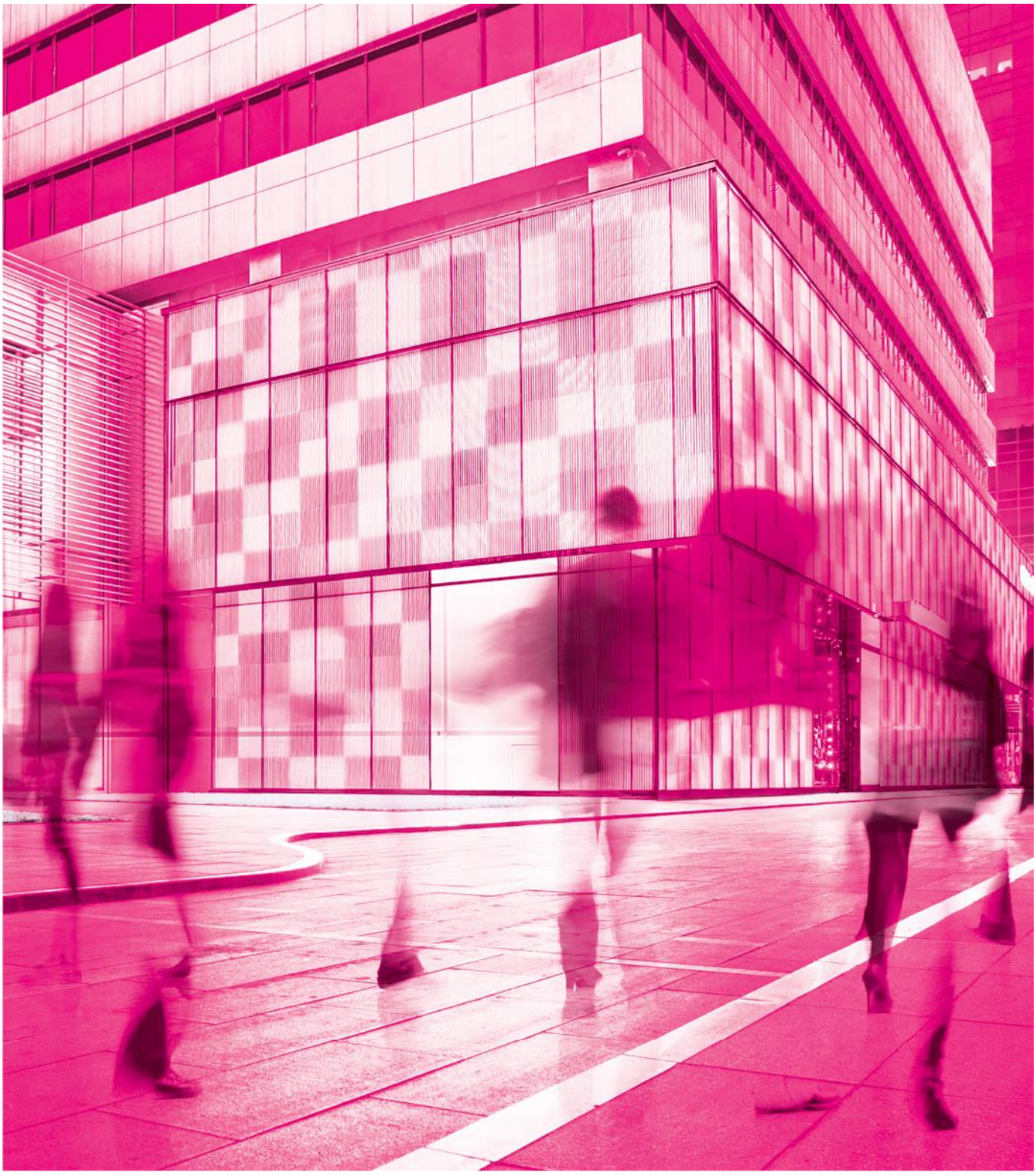

traffic & parking assessment;

Planning Proposal for Prospect South Lands

For Office of Strategic Lands

15 March 2018

parking;
traffic;
civil design;
communication;

ptc.

Document Control

Planning Proposal for Prospect South Lands, Traffic & parking assessment

Issue	Date	Issue Details	Author	Reviewed
1	29/11/2017	Draft Issue	HL	AU
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3	15/03/2018	Final Issue	HL	AU
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Contents

1. Executive Summary

ptc. has been engaged by the Office of Strategic Lands (on behalf of Minister for Planning) to provide a Traffic Impact Assessment to accompany the Planning Proposal for the rezoning of land comprising a total of 16 properties totalling an area of approximately 12.2 Ha in Prospect.

With reference to the most recent RMS survey data, a review of the potential traffic generation of the site revealed that the development will lead to a net traffic generation of 336 trips during the peak hour. In order to assess the traffic circumstances associated with the proposal, intersection surveys and traffic modelling using SIDRA Intersection have been undertaken.

Overall, the SIDRA analysis indicates that the existing operation of the Prospect Highway/M4 Interchange and Prospect Highway/Reservoir Road are operating at capacity. However, the Prospect Highway Upgrade is anticipated to improve the performance of these intersections by the introduction of additional through-lanes to support the growing Prospect South Lands Precinct.

Based on the analysis, the intersections of Prospect Highway/M4 Interchange and Prospect Highway/Reservoir Road will operate at a reasonable level of service during both the AM and PM peaks with acceptable delays and spare capacity, despite the additional 336 trips during the peak hour generated by the proposal.

In accordance with the Blacktown DCP, the required parking provision rate associated with warehouses with associated office premises have been applied to the Masterplan concept proposal. Following this, a minimum car parking provision of 735 parking spaces applies to the subject development site. Further assessment of the parking provisions, as well as servicing requirements is to be undertaken during the submission of future Development Applications.

In light of the above, the proposed development is considered acceptable and supportable in the context of traffic.

2. Introduction

2.1 Project Summary

ptc. has been engaged by the Office of Strategic Lands (OSL) to prepare a Traffic and Parking Assessment to accompany a Planning Proposal to Blacktown City Council for the rezoning of land in the vicinity of the Prospect Reservoir (See Figure 1).

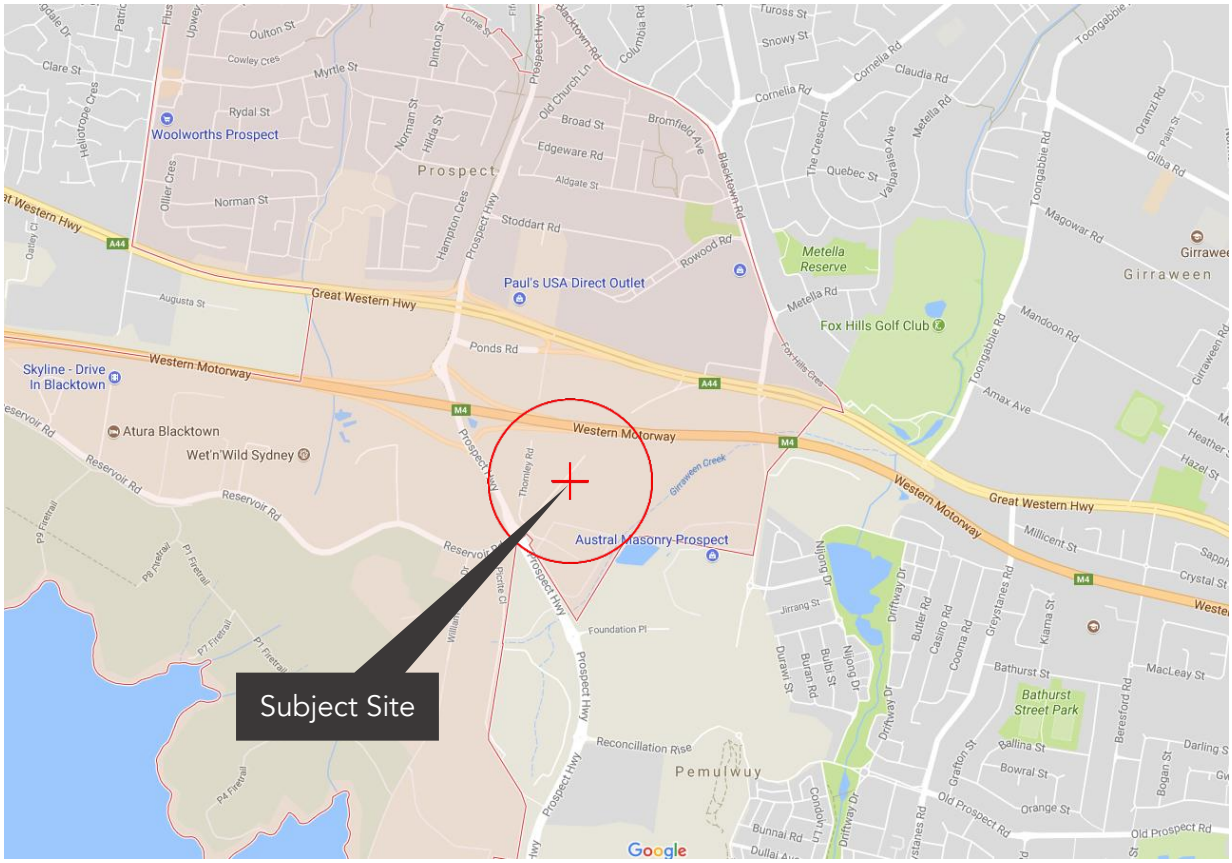


Figure 1 – Site Location

2.2 Purpose of this Report

This report presents the following considerations in relation to the Traffic and Parking assessment of the Proposal:

Section 2	A description of the project;
Section 3	Establishment of the site context and development proposal;
Section 4	A description of the road network serving the development property, the surrounding public traffic options, and the existing active traffic facilities;
Section 5	A description of the existing traffic volumes through key local intersections, determination of the traffic activity associated with the development proposal, and the adequacy of the surrounding road network;
Section 6	A description of parking provision in the context of the relevant planning control requirements; and
Section 7	The requirements in regards to the car park, vehicular access and internal circulation arrangements, in relation to the relevant standards and Council policies, will need to be assessed in a later development stage.

3. Proposal

3.1 Site Context

The subject site lies on land which is currently zoned for primary production small lots (RU4), situated to the south of the Western Motorway. Key features surrounding the site include:

- To the north lies a business development zone (B5) which accommodates retail outlets and restaurants;
- To the south lie numerous warehouses zoned for general industrial (IN1) and light industrial (IN2) use;
- To the south-west lies the Prospect Reservoir and Prospect;
- To the west lies Wet 'n' Wild Sydney, within a 750m walking distance; and
- The greater residential and industrial precinct of Prospect, comprising typically of low-density residential (R2) and general industrial (IN1) land uses.

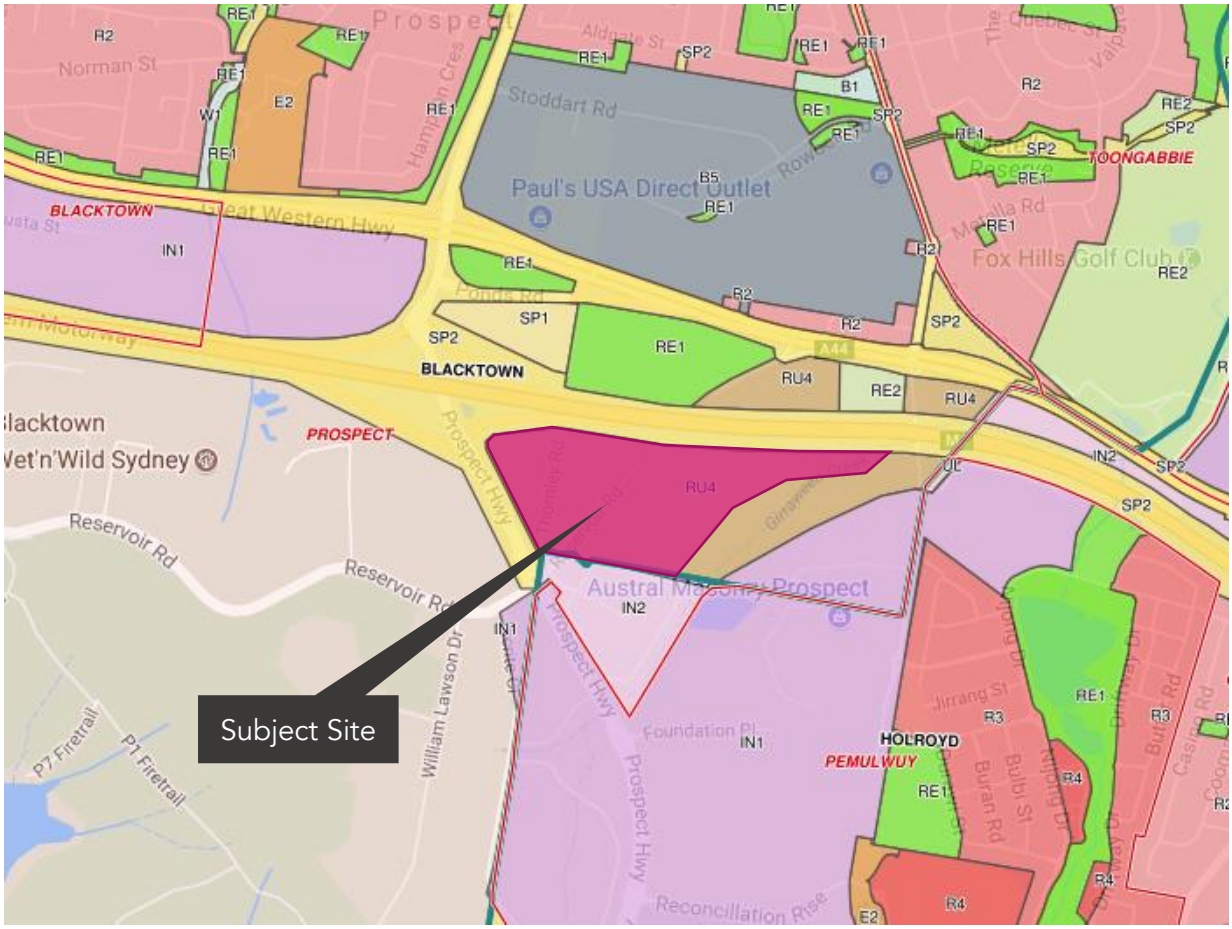


Figure 2 – Local Land Use Map (Source: NSW Planning Viewer)

3.2 Development Site

The proposal relates to the subject site comprising the following lots of land:

- Lot 3 / DP 1192514 (64,990m^2)
- Lot 10 / DP 448744 (3,945m^2)
- Lot 11 / DP 448744 (3,970m^2)
- Lot 12 / DP 448744 (4,046m^2)
- Lot 15 / DP 448744 (2,402m^2)
- Lot 18 / DP 802753 (6,555m^2)
- Lot 24 / DP 801210 (7,772m^2)
- Lot 25 / DP 801210 (1,382m^2)
- Lot 26 / DP 801210 (14,320m^2)

A number of adjoining sites are also included in the assessment, which are listed below:

- Lot A / DP 374323 (518.5m^2)
- Lot C / DP 374323 (860m^2)
- Lot D / 374324 (309.8m^2)
- Lot 10 / DP 801209 (3,263m^2)
- Lot 11 / DP 801209 (7,427m^2)
- Lot 10 / DP 374325 (676.6m^2)
- Lot 17 / DP 802753 (RMS land) (1,124m^2)

The total site area is approximately 12.2 Ha and comprises land owned by the Minister for Planning (approximately 11Ha) and two parcels of privately-owned land. The area also contains local roads (Reservoir Road and Thornley Road) owned by Blacktown City Council. The roads are subject to possible closure and sale, leaving the possibility of additional land for development.

