Western Harbour Tunnel project and City West Link.

Figure 4-12 Rozelle Interchange: 'cumulative' road network for operational traffic modelling

4.2.2 Impacts on Sydney metropolitan road network

This section details the traffic demand changes forecast by the WRTM due to the proposed modification in a 'cumulative' scenario using forecast traffic volumes for 2023 and 2033.

'Cumulative' (2023)

Figure 4-13 shows bandwidth plots illustrating the forecast change in daily traffic volumes between the 2023 'cumulative' EIS scenario and 'cumulative' modification scenario. The changes shown represent differences in the forecast AWT between the modelled scenarios. Roads that are expected to carry less traffic in the future 2023 'cumulative' modification scenario are shown in green and roads where traffic volumes are predicted to increase are shown in red. These forecast traffic volumes include both fixed and induced traffic demand.

As in the 'with project' scenario, with the inclusion of the proposed modification, there is minimal change in the daily traffic forecast on the network. Again, the thick red line at the City West Link/The Crescent intersection indicates the traffic shifting from the at grade intersection to the new overpass. In the 'cumulative' scenario, about 17,500 vehicles per day are forecast to use the overpass in 2023, with a resultant reduction in volume at the at grade intersection.

Again, a small increase in daily demand is forecast on Anzac Bridge eastbound (about 1,500 vehicles per day) and on Johnston Street northbound (about 2,000 vehicles per day). A review of the forecast Johnston Street northbound peak hour volumes was undertaken. Again, this indicated that most of the forecast increase would occur in off peak periods, with only an additional 80 northbound vehicles per hour forecast during each of the AM and PM peak hours. A sensitivity test was undertaken to test the significance of this increase on the VISSIM model peak period network performance, which indicated the increase had minimal impact.

'Cumulative' (2033)

Figure 4-14 shows bandwidth plots illustrating the forecast change in daily traffic volumes between the 2033 'cumulative' EIS scenario and 'cumulative' modification scenario. The changes shown represent differences in the forecast AWT between the modelled scenarios. Roads that are expected to carry less traffic in the future 2023 'cumulative' modification scenario are shown in green and roads where traffic volumes are predicted to increase are shown in red. These forecast traffic volumes include both fixed and induced traffic demand.

Like the 2023 scenarios, with the inclusion of the proposed modification, there is minimal change in the daily traffic forecast on the network. Again, the thick red line at the City West Link/The Crescent intersection indicates the traffic shifting from the at grade intersection to the new overpass. About 19,000 vehicles per day are forecast to use the overpass in 2023, with a resultant reduction in volume at the at grade intersection.

A small increase in daily demand is forecast on Anzac Bridge eastbound (about 1,500 vehicles per day) and on Johnston Street northbound (about 1,500 vehicles per day). A review of the forecast peak hour volumes was undertaken. This indicated that most of the forecast increase would occur in off peak periods, with only an additional 90 northbound vehicles per hour forecast during the AM peak hour and an additional 40 northbound vehicles per hour forecast during the PM peak hour. A sensitivity test was undertaken in the AM peak hour to test the significance of this increase on the VISSIM model peak period network performance, which indicated the increase had minimal impact.

Source: WRTM v2.3, 2019

Figure 4-13 Difference in AWT between 2023 'cumulative' EIS and 'cumulative' modification scenarios

Source: WRTM v2.3, 2019

Figure 4-14 Difference in AWT between 2033 'cumulative' EIS and 'cumulative' modification scenarios

4.2.3 Impacts on network performance

2023 'cumulative' scenario

Table 4-6 and **Table 4-7** present a comparison of the performance of the road network between the 2023 EIS and modification 'cumulative' scenarios for the AM and PM peak hours, using microsimulation modelling.

AM peak hour

In the 2023 AM peak hour, network performance metrics are comparable with negligible changes to the vehicle performance metrics.

In both models, the AM peak citybound movements remain affected by the queues back from the Bathurst Street/Cross City Tunnel exit ramp and the downstream exit blocking on the Western Distributor from the Sydney Harbour Bridge.

