



## **WestConnex Stage 2 EIS Review of Traffic, Transport, and Modelling**



**City of Sydney**





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## Executive Summary -

This report has been prepared by TTM Consulting for the City of Sydney. It provides independent advice to the city for its consideration of the Environmental Impact Statement (EIS) for the “New M5”. The New M5 is the main component of Stage 2 of the WestConnex Project.

It is our advice to the City of Sydney that the traffic forecasts for the New M5 do not support completion of the project at this stage. Whilst the reasons are multitude they can be summarised as:

1. - The proposed tolling regime results in traffic avoiding the motorway system and diverting to local roads.
2. - The forecast traffic volumes for the New M5 are very low. By comparison, they are lower than for the Sydney Cross City Tunnel.

There are areas of particular concern where we advise that the EIS does not satisfy the Secretary's Environmental Assessment Requirements. These include:

1. - The strategic traffic modelling is inconsistent. In particular, the traffic forecasts for average weekday traffic in the New M5 are excessively high when compared to the morning peak period flows. These overly high daily forecasts adversely affect the economic and financial assessment of the project.
2. - The traffic forecasts appear to include the assumption that the M5 East is tolled. This is an un-tolled road and is not part of the project presented to the government. The toll assumed for the M5 East has not been stated in the EIS report.
3. - The upgrade of Campbell Road/Street and Euston Road results in significant diversions of traffic from the Princes Highway to Euston Road. The implications of this have not been addressed in the EIS.

We advise that the implications of induced demand have not been adequately assessed and that the forecasts in turn are not reliable for economic or financial assessment.

Should the project proceed in its current form there remain a number of construction and operational issues which need to be addressed.

The modelling indicates that there will be significant diversions from Euston Road to surrounding local streets with just the New M5 and also with the fully completed WestConnex. Traffic management measures will be required to address this intrusion into local residential precincts. Regardless, residents of this area will experience significant impacts on their local amenity both with the New M5 and with the completion of the full WestConnex.

## 1. Introduction -

TTM Consulting was engaged by the City of Sydney to prepare a report for Council's consideration in response to the traffic related components of the Environmental Impact Statement (EIS) for Stage 2 of the WestConnex Project, referred to as the New M5. This report assesses both the construction and operation phases of the proposal.

This report assesses the traffic and transport information provided in Chapter 9 of the main report, parts of Chapter 6 Construction Work, and parts of Chapter 27 Cumulative Impacts of the main report and the Traffic and Transport Assessment contained in Appendix G.

This report essentially addresses three issues. They are:

1. - A review of the traffic forecasts and the strategic implications for the provision of transport related infrastructure within the Sydney metropolitan area.
2. - An assessment of construction related activity should the project proceed.
3. - An assessment of traffic conditions post construction should the project proceed.

In undertaking this assessment, we have considered:

- The modelling scenarios and validity in assessment of project of this size and scale. This includes non-project works in future scenarios, and assumptions.
- The planning horizons in considering a project of this magnitude.
- Transport-related impacts through the wider southern Sydney area and in the local vicinity.
- Future conditions for various stakeholder groups, including residents, cyclists, pedestrians and businesses.
- Mitigation measures to manage transport impacts of WestConnex on adjacent streets and intersections, particularly in the suburbs of Alexandria, Erskineville, St Peters and Newtown.

In the process of preparing this advice we have taken into consideration information from a number of documents including the New M5 EIS, the WestConnex Updated Strategic Business Case, the M4 East, and the Sydney Metro Project Overview. Additional information has been supplied by the Sydney Motorway Corporation.

The report is structured as follows:

- Chapter 2 presents an overview of the project.
- Chapter 3 advises on compliance of the EIS with the Secretary's Environmental Assessment Requirements (SEARs).
- Chapter 4 presents the forecast traffic flows.
- Chapter 5 provides a critique of the forecast flows.
- Chapter 6 addresses the strategic traffic related aspects of the project.
- Chapter 7 examines traffic related issues during the construction phase.
- Chapter 8 examines traffic related issues during the operational phase.
- Chapter 9 presents the key issues and recommendations.

## 2. Overview of the Project

### 2.1. WestConnex

Figure 2-1 presents a general schematic of the WestConnex project. It is being delivered in three stages which have developed over time. A description of each of the components of the project is presented in Table 2-1.

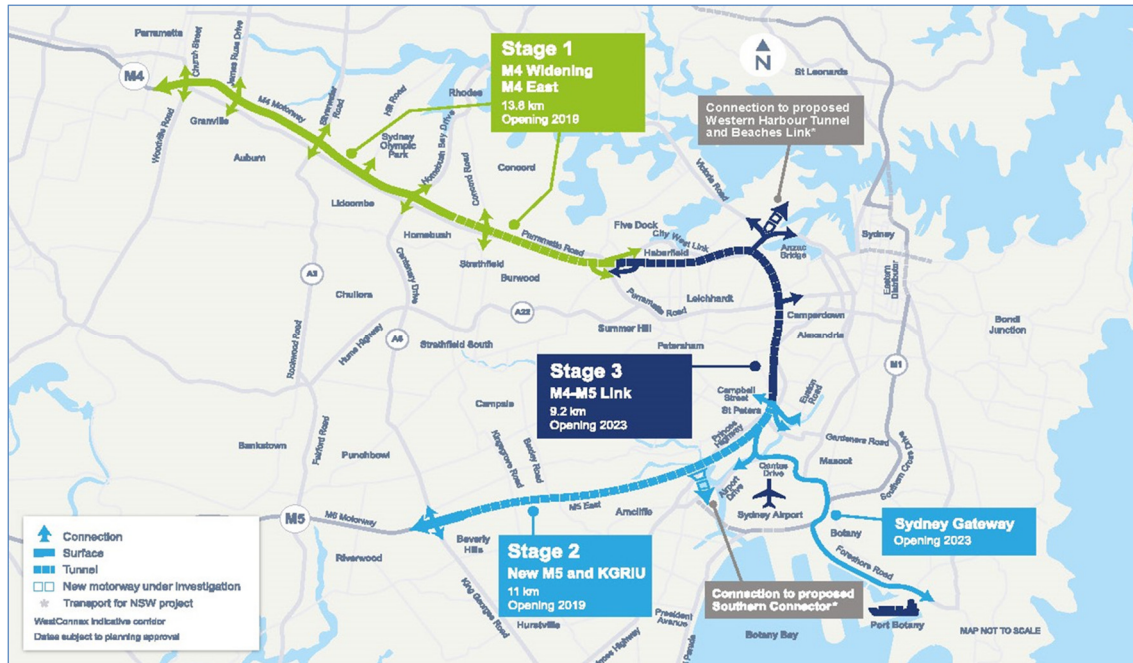


Figure 2-1: WestConnex Staging

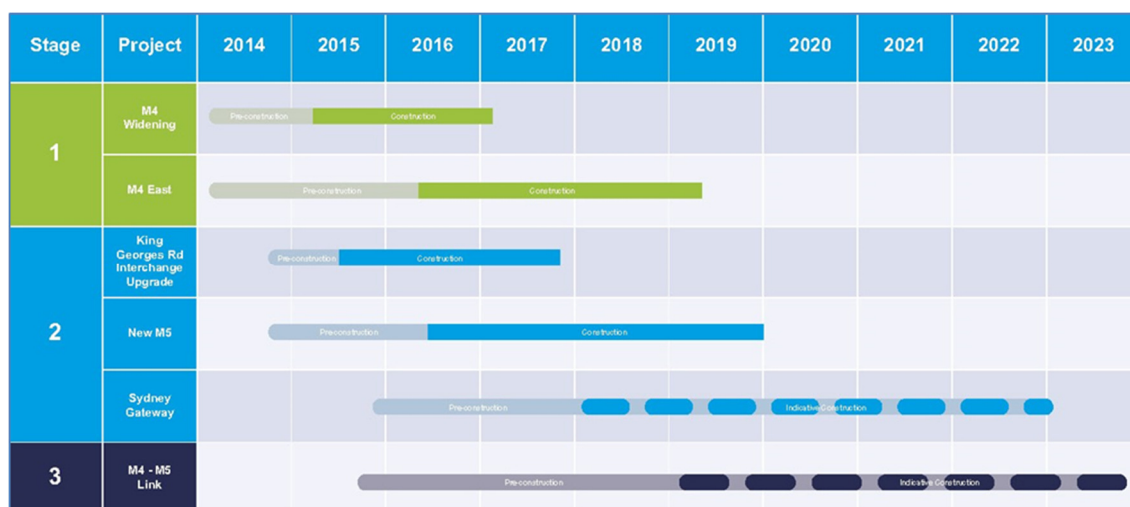


**Table 2-1: WestConnex Components<sup>1</sup>**

Component	Linking / Location	Description
<b>Stage 1</b>		
Stage 1A - M4 Widening	Parramatta to Homebush	Widening the existing M4 Motorway from Parramatta to Homebush.
Stage 1B - M4 East	Homebush to Haberfield	Extending the M4 Motorway in tunnels between Homebush and Haberfield via Concord. Includes provision for the future connection to M4 – M5 Link.
<b>Stage 2</b>		
New M5	Beverly Hills to St Peters	Duplicating the M5 East from King Georges Road in Beverly Hills with tunnels from Kingsgrove to a new interchange at St Peters. The St Peters Interchange allows for connections to the Sydney Gateway. The New M5 tunnels include provision for a future connection to the proposed Southern Connector (part of Gateway to the South) and the M4 – M5 Link.
King Georges Road Interchange Upgrade	Beverly Hills	Upgrade of the King Georges Road Interchange between the newly widened M5 West and the M5 East at Beverly Hills, in preparation for the New M5.
Sydney Gateway	St Peters to Sydney Airport and Port Botany	A high-quality, high-capacity connection between the new St Peters Interchange and the Sydney Airport and Port Botany precinct.
<b>Stage 3</b>		
M4 – M5 Link	Haberfield to St Peters	Tunnels connecting to the M4 East and New M5 via Rozelle and Camperdown. Includes ramps connecting to the St Peters Interchange and an interchange at Rozelle with provision for a future connection to the Western Harbour Tunnel and Beaches Link.

The widening of the M4 commenced in March 2015. Work has commenced on delivery and upgrade of the M5 / King Georges Road interchange as part of Stage 2. The timing forecast for the remainder of the projects is presented in Figure 2-2.

<sup>1</sup> Source: WestConnex Updated Strategic Business Case (November 2015)



**Figure 2-2: WestConnex Timing<sup>2</sup>**

The WestConnex Updated Strategic Business Case states that “Sydney Gateway delivery timeframe is marked ‘Indicative Construction’. It is dependent on further development work, so timeframes may change. At the latest, it will open by 2023.”

Running parallel with Stage 1 is the Parramatta Road Urban Renewal program which is looking at opportunities to take advantage of reduced traffic flows on Parramatta Road due to diversions to WestConnex. The EIS for the M4 East reports a forecast 53% decrease in traffic on Parramatta Road west of Haberfield in 2021 with just the M4 East and a forecast 45% decrease on completion of the full WestConnex project in 2031.