As can be seen in the aerial view of the subject site in Figure 3, the land is located adjoining the M4 – Western Motorway, between the extension of the Prospect Highway to the west and runs along the M4. The land is accessed directly from the Motorway via the Blacktown turn-off, Prospect Highway and Reservoir Road.

The southern boundary of the site is defined by the Greystanes Release Area of State Environmental Planning Policy 2009 – Western Sydney Employment Lands.

Currently, the site is mostly unoccupied.

Figure 3 – Aerial View of Subject Site & Surrounds (Source: Nearmap)

3.3 Development Proposal

The objective of the Project is to submit a Planning Proposal to Blacktown City Council for the rezoning of the subject site for industrial use.

As the site directly adjoins the Greystanes Industrial area (within the Western Sydney Employment Area), the subject land could potentially be seen as a northern extension of this area that takes advantage of the good accessibility and infrastructure available in this location. Initial meetings with Council have been supportive and Council have provided advice in terms of requirements for a Planning Proposal (refer to **Attachment 1**).

It is the intention of the Office of Strategic Lands (OSL) to seek approval for the rezoning of the parcels of land stated previously, for light and general industrial uses to match the adjoining zoning. In light of this, the OSL has contacted adjoining landowners who have indicated their willingness to participate in a Planning Proposal to Blacktown City Council.

3.3.1 Prospect Highway Upgrade

Although not directly linked to the proposal, there are already approved plans to upgrade the intersection of Prospect Hwy / M4 Interchange (see Figure 4). In addition to this, widening of the Prospect Hwy (southbound) up to the intersection Prospect Hwy /M4 Interchange by one additional lane has been approved. Furthermore, the existing roundabout configuration of Prospect Hwy/Reservoir Rd will be converted into a four-arm signalised intersection with additional lanes provided in each approach. The

Traffic Signal Control (TCS) plans detailing the existing and proposed intersection configurations are included as **Attachment 5**.

These changes will be beneficial to the proposed land use development on the subject site.

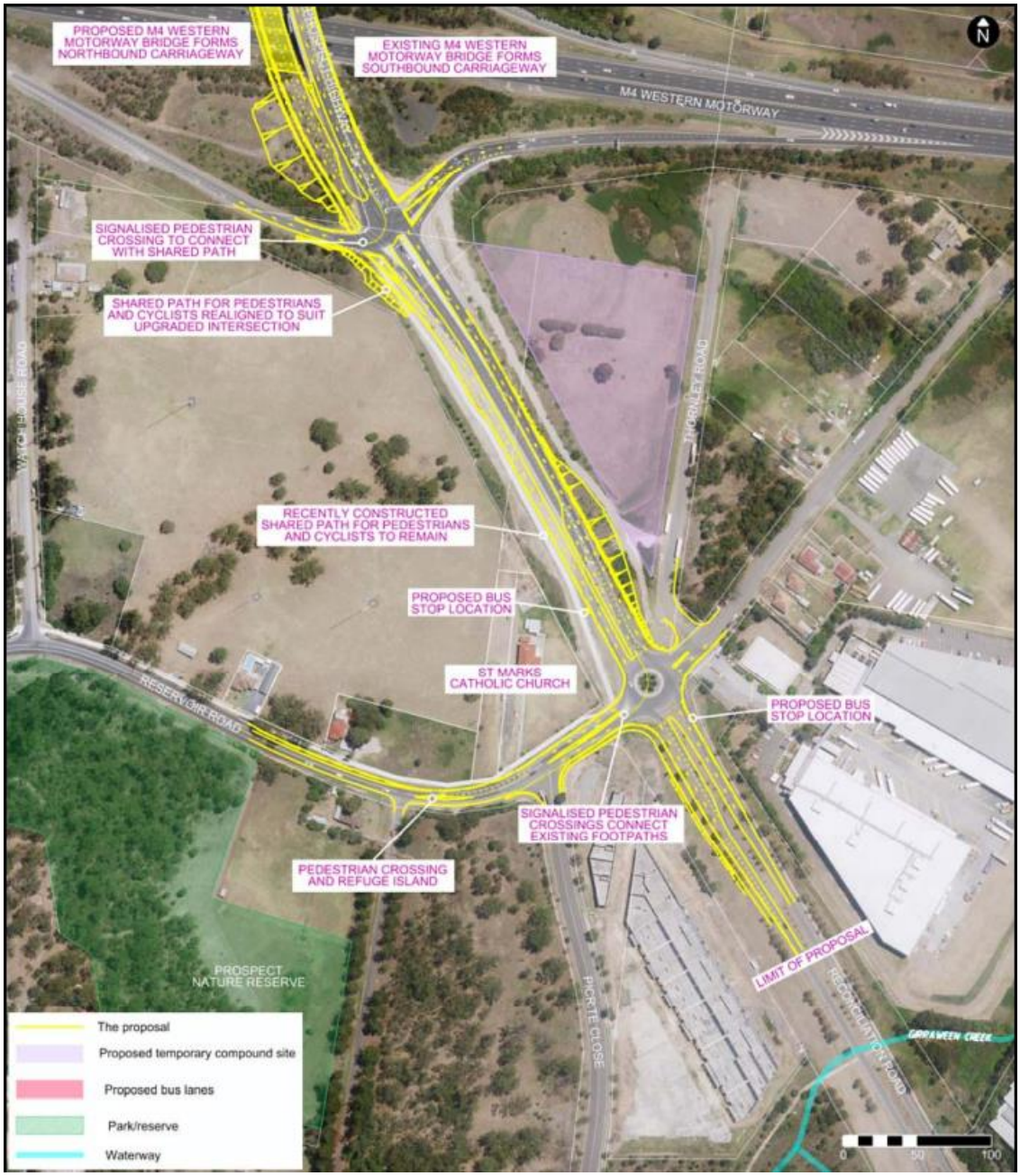


Figure 4 - Prospect Highway Upgrade Proposal (Source: RMS, 2017)

3.3.2 Proposed Vehicular Access

The Project Planner, Urbis, is currently exploring options in regards to the proposed access to the site. The Prospect South Masterplan illustrating the proposed access arrangement is presented in **Attachment 1**. The access arrangement will retain the existing access via Thorney Road, and allow circulation of vehicles in a ring-road configuration along the perimeter of each building. It is noted that the Prospect Masterplan does not yet illustrate the proposed signalised intersection layout for Prospect Highway/Reservoir Road.

Given the close proximity of Thornley Road to the intersection of Prospect Highway/Reservoir Road, vehicles exiting the site via Thornley Road will need to cross the right turn lane to enter the kerbside lane on Reservoir Road. Therefore, vehicles intending to travel south along Prospect Highway or continue west along Reservoir Road will need to wait for a sufficient gap in the right-turn lane in order to merge with the left or through-lane traffic.

In order to mitigate the potential for queuing along Thornley Road, an alternative access option involving the closure or partial closure of Thornley Road could be considered in due course, subject to discussion with RMS. This option may involve the construction of a new access (public or private) to be provided at a suitable distance from the new signalised intersection (see Figure 5), to be resolved after rezoning at any future DA submission.

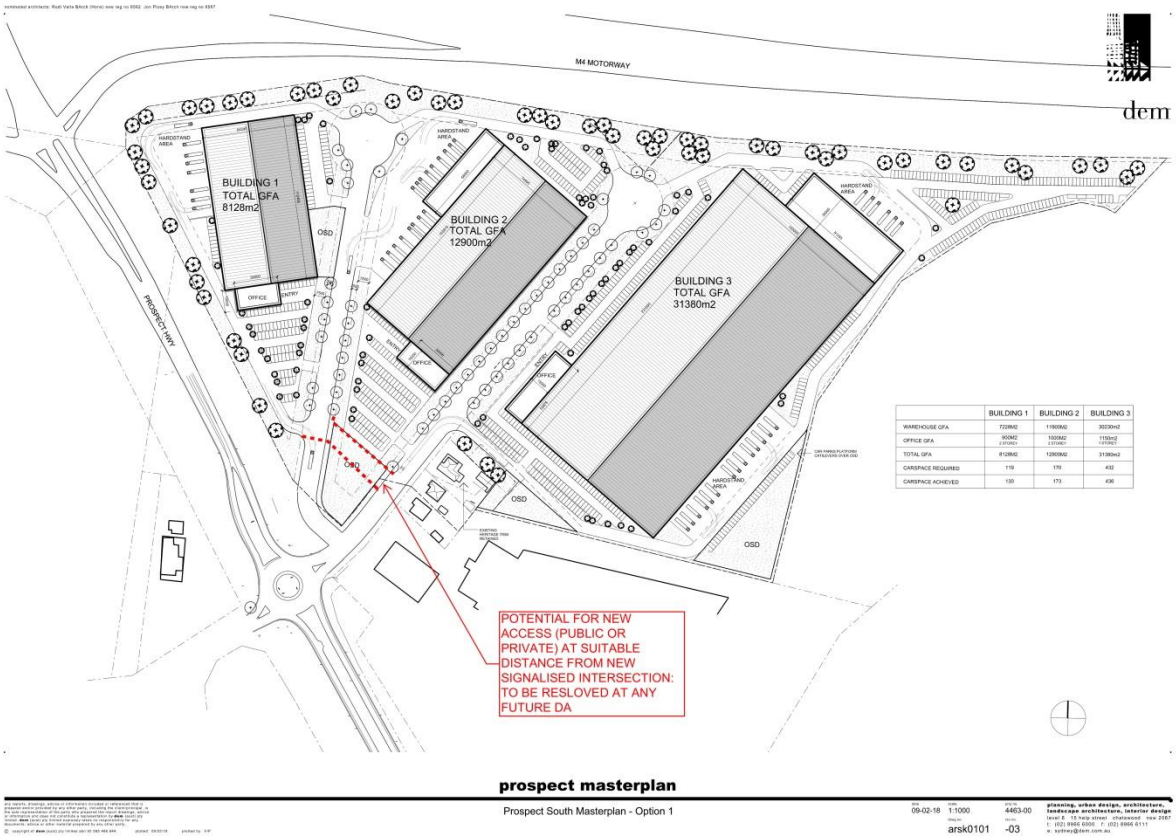


Figure 5 - Alternative Access Option

4. Existing Transport Facilities

4.1 Road Hierarchy

The subject site is located in the suburb of Prospect, and is primarily serviced by the State Roads such as the Great Western Highway (A44) and the Western Motorway (M4) as well as Regional Roads including Blacktown Road and Toongabbie Road. The site is also serviced by local roads managed by Council.