Table 4-6 Rozelle Interchange network performance – AM peak hour (2023 'cumulative' EIS vs 'cumulative' modification scenario)

Network measure	2023 'cumulative' (EIS)	2023 'cumulative' (Modification)	Percentage change
All vehicles			
Total traffic demand (veh)	29,689	29,689	0%
Total vehicle kilometres travelled in network (km)	91,329	91,252	<1%
Total time travelled approaching and in network (hr)	4,139	4,401	6%
Total vehicles arrived	29,253	29,119	<1%
Total number of stops	127,991	117,950	-8%
Average per vehicle in network			
Average vehicle kilometres travelled in network (km)	3.1	3.1	0%
Average time travelled in network (mins)	5.9	6.0	2%
Average number of stops	4.0	3.7	-8%
Average speed (km/h)	31.7	31.6	<1%
Unreleased vehicles			
Unreleased demand (veh)	703	809	15%
% of total traffic demand	2%	3%	-

PM peak hour

During the PM peak hour, the overall network performance metrics are comparable with a slight reduction in the number of stops in the modification model. Unlike in the 'with project' scenario, the increased number of vehicles suffer less delay reaching the Anzac Bridge and Western Distributor earlier in the peak hour because the Western Harbour Tunnel has reduced the northbound demand on the Western Distributor approach to Sydney Harbour Bridge.

Table 4-7 Rozelle Interchange network performance – PM peak hour (2023 'cumulative' EIS vs 'cumulative' modification scenario)

Network measure	2023 'cumulative' (EIS)	2023 'cumulative' (Modification)	Percentage change
All vehicles			
Total traffic demand (veh)	30,805	30,805	0%
Total vehicle kilometres travelled in network (km)	96,899	96,988	<1%
Total time travelled approaching and in network (hr)	3,480	3,366	-3%
Total vehicles arrived	29,496	29,564	<1%
Total number of stops	68,692	63,069	-8%
Average per vehicle in network			
Average vehicle kilometres travelled in network (km)	3.3	3.3	0%
Average time travelled in network (mins)	5.1	5.1	0%
Average number of stops	2.1	2.0	-5%
Average speed (km/h)	39.0	38.9	<1%
Unreleased vehicles			
Unreleased demand (veh)	1,351	1,324	-2%
% of total traffic demand	4%	4%	-

2033 'cumulative' scenario

Table 4-8 and **Table 4-9** present a comparison of the performance of the road network between the 2033 EIS and modification 'cumulative' scenarios for the AM and PM peak hours, using microsimulation modelling.

AM peak hour

As before, the 'cumulative' model has the same demand, but the proposed changes at The Crescent/Johnston Street/Chapman Road intersection along with The Crescent overpass at City West Link/The Crescent intersection allow more traffic into the network. As with the project model, the improvements to The Crescent merge arrangement at the mousehole improve travel times on City West Link/The Crescent and increase the traffic flow northbound on Victoria Road.

In the modification scenario, the Western Distributor is forecast to be more congested compared to the EIS scenario. In both models, the citybound movements are likely to be affected by the queues from the Bathurst Street/Cross City Tunnel exit ramp and the downstream exit blocking from the Sydney Harbour Bridge, which causes some flow breakdown on Anzac Bridge. This congestion on the Western Distributor and Anzac Bridge is forecast to cause queuing in the Iron Cove Link, and on the M4 exit ramp. The network performance metrics indicate that vehicles in the modified network travel at similar speeds but with fewer stops than in the EIS network.

Table 4-8 Rozelle Interchange network performance – AM peak hour (2033 'cumulative' EIS vs 'cumulative' modification scenario)

Network measure	2033 'cumulative' (EIS)	2033 'cumulative' (Modification)	Percentage change
All vehicles			
Total traffic demand (veh)	34,863	34,863	0%
Total vehicle kilometres travelled in network (km)	103,220	102,871	<1%
Total time travelled approaching and in network (hr)	5,654	5,745	2%
Total vehicles arrived	33,314	33,095	-1%
Total number of stops	151,561	136,784	-10%
Average per vehicle in network			
Average vehicle kilometres travelled in network (km)	3.1	3.1	0%
Average time travelled in network (mins)	6.0	6.0	0%
Average number of stops	4.2	3.8	-10%
Average speed (km/h)	31.2	31.3	<1%
Unreleased vehicles			
Unreleased demand (veh)	1,911	1,953	2%
% of total traffic demand	6%	6%	-

PM peak hour

As in 2023, during the PM peak hour, the overall network performance metrics are comparable to the EIS models with a reduction in average speeds and a slight increase in the number of stops.