A potential “Southern Extension” from Arncliffe to Kogarah is currently being investigated by Transport for NSW. It would connect the New M5 to the southern and bayside suburbs of Sydney, and the proposed F6 extension. It is understood that the traffic forecasts for the full WestConnex project in 2031 include the Southern Extension connecting to President Avenue.

It should be noted that whilst Stage 1 and 2 (excluding Sydney Gateway) of WestConnex are committed projects there is no guarantee about the timing or eventual completion of Sydney Gateway or Stage 3. There is also no guarantee that the potential Southern Extension and F6 extension will occur in the foreseeable future (if at all). These projects have been considered as part of the traffic assessment of the EIS. The appropriateness of including these uncommitted projects in the traffic assessment is not apparent.

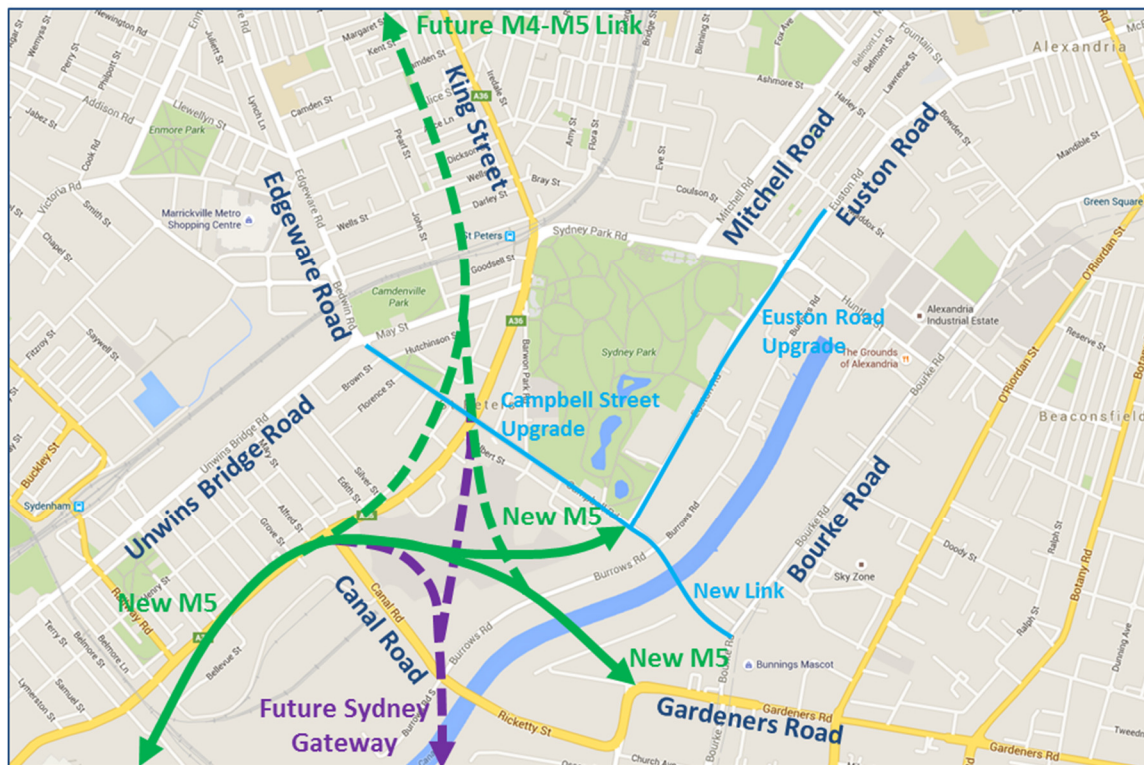
## 2.2. New M5

The subject of this report is the New M5 which is the construction of a new tunnel from the existing M5 at Beverly Hills to St Peters. The St Peters interchange connects to Canal Road with northbound traffic directed to Euston Road, westbound traffic directed to Edgeware Road and eastbound traffic linked to Gardeners Road and Bourke Road (See Figure 2-3). The new link to Bourke Road is referred to as the Campbell Road Bridge in the EIS.

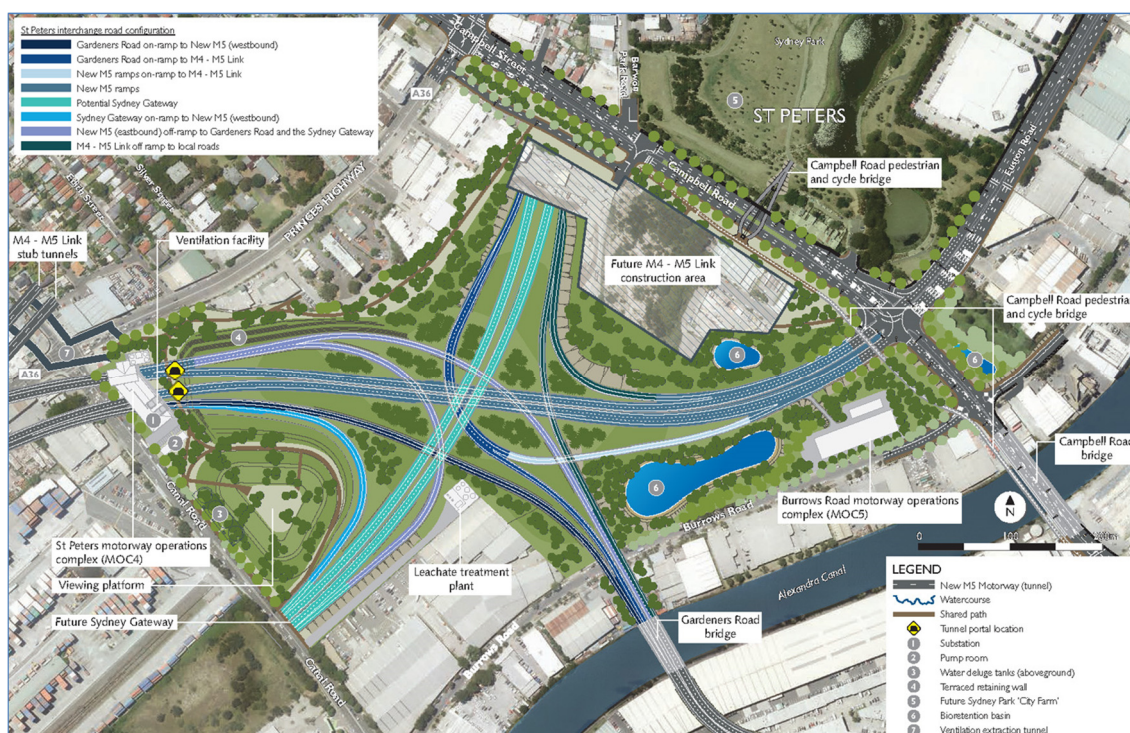
<sup>2</sup> Source: WestConnex Updated Strategic Business Case (November 2015)

Provision is also made for connections to the proposed Sydney Gateway and a future connection to the proposed Southern Connector (part of Gateway to the South) and the M4 – M5 Link.

The St Peters interchange also includes provision for pedestrians and cyclists some of which are identified in Figure 2-4. A detailed assessment of the proposed bicycle infrastructure is being undertaken separately by Council.



**Figure 2-3: St Peters Interchange Connections and Road Upgrades**



**Figure 2-4: St Peters Interchange Layout**

Whilst not explicit in the project description the right turn from the New M5 to the new Campbell Road Bridge will be banned. Traffic northbound on the New M5 accessing the Botany area would use the link to Gardeners Road instead. Traffic in the reverse direction would be able to use the Campbell Road Bridge to access the New M5 southbound.<sup>3</sup>

TTM have also been advised that the modelling for the New M5 has assumed banning of the right turn from Mitchell into Sydney Park Rd, and a bus only right turn from Euston into Sydney Park Road.

## 2.3. Tolling Regime

The will have a capped distance-based tolling system, similar to the M7. Table 2-2 presents the tolling regime as report in the WestConnex Updated Strategic Business Case.

**Table 2-2: Tolling Regime<sup>4</sup>**

Component	2013	2015
Flagfall	\$1.04	\$1.12
Toll per km	\$0.38	\$0.42
<b>Toll cap</b>	<b>\$7.35</b>	<b>\$7.95</b>
Truck multiplier	3x	
Escalation	Max of 4% or CPI whichever is greater	
Concession term	To 2060	

<sup>3</sup> Source: New M5 EIS\_Vol 1A, Page 5-72

<sup>4</sup> Source: WestConnex Updated Strategic Business Case



The WestConnex Updated Strategic Business Case states that “Once operational, toll indexation will be consistent for all three stages with a maximum of four per cent or CPI, whichever is greater for the first 20-years, reverting to CPI thereafter”. This escalation is similar to agreements for other tolled roads in Sydney.

Table 2-3 presents indicative tolls for the sections of the WestConnex project.

**Table 2-3: Indicative Tolls (cars)<sup>5</sup>**

WestConnex Stage	Indicative min/max toll (\$2015 incl GST)
M4 Widening (Parramatta to Homebush)	Min: \$1.50 Max: \$3.90
M4 East (Homebush to Haberfield)	Min: \$2.00 Max: \$3.60
Stage 2 - New M5 (Beverly Hills to St Peters)	Min: \$1.70 Max: \$4.80
Stage 3 - M4-M5 Link (Haberfield to St Peters)	Min: \$1.80 Max: \$4.10
WestConnex total	Min: \$1.50 Max: \$7.35 (capped)

**It is not made clear in the EIS but it appears that the modelling includes tolling of the existing M5 East Motorway. If this is the case the EIS needs to assess the effects of this new toll separate to the New M5.**

## 2.4. Other Projects – Sydney Metro

When considering the impacts of the New M5 one must be cognisant of other projects in the vicinity. As noted earlier, investigations are currently underway for the Sydney Gateway and Southern Extension. In addition to this, the Sydney Metro project is in the final stages of design.

Figure 2-5 shows the route of the proposed Sydney Metro. The Sydney Metro is a major rail project linking the Sydney Metro Northwest (currently under construction) to Sydenham via Chatswood. This section of the projects will have 15 kilometres of tunnels which run under Sydney Harbour and through Sydney’s CBD. An additional 13.5 kilometres of rail track will be upgraded to extend the metro from Sydenham to Bankstown Station.

The service will be stand-alone. That is the rail tracks will not be shared with other services. As a result, it will not be subject to delays caused by other trains. It will have the capacity to increase the number of trains entering the CBD from 120 to about 200 in peak hours. This is equivalent to approximately 100,000 train passengers in peak hours.

<sup>5</sup> Source: WestConnex website (20 January 2015)



**Figure 2-5: Sydney Metro**

Construction is programmed to commence in 2017 with the first tunnel boring activities commencing in 2018. The Sydney Metro section from Chatswood to Sydenham would be operational from 2024.

It is anticipated that Tunnel Boring Machines (TBMs) would be launched from three sites:

1. - Chatswood dive site (northern).
2. - Barangaroo Station – this site is proposed to support a specialised TBM for the Sydney Harbour crossing (to be confirmed with further industry consultation).
3. - Marrickville dive site (southern).