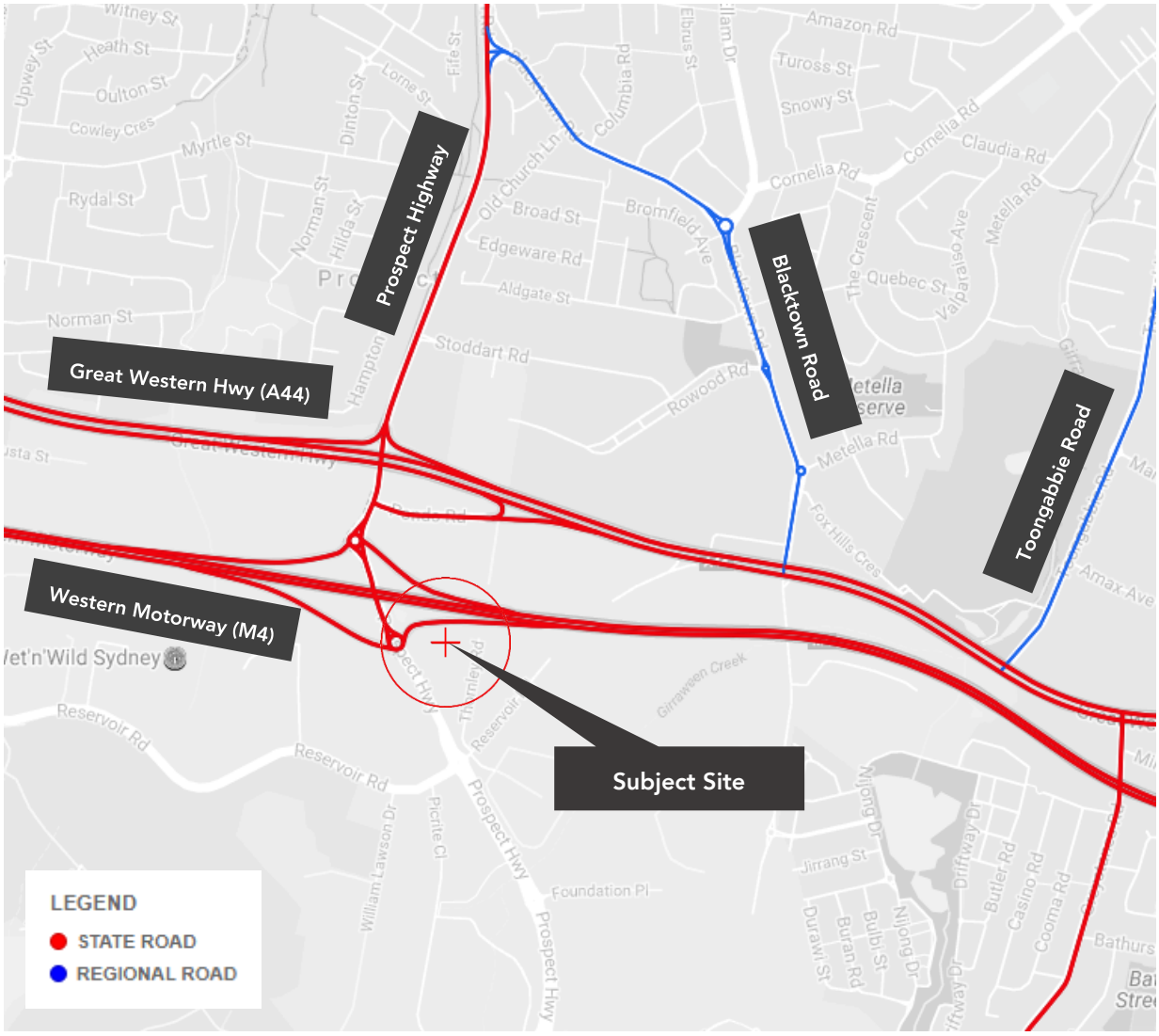


Figure 6 – Road Hierarchy (RMS Road Hierarchy Review)

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

State Roads	- Freeways and Primary Arterials (RMS Managed)
Regional Roads	- Secondary or sub arterials (Council Managed, Part funded by the State)
Local Roads	- Collector and local access roads (Council Managed)

Western Motorway (M4)	
Road Classification	State Road
Alignment	East - West
Number of Lanes	3 lanes in each direction
Carriageway Type	Divided
Carriageway Width	30m
Speed Limit	90 km/h
School Zone	No
Parking Controls	N/A
Forms Site Frontage	Yes

Figure 7 – Western Motorway – Eastbound

Great Western Highway (A44)	
Road Classification	State Road
Alignment	East - West
Number of Lanes	3 lanes in each direction
Carriageway Type	Divided
Carriageway Width	35m
Speed Limit	80 km/h
School Zone	No
Parking Controls	No Parking
Forms Site Frontage	No

Figure 8 – Great Western Highway (A44) - Eastbound

Prospect Highway	
Road Classification	State Road
Alignment	North – South
Number of Lanes	2 lanes in each direction (varies)
Carriageway Type	Divided
Carriageway Width	15m (varies)
Speed Limit	60 km/h
School Zone	No
Parking Controls	No Stopping
Forms Site Frontage	Yes

Figure 9 – Prospect Highway – Northbound

Reservoir Road	
Road Classification	Local Road
Alignment	East - West
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	12.5m
Speed Limit	60 km/h
School Zone	No
Parking Controls	No Stopping
Forms Site Frontage	Yes

Figure 10 – Reservoir Road – Westbound

4.2 NSW B-double Truck Routes

The RMS Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map presents the NSW roads which are approved for access by B-double trucks of lengths varying between 19m and 26m. A map of the B-double (up to 26m length) road network within the vicinity of the site is shown in Figure 11.

For B-double access outside of the approved network, a B-double permit application will need to be lodged with the National Heavy Vehicle Regulator (NHVR). This would include both Reservoir and Thornley Roads, however, given the proposed land use and road upgrades, it is not anticipated to be a major issue in the future.

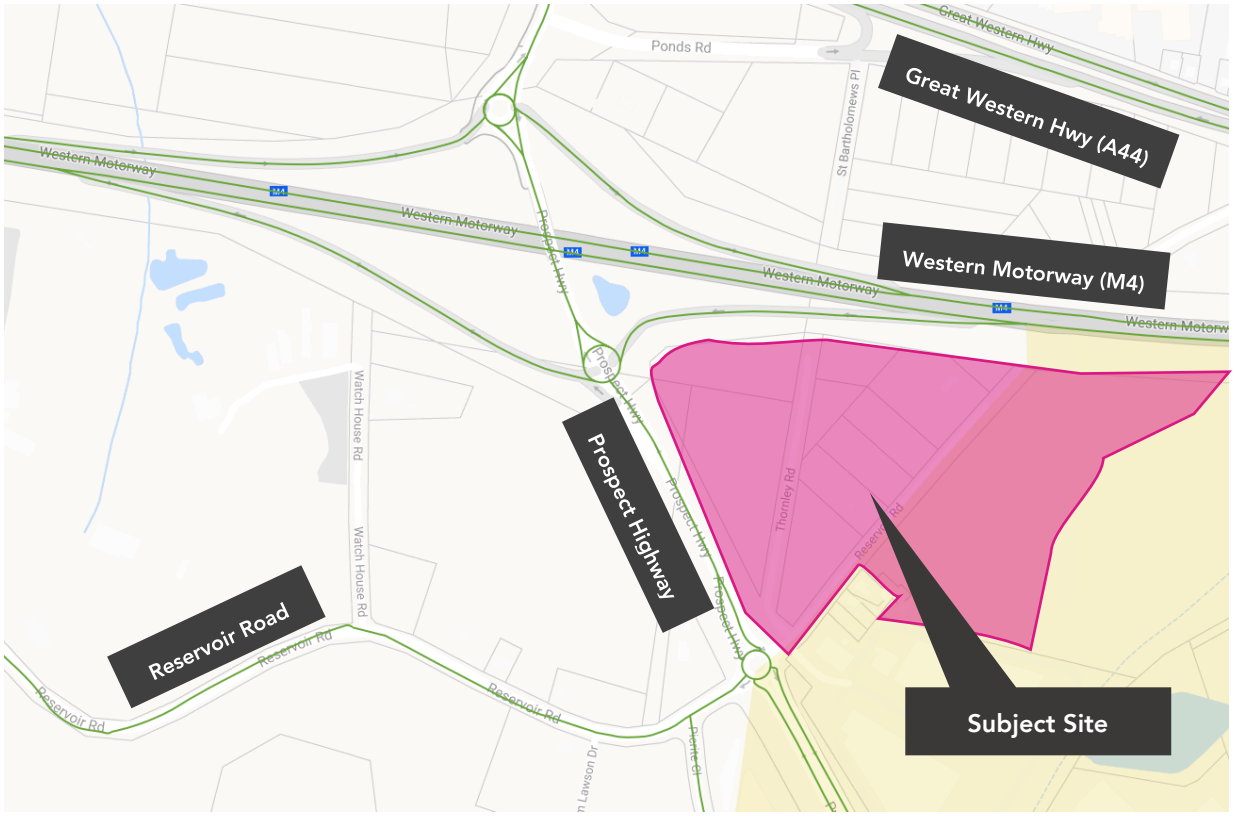


Figure 11 - NSW Approved B-double Route Map (Source: RMS Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map

4.3 Public Transport

The locality was assessed in the context of available forms of public transport that may be utilised by prospective workers and customers. When defining accessibility, the NSW Guidelines to Walking & Cycling (2004) suggest that 400m-800m is a comfortable walking distance.

4.3.1 Bus Services

A review of the bus services operating within the immediate vicinity of the site has been undertaken. Currently, the closest bus stop is located within a 10 minute walk (750m) on Prospect Highway. Another three bus stops are located approximately 500m to 800m away from the subject site; however, currently there is no footpath to connect these with the development area. Three bus services were identified to be operating in the surroundings, with the bus stop locations shown in Figure 12. A summary of the new services applicable from 26 November 2017 is shown in Table 1.

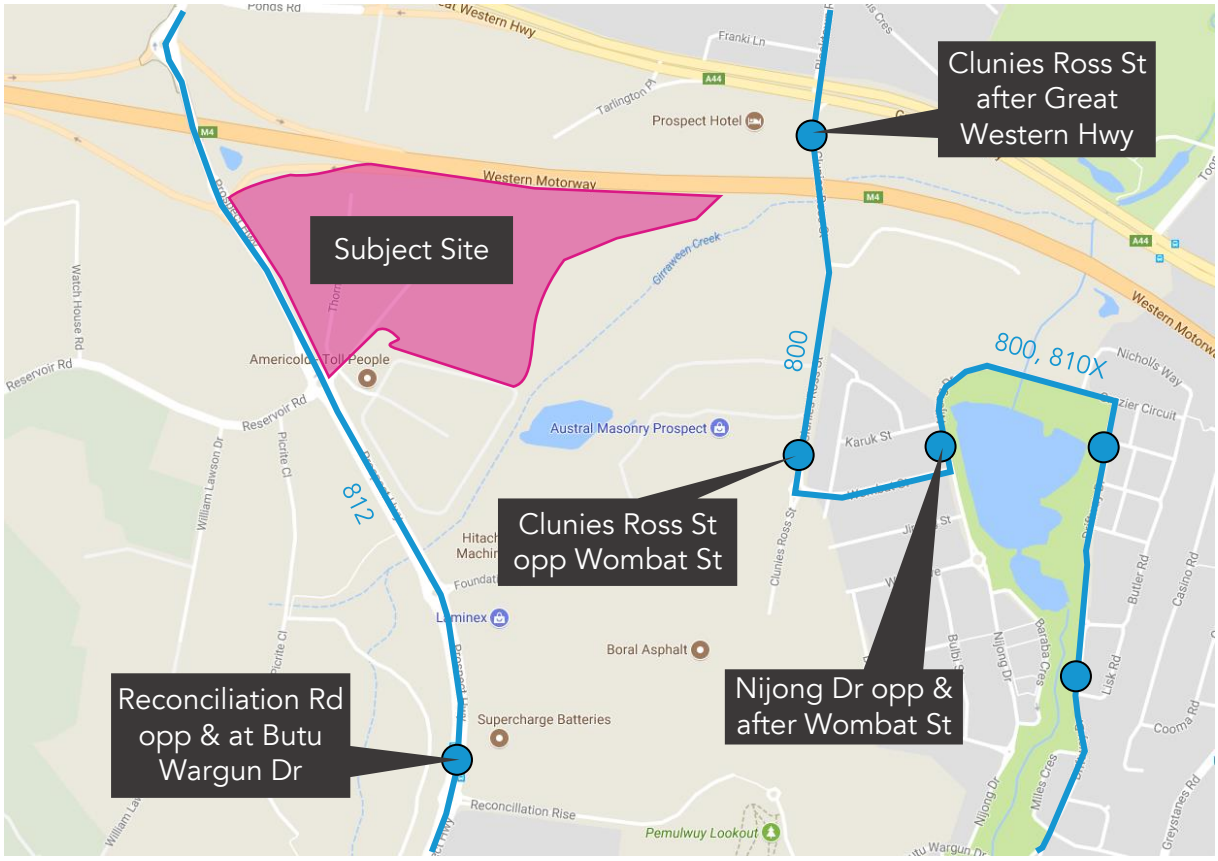


Figure 12 - Local Bus Stops

Table 1 – Bus Service Summary

Route No.	Frequency (approximate)	Coverage
800	Mon-Fri: 15-30 minute intervals, between 5:39am and 8:32pm Sat & Sun: 30 minute intervals, between 6:29am and 7:54pm	Blacktown to Fairfield via Wetherill Park
810X	Mon-Fri: 5 services in morning peak, between 6:10am and 7:49am 2 services in afternoon peak, at 4:00pm and 5:20pm	Merrylands to Parramatta via Great Western Hwy
812	Mon-Fri: every 30 minutes during peak periods only, between 5:40am and 9:23am & between 2:59pm and 8:56pm.	Fairfield to Blacktown

In light of the above, the subject site is relatively well located in terms of access to public transport services.

4.4 Active Travel

In addition to public transport, the locality was also assessed for its active transport potential.

In terms of public infrastructure, the local road network offers a relatively good level of amenity and safety for pedestrians, providing separated footpaths on at least one side of the carriageway, pedestrian crossings, supporting signage and appropriate lighting throughout the locality. It is noted, however, that pedestrian crossings are not provided at the Prospect Hwy/Reservoir Road roundabout.

A review of the local cycling network identifies a number of dedicated on-road and off-road shared cycle paths within the vicinity of the site. Particularly the link to the north towards Blacktown is well established, offering an off-road shared path. The path along Prospect Road, southbound of the subject site provides a link to the southern residential area. A map of the local cycling infrastructure is presented in Figure 13.