Table 4-9 Rozelle Interchange network performance – PM peak hour (2033 'cumulative' EIS vs 'cumulative' modification scenario)

Network measure	2033 'cumulative' (EIS)	2033 'cumulative' (Modification)	Percentage change
All vehicles			
Total traffic demand (veh)	34,705	34,705	0%
Total vehicle kilometres travelled in network (km)	102,632	102,145	<1%
Total time travelled approaching and in network (hr)	4,820	4,833	<1%
Total vehicles arrived	32,230	32,091	<1%
Total number of stops	81,682	83,329	2%
Average per vehicle in network			
Average vehicle kilometres travelled in network (km)	3.2	3.2	0%
Average time travelled in network (mins)	5.2	5.3	2%
Average number of stops	2.3	2.4	4%
Average speed (km/h)	37.1	36.2	-2%
Unreleased vehicles			
Unreleased demand (veh)	2,537	2,603	3%
% of total traffic demand	7%	8%	-

4.2.4 Impacts on intersection performance

Table 4-10 presents the modelled AM and PM peak hour LoS for key intersections in the modelled Rozelle Interchange network using 'unconstrained' models. These models do not have the capacity constraints that artificially create congestion. This is done determine how the intersections would operate under the full demand.

In both 2023 and 2033 AM and PM peak hours, the forecast intersection performances are comparable or better in the modification scenarios compared with the EIS, with particular improvement at The Crescent/Johnston Street/Chapman Road intersection.

Table 4-10 Rozelle Interchange: key intersection performance (LoS) – Peak hour ('cumulative' EIS vs 'cumulative' modification scenario)

Key intersections	2015 Base	2023 'cumulative' (EIS)	2023 'cumulative' (Modification)	2033 'cumulative' (EIS)	2033 'cumulative' (Modification)
AM peak hour					
Victoria Road/Wellington Street	D	C	C	C	C
Victoria Road/Darling Street	F	F	F	F	F
Victoria Road/Robert Street	D	C	C	E	D
Victoria Road/The Crescent	B	C	B	D	C
The Crescent/James Craig Road	A	A	A	B	B
City West Link/The Crescent	B	C	B	C	C
The Crescent/Johnston Street	C	C	C	F	C
The Crescent/M5 ramps	–	B	B	B	B
PM peak hour					
Victoria Road/Wellington Street	B	B	B	C	B
Victoria Road/Darling Street	F	D	D	D	D
Victoria Road/Robert Street	F	C	C	C	C
Victoria Road/The Crescent	F	C	C	C	C
The Crescent/James Craig Road	B	A	A	A	A
City West Link/The Crescent	D	C	B	C	B
The Crescent/Johnston Street	F	F	C	F	D
The Crescent/M5 ramps	–	B	A	C	B

4.2.5 Impacts on travel times

Like in the EIS analysis, to assess travel times through the 'cumulative' scenario network, exit blocking constraints were retained to reflect network congestion at intersections beyond the modelled network extents. Average travel times along Victoria Road and City West Link onto Anzac Bridge, between the same extents as in the EIS analysis, are presented in **Figure 4-15** and **Figure 4-16**.

During the AM peak hour, the models show comparable travel times in the peak direction (inbound to the city) from Victoria Road via Iron Cove Link, longer travel times via Victoria Road and faster travel times on City West Link. As the congestion on the Western Distributor and Anzac Bridge is reduced in the 'cumulative' scenario compared to the 'with project' scenario, due to the introduction of Western Harbour Tunnel, these changes are reduced from that seen in the 'with project' comparison.

As in the 'with project' scenarios, the modified network allows improved traffic performance along City West Link and The Crescent, which is reflected in reduced travel times between Anzac Bridge and Catherine Street in both directions.

As in the 'with project' scenarios, the modified network allows more traffic onto Victoria Road which increases travel times affecting both normal traffic and bus travel times. This is caused by longer queues forming from the northern end of Victoria Road when compared with the EIS models. These queues take longer to dissipate resulting in longer northbound travel times on Victoria Road.