These three sites would provide support for the tunnelling operations including spoil storage and removal, power supply to the TBMs, tunnel ventilation, grout batching, water treatment and disposal, material storage as well as site office facilities, worker amenities and parking.

### 3. - Compliance with the Secretary's Environmental Assessment Requirements

The Secretary's Environmental Assessment Requirements dated 16 June 2015 have the following requirements in relation to traffic and transport:

- details of how the proposal meets the objectives of the overall WestConnex program;
- details of how the traffic and transport objectives of the proposal, and service and infrastructure responses, take into account: adjacent sensitive land uses; future housing and employment growth areas; existing town, employment and industrial centres; approved and proposed infrastructure proposals; and broader transport needs (including public transport, cyclist and pedestrian requirements and facilities); including with specific reference to:
  - the preferred alignment and design,
  - the proposed interchanges and connections to the surrounding road network, and
  - associated road and related transport infrastructure facilities;
- an assessment and modelling of operational traffic and transport impacts on the local and regional road network (in consultation with affected councils), and the Sydney motorway network, including the consideration of planning proposals, major urban renewal and development, the potential cumulative impacts of Stage 3 – M4 South (Haberfield to St Peters), and the impacts of potential shifts of traffic movements to alternative routes outside the proposal area (including as a result of tolls);
- induced traffic and operational implications for public transport (particularly with respect to strategic bus corridors and bus routes) and future public transport opportunities;
- impacts on property and business access and on street parking provision, including permanent and temporary (construction) changes to access and parking, and traffic management measures such as clearways;
- impacts on cyclists and pedestrian access and safety and consideration of opportunities to integrate cycleway and pedestrian elements with surrounding networks;
- construction traffic and transport impacts of the proposal (including ancillary facilities) and associated management measures, in particular:
  - impacts on the road network (including safety and level of service, parking, pedestrian and cyclist access, and disruption to public transport services and access to properties),
  - route identification and suitability for heavy vehicles, and scheduling of transport movements, particularly movements outside standard construction hours,
  - the number, frequency and size of construction related vehicles (both light and heavy vehicles),

- the nature of existing traffic on construction access routes (including consideration of peak traffic times),
- the need to close, divert or otherwise reconfigure elements of the road network associated with construction of the proposal,
- having reference to the cumulative construction impacts of other infrastructure preparing for or commencing construction.

There are areas of particular concern where we advise that the EIS does not satisfy these requirements. These include:

- The strategic traffic modelling is inconsistent. In particular, the traffic forecasts for average weekday traffic in the New M5 are excessively high when compared to the morning peak period flows. These overly high daily forecasts adversely affect the economic and financial assessment of the project.
- The traffic forecasts appear to include the assumption that the M5 East is tolled. This is an un-tolled road and is not part of the project presented to the government. The toll assumed for the M5 East has not been stated in the EIS report.
- The upgrade of Campbell Road/Street and Euston Road results in significant diversions of traffic from the Princes Highway to Euston Road. The implications of this have not been addressed in the EIS.

This and other issues are discussed later in this report.



## 4. Forecast Traffic Flows -

This chapter presents the forecast traffic flows from the EIS relevant to the City of Sydney. Chapter 5 presents a critique of the forecasts.

Forecasts of average weekday and peak period flows have been reported in the EIS. The Sydney Motorway Corporation has provided additional information in relation to flows in the vicinity of the St Peters interchange.

The following scenarios are reported:

- Year 2021 without the New M5.
- Year 2021 with the New M5.
- Year 2031 without the New M5.
- Year 2031 with the New M5.
- Year 2031 with the New M5 plus the completion of Stage 3 of WestConnex plus the Sydney Gateway and the Southern Extension.

The Southern Extension in the last scenario is not part of the WestConnex project at this stage. For ease of understanding we refer to this scenario with the addition of the WestConnex Stage 3, Sydney Gateway and Southern Extension from the New M5 as “WestConnex-Plus”.

### 4.1. Screenlines

Traffic flows have been collated for two screenlines relevant to the City of Sydney local government area. The screenlines are shown in Figure 4-1. They include the following roads:

- Northern Screenline:
  - Edgeware Road, west of Edinburgh Road
  - King Street, south of Alice Street
  - Mitchell Road, north of Sydney Park Road
  - Euston Road, north of Sydney Park Road
- Eastern Screenline:
  - Princes Highway
  - New M5
  - Marsh Street
  - M5 East Motorway
  - General Holmes Drive

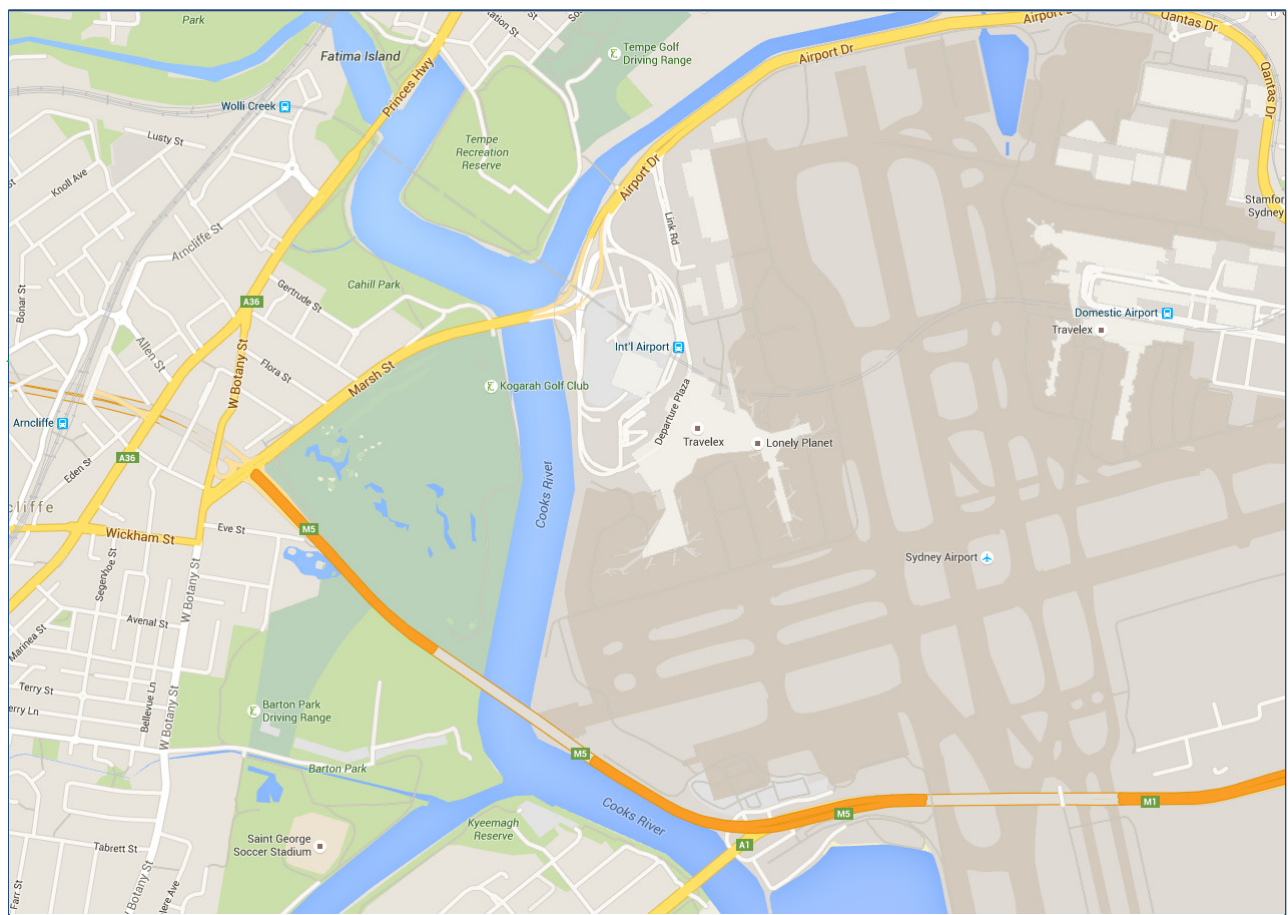
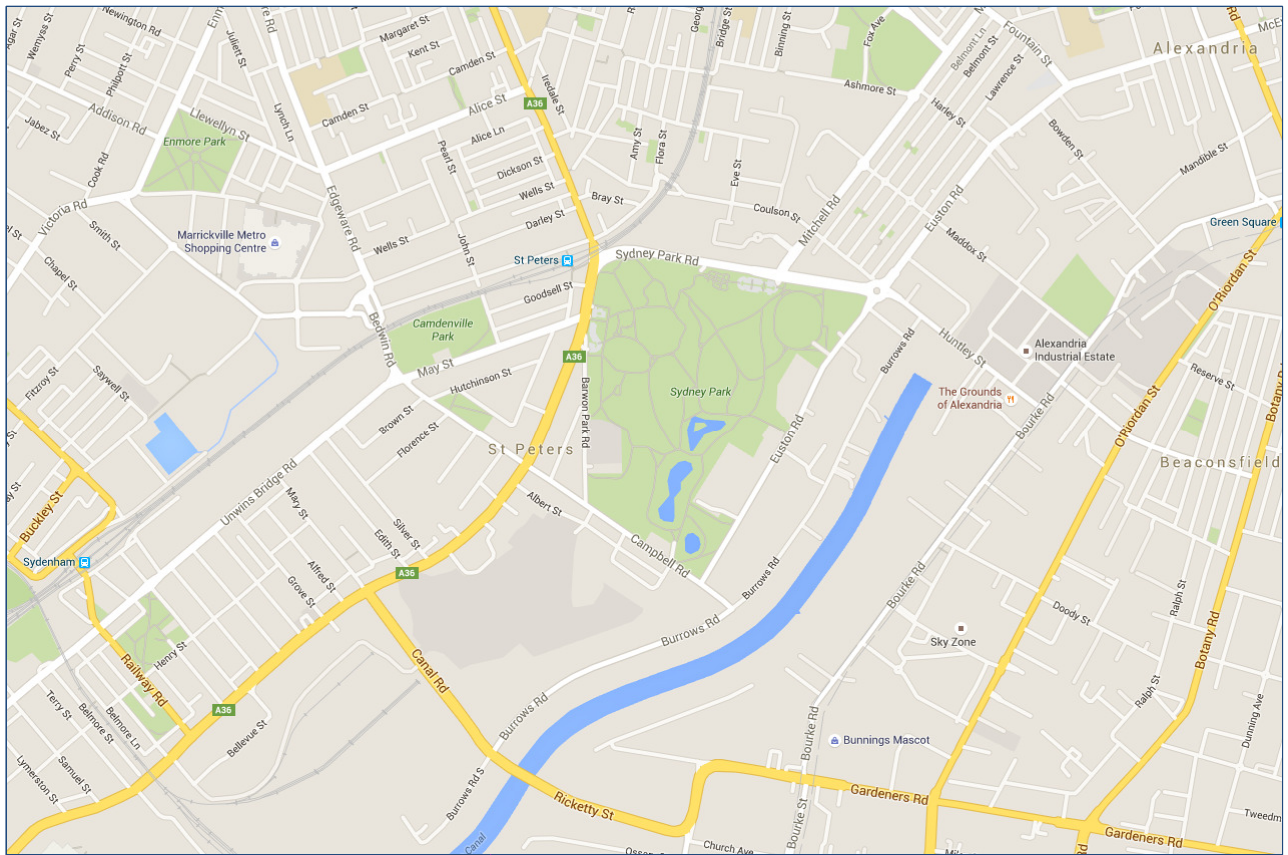


Figure 4-1: Screenlines

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Table 4-1, Table 4-2, and Table 4-3 present the forecast morning, evening, and average weekday traffic flows for 2021 and 2031 for the two screenlines. The forecasts are presented graphically in the following pages as follows:

- Figure 4-2: Year 2014/15 Traffic Volumes (2-Way)
- Figure 4-3: Year 2021 Forecast Average Weekday Traffic (2-Way)
- Figure 4-4: Year 2031 Forecast Average Weekday Traffic with New M5 only (2-Way)
- Figure 4-5: Year 2031 Forecast Average Weekday Traffic with all Projects (2-Way)

Additional figures showing forecast morning and evening peak hour traffic flows are contained in Appendix A.