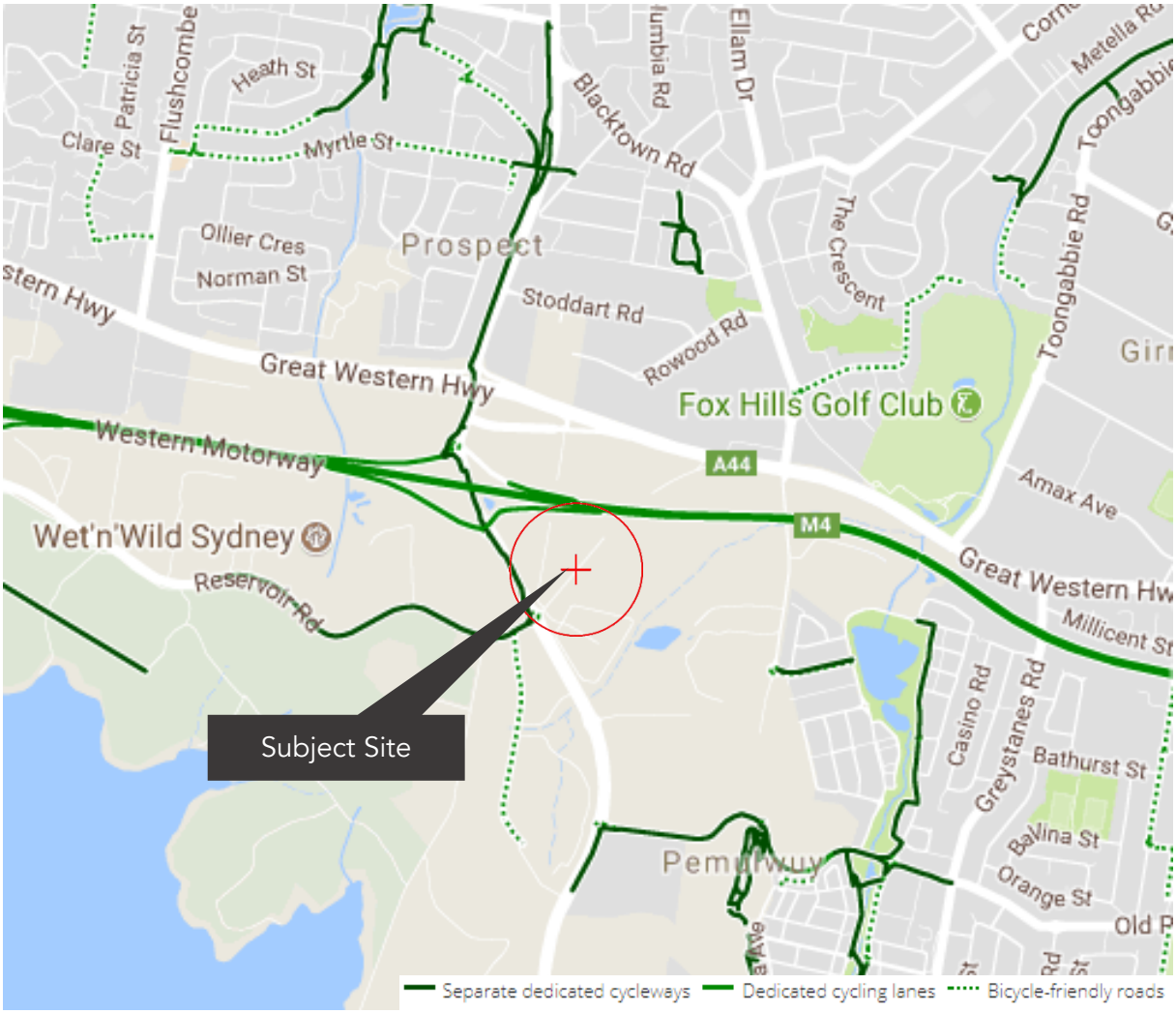


Figure 13 – Local Bicycle Network (Source: SydneyCycleWays, Nov 2017)

5. Traffic Impact Assessment

The potential traffic generation of the proposed development has been estimated with reference to the following:

- RMS Guide to Traffic Generating Developments 2002 (RMS Guide)
- Technical Direction TDT 2013/04

The technical direction contains the most recent RMS survey data for various land uses.

5.1 Existing Traffic Conditions

In order to determine the existing traffic conditions within the road network serving the subject site, traffic count surveys were undertaken at the following intersections (see Figure 14):

1. Prospect Hwy / Reservoir Rd (roundabout); and
2. Prospect Hwy / M4 Interchange (both ramps south of M4) (signalised).

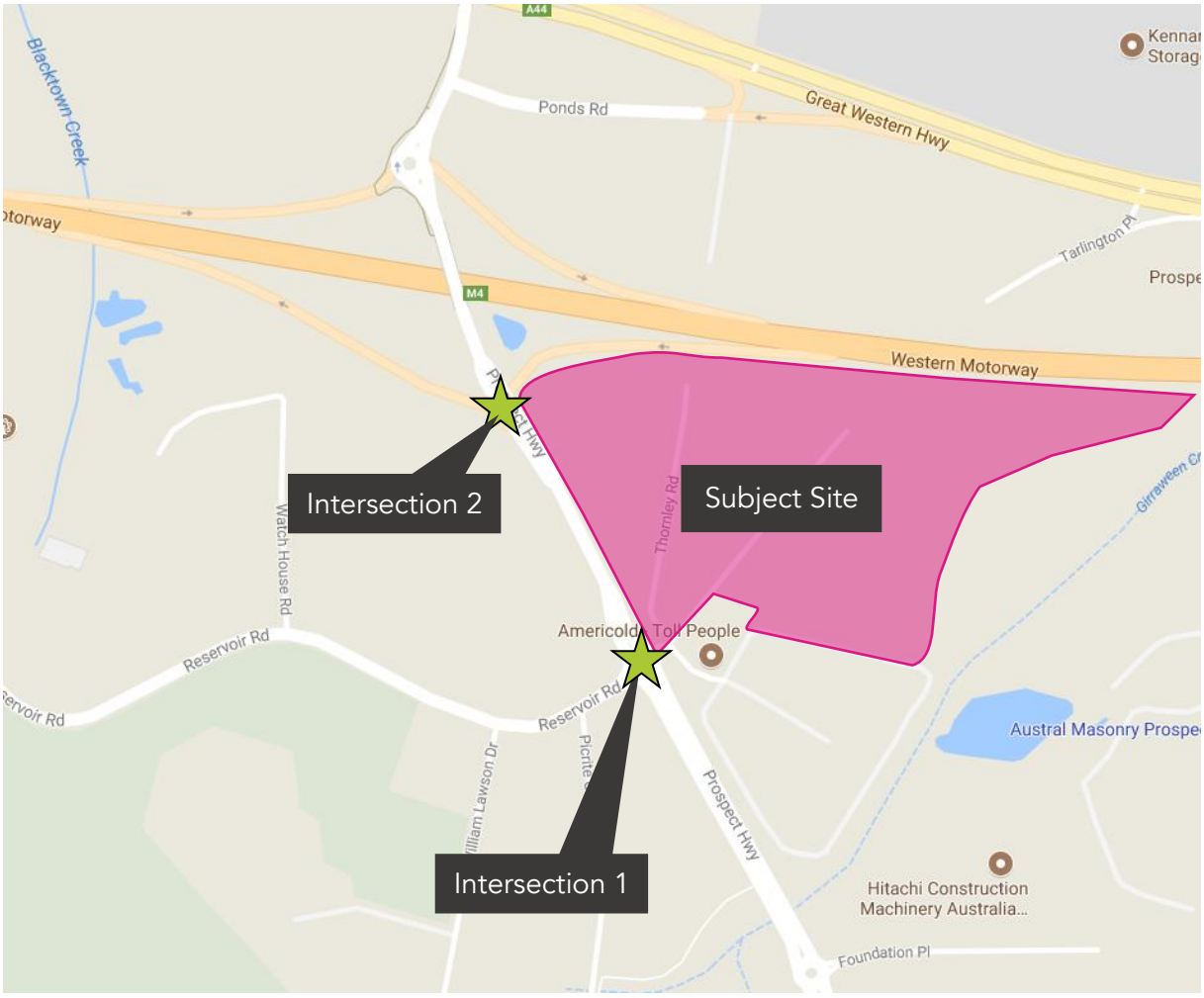


Figure 14 – Traffic Count Surveyed Intersections

The surveys were undertaken on Tuesday, 14 November 2017 in the morning and evening peak hour periods at 7am-9am and 4pm-6pm (non-school holiday period). Due to the surrounding industrial land use,

light and heavy vehicles were recorded separately in the survey. A summary of the SIDRA calculations can be found in Attachment 1.

5.2 Existing Traffic Generation

Currently, the site is mostly unoccupied and thus does not generate any traffic.

5.3 Proposed Traffic Generation

In the course of the proposed rezoning and the following development, the entire land area is planned to be used for industrial purposes. As it is the intention of the OSL to match the adjoining land use, for the purpose of this report, the traffic generation rates of warehouses are adopted in order to calculate the future traffic generation (section 3.10.2 of the RMS Guide).

It should be noted that the traffic generation can vary significantly depending on particular businesses operating in the area. For example, according to the RMS Guide, warehouses where retailing from the site is permitted or with a major manufacturing system, the traffic generation rates increase.

In order to calculate the future traffic generation, the gross floor area (GFA) of the site is required. It is noted that only conceptual plans are available at this stage; the plans illustrate approximately 55,000m^2 GFA which is equivalent to 45% of the total 12.2 Ha site area. **ptc.** has included an additional 10% buffer, adopting 55% of the total site area as the GFA for a conservative approach when assessing the potential traffic activity. Following this, the total GFA adopted is 67,100m^2 (12.2 Ha x 55%).

Based on the above, the future traffic activity is calculated in Table 2.

Table 2 – Proposed Traffic Generation

Component	Period	Vehicle Trip Rate	GFA	Proposed Trips
Warehouse	Morning Peak Hourly (AM)	0.5 / 100m^2 GFA	67,100m^2	336 (335.5)
	Daily	4 / 100m^2 GFA		2684

5.4 Traffic Modelling

5.4.1 Traffic Distribution

In regards to traffic distribution, the following assumptions for the AM / PM peak hourly flows were made:

- AM peak hour: 80% of trips inbound;
  20% of trips outbound;
- PM peak hour: 30% of trips inbound;
  70% of trips outbound.

The following trip assignment is proposed for all vehicles arriving and departing from the subject site in the morning and evening peak hour, respectively (see Figure 15):

- 0% west onto Reservoir Rd. This road is not constructed for heavy vehicles and thus should be closed off for such traffic;
- 40% south onto Prospect Hwy, towards Wetherill Park, Liverpool, Bankstown;

- 60% north onto Prospect Hwy, towards M4 and Bankstown;
- 18% west onto M4, towards Penrith;
- 42% north, of which:
    - 18% turn right onto M4, towards Parramatta and Sydney;
    - 24% continue north towards Blacktown.

Figure 15 – Traffic Distribution for Post Development Subject Site

5.4.2 SIDRA Calculations

Typically, there are three performance indicators used to summarise the performance of an intersection, being:

- Degree of Saturation (DoS) – The total usage of the intersection expressed as a factor of 1 with 1 representing 100% vehicles/capacity (v/c). (e.g. 0.8=80% saturation)
- Average Delay – The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- Level of Service (LoS) – This is a categorisation of average delay, intended for simple reference. The RMS adopts the following bands:

Table 3 – Level of Service (LoS) Definitions by RMS

LoS	Average Delay (secs/vehicle)	Traffic Signals Roundabout	Give Way & Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays & 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 will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Unsatisfactory with excessive queuing. Requires additional capacity	Unsatisfactory with excessive queuing; requires other control mode

The RMS Guide gives a trip generation rate for warehouses for the morning peak hour only. However, for the purpose of this report, it is assumed that the number of trips occurring in the mornings will remain at a similar level in the evenings. Based on this, the proposed trip generation determined in Table 2 will be used for both the AM and the PM peak hour traffic calculation.

As the proposed land use will be either light or general industrial, a relatively high rate of heavy vehicles is to be expected. For the purpose of this report the following ratio is adopted:

- 60% light vehicles;
- 40% heavy vehicles.

The AM and PM peak hour periods adopted for the traffic modelling are 7:00am – 8:00am and 4:00pm – 5:00pm, respectively.

It should be noted that a redevelopment of the intersection Prospect Hwy / M4 Interchange has been approved and will occur in the near future. For this reason, the post development SIDRA calculations were undertaken in consideration of the new intersection layout.

The SIDRA results for both intersections are summarised in Table 4 which shows the lane Level of Service for both the AM and the PM peak hours. A more detailed summary of the SIDRA calculations can be found in **Attachment 4.**

Table 4 – SIDRA Results Summary

Intersection Number	Intersection	Time	Period	Level of Service	Average Delay (s)	Degree of Saturation (%)	95% Queue Length (m)
1	Prospect Hwy / M4 Interchange	AM Peak	Existing	C	25.0	0.857	146.0
			Future	C	20.3	0.790	72.8
		PM Peak	Existing	F	82.7	1.014	552.0
			Future	C	28.7	0.886	126.6
2	Prospect Hwy / Reservoir Rd	AM Peak	Existing	F	94.5	1.143	730.9
			Future	E	56.9	0.908	292.2
		PM Peak	Existing	C	32.5	1.016	485.3
			Future	D	48.8	0.889	362.9

The traffic impacts on each intersection is summarised below:

5.4.3 Prospect Highway/M4 Interchange

In the existing scenario, the intersection of the Prospect Highway/M4 Interchange is currently operating at LOS C in the AM peak with an average vehicle delay of 25 seconds and a 95th percentile queue length of 146m. In the PM peak, the intersection is operating at capacity (DoS of 1.014) with LOS F, and increased average delay to 82.7 seconds and a queue length of 552.0m. It is noted that the future Prospect Highway Upgrade will assist in improving the traffic conditions at the intersection by the addition of a through-lane to the northern approach arm.

In the future scenario, the geometry of the intersection has been revised to reflect future layout as part of the Prospect Highway Upgrade. In the AM peak period, the intersection is operating at LOS C with an average delay of 20.3 seconds and a queue of 72.8m. The results of the future model indicate a considerable improvement in the operation of the intersection during the PM peak with an average delay of 28.7 seconds and a queue length of 126.6m. In the existing scenario, the intersection is operating at capacity; however, after the widening of the Prospect Highway, the intersection has spare capacity even with the addition of the development generated traffic.