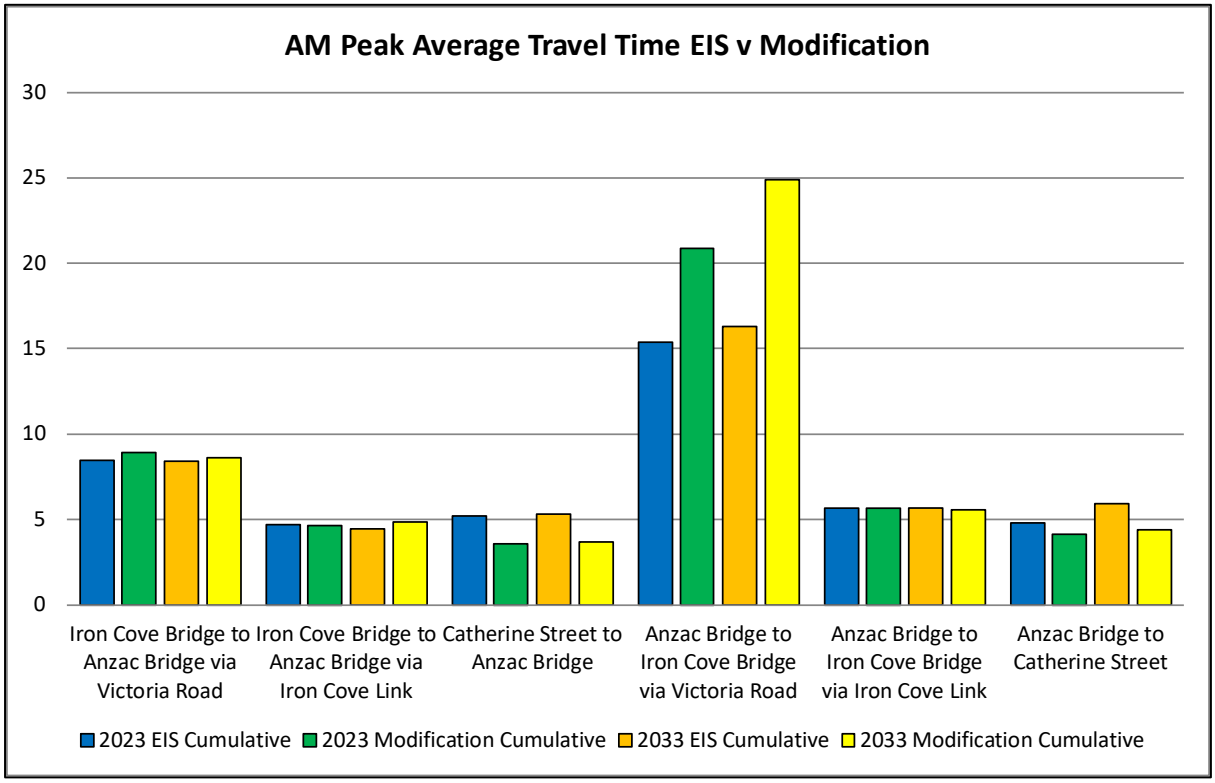

Figure 4-15 **Rozelle Interchange: average travel time (mins) – comparison between AM peak hour 'cumulative' EIS and 'cumulative' modification scenarios**

During the PM peak hour, the model results show comparable travel times in both scenarios.