Screenline / Road Location	Direction	2014/15 AM Peak	2021 AM Peak			2031 AM Peak		
			Without New M5	With New M5 Only	Change	Without New M5	With full Westconnex and Southern Extension	Change
			veh/hr	veh/hr	%	veh/hr	veh/hr	%
<b>Northern Screenline</b>								
Edgeware Road, west of Edinburgh Road	N/B	670	720	780	8%	760	820	8%
	S/B	730	770	910	18%	830	920	11%
King Street, south of Alice Street	N/B	1019	880	800	-9%	1,100	870	-21%
	S/B	781	560	620	11%	450	730	62%
Mitchell Road, north of Sydney Park Road	N/B	706	395	488	24%	506	578	14%
	S/B	394	417	484	16%	600	425	-29%
Euston Road, north of Sydney Park Road	N/B	1220	1,050	1,950	86%	990	2,120	114%
	S/B	503	790	1,110	41%	970	1,580	63%
<b>Total</b>	<b>N/B</b>	<b>3,615</b>	<b>3,045</b>	<b>4,018</b>	<b>32%</b>	<b>3,356</b>	<b>4,388</b>	<b>31%</b>
	<b>S/B</b>	<b>2,408</b>	<b>2,537</b>	<b>3,124</b>	<b>23%</b>	<b>2,850</b>	<b>3,655</b>	<b>28%</b>
<b>Eastern Screenline</b>								
Princes Highway, south of the Cooks River	E/B	2740	2,910	2,880	-1%	3,010	2,545	-15%
	W/B	1150	1,570	1,400	-11%	1,880	693	-63%
New M5, at the Cooks River	E/B	0	0	1,270	n.a.	0	3,537	n.a.
	W/B	0	0	510	n.a.	0	2,016	n.a.
Marsh Street, at the Cooks River	E/B	3000	3,650	3,390	-7%	3,820	3,363	-12%
	W/B	1790	2,020	1,980	-2%	2,320	2,461	6%
M5 East, at the Cooks River	E/B	3110	3,220	2,660	-17%	3,190	3,488	9%
	W/B	1910	2,440	1,820	-25%	2,690	2,358	-12%
General Holmes Drive, at the Cooks River	E/B	4400	4,660	4,670	0%	4,890	4,932	1%
	W/B	1470	1,740	1,900	9%	2,130	2,404	13%
<b>Total</b>	<b>N/B</b>	<b>10,510</b>	<b>11,530</b>	<b>11,990</b>	<b>4%</b>	<b>11,900</b>	<b>15,320</b>	<b>29%</b>
	<b>S/B</b>	<b>5,170</b>	<b>6,200</b>	<b>6,210</b>	<b>0%</b>	<b>7,140</b>	<b>9,239</b>	<b>29%</b>

Table 4-1: Morning Peak Hour Traffic Forecasts

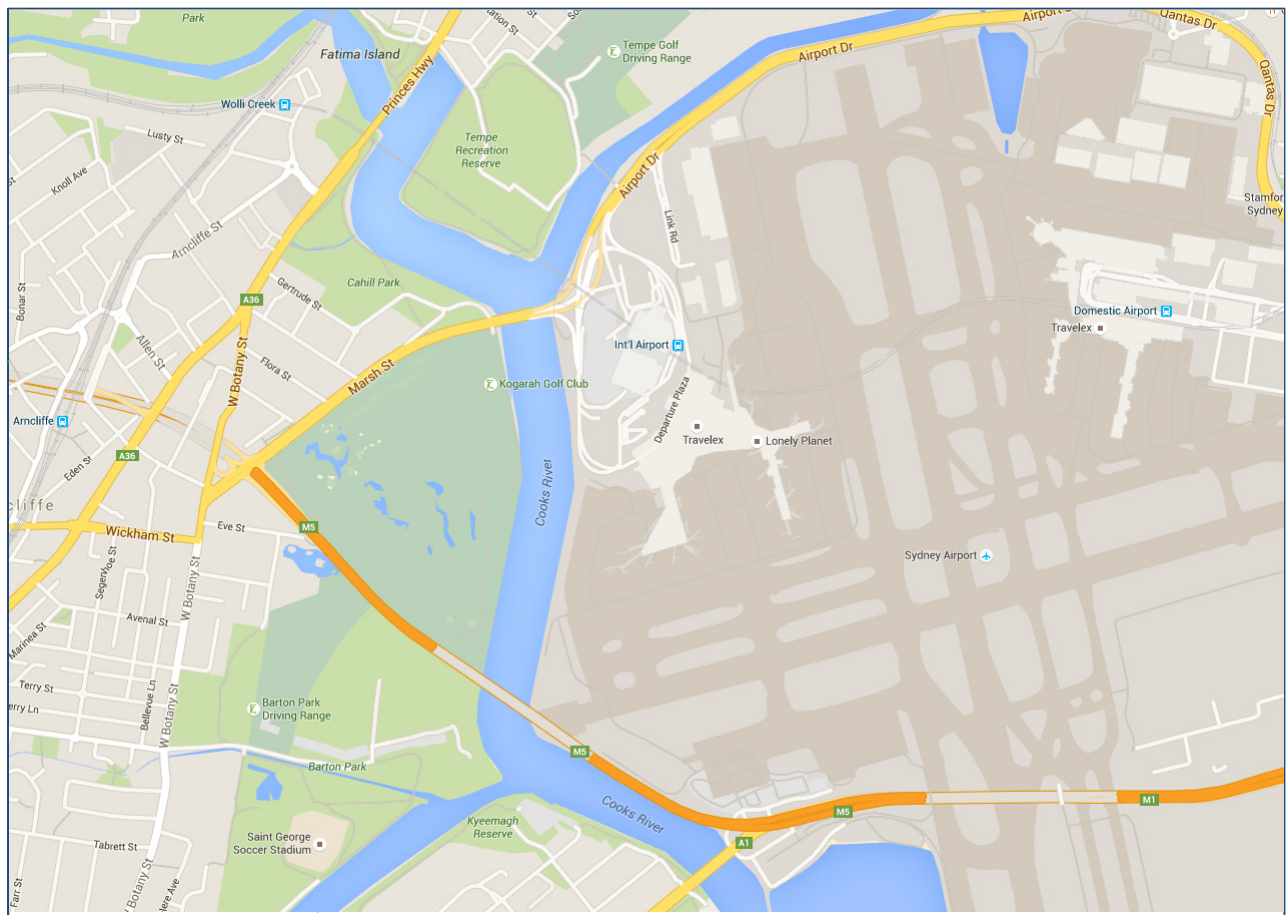
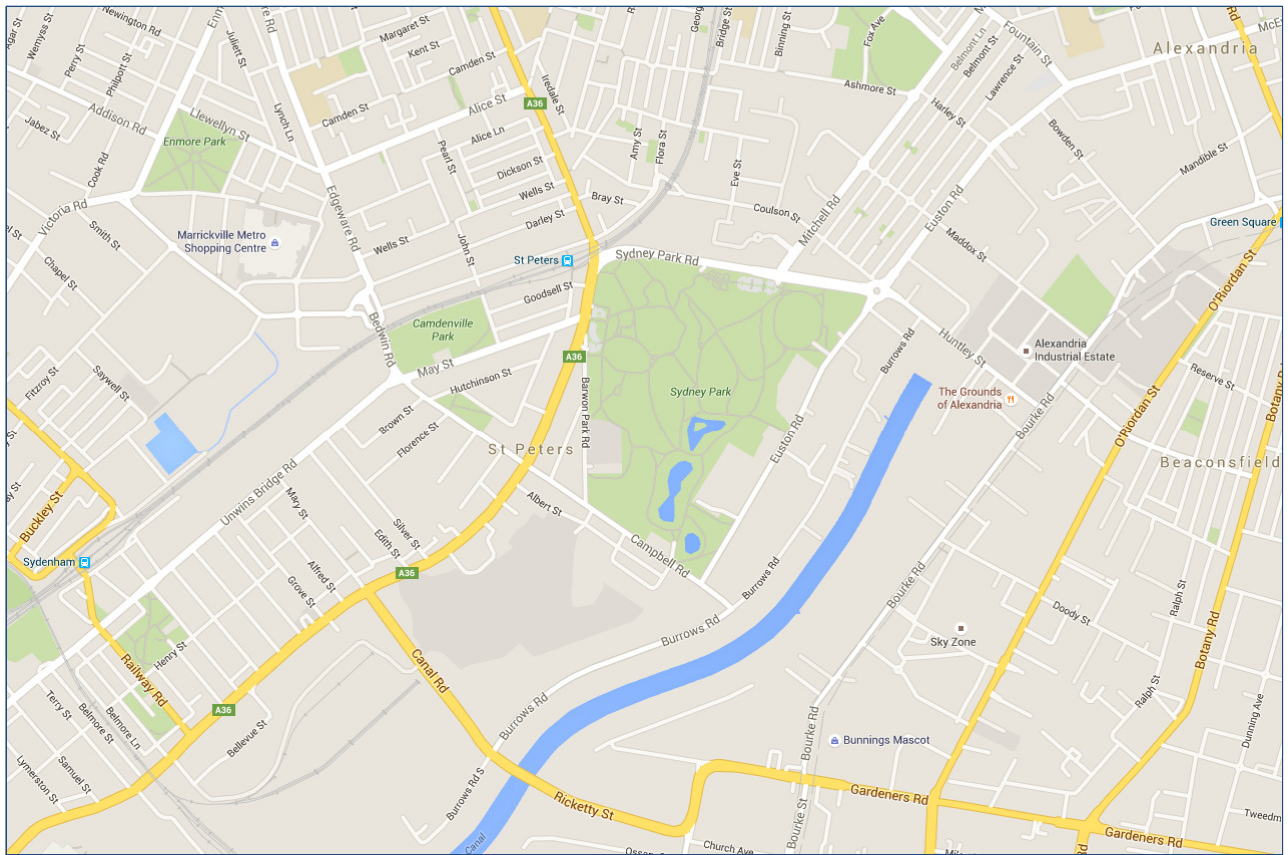
Screenline / Road Location	Direction	2014/15 PM Peak	2021 PM Peak			2031 PM Peak		
			Without New M5	With New M5 Only	Change	Without New M5	With full Westconnex and Southern Extension	Change
<b>Northern Screenline</b>			<b>veh/hr</b>	<b>veh/hr</b>	<b>%</b>	<b>veh/hr</b>	<b>veh/hr</b>	<b>%</b>
Edgeware Road, west of Edinburgh Road	N/B	814	1,060	1,090	3%	1,030	1,110	8%
	S/B	777	830	1,030	24%	730	1,040	42%
King Street, south of Alice Street	N/B	953	830	910	10%	890	940	6%
	S/B	941	1,030	1,010	-2%	980	1,210	23%
Mitchell Road, north of Sydney Park Road	N/B	504	681	645	-5%	736	864	17%
	S/B	577	446	421	-6%	396	303	-23%
Euston Road, north of Sydney Park Road	N/B	597	820	1,280	56%	780	1,530	96%
	S/B	1334	1,340	1,940	45%	1,500	2,160	44%
<b>Total</b>	<b>N/B</b>	<b>2,868</b>	<b>3,391</b>	<b>3,925</b>	<b>16%</b>	<b>3,436</b>	<b>4,444</b>	<b>29%</b>
	<b>S/B</b>	<b>3,629</b>	<b>3,646</b>	<b>4,401</b>	<b>21%</b>	<b>3,606</b>	<b>4,713</b>	<b>31%</b>
<b>Eastern Screenline</b>								
Princes Highway, south of the Cooks River	E/B	1770	2,150	2,140	0%	2,490	1,012	-59%
	W/B	2740	3,100	3,050	-2%	3,300	2,436	-26%
New M5, at the Cooks River	E/B	0	0	750	n.a.	0	2,002	n.a.
	W/B	0	0	1,380	n.a.	0	5,146	n.a.
Marsh Street, at the Cooks River	E/B	1590	1,970	1,590	-19%	2,450	2,665	9%
	W/B	2130	2,760	2,550	-8%	3,070	3,003	-2%
M5 East, at the Cooks River	E/B	2580	2,960	2,630	-11%	3,410	3,483	2%
	W/B	3230	3,450	2,780	-19%	3,510	2,574	-27%
General Holmes Drive, at the Cooks River	E/B	2030	2,350	2,390	2%	2,610	2,801	7%
	W/B	4130	4,310	4,370	1%	4,520	4,430	-2%
<b>Total</b>	<b>N/B</b>	<b>6,200</b>	<b>7,280</b>	<b>7,360</b>	<b>1%</b>	<b>8,470</b>	<b>10,950</b>	<b>29%</b>
	<b>S/B</b>	<b>9,490</b>	<b>10,520</b>	<b>11,080</b>	<b>5%</b>	<b>11,100</b>	<b>15,153</b>	<b>37%</b>