5.4.4 Prospect Highway/Reservoir Road

The existing scenario has been modelled based on the current layout of the Prospect Highway/Reservoir Road as a four-arm, unsignalised roundabout. In the AM peak, the intersection is operating beyond capacity (DoS of 1.143) and an average delay of 94.5 seconds. A queue length of 730.9m associated with the northern Prospect Highway approach arm is observed, which extends north towards Ponds Road. During the PM peak, the intersection is operating at LOS C with an average delay of 32.5 seconds and queue of 485.3m.

As part of the Prospect Highway Upgrade, the roundabout is proposed to be converted into a four-arm signalised intersection with the provision of additional north-south and east-west lanes to improve traffic throughput.

In the future AM peak, the intersection is operating at LOS E with road users experiencing an average delay of 56.9 seconds and queue of 292.2m. This is a significant improvement in the performance of the intersection when compared with the existing scenario with approximately 10% spare capacity.

The future model also indicates similar improvements in the performance of the intersection during the PM peak. The signalised intersection is forecast to operate at LOS D, with an average delay of 48.8 seconds and reduced queue length of 362.9m. It is acknowledged that increased delays are experienced; however, the upgrade to the road infrastructure allows the intersection to operate at an acceptable level of service with 11% spare capacity. As such, this is a notable improvement when compared to the existing performance of the intersection.

5.5 Traffic Impact Summary

Overall, the SIDRA analysis indicates that the intersection of Prospect Hwy/M4 Interchange will operate at a good level of service during both the AM and PM peaks with acceptable delays and spare capacity, despite the additional 336 trips during peak hour generated by the proposal. Based on the SIDRA modelling, it has been determined that the new layout of this intersection will lead to a general improvement in the traffic flow in terms of queuing, particularly in the evening peak hour.

The upgrade to the Prospect Highway also has notable improvements on the performance of the Prospect Highway/Reservoir Road. The introduction of additional north-south through lanes has resulted in a significant decrease in queuing along the northern approach arm. Furthermore, additional capacity in the intersection will be achieved as a result of the upgrade, with approximately 10% spare capacity in both the AM and PM peak periods.

6. Parking Provision

6.1 Car Parking Planning Policy

The proposed development is subject to the parking provision rates stipulated in Part A, Section 6 of the Blacktown Development Control Plan 2015 (BDCP), which are outlined below:

- 1 space per 75m^2 GFA for light, general and heavy industry and warehouse or distribution centre; and
- 1 space per 40m^2 GFA for the office component.

In addition to this, the Building Code of Australia 2016 (BCA) outlines the required parking provisions for people with disabilities. Since the subject site shall be zoned as light or general industrial, it can be assumed that the buildings will carry any of the following classifications:

- Class 5: an office building used for professional or commercial purposes, excluding buildings of Class 6, 7, 8 or 9;
- Class 6: a shop or other building for the sale of goods by retail or the supply of services direct to the public;
- Class 7b: a building which is for storage, or display of goods or produce for sale by wholesale;
- Class 8: a laboratory, or a building in which a handicraft or process for the production, assembling, altering, repairing, packing, finishing, or cleaning of goods or produce is carried on for trade, sale, or gain.

In light of this, the following accessible car parking provision needs to be satisfied:

- 1 space for every 100 car parking spaces or part thereof for building classes 5, 7 and 8;
- 1 space for every 50 car parking spaces or part thereof for building class 6.

It is noted that the BDCP outlines requirements for accessible car parking provision within Part E - Development in Industrial Zones: Section 4.8. The BDCP states that developments providing 50 or more parking spaces must provide at least 2% or part thereof of those spaces for users with a disability. In accordance with this requirement, a minimum of 2% of total car parking provision are to be accessible parking spaces.

6.1.1 Parking Requirement

The Prospect Masterplan (see **Attachment 2**) presents a concept development proposal. Based on the parking provision rates stipulated in Part A – Section 6 of the BDCP and GFA for each land use, the number of parking spaces required is outlined in the following table:

Table 5 - Car Parking Provision Summary

Building No.	Land Use Component	GFA	BDCP Minimum Parking Rate	BDCP Minimum Parking Provision Requirement	Proposed Parking Provision
Building 1	Light or general industry (including warehouse)	7,228m^2	1 space / 75m^2 GFA	96.4	130
	Office Component	900 m^2	1 space / 40m^2 GFA	22.5	
			Total Building 1	**119** ***(118.9)***	
Building 2	Light or general industry (including warehouse)	11,900m^2	1 space / 75m^2 GFA	158.7	173
	Office Component	1,000 m^2	1 space / 40m^2 GFA	25	
			Total Building 2	**184** ***(183.7)***	
Building 3	Light or general industry (including warehouse)	30,230 m^2	1 space / 75m^2 GFA	403.1	436
	Office Component	1,150 m^2	1 space / 40m^2 GFA	28.8	
			Total Building 3	**432** ***(431.9)***	
			Total Parking Provision	**735**	**739**

Given the conceptual nature of the Masterplan being indicative only, the detailed parking provision requirements (including accessible parking provisions) can be finalised during detailed design stage.

6.2 Bicycle Parking Planning Policy

Blacktown Council promotes cycling as a healthy transport alternative and as such states the following in the BDCP:

> *"Applicants are encouraged to incorporate, in the design of their buildings, safe storage/parking areas for bicycles, with adequate shower and change facilities provided for staff (where appropriate)."*

6.3 Servicing

In terms of service vehicle areas, the BDCP provides the following information:

> *"Service vehicle areas should be provided off-street with convenient access. In larger developments, service areas should operate independently of other parking areas. This includes access for inspections and cleaning of integrated water cycle management and water sensitive urban design measures incorporated into roadways."*

An assessment of the bicycle and servicing requirements is to be undertaken at a later stage once further details of the proposal are determined.

7. Access and Car Park Assessment

All parking spaces of new developments need to comply with Australian standards, such as:

- AS2890.1:2004 *(Off-street car parking)*;
- AS2890.2: 2002 *(Off-street commercial vehicle facilities)*
- AS2890.3:2015 *(Bicycle Parking);*
- AS2890.6: 2009 *(Parking facilities - Off-street parking for people with disabilities).*

In order to submit a development application to Council, a detailed access and car park assessment needs to be prepared. For the purpose of this report such an assessment is not required, but will be necessary in a later stage.

The assessment will require a discussion and examination of the following:

- Vehicular access & circulation;
- Sight distance;
- Car park arrangement for cars, motorcycles and bicycles.

8. Conclusion

ptc. has been engaged by the Office of Strategic Lands (on behalf of Minister for Planning) to provide a Traffic Impact Assessment to accompany the Planning Proposal for the rezoning of land comprising a total of 16 properties totalling an area of approximately 12.2 Ha in Prospect.

A review of the proposed infrastructure upgrades within the vicinity of the subject site indicated that the NSW Government is planning a 3.6km upgrade of Prospect Highway, between Reservoir Road, Prospect and St Martin's Crescent, Blacktown. The Prospect Highway Upgrade will support the growth of the region benefit future employees and visitors to meet the future needs of Western Sydney.

The Prospect Masterplan presents the proposed vehicular access arrangements to the site which allows access via Thornley Road and Reservoir Road. An internal ring-road configuration has also been adopted to allow circulation of vehicles around the perimeter of each building. An alternative access option has also been identified to mitigate potential for queuing along Thornley Road due to the close proximity of the Thornley Road access from the intersection of Prospect Highway/Reservoir Road. It is acknowledged that the potential for a new access (public or private) at a suitable distance from the future signalised intersection of Prospect Highway/Reservoir Road is to be resolved at any future Development Application.

With reference to the most recent RMS survey data, a review of the potential traffic generation of the site revealed that the development will lead to a net traffic generation of 336 trips during the peak hour. In order to assess the traffic circumstances associated with the proposal, intersection surveys and traffic modelling using SIDRA Intersection have been undertaken.

Overall, the SIDRA analysis indicates that the existing operation of the Prospect Highway/M4 Interchange and Prospect Highway/Reservoir Road are operating at capacity. However, the Prospect Highway Upgrade is anticipated to improve the performance of these intersections by the introduction of additional through-lanes to support the growing Prospect South Lands Precinct.

Based on the analysis, the intersections of Prospect Highway/M4 Interchange and Prospect Highway/Reservoir Road will operate at a reasonable level of service during both the AM and PM peaks with acceptable delays and spare capacity, despite the additional 336 trips during the peak hour generated by the proposal.

In accordance with the Blacktown DCP, the required parking provision rate associated with warehouses with associated office premises have been applied to the Masterplan concept proposal. Following this, a minimum car parking provision of 735 parking spaces applies to the subject development site. Further assessment of the parking provisions, as well as servicing requirements is to be undertaken during the submission of future Development Applications.

In light of the above, the proposed development is considered acceptable and supportable in the context of traffic.

Attachment 1 Council Planning Proposal Requirements

Blacktown City Council
Growing with Pride

File no: F17/678

17 March 2017

Mr Jeffery Lord
DBL Property Pty Limited
Suite 2, Upper Ground Floor
437 Kent Street
Sydney NSW 2000

Dear Sir,

Request for a Planning Proposal to rezone land in the vicinity of Thornley Road, Reservoir Road and Tarlington Place, Prospect

I am writing to you in response to our meeting on 16 February 2017 in which you outlined your proposal on behalf of the Office of Strategic Lands, to request an amendment to the *Blacktown Local Environmental Plan 2015* (BLEP 2015). We understand it is your request to change the zone from RU4 Rural Small Holdings to IN1 General Industrial or IN2 Light Industrial under BLEP 2015.

There are a number of matters that will need to be carefully considered in our assessment of your request. The attachment to this letter outlines the minimum information that we require to be submitted to enable us to consider your proposal.

If you would like to discuss this matter further, please contact Team Leader Release Areas Fiona McDermott on 9839 6117.

Yours faithfully,

Chris Shannon
Manager Strategic Planning

Council Chambers • 62 Flushcombe Road • Blacktown NSW 2148
Telephone: (02) 9839 6000 • **Facsimile:** (02) 9831-1961 • DX 8117 Blacktown
Email: council@blacktown.nsw.gov.au • **Website:** www.blacktown.nsw.gov.au
All correspondence to: The General Manager • PO Box 63 • Blacktown NSW 2148

Required information to be submitted to amend an environmental planning instrument

Proposal

- Amendment to *Blacktown Local Environmental Plan 2015* (BLEP 2015) to rezone land from RU4 Rural Small Holdings to IN1 General Industrial or IN2 Light Industrial

Location

- Land in the vicinity of Thornley Road, Reservoir Road, and Tarlington Place, Prospect

1. Documentation

We require a letter formally requesting the proposed amendments. We also require 3 paper copies and 1 electronic copy of all plans and documentation that is relevant to your request on either CD or USB.

2. Application Fee

Outlined below are our lodgement fees based on our current 2016/2017 Goods & Services Pricing Schedule. Should we proceed to consider and advertise the proposal, regardless of the outcome of this consideration, there will be no refund.

Application to amend environmental planning instrument	$100,000

3. Owner's consent

We require a signed letter of consent from all affected landowners to any formal request to us to consider your proposal.

4. Planning report

We require a report that provides an overview of the proposal that addresses the following matters:

a. a description of the proposal and explanation of the changes relevant environmental planning instruments

b. detailed analysis of the site and surrounding locality identifying all issues that need to be addressed (eg. site constraints and development barriers)

c. potential employment yield as a result of the proposal

d. explanation of intended development on the site if the proposal is successful

e. relevant plans, concept drawings, and / or photomontages demonstrating development that could occur as a result of the proposed amendment

f. explanation of potential impacts of the proposal and how these will be addressed

g. any proposed offer to enter into a voluntary planning agreement

h. any other relevant miscellaneous studies and/or documentation, including any correspondence from council to any pre-lodgement meeting.

5. Request for a planning proposal

We require an amendable version of a draft planning proposal prepared in accordance with the latest edition of the State Government's *Guide to Preparing Planning Proposals* and *Guide to Preparing Local Environmental Plans*, detailing:

a. a statement of the objectives and intended outcomes of the proposed instrument

b. an explanation of the provisions that are to be included in the proposed instrument

c. the justification for those objectives, outcomes and the process for their implementation, including:

   i. the need for the planning proposal
   ii. relationship to strategic planning framework
   iii. environmental, social and economic impact
   iv. State and Commonwealth interests

d. maps, where relevant, to identify the intent of the planning proposal and the area to which it applies

e. proposed community consultation, including consultation with government agencies

f. details of the public benefit that would result from the planning proposal.

6. Relevant supporting environmental impact studies

We understand you have undertaken previous investigations in this area. We require you to provide the following up to date environmental impact studies:

a. infrastructure services report demonstrating that there is sufficient capacity to service the area in terms of water, sewer and power
b. watercycle management strategy (drainage)
c. traffic and transport assessment
d. biodiversity assessment covering flora, fauna and riparian corridors
e. Aboriginal archaeology and European heritage
f. contamination and salinity.

7. Maps

PDF and GIS 'Shape' files for any proposed mapping amendment to an environmental planning instrument. The pdf and 'shape files' must meet the State Government's standard technical requirements for spatial datasets and maps.

8. Consideration

Should we proceed and Council resolves to prepare a planning proposal and we receive a Gateway Determination from the Department of Planning and Environment, this does not imply whatsoever that the planning proposal will ultimately be supported. We can vary or not proceed with the planning proposal at any time during our consideration of your proposal. Our final determination of your request will occur when Council has resolved to adopt the planning proposal and to forward it to the Minister for Planning to be made.

We refer you to Section 58 of the *Environmental Planning and Assessment Act 1979*:

> ***"58 Relevant planning authority may vary proposals or not proceed***
>
> *(1) The relevant planning authority may, at any time, vary its proposals as a consequence of its consideration of any submission or report during community consultation or for any other reason*
>
> *(2) If it does so, the relevant planning authority is to forward a revised planning proposal to the Minister*
>
> *(3) Further community consultation under section 57 is not required unless the Minister so directs in a revised determination under section 56*
>
> *(4) The relevant planning authority may also, at any time, request the Minister to determine that the matter not proceed."*

Scope of Works – Transport & Traffic Consultant

An initial brief Traffic Assessment of the site was carried out by Traffix, Traffic Engineers in 2007. This should be reviewed by the Consultant.