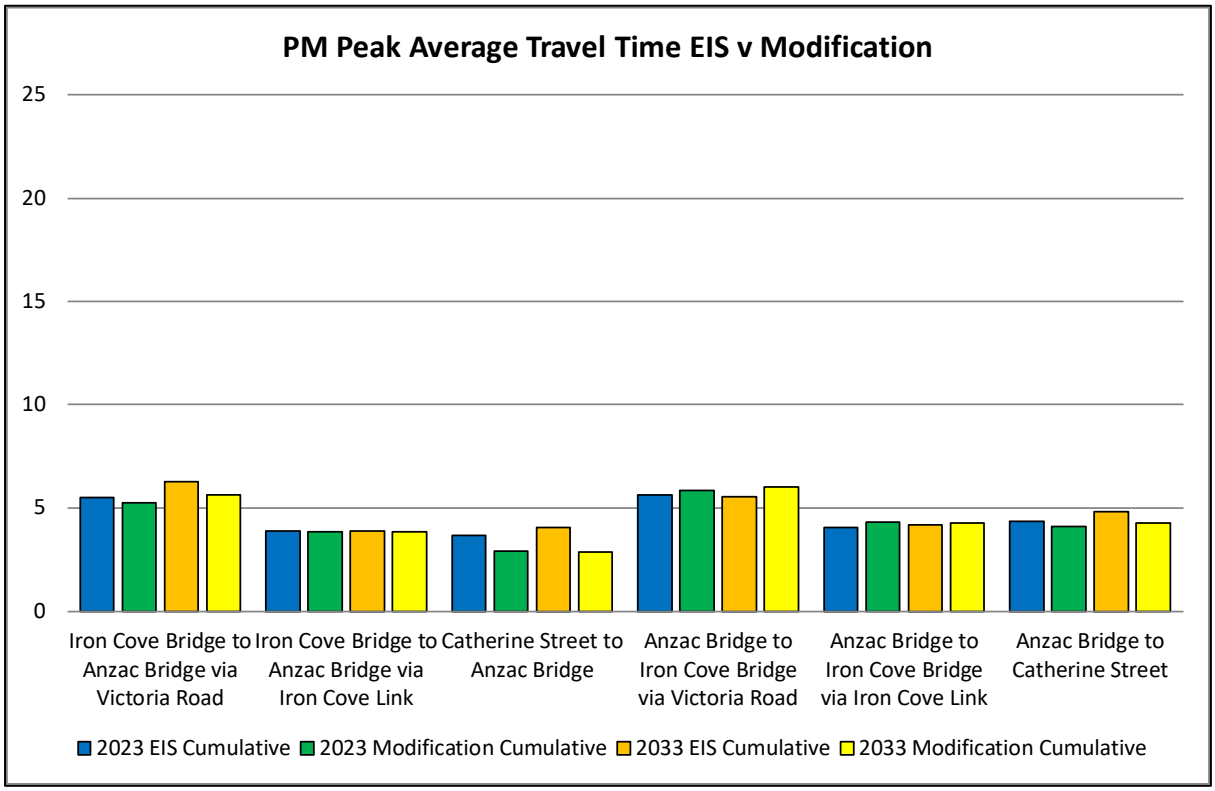

Figure 4-16 **Rozelle Interchange: average travel time (mins) – comparison between PM peak hour 'cumulative' EIS and 'cumulative' modification scenarios**

4.2.6 Impacts on road safety

The frequency of crashes is expected to change relative to the forecast traffic volume changes. In the EIS, potential future crashes were calculated using the historical crash rates and applied to the forecast average daily traffic flows. Reviewing the forecast daily changes in traffic volumes from the WRTM indicates a minimal change in daily volumes across the network. Based on these forecasts, a minimal change in crashes is also forecast on the roads assessed in the EIS.

As noted before, the proposed grade separated right turn overpass from The Crescent (northbound) to The Crescent (eastbound) at the City West Link / The Crescent intersection would remove the at grade right turn movement, which would remove safety issues with conflicting movements to this right turn at the intersection.

4.2.7 Impacts on public transport services

Figure 4-17 and **Figure 4-18** show the comparison in travel times for buses in the 'cumulative' scenarios for the AM and PM peak hours. The main bus route on Victoria Road, Anzac Bridge and the bus lanes to and from Druitt Street is presented.

During the AM peak hour in both forecast years, citybound bus travel times are forecast to marginally improve, which is as a result of the proposed changes to the Anzac Bridge approaches. In the outbound direction, the bus travel time along Victoria Road is forecast to increase in 2033 for the same reason that affects general traffic i.e. congestion on Victoria Road caused by higher traffic volumes travelling northbound. As there is no northbound bus lane on Victoria Road between The Crescent and the exit from the Iron Cove Link, the increased congestion impacts the northbound bus travel times, with 2033 travel times forecast to increase from about 24 minutes to about 30 minutes.

In the PM peak hour, there are only minor differences in the bus travel times in both forecast years compared to the EIS, with a slight increase forecast in outbound travel times.