Table 4-2: Evening Peak Hour Traffic Forecasts

	2014/15 AWT	2021 AWT			2031 AWT				
Screenline / Road Location	Existing	Without New M5	With New M5 Only	Change	Without New M5	With New M5 Only	Change	With full WestConnex and Southern Extension	Change
<b>Northern Screenline</b>									
Edgeware Road, west of Edinburgh Road	12,130	12,810	13,380	4%	13,230	13760	4%	13600	3%
King Street, south of Alice Street	16,110	21,310	21,980	3%	26,920	27080	1%	26420	-2%
Mitchell Road, north of Sydney Park Road	21,890	26,790	15,310	-43%	30,300	19230	-37%	20430	-33%
Euston Road, north of Sydney Park Road	23,460	29,110	50,520	74%	32,380	54820	69%	58390	80%
<b>Total</b>	<b>73,590</b>	<b>90,020</b>	<b>101,190</b>	<b>12%</b>	<b>102,830</b>	<b>114,890</b>	<b>12%</b>	<b>118,840</b>	<b>16%</b>
<b>Eastern Screenline</b>									
Princes Highway, south of the Cooks River	75,500	72,415	68,388	-6%	79,085	75,628	-4%	24,950	-68%
New M5, at the Cooks River	–	0	29,339	n.a.	–	34,748	n.a.	81,739	n.a.
Marsh Street, at the Cooks River	64,500	75,979	66,723	-12%	92,805	86,501	-7%	97,563	5%
M5 East, at the Cooks River	79,000	101,554	80,775	-20%	109,634	95,208	-13%	86,763	-21%
General Holmes Drive, at the Cooks River	85,500	95,018	99,706	5%	104,804	108,233	3%	101,722	-3%
<b>Total</b>	<b>304,500</b>	<b>344,966</b>	<b>344,931</b>	<b>0%</b>	<b>386,328</b>	<b>400,318</b>	<b>4%</b>	<b>392,737</b>	<b>2%</b>

**Table 4-3: Average Weekday Traffic Forecasts**





**Figure 4-2: Year 2014/15 Traffic Volumes (2-Way)**



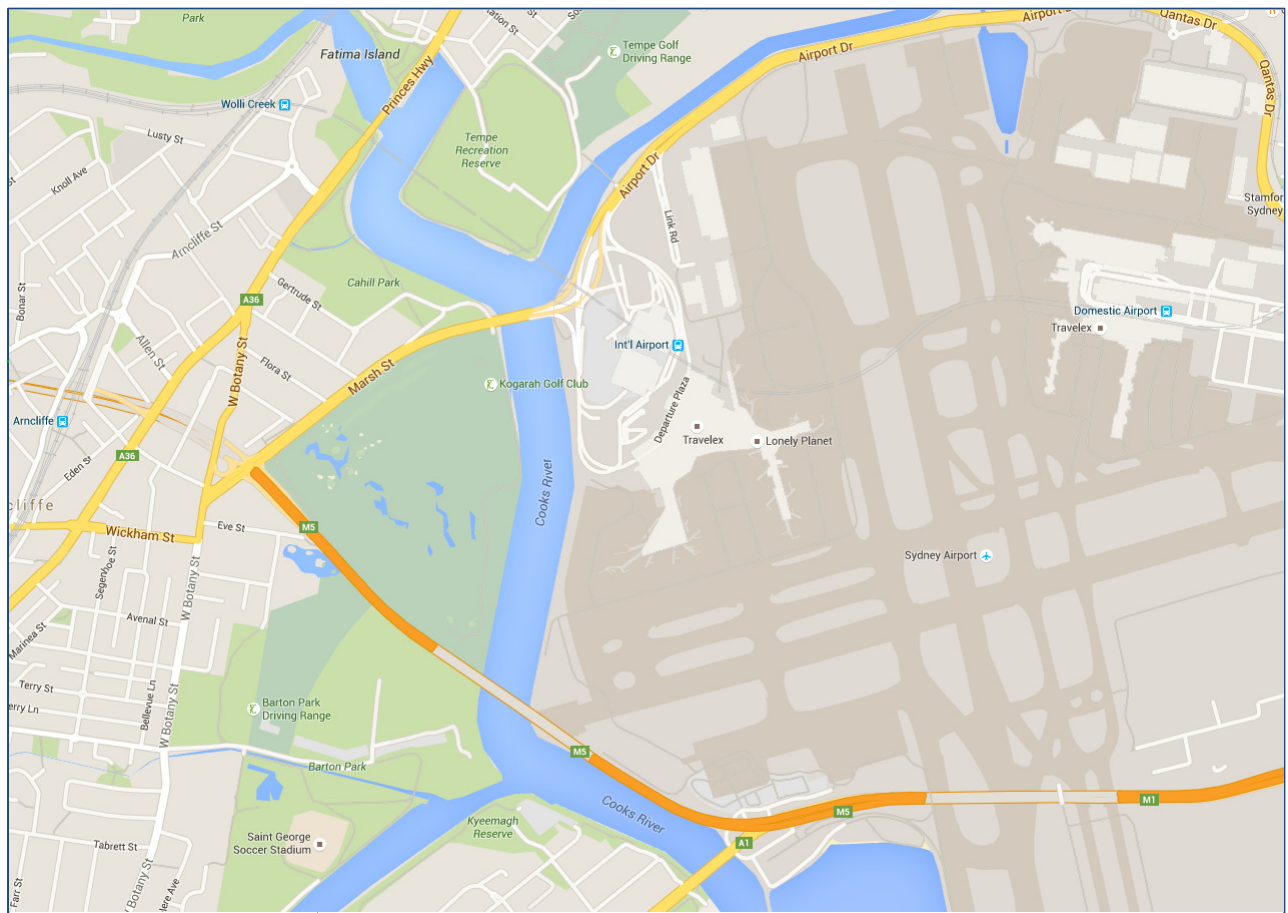
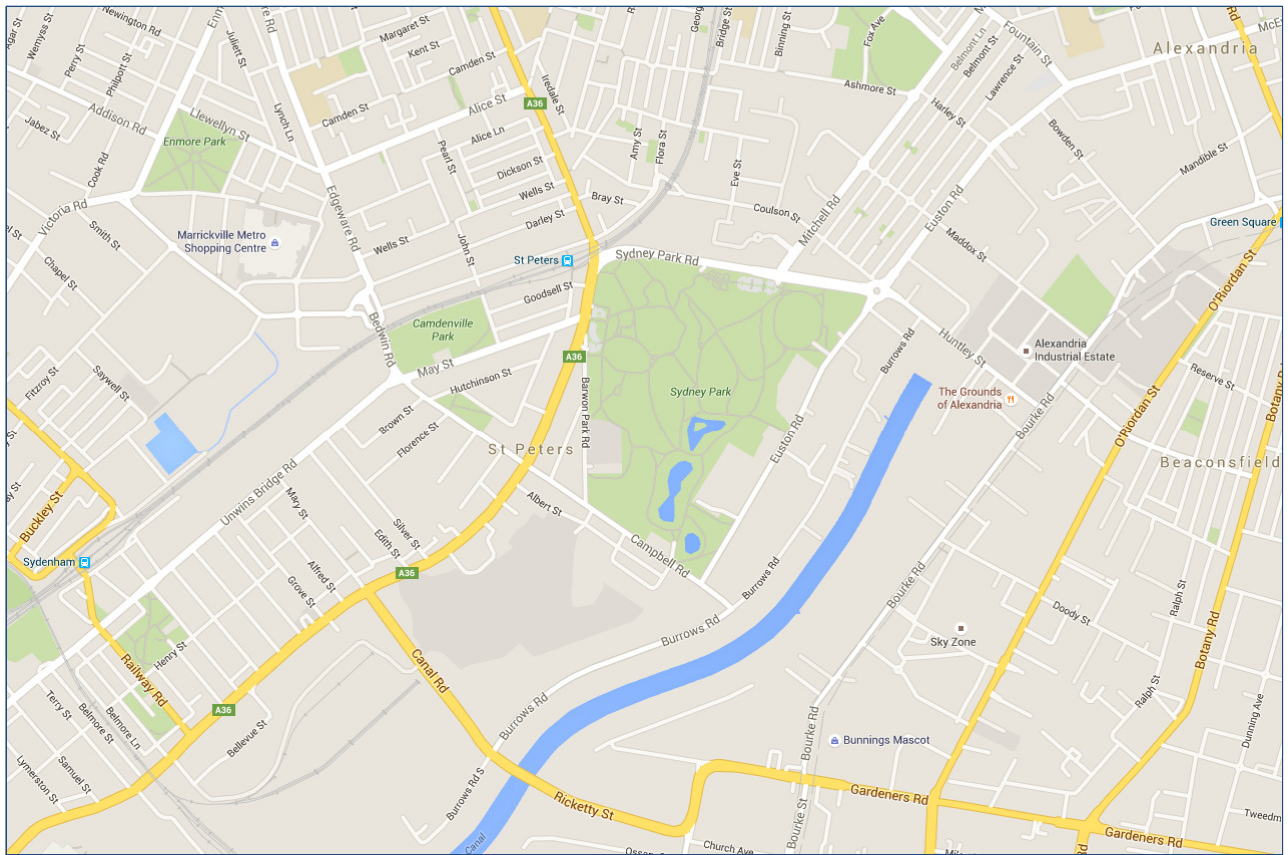