The Project Architect will prepare an initial scheme for the site and the consultant should allow to liaise with the Project Architect and Project Team to refine and develop the site plan.

The Consultant should then allow to:

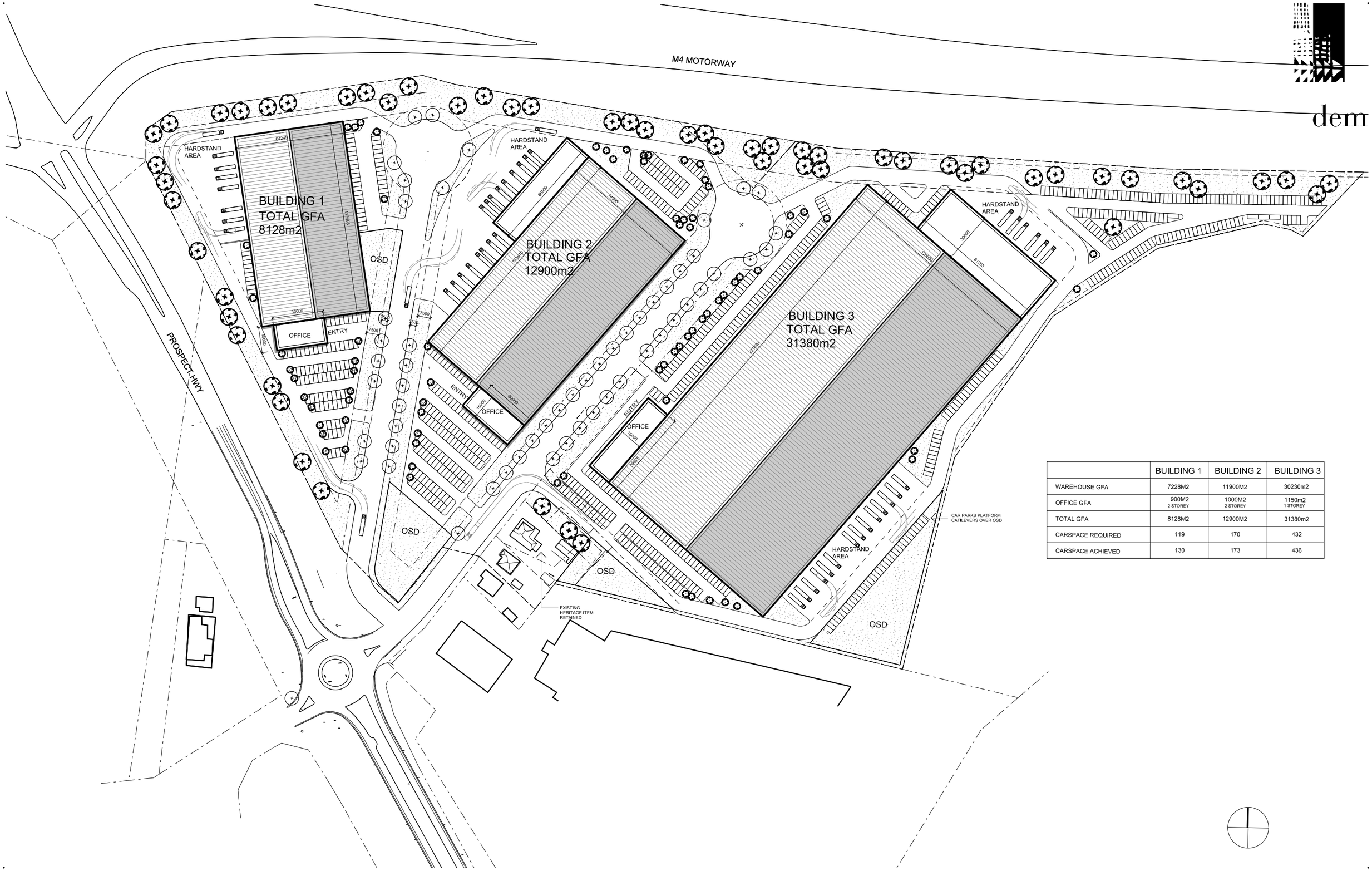
- Review and advise on the traffic, transport and access requirement or the development of the site;
- Liaise and obtain BCC/RMS requirements for access and traffic arrangements in the local area and provide advice to the Project Team on required road widths, intersection arrangements;
- Outline any external intersection improvements that might be required as a result of the development of the site;
- Prepare a draft and final report outlining the final resolution of all traffic, access, and public transport issues for the site and coordinate that input with the Project Architect and Planner;

The Consultant is required to produce a report and drawings suitable for inclusion as a specialist Appendix to the Planning Proposal.

Attachment 2 Prospect Masterplan

nominated architects: Rudi Valla BArch (Hons) nsw reg no 6582 Jon Pizey BArch nsw reg no 6567

dem



	BUILDING 1	BUILDING 2	BUILDING 3
WAREHOUSE GFA	7228M2	11900M2	30230m2
OFFICE GFA	900M2 2 STOREY	1000M2 2 STOREY	1150m2 1 STOREY
TOTAL GFA	8128M2	12900M2	31380m2
CARSPACE REQUIRED	119	170	432
CARSPACE ACHIEVED	130	173	436

prospect masterplan

Prospect South Masterplan - Option 1

plotted: 09/02/18 plotted by: VIP

date 09-02-18 scale 1:1000 drwg no. arsk0101 proj no. 4463-00 rev no. -03

planning, urban design, architecture, landscape architecture, interior design
level 8 15 help street chatswood nsw 2067
t: (02) 8966 6000 f: (02) 8966 6111
e: sydney@dem.com.au

Attachment 3 SIDRA Results – Existing Scenario

MOVEMENT SUMMARY

Site: 101 [1. Prospect Hwy / M4 Interchange - Existing AM]

Existing AM Peak
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Prospect Hwy (S)											
1	L2	207	56.9	0.455	22.8	LOS C	4.9	50.9	0.82	0.78	39.7
2	T1	575	31.1	0.857	26.5	LOS C	16.5	146.0	0.95	1.00	34.4
Approach		782	38.0	0.857	25.5	LOS C	16.5	146.0	0.91	0.94	36.1
East: M4 Off-Ramp (E)											
4	L2	369	18.5	0.506	10.2	LOS B	5.1	41.0	0.61	0.75	48.9
5	T1	1	0.0	0.854	33.2	LOS C	10.2	76.9	1.00	1.00	36.7
6	R2	591	8.7	0.854	38.8	LOS D	10.2	76.9	1.00	1.00	31.3
Approach		961	12.5	0.854	27.8	LOS C	10.2	76.9	0.85	0.91	36.8
North: Prospect Hwy (N)											
8	T1	553	13.9	0.515	7.5	LOS A	9.4	73.9	0.62	0.55	49.5
9	R2	437	11.3	0.847	40.2	LOS D	7.5	57.7	1.00	1.00	31.2
Approach		989	12.8	0.847	21.9	LOS C	9.4	73.9	0.79	0.75	38.2
All Vehicles		2733	19.9	0.857	25.0	LOS C	16.5	146.0	0.85	0.86	37.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1S	South Slip/Bypass Lane Crossing	53	10.2	LOS B	0.1	0.1	0.58	0.58
P4	West Full Crossing	53	16.2	LOS B	0.1	0.1	0.73	0.73
All Pedestrians		105	13.2	LOS B			0.66	0.66

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 102 [2. Prospect Hwy / Reservoir Rd - Existing AM]

Existing AM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Prospect Hwy (S)											
1	L2	134	20.5	0.734	5.7	LOS A	9.6	87.2	0.69	0.54	50.8
2	T1	736	36.5	0.734	6.3	LOS A	9.6	87.2	0.69	0.54	50.3
3	R2	7	57.1	0.734	11.1	LOS B	9.6	87.2	0.69	0.54	48.7
Approach		877	34.2	0.734	6.2	LOS A	9.6	87.2	0.69	0.54	50.4
East: Reservoir Rd (E)											
4	L2	4	100.0	0.136	29.9	LOS C	0.8	9.9	0.95	0.98	35.1
5	T1	5	80.0	0.136	28.3	LOS C	0.8	9.9	0.95	0.98	37.9
6	R2	15	78.6	0.136	32.6	LOS C	0.8	9.9	0.95	0.98	34.0
Approach		24	82.6	0.136	30.7	LOS C	0.8	9.9	0.95	0.98	35.1
North: Prospect Hwy (N)											
7	L2	15	21.4	1.143	150.6	LOS F	91.2	730.9	1.00	3.85	13.2
8	T1	787	17.6	1.143	150.7	LOS F	91.2	730.9	1.00	3.85	13.7
9	R2	91	9.3	1.143	154.6	LOS F	91.2	730.9	1.00	3.85	15.3
Approach		893	16.9	1.143	151.1	LOS F	91.2	730.9	1.00	3.85	13.8
West: Reservoir Rd (W)											
10	L2	57	20.4	1.100	139.4	LOS F	56.8	439.0	1.00	3.10	16.0
11	T1	14	38.5	1.100	140.9	LOS F	56.8	439.0	1.00	3.10	16.3
12	R2	517	10.6	1.100	143.4	LOS F	56.8	439.0	1.00	3.10	16.7
Approach		587	12.2	1.100	142.9	LOS F	56.8	439.0	1.00	3.10	16.6
All Vehicles		2381	22.8	1.143	94.5	LOS F	91.2	730.9	0.89	2.42	20.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [1. Prospect Hwy / M4 Interchange - Existing PM]

Existing PM Peak
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Prospect Hwy (S)											
1	L2	367	9.7	0.526	39.8	LOS D	19.6	148.7	0.79	0.81	33.3
2	T1	872	6.9	1.002	87.7	LOS F	74.5	552.0	0.94	1.12	17.3
Approach		1239	7.7	1.002	73.5	LOS E	74.5	552.0	0.90	1.03	21.1
East: M4 Off-Ramp (E)											
4	L2	188	30.2	0.217	7.1	LOS A	1.9	16.3	0.19	0.60	51.3
5	T1	3	0.0	1.001	118.7	LOS F	25.6	187.0	1.00	1.08	19.7
6	R2	557	4.9	1.001	122.7	LOS F	31.0	226.3	1.00	1.08	16.1
Approach		748	11.3	1.001	93.6	LOS F	31.0	226.3	0.80	0.96	19.8
North: Prospect Hwy (N)											
8	T1	355	31.2	0.293	6.5	LOS A	8.2	72.7	0.35	0.31	50.8
9	R2	617	6.0	1.014	131.9	LOS F	33.9	249.6	1.00	1.11	15.3
Approach		972	15.2	1.014	86.1	LOS F	33.9	249.6	0.76	0.82	19.4
All Vehicles		2959	11.1	1.014	82.7	LOS F	74.5	552.0	0.83	0.94	20.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1S	South Slip/Bypass Lane Crossing	53	19.8	LOS B	0.1	0.1	0.51	0.51
P4	West Full Crossing	53	28.3	LOS C	0.1	0.1	0.61	0.61
All Pedestrians		105	24.0	LOS C			0.56	0.56

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 102 [2. Prospect Hwy / Reservoir Rd - Existing PM]

Existing PM Peak
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Prospect Hwy (S)											
1	L2	292	9.7	1.016	34.5	LOS C	64.8	485.3	1.00	1.09	36.2
2	T1	1069	7.6	1.016	34.7	LOS C	64.8	485.3	1.00	1.09	33.9
3	R2	2	100.0	1.016	43.6	LOS D	64.8	485.3	1.00	1.09	33.3
Approach		1363	8.2	1.016	34.7	LOS C	64.8	485.3	1.00	1.09	34.5
East: Reservoir Rd (E)											
4	L2	6	50.0	0.060	10.6	LOS B	0.4	3.3	0.75	0.71	44.8
5	T1	7	42.9	0.060	10.5	LOS B	0.4	3.3	0.75	0.71	48.1
6	R2	25	16.7	0.060	13.9	LOS B	0.4	3.3	0.75	0.71	46.2
Approach		39	27.0	0.060	12.7	LOS B	0.4	3.3	0.75	0.71	46.3
North: Prospect Hwy (N)											
7	L2	17	81.2	0.497	6.8	LOS A	3.8	34.0	0.47	0.55	47.0
8	T1	427	32.5	0.497	6.1	LOS A	3.8	34.0	0.47	0.55	50.9
9	R2	102	16.5	0.497	10.0	LOS B	3.8	34.0	0.47	0.55	52.0
Approach		546	31.0	0.497	6.8	LOS A	3.8	34.0	0.47	0.55	51.0
West: Reservoir Rd (W)											
10	L2	148	7.8	0.911	71.2	LOS F	15.6	118.9	1.00	1.58	24.6
11	T1	5	60.0	0.911	75.9	LOS F	15.6	118.9	1.00	1.58	25.0
12	R2	138	10.7	0.911	76.0	LOS F	15.6	118.9	1.00	1.58	25.6
Approach		292	10.1	0.911	73.5	LOS F	15.6	118.9	1.00	1.58	25.1
All Vehicles		2240	14.3	1.016	32.5	LOS C	64.8	485.3	0.87	1.02	35.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Attachment 4 SIDRA Results – Post Development Scenario

MOVEMENT SUMMARY

Site: 101 [1. Prospect Hwy / M4 Interchange - Development AM]