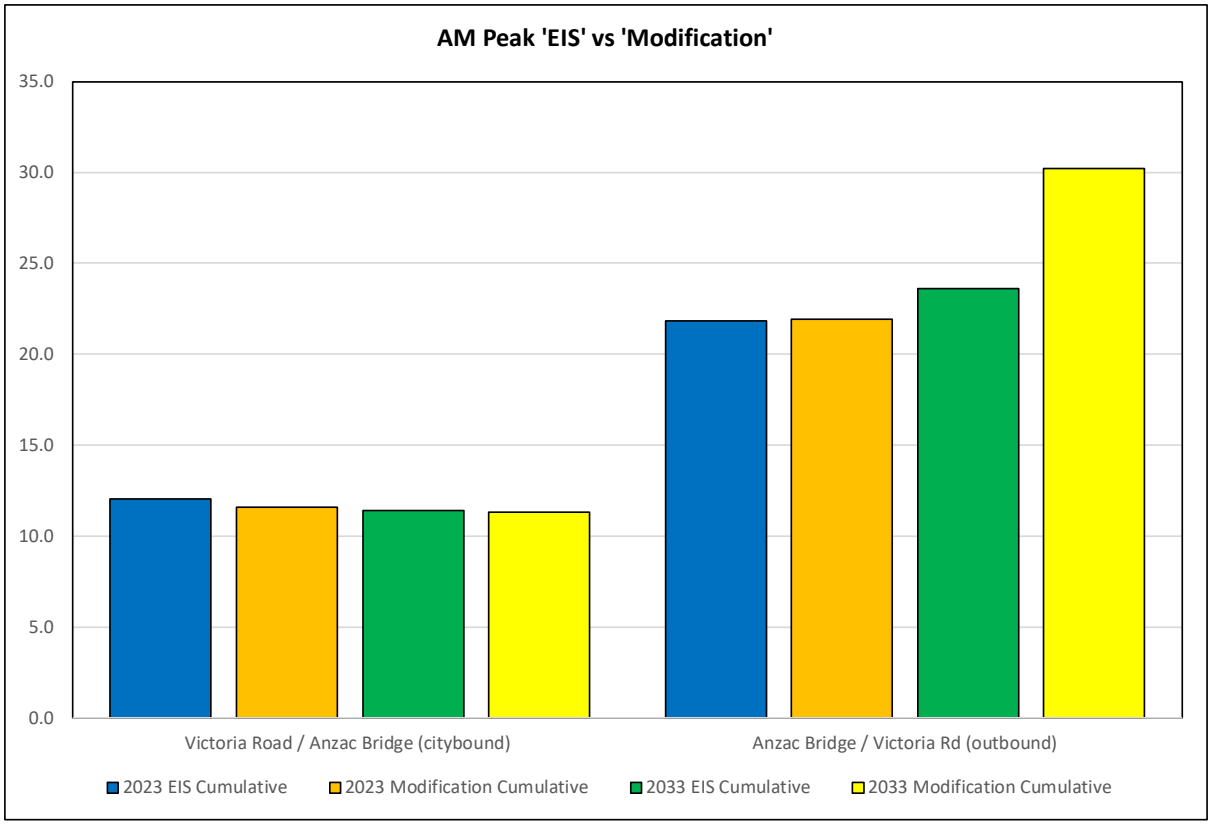

Figure 4-17 **Rozelle Interchange: average travel time for buses – comparison between AM peak hour 'cumulative' EIS and 'cumulative' modification scenarios**

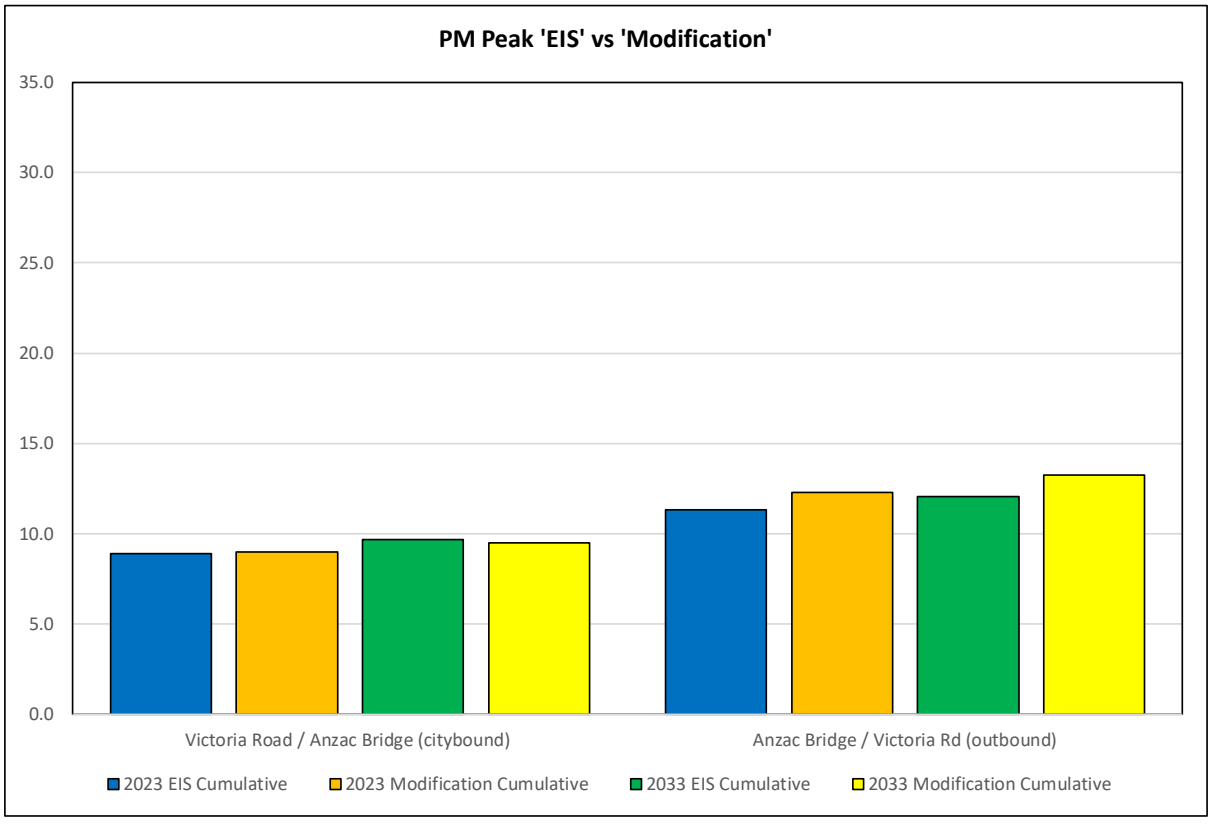

Figure 4-18 **Rozelle Interchange: average travel time for buses – comparison between PM peak hour 'cumulative' EIS and 'cumulative' modification scenarios**