Figure 4-3: Year 2021 Forecast Average Weekday Traffic (2-Way)



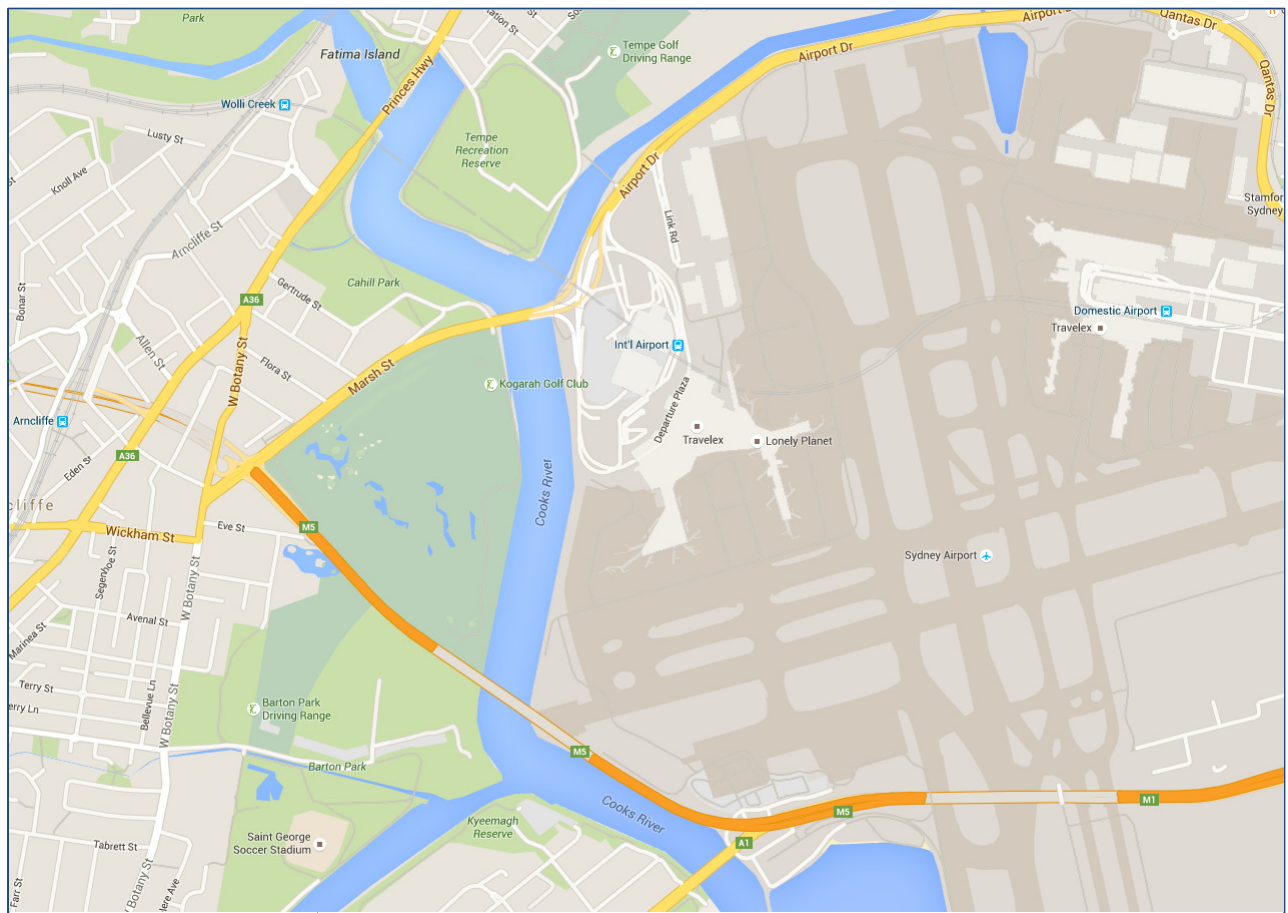
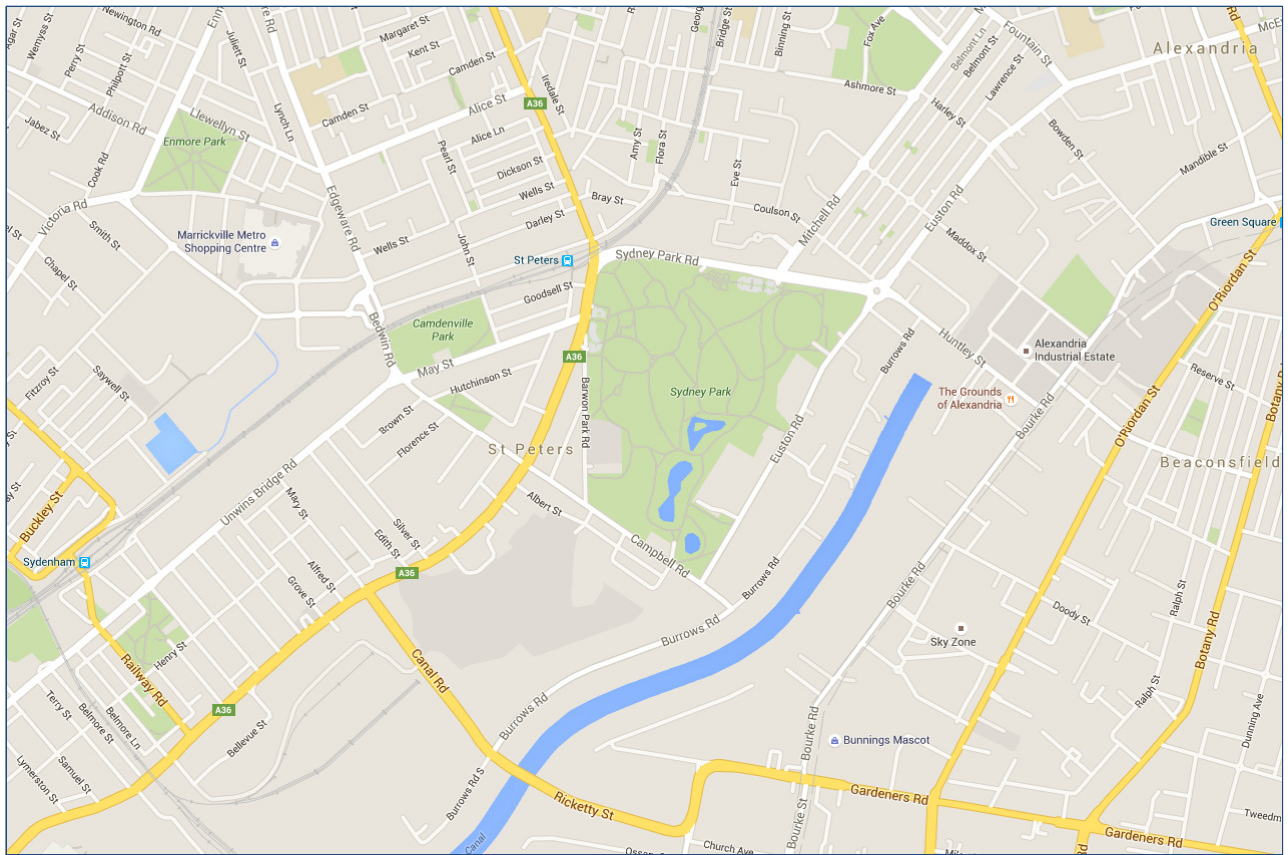
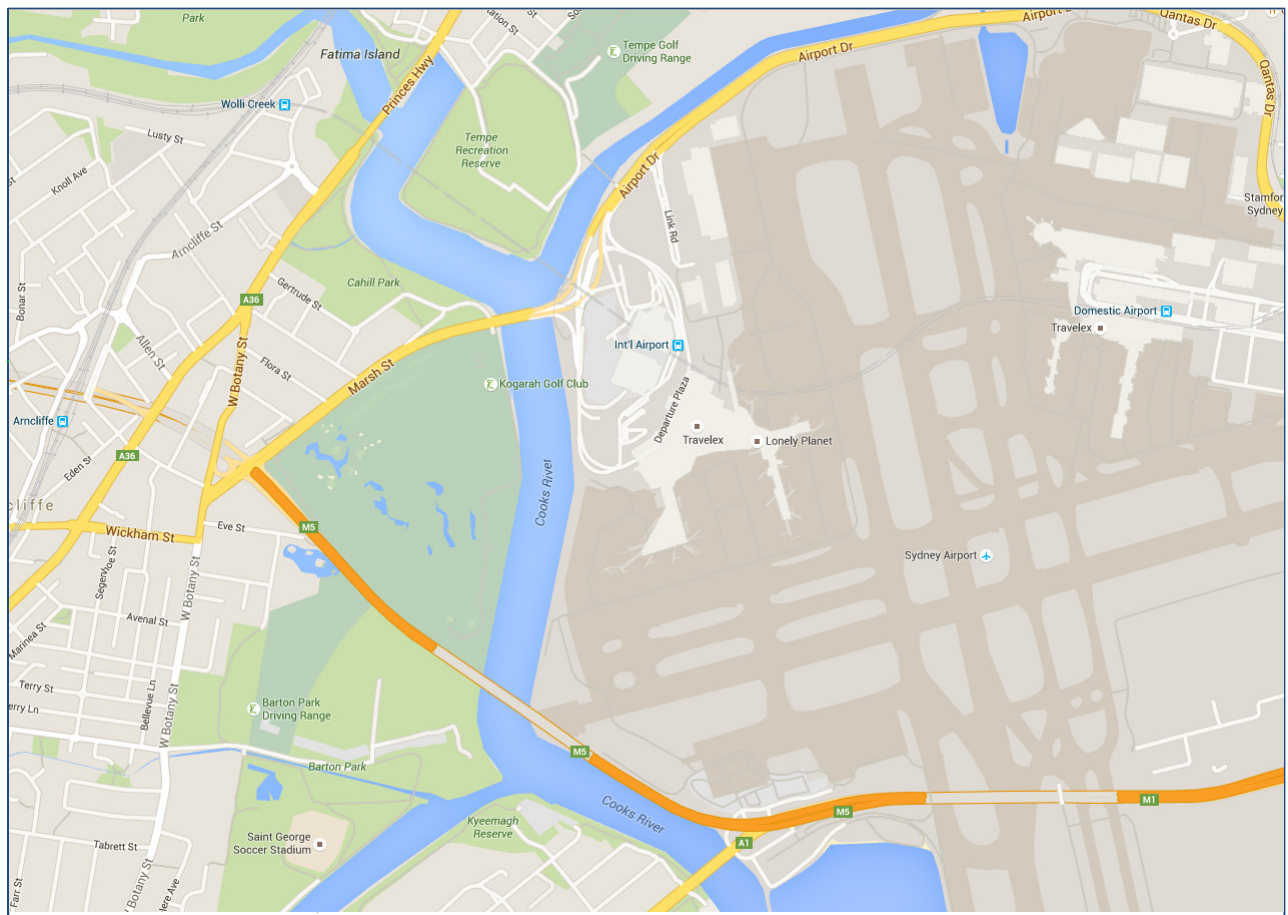
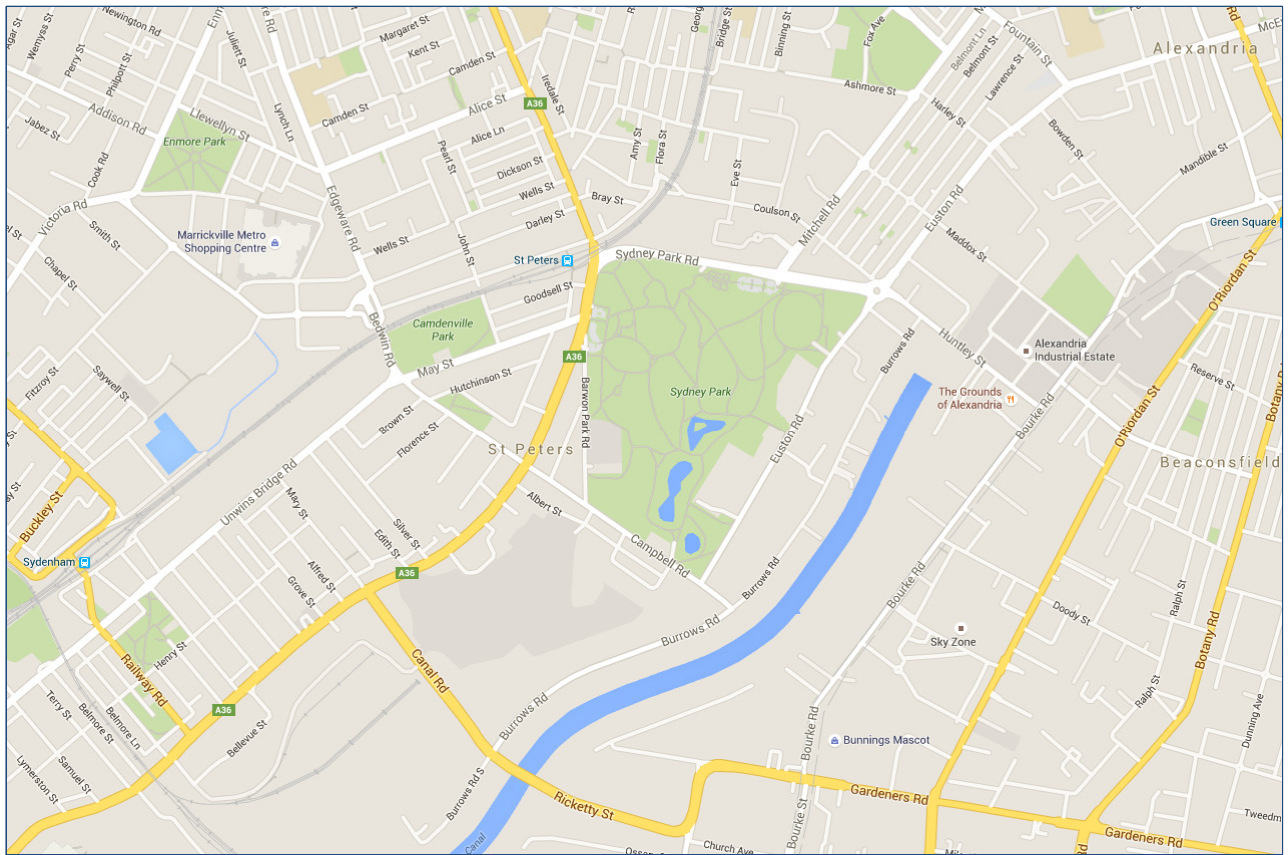