Development AM Peak
Signals - Fixed Time Isolated Cycle Time = 50 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Prospect Hwy (S)											
1	L2	220	56.0	0.701	27.8	LOS C	5.6	58.0	0.97	0.91	37.3
2	T1	604	31.5	0.790	24.1	LOS C	8.2	72.8	0.99	0.99	35.8
Approach		824	38.1	0.790	25.1	LOS C	8.2	72.8	0.99	0.96	36.3
East: M4 Off-Ramp (E)											
4	L2	420	21.1	0.571	9.4	LOS A	4.9	40.5	0.65	0.76	49.5
5	T1	1	0.0	0.777	24.0	LOS C	7.9	59.3	1.00	0.95	40.4
6	R2	591	8.7	0.777	29.6	LOS C	7.9	59.3	1.00	0.95	35.2
Approach		1012	13.8	0.777	21.2	LOS C	7.9	59.3	0.85	0.87	40.4
North: Prospect Hwy (N)											
8	T1	672	18.5	0.410	7.2	LOS A	5.6	45.8	0.61	0.53	49.9
9	R2	437	11.3	0.706	29.4	LOS C	5.6	43.2	0.99	0.88	35.3
Approach		1108	15.7	0.706	15.9	LOS B	5.6	45.8	0.76	0.67	42.0
All Vehicles		2944	21.3	0.790	20.3	LOS C	8.2	72.8	0.85	0.82	39.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1S	South Slip/Bypass Lane Crossing	53	6.8	LOS A	0.0	0.0	0.52	0.52
P4	West Full Crossing	53	18.5	LOS B	0.1	0.1	0.86	0.86
All Pedestrians		105	12.7	LOS B			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 102 [2. Prospect Hwy / Reservoir Rd - Development AM]

Development AM Peak
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Prospect Hwy (S)											
1	L2	127	20.5	0.802	54.6	LOS D	30.3	270.0	0.97	0.91	29.8
2	T1	699	36.5	0.802	48.9	LOS D	30.3	270.0	0.94	0.88	28.0
3	R2	115	40.9	0.908	96.9	LOS F	9.8	92.6	1.00	0.99	18.6
Approach		941	34.9	0.908	55.6	LOS E	30.3	270.0	0.95	0.90	26.6
East: Reservoir Rd (E)											
4	L2	31	48.4	0.202	42.0	LOS D	1.6	16.5	0.93	0.73	30.1
5	T1	5	80.0	0.202	36.2	LOS D	1.6	16.5	0.93	0.73	33.4
6	R2	54	50.0	0.201	37.4	LOS D	2.3	23.0	0.88	0.74	27.9
Approach		90	51.1	0.202	38.9	LOS D	2.3	23.0	0.90	0.73	29.0
North: Prospect Hwy (N)											
7	L2	175	38.3	0.907	58.0	LOS E	29.7	253.8	1.00	1.00	25.6
8	T1	748	17.6	0.907	51.2	LOS D	31.1	250.4	1.00	1.01	27.3
9	R2	86	9.3	0.325	79.4	LOS E	3.1	23.4	0.99	0.74	23.1
Approach		1009	20.5	0.907	54.8	LOS D	31.1	253.8	1.00	0.99	26.6
West: Reservoir Rd (W)											
10	L2	54	20.4	0.176	37.5	LOS D	3.1	25.8	0.84	0.72	32.7
11	T1	13	38.5	0.176	31.6	LOS C	3.1	25.8	0.84	0.72	35.4
12	R2	491	10.6	0.903	69.7	LOS E	38.3	292.2	0.98	0.96	25.9
Approach		558	12.2	0.903	65.7	LOS E	38.3	292.2	0.96	0.93	26.6
All Vehicles		2598	25.0	0.908	56.9	LOS E	38.3	292.2	0.97	0.94	26.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians							
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	69.2	LOS F	0.1	0.1	0.96	0.96
P4	West Full Crossing	20	41.8	LOS E	0.1	0.1	0.75	0.75
All Pedestrians		40	55.5	LOS E			0.85	0.85

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. Prospect Hwy / M4 Interchange - Development PM]

Development PM Peak
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Prospect Hwy (S)											
1	L2	412	13.0	0.777	29.7	LOS C	12.4	96.6	0.97	0.93	37.3
2	T1	976	10.5	0.857	29.1	LOS C	16.6	126.6	1.00	1.06	33.0
Approach		1387	11.2	0.857	29.3	LOS C	16.6	126.6	0.99	1.02	34.5
East: M4 Off-Ramp (E)											
4	L2	207	31.0	0.254	7.2	LOS A	1.2	10.7	0.33	0.64	51.2
5	T1	3	0.0	0.859	34.0	LOS C	9.7	70.9	1.00	1.02	36.4
6	R2	557	4.9	0.859	39.6	LOS D	9.7	70.9	1.00	1.02	31.5
Approach		767	11.9	0.859	30.8	LOS C	9.7	70.9	0.82	0.92	35.5
North: Prospect Hwy (N)											
8	T1	400	32.1	0.231	5.5	LOS A	3.0	26.9	0.47	0.39	52.0
9	R2	617	6.0	0.866	39.6	LOS D	10.8	79.5	1.00	1.00	31.3
Approach		1017	16.3	0.866	26.1	LOS C	10.8	79.5	0.79	0.76	36.1
All Vehicles		3172	13.0	0.866	28.7	LOS C	16.6	126.6	0.88	0.91	35.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1S	South Slip/Bypass Lane Crossing	53	9.1	LOS A	0.0	0.0	0.55	0.55
P4	West Full Crossing	53	17.7	LOS B	0.1	0.1	0.77	0.77
All Pedestrians		105	13.4	LOS B			0.66	0.66

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 102 [2. Prospect Hwy / Reservoir Rd - Development PM]

Development PM Peak
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Prospect Hwy (S)											
1	L2	277	9.7	0.889	57.8	LOS E	48.3	362.9	1.00	0.99	29.1
2	T1	1016	7.6	0.889	53.0	LOS D	48.3	362.9	0.98	0.98	26.8
3	R2	42	42.9	0.335	78.1	LOS E	3.0	28.9	0.98	0.75	21.4
Approach		1335	9.1	0.889	54.8	LOS D	48.3	362.9	0.99	0.97	27.1
East: Reservoir Rd (E)											
4	L2	100	41.0	0.469	38.7	LOS D	4.3	40.9	0.95	0.78	31.3
5	T1	7	42.9	0.469	33.0	LOS C	4.3	40.9	0.95	0.78	34.6
6	R2	165	36.4	0.472	39.1	LOS D	7.8	71.9	0.91	0.80	28.3
Approach		272	38.2	0.472	38.8	LOS D	7.8	71.9	0.92	0.79	29.5
North: Prospect Hwy (N)											
7	L2	77	48.1	0.474	34.8	LOS C	10.5	97.4	0.86	0.75	33.6
8	T1	406	32.5	0.474	28.6	LOS C	11.1	99.1	0.86	0.73	35.9
9	R2	97	16.5	0.704	89.9	LOS F	3.8	30.7	1.00	0.81	21.3
Approach		580	31.9	0.704	39.7	LOS D	11.1	99.1	0.88	0.75	31.5
West: Reservoir Rd (W)											
10	L2	141	7.8	0.475	50.6	LOS D	7.7	58.2	0.95	0.84	29.1
11	T1	5	60.0	0.475	45.0	LOS D	7.7	58.2	0.95	0.84	30.5
12	R2	131	10.7	0.239	47.2	LOS D	7.1	54.2	0.79	0.76	31.6
Approach		277	10.1	0.475	48.9	LOS D	7.7	58.2	0.87	0.80	30.3
All Vehicles		2464	17.8	0.889	48.8	LOS D	48.3	362.9	0.94	0.88	28.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	69.2	LOS F	0.1	0.1	0.96	0.96
P4	West Full Crossing	20	36.1	LOS D	0.1	0.1	0.69	0.69
All Pedestrians		40	52.6	LOS E			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Attachment 5 TCS Plans (Existing & Proposed)

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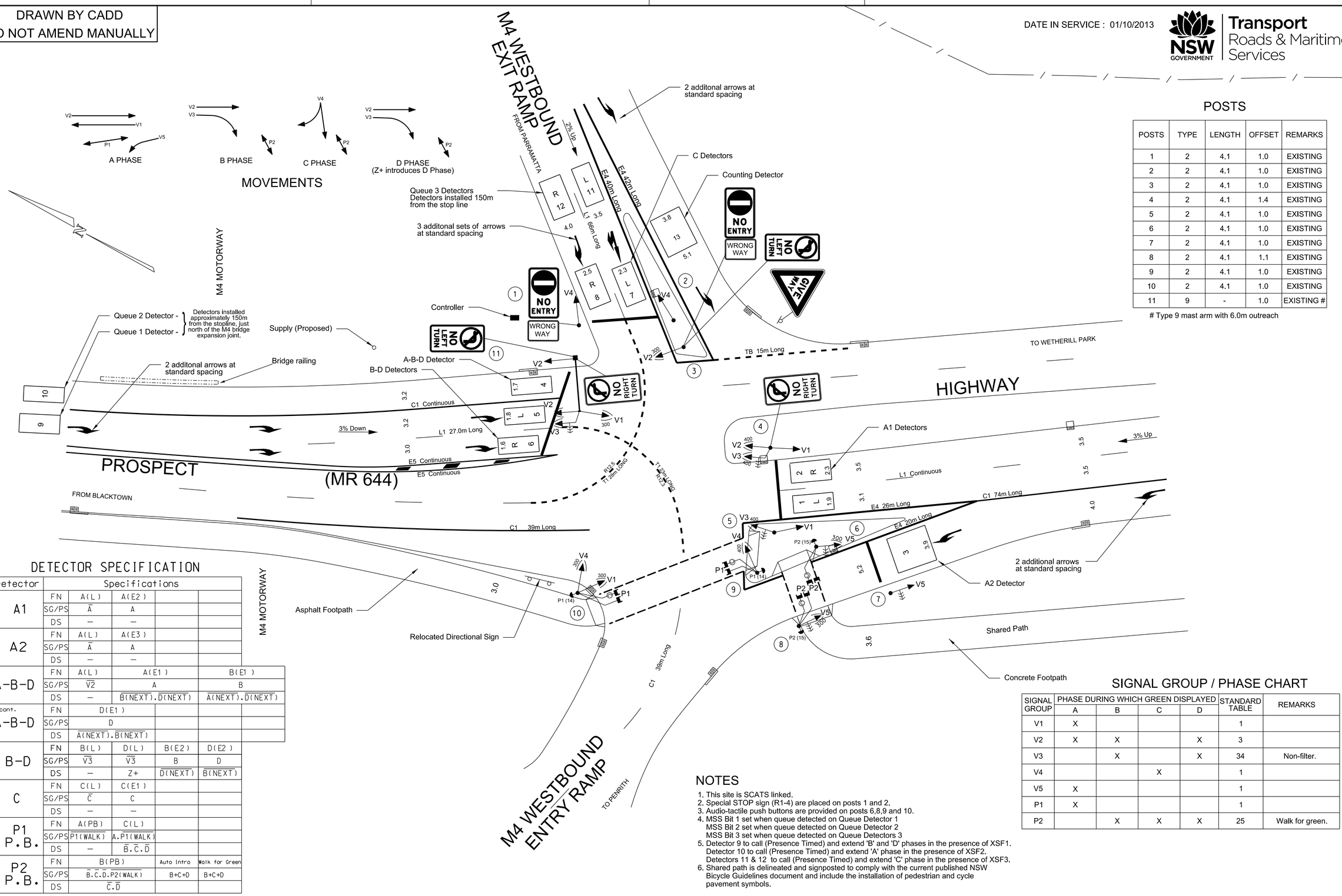
DATE IN SERVICE : 01/10/2013

NSW GOVERNMENT Transport Roads & Maritime Services

0644.040.VV.4523



POSTS

POSTS	TYPE	LENGTH	OFFSET	REMARKS
1	2	4.1	1.0	EXISTING
2	2	4.1	1.0	EXISTING
3	2	4.1	1.0	EXISTING
4	2	4.1	1.4	EXISTING
5	2	4.1	1.0	EXISTING
6	2	4.1	1.0	EXISTING
7	2	4.1	1.0	EXISTING
8	2	4.1	1.1	EXISTING
9	2	4.1	1.0	EXISTING
10	2	4.1	1.0	EXISTING
11	9	-	1.0	EXISTING #

Type 9 mast arm with 6.0m outreach

DETECTOR SPECIFICATION

Detector		Specifications			
A1	FN	A(L)	A(E2)		
	SG/PS	$\overline{A}$	A		
	DS	—	—		
A2	FN	A(L)	A(E3)		
	SG/PS	$\overline{A}$	A		
	DS	—	—		
A-B-D	FN	A(L)	A(E1)	B(E1)	
	SG/PS	$\overline{V2}$	A	B	
	DS	—	$\overline{B(NEXT)}.D(NEXT)$	$A(NEXT).\overline{D(NEXT)}$	
cont. A-B-D	FN	D(E1)			
	SG/PS	D			
	DS	$\overline{A(NEXT)}.\overline{B(NEXT)}$			
B-D	FN	B(L)	D(L)	B(E2)	D(E2)
	SG/PS	$\overline{V3}$	$\overline{V3}$	B	D
	DS	—	Z+	$\overline{D(NEXT)}$	$\overline{B(NEXT)}$
C	FN	C(L)	C(E1)		
	SG/PS	$\overline{C}$	C		
	DS	—	—		
P1 P.B.	FN	A(PB)	C(L)		
	SG/PS	P1(WALK)	$A.\overline{P1(WALK)}$		
	DS	—	$\overline{B.C.D}$		
P2 P.B.	FN	B(PB)		Auto Intro	Walk for Green
	SG/PS	$\overline{B.C.D.P2(WALK)}$		B+C+D	B+C+D
	DS	$\overline{C.D}$			

SIGNAL GROUP / PHASE CHART

SIGNAL GROUP	PHASE DURING WHICH GREEN DISPLAYED				STANDARD TABLE	REMARKS
	A	B	C	D		
V1	X				1	
V2	X	X		X	3	
V3		X		X	34	Non-filter.
V4			X		1	
V5	X				1	
P1	X				1	
P2		X	X	X	25	Walk for green.

NOTES

1. This site is SCATS linked.
2. Special STOP sign (R1-4) are placed on posts 1 and 2.
3. Audio-tactile push buttons are provided on posts 6,8,9 and 10.
4. MSS Bit 1 set when queue detected on Queue Detector 1
   MSS Bit 2 set when queue detected on Queue Detector 2
   MSS Bit 3 set when queue detected on Queue Detectors 3
5. Detector 9 to call (Presence Timed) and extend 'B' and 'D' phases in the presence of XSF1.
   Detector 10 to call (Presence Timed) and extend 'A' phase in the presence of XSF2.
   Detectors 11 & 12 to call (Presence Timed) and extend 'C' phase in the presence of XSF3.
6. Shared path is delineated and signposted to comply with the current published NSW Bicycle Guidelines document and include the installation of pedestrian and cycle pavement symbols.

A ORIGINAL ISSUE
B ISSUE EXECUTED. W.M
WORKS A.L. 08/12/2015

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	△	STD POSIT	VD001-5
GAS VALVE	#	PRES. DETECT	VC005-17
SEWER MANHOLE	⊗	VEH. GROUP OP	TS-TN-019
TELECOM PIT	◪	DET. LOGIC OP	TS-TN-020
ELECT LIGHT POLE	○	PED. MOVEMNT OP	TS-TN-021
POWER POLE	○		
STAY POLE	⊘		
TELEPHONE BOX	⊡	SURVEYOR : W, CHO	
TELECOM PILLAR	◍	DATE : 04/06/12	

U.B.D. Ref. Map 189 A16
I.S.G. E: 292 160
CO-ORDS N: 1 257 820

DESIGNED V STANTON
CHECKED K.IRONSIDE
V STANTON
SITE CHECKED
31-1-2013
RECOMMENDED

DESIGN APPROVAL
APPROVED
POSITION SNR DESIGNER
DATE 31-1-2013
DESIGN PREPARED BY
ROAD DESIGN ENGINEERING
ENGINEERING TECHNOLOGY
NETWORK MANAGEMENT

RMS ACCEPTANCE
RECOMMENDED
POSITION N.O.T.I.
DATE 04-02-2013
ACCEPTED
POSITION RN MGR
DATE 05-03-2013

ROADS AND MARITIME SERVICES

BLACKTOWN COUNCIL AREA
TRAFFIC SIGNALS AT
PROSPECT (MR644) HIGHWAY
AND M4 WESTBOUND ENTRY/EXIT RAMPS,
PROSPECT

DESIGN LAYOUT TCS No 4523

EXISTING ☒ PROPOSED ☐
CADD FILE: VV4523_1B.dgn
SCALE 5 0 (1:200) 5 10
ISSUE B
FILE 40 TS 512
SUPERSEDES SHEET/ISSUE 1A
REGN. 0644.040.VV.4523
SHEET 1

22/11/2017 8:38:09 AM K:\Signals\TCS\vv4500-vv4599\vv4523\Drawings Final\VV4523_1B.dgn

TCS 4523

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DATE IN SERVICE : 01/10/2013

NSW GOVERNMENT Transport Roads & Maritime Services

NOTES

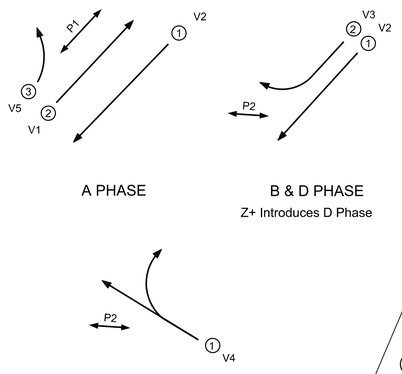
1. This site is SCATS linked.
2. Special STOP signs (R1-4) are placed on posts 4 and 5.
3. Audio-tactile push buttons are provided on posts 1, 12, 13 and 14.
4. C1 Detectors 8 and 9 (queue) to set MSS Bits 1 and 2 respectively if presence timer has expired. Using a 'Dummy Signal Group' the detector can be used as an 'SA' back up in SCATS by starting first Special Timer after start of V4 green and then terminates after end of V4 green by expiry of second Special Timer.
5. Stop line in the M4 W/B Off Ramp is 600mm wide.
6. Triangular islands to be constructed with non mountable barrier kerb.
7. Kerb ramps are constructed at all marked foot crossings in accordance with Model Drawing MD.R173.B01.A.1.
8. CCTV Camera to be mounted on post 3.
9. Relocated power supply to be in accord with Endeavour Energy Design Package - ARNP0003 - 407504.
10. For details of civil road works refer to plan DS2015/000269 prepared by SMEC Australia Pty Ltd.

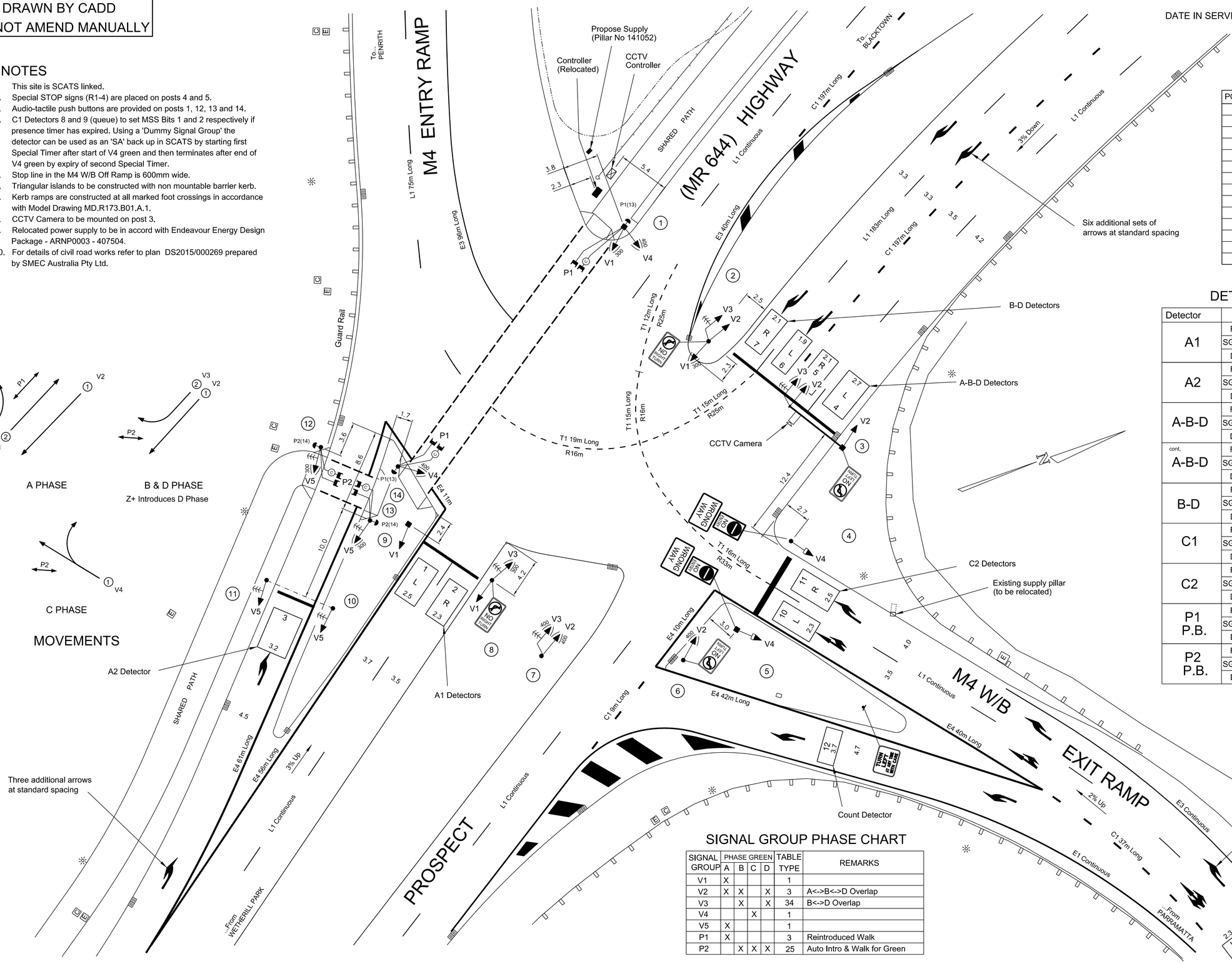
POSTS

POST	TYPE	LENGTH	OFFSET	REMARKS
1	6	-	1.0	NEW
2	2	4.1	-	NEW
3	9	-	1.0	NEW (7m Outreach)
4	2	4.1	1.0	NEW
5	6	-	2.0	NEW
6	2	4.1	1.0	EXISTING
7	2	4.1	2.9	EXISTING
8	2	4.1	1.0	NEW
9	6	-	2.0	NEW
10	2	4.1	1.0	NEW
11	2	4.1	1.0	NEW
12	2	4.1	1.0	NEW
13	2	4.1	1.0	NEW
14	2	4.1	1.0	NEW

DETECTOR SPECIFICATION

Detector	Specifications				
A1	FN	A(L)	A(E2)		
	SG/PS	$\overline{A}$	A		
	DS	–	–		
A2	FN	A(L)	A(E3)		
	SG/PS	$\overline{A}$	A		
	DS	–	–		
A-B-D	FN	A(L)	A(E1)		
	SG/PS	$\overline{V2}$	A		
	DS	$\overline{B}.\overline{D}$	$\overline{B(NEXT)}.\overline{D(NEXT)}$		
cont. A-B-D	FN	B(E1)		D(E1)	
	SG/PS	B		D	
	DS	$\overline{A(NEXT)}.D(NEXT)$		$\overline{A(NEXT)}.\overline{B(NEXT)}$	
B-D	FN	B(L)	D(L)	B(E2)	D(E2)
	SG/PS	$\overline{V3}$	$\overline{V3}$	B	D
	DS	–	Z+	$\overline{D(NEXT)}$	$\overline{B(NEXT)}$
C1	FN	C(PR)	C(E2)	SEE NOTE 4	
	SG/PS	$\overline{C}$	C		
	DS	$\overline{XSF1}$	$\overline{XSF1}$		
C2	FN	C(L)	C(E1)		
	SG/PS	$\overline{C}$	C		
	DS	–	–		
P1 P.B.	FN	A(PB)		Reintroduce Walk	
	SG/PS	P1(WALK)		A.P1(WALK)	
	DS	–		$\overline{B}.\overline{C}.D$	
P2 P.B.	FN	B(PB)		Auto Intro	Walk for grn
	SG/PS	A.$\overline{P2(WALK)}$		B+C+D	B+C+D
	DS	$\overline{C}.\overline{D}$			





SIGNAL GROUP PHASE CHART

SIGNAL GROUP	PHASE GREEN A	B	C	D	TABLE TYPE	REMARKS
V1	X				1	
V2	X	X		X	3	A<->B<->D Overlap
V3		X		X	34	B<->D Overlap
V4			X		1	
V5	X				1	
P1	X				3	Reintroduced Walk
P2		X	X	X	25	Auto Intro & Walk for Green

A ORIGINAL ISSUE

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	▲	STD POSIT	VD001-5
GAS VALVE	#	PRES. DETECT	VC005-17
SEWER MANHOLE	⊗	VEH. GROUP OP	TS-TN-019
TELECOM PIT	◪	DET. LOGIC OP	TS-TN-020
ELECT LIGHT POLE	○	PED. MOVEMNT OP	TS-TN-021
POWER POLE	○		
STAY POLE	⊘		
TELEPHONE BOX	▯	SURVEYOR : RMS	
TELECOM PILLAR	◕	DATE : 2014	

U.B.D. Ref. Map 189 A16
I.S.G. CO-ORDS E: 292 180 N: 1 257 820

DESIGNED J BATES
CHECKED R BATES
J BATES
SITE CHECKED
J BATES
RECOMMENDED

DESIGN APPROVAL
APPROVED
POSITION
DATE 25/07/16
DESIGN PREPARED BY
B-Line Drafting

RMS ACCEPTANCE
RECOMMENDED
Steve Acreman
POSITION NETWORK OPERATIONS TEAM LEADER
DATE 10/08/2016
ACCEPTED
Nicolas Kocoski
POSITION MANAGER NETWORK AND SAFETY SERVICES
DATE 17/08/2016

ROADS AND MARITIME SERVICES

BLACKTOWN COUNCIL AREA
TRAFFIC SIGNALS AT
PROSPECT HIGHWAY (MR 644)
AND M4 WESTBOUND RAMPS
PROSPECT

DESIGN LAYOUT TCS No 4523

EXISTING ☐ PROPOSED ☒
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ISSUE A
FILE SF2014/014772
SUPERSEDES SHEET/ISSUE 1/B
REG No. DS2014/004904
TCS No. 4523
SHEET 5

30/08/2016 11:52:13 AM K:\Signals\TCS\Drawings From Consultants\Drawings\Complete\VV4523_5AComplete\VV4523_5A.dgn

Revision 1 - August 2014

TCS 4724

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NOTES

1. This site is SCATS linked.
2. Special STOP signs (R1-4) are placed on posts 5 and 10.
3. Audio-tactile push buttons are provided on posts 1, 3, 4 and 5.
4. Double Diamond Overlap to TS-TN-027.
5. Provision to be made in cabling and ducting for future pedestrian crossing over the Prospect Highway (north) and Reservoir Rd (east).
6. Kerb ramps are constructed at all marked foot crossings in accordance with Model Drawing MD.R173.B01.A.1.
7. Power supply to be in accord with Endeavour Energy Design Package - ARNP0003 - 407504.
8. CCTV Camera to be mounted on post 8.
9. For details of civil road works refer to plan DS2015/000269 prepared by SMEC Australia Pty Ltd.

DATE IN SERVICE : 00/00/00

Transport Roads & Maritime Services