4.2.8 Impacts on active transport facilities

There is no change in active transport facilities for the 'cumulative' scenario compared to the 'with project' scenario. These impacts are discussed in **section 4.1.8**.

4.2.9 Impacts on local property access and on-street parking

There is no change in local property access and on-street parking for the 'cumulative' scenario compared to the 'with project' scenario. These impacts are discussed in **section 4.1.9**.

4.2.10 Impacts on connectivity

There is no change in connectivity for the 'cumulative' scenario compared to the 'with project' scenario. These impacts are discussed in **section 4.1.10**. The maximum forecast peak hour demand from Johnston Street and The Crescent (south) to James Craig Road in the 'cumulative' scenario is about 40 vehicles in the 2033 AM peak hour. The impact of these vehicles relocating to other routes is likely to be minimal, especially if they are spread across more than one route.

5 Management of impacts

5.1 Construction

The proposed modification would result in minimal change to the construction traffic and transport impacts previously assessed in the M4-M5 Link EIS and SPIR. Construction impacts would continue to be managed through the construction management measures contained in the CoA for the project, specifically those in the Construction Traffic Transport and Access Management Sub-Plan, as required by Condition C4 of the CoA, and the Construction Parking and Access Strategy, as required by Condition E54 of the CoA.

Safe pedestrian and cyclist access would be maintained during construction in accordance with Condition E57 and road safety audits would be carried during detailed design to assess the safety performance of new or modified road and pedestrian and cyclist infrastructure (including around construction ancillary facilities).

5.2 Operation

The traffic assessment has identified that the proposed modification would cause some changes to the operational performance of the surrounding road network.

With the proposed modification, it is forecast that more traffic would be better able to enter the network earlier in the peak period, particularly at The Crescent/Johnston Street/Chapman Road intersection. In addition, the Victoria Road/The Crescent intersection operates more efficiently in the modified network compared to the EIS network. As a result, generally more vehicles can be accommodated in the network and the intersection performance and LoS at intersections are improved. However, this increased traffic volume able to enter the network does impact parts of the network that were already forecast to be congested, such as the Western Distributor eastbound and Victoria Road northbound in the AM peak.

Operational traffic impacts would be managed via the existing environmental management measures and the CoA, such as:

- Environmental management measure OpTT3 states that Roads and Maritime will develop a strategy to ensure appropriate network integration in the areas surrounding the Rozelle Interchange. The strategy will include a review of capacity improvement measures, the interface with road based public transport on the Western Distributor and Victoria Road in consultation with Transport for NSW, project staging options and demand management measures
- As per the conditions of the M4-M5 Link approval – road network performance plan (Condition E63) and operational road network performance review (Condition E64) – Roads and Maritime would undertake a review of network performance, in consultation with Transport for NSW and relevant councils, to confirm the operational traffic impacts of the M4-M5 Link on surrounding arterial roads and major intersections at both 12 months and at five years after the commencement of operation of the M4-M5 Link. The assessment would be based on updated traffic surveys at the time and the methodology used would be comparable with that used in this assessment.

6 Conclusion

The effect of the proposed modification on traffic and transport related construction impacts are expected to be minor with the relevant levels of service comparable to the assessment presented in the M4-M5 Link EIS and SPIR.

The management and mitigation measures identified in Chapter E1 of the M4-M5 Link SPIR and the CoA for the project would appropriately manage impacts from the proposed construction modifications.