Figure 4-4: Year 2031 Forecast Average Weekday Traffic with New M5 only (2-Way)





**Figure 4-5: Year 2031 Forecast Average Weekday Traffic with WestConnex-Plus (2-Way)**

## 4.2. Traffic Flows on Specific Roads

The following tables present the forecast traffic flows on Euston Road, King Street, and Mitchell Road.

**Table 4-4: Forecast Traffic Flows on Euston Road, north of Sydney Park Road**

Scenario	Direction	Morning Peak Hour	Evening Peak Hour	Average Weekday Traffic	AWT vs. 2014
Current (2014)	Northbound	1,220	597	-	n.a.
	Southbound	503	1,334	-	n.a.
	Two way	1,723	1,931	23,460	n.a.
2021 without New M5	Northbound	1,050	820	-	-
	Southbound	790	1,340	-	-
	Two way	1,840	2,160	29,110	24%
2021 with New M5	Northbound	1,950	1,280	-	-
	Southbound	1,110	1,940	-	-
	Two way	3,060	3,220	50,520	115%
2031 without New M5	Northbound	990	780	-	-
	Southbound	970	1,500	-	-
	Two way	1,960	2,280	32,380	38%
2031 with full WestConnex plus Southern Extension	Northbound	2,120	1,530	-	-
	Southbound	1,580	2,160	-	-
	Two way	3,700	3,690	58,390	149%

**Table 4-5: Forecast Traffic Flows on King Street, south of Alice Street**

Scenario	Direction	Morning Peak Hour	Evening Peak Hour	Average Weekday Traffic	AWT vs. 2014
Current (2014)	Northbound	1,019	953	-	n.a.
	Southbound	781	941	-	n.a.
	Two way	1,800	1,894	16,110	n.a.
2021 without New M5	Northbound	880	830	-	-
	Southbound	560	1,030	-	-
	Two way	1,440	1,860	21,310	32%
2021 with New M5	Northbound	800	910	-	-
	Southbound	620	1,010	-	-
	Two way	1,420	1,920	21,980	36%
2031 without New M5	Northbound	1,100	890	-	-
	Southbound	450	980	-	-
	Two way	1,550	1,870	13,230	-18%
2031 with full WestConnex plus Southern Extension	Northbound	870	940	-	-
	Southbound	730	1,210	-	-
	Two way	1,600	2,150	13,760	-15%

**Table 4-6: Forecast Traffic Flows on Mitchell Road, north of Sydney Park Road**

Scenario	Direction	Morning Peak Hour	Evening Peak Hour	Average Weekday Traffic	AWT vs. 2014
Current (2014)	Northbound	706	504	-	n.a.
	Southbound	394	577	-	n.a.
	Two way	1,100	1,081	21,890	n.a.
2021 without New M5	Northbound	395	681	-	-
	Southbound	417	446	-	-
	Two way	812	1,127	26,790	22%
2021 with New M5	Northbound	488	645	-	-
	Southbound	484	421	-	-
	Two way	972	1,066	15,310	-30%
2031 without New M5	Northbound	506	736	-	-
	Southbound	600	396	-	-
	Two way	1,106	1,132	30,300	38%
2031 with full WestConnex plus Southern Extension	Northbound	578	864	-	-
	Southbound	425	303	-	-
	Two way	1,003	1,167	20,430	-7%

### 4.3. Select Link Flows

The Sydney Motorway Authority has provided Councils with plots of “select link flows” for the morning and evening peaks. Select link plots show where the traffic is coming from and going to for a particular location. Figure 4-6 to Figure 4-9 present the traffic forecast to be using Euston Road north of Sydney Park Road and the New M5 in 2021 during the morning and evening peak hours.

Cautionary Note: The percentages shown in the figures are indicative only. They have been scaled from plots supplied by the Sydney Motorway Corporation.



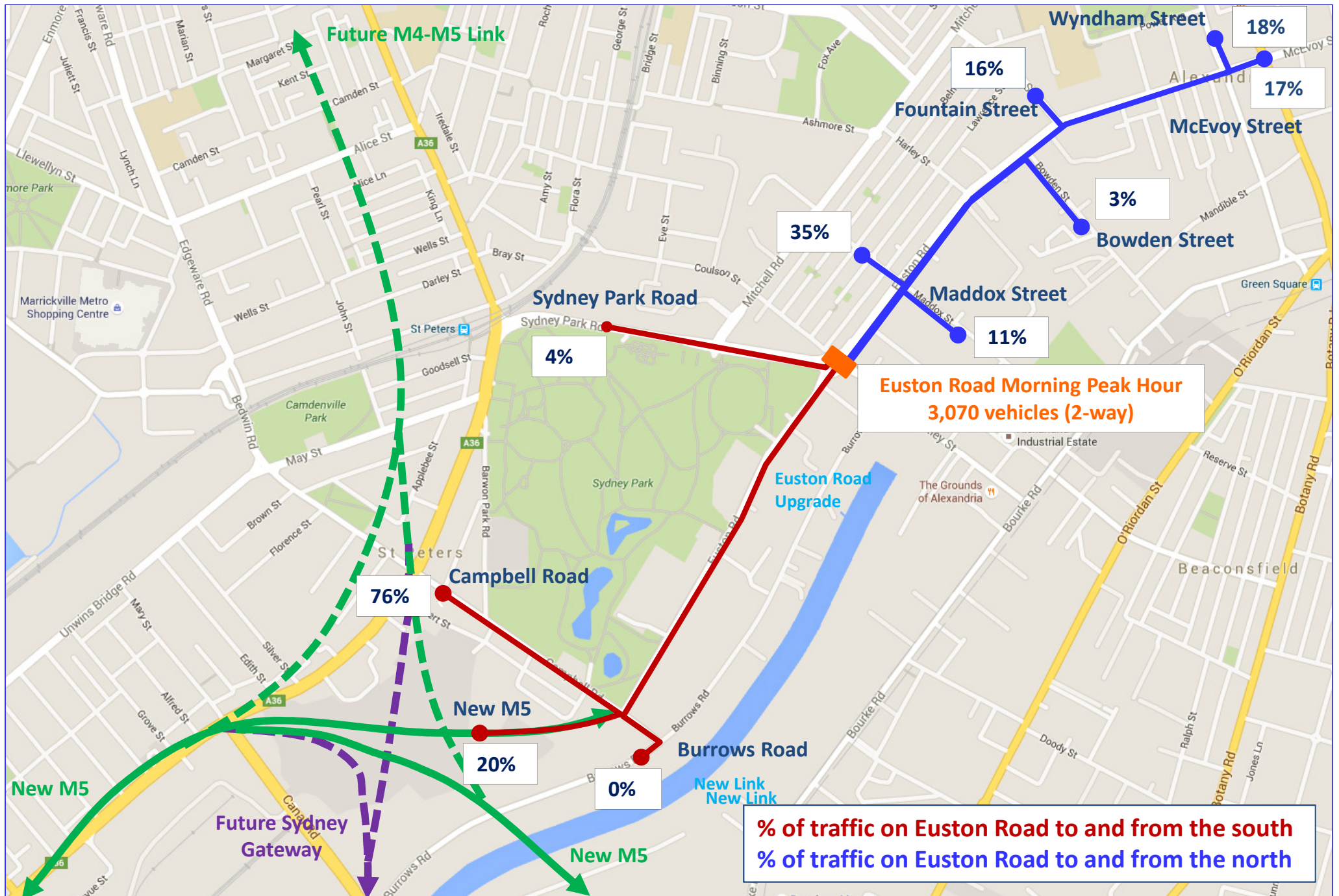


Figure 4-6: Select Link – Euston Road 2021 AM Peak Flows (two-way)