The operational traffic assessment has identified that the proposed modifications would cause the following changes to the operational performance of the surrounding road network:

- 'With project' scenario
  - During both AM and PM peak hours, the overall modelled network performance metrics are comparable or slightly better than those presented in the EIS
  - Intersection performances are also forecast to be comparable or better when compared with the EIS results, except for the Victoria Road/Darling Street intersection, which is forecast to perform slightly worse than in the EIS due to a higher total intersection throughput
  - Travel times from City West Link to Anzac Bridge are forecast to improve due to the proposed changes at the City West Link/The Crescent intersection, however, increased traffic volume able to enter the network is likely to impact parts of the network already forecast to be congested, such as Victoria Road northbound in the AM peak
  - Public transport travel time impacts reflect those of general traffic, with travel time impacts northbound on Victoria Road in the AM peak.
- 'Cumulative' scenario
  - During both AM and PM peak hours, the modelled network performance metrics are very similar to those in the EIS models.
  - Intersection performances are forecast to be comparable or better when compared with the EIS results
  - Travel times from City West Link to Anzac Bridge are forecast to improve due to the proposed changes at the City West Link/The Crescent intersection, however, increased traffic volume able to enter the network is likely to impact parts of the network already forecast to be congested, such as Victoria Road northbound in the AM peak
  - Public transport travel time impacts reflect those of general traffic, with travel time impacts northbound on Victoria Road in the AM peak.

Operational traffic impacts would be managed via the existing environmental management measures and CoA.

Regarding public transport facilities, the bus bay on the west side of The Crescent would be relocated slightly further south on The Crescent to just north of the Johnston Street intersection. The realignment of the green link to the west of The Crescent would provide an improved connection between the Rozelle Rail Yards and the Rozelle Bay light rail stop.

Regarding active transport facilities, the green link and shared user path bridge as part of the proposed modification would provide the same connectivity as described in the EIS for pedestrians and cyclists from the Rozelle Rail Yards to the existing Rozelle Bay light rail stop, Rozelle Bay foreshore and Bicentennial Park.

As a result of the proposed modification. pedestrians currently accessing Bicentennial Park from Johnston Street would be required to use the new signalised pedestrian crossing, which would not provide as direct an access to Bicentennial Park. The total number of traffic lanes crossed on The

Crescent would be the same as presented in the EIS (five lanes), but moving it to the eastern side, would split the crossing into two sections – one crossing of three lanes and one crossing of two lanes.

Regarding potential future crashes, the forecast daily changes in traffic volumes indicates a minimal change in daily volumes across the network. Based on these forecasts, a minimal change in crashes is also forecast on the roads assessed in the EIS. The proposed grade separated right turn overpass from The Crescent (northbound) to The Crescent (eastbound) at the City West Link / The Crescent intersection would remove the at grade right turn movement, which would remove safety issues related to conflicting movements to this right turn at the intersection.

There is no proposed direct impact on local property access in the suburbs of Rozelle and Annandale as part of the proposed modification. Local access to 300 Johnston Street just south of The Crescent / Johnston Street / Chapman Road intersection would need to be incorporated into the intersection design. The movement of vehicles into and out of the property is unlikely to affect the intersection performance and is an operational matter that would be addressed during detailed design.

The proposed The Crescent / Johnston Street / Chapman Road intersection upgrade would temporarily remove four on-street parking spaces on the northern side of Chapman Road, but these would be reinstated, and permanently remove two on-street parking spaces at the very northern end of the northbound carriageway of Johnston Street.

The proposed The Crescent / Johnston Street / Chapman Road intersection upgrade would also remove the right turn movement from Johnston Street (northbound) onto The Crescent (southbound). Depending on their origin and destination, motorists that would have made this right turn would in the future travel through Annandale, east of Johnston Street, to access The Crescent / Minogue Crescent / Ross Street or use Parramatta Road, if their origin or destination is further south. Traffic surveys indicate fewer than 100 vehicles currently make this right turn in the AM peak hour and fewer than 50 vehicles in the PM peak hour.

The proposed grade separated right turn overpass from The Crescent (northbound) to The Crescent (eastbound) at the City West Link / The Crescent intersection would remove the ability for motorists to turn right from The Crescent (northbound) onto The Crescent (eastbound) and then turn right onto James Craig Road. Motorists wanting to access James Craig Road from the south would need to use another route to access City West Link from the west and then turn right into James Craig Road or access the Anzac Bridge from the east to then turn left into James Craig Road. The maximum forecast peak hour demand from Johnston Street and The Crescent (south) to James Craig Road in the ‘with project’ scenario is about 40 vehicles in the 2033 AM peak hour. The impact of these vehicles relocating to other routes is likely to be minimal, especially if they are spread across more than one route.

7 References

WestConnex M4-M5 Link: Environmental Impact Statement, Roads and Maritime Services, August 2017

WestConnex M4-M5 Link: Submissions and preferred infrastructure report, Roads and Maritime Services, January 2018

WestConnex M4-M5 Link: Infrastructure approval, Department of Planning & Environment, April 2018