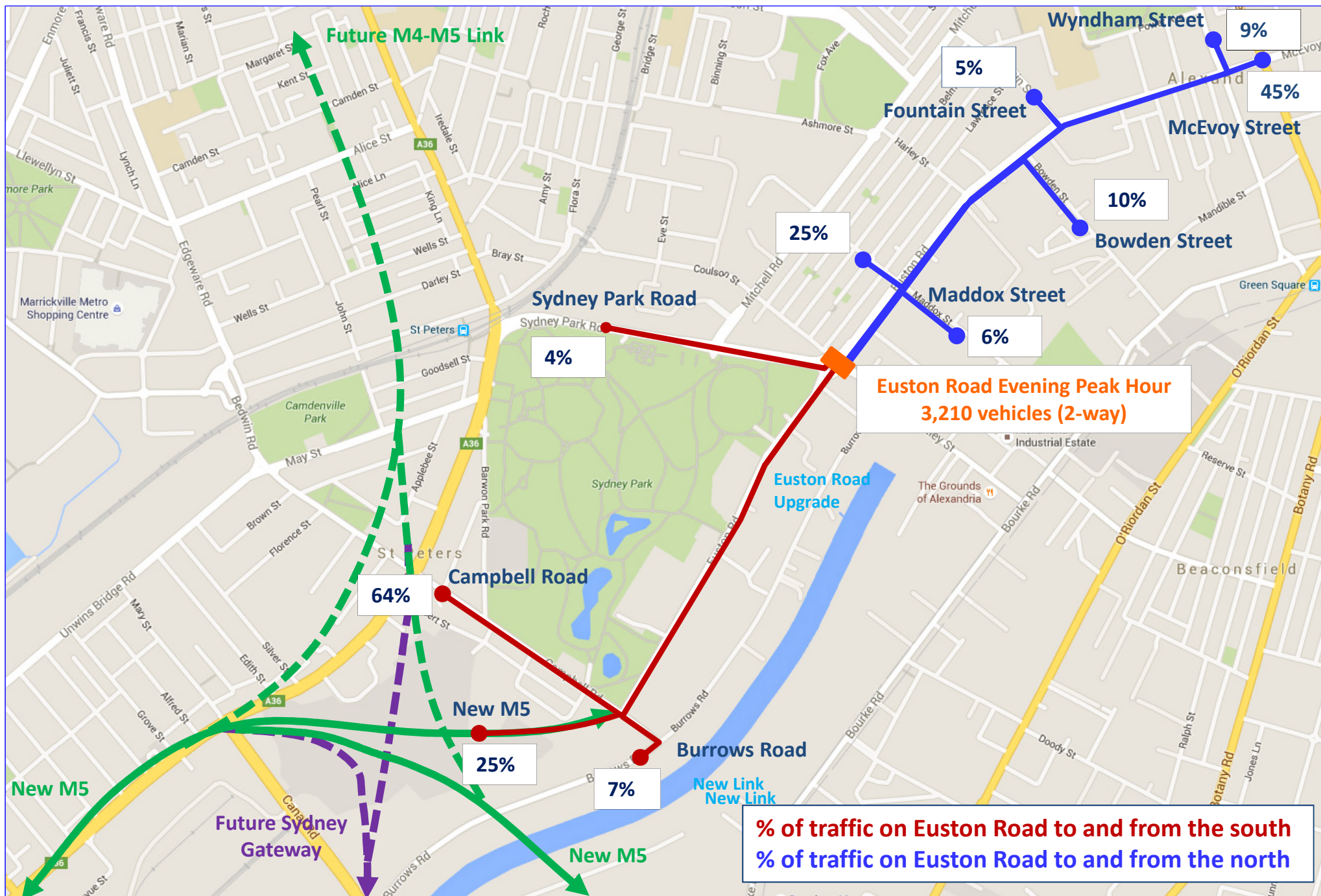


Figure 4-7: Select Link – Euston Road 2021 PM Peak Flows (two-way)



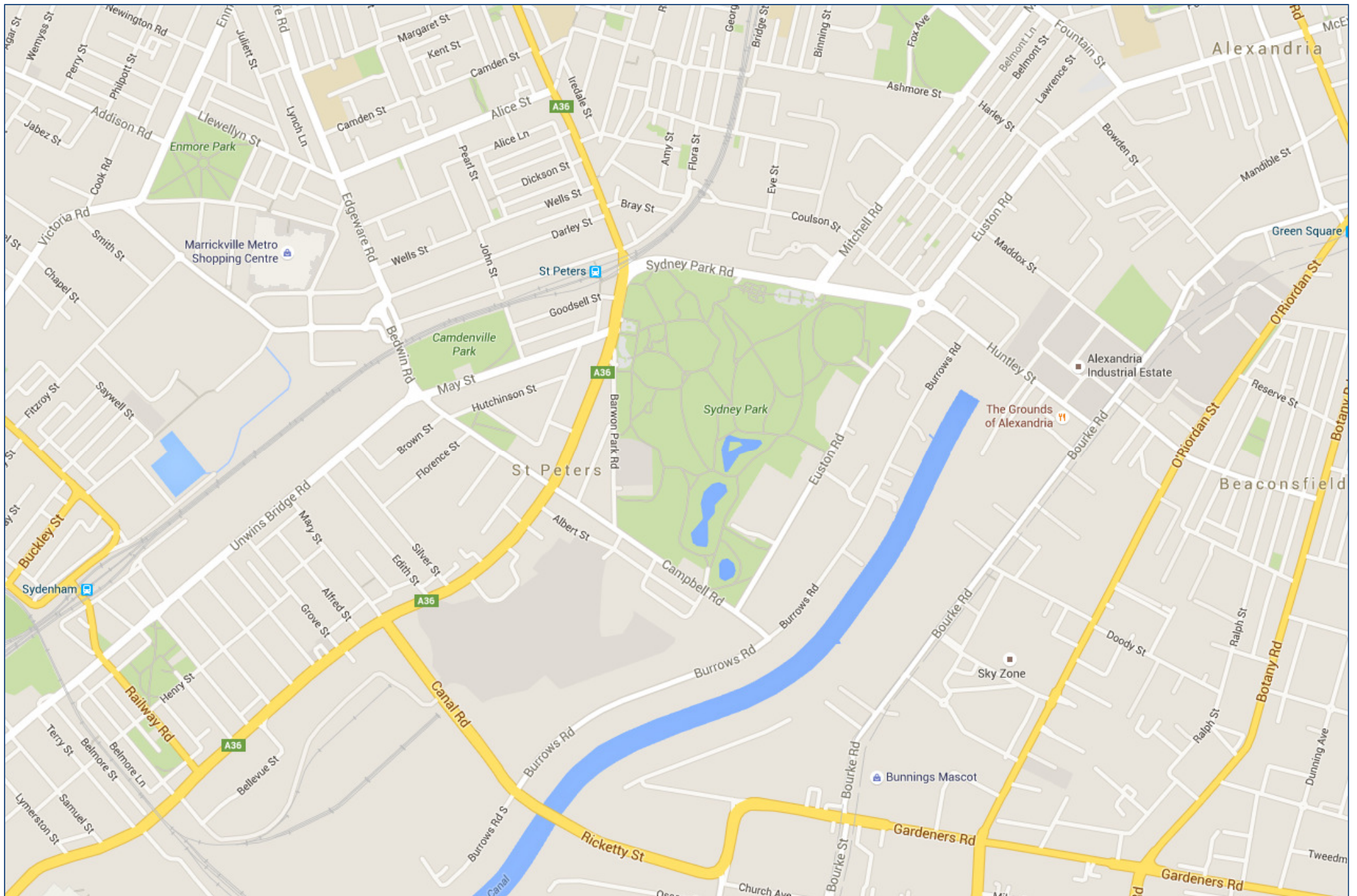


Figure 4-8: Select Link – New M5 2021 AM Peak Flows (two-way)







#### 4.4. Peak to Daily Convert Factors

Comparison of morning peak to daily convert factors are a useful tool to determine the stability of the traffic model and to ensure that one can have confidence in daily forecasts which are used for revenue models. Morning peak forecasts are the most stable aspect of traffic forecasting as they are primarily based on solid data from the Australian Census plus data from the NSW Bureau of Transport Statistics. Traffic forecasts for other times of the day are more difficult to produce as travel patterns differ considerably by day or week and time. The morning peak to daily factor does not vary significantly for similar types of roads. Tolloed roads tend to have a lower daily factor as diversions to alternate routes are higher outside of peak periods. That is, there is a lower tendency to use tolloed roads outside of peak periods. Table 4-7 presents peak to daily convert factors associated with the forecasts in the EIS.

**Table 4-7: Forecast Peak to Daily Factors**

Screenline / Road Location	AM Peak to AWT Factor		
	Existing	2021 Without New M5	2021 With New M5 Only
<b>Northern Screenline</b>			
Edgeware Road, west of Edinburgh Road	8.7	8.6	7.9
King Street, south of Alice Street	9.0	14.8	15.5
Mitchell Road, north of Sydney Park Road	19.9	33.0	15.8
Euston Road, north of Sydney Park Road	13.6	15.8	16.5
<b>Total</b>	<b>12.2</b>	<b>16.1</b>	<b>14.2</b>
<b>Eastern Screenline</b>			
Princes Highway, south of the Cooks River	19.4	16.2	16.0
New M5, at the Cooks River	n.a.	n.a.	16.5
Marsh Street, at the Cooks River	13.5	13.4	12.4
M5 East, at the Cooks River	15.7	17.9	18.0
General Holmes Drive, at the Cooks River	14.6	14.8	15.2
<b>Total</b>	<b>15.6</b>	<b>15.5</b>	<b>15.3</b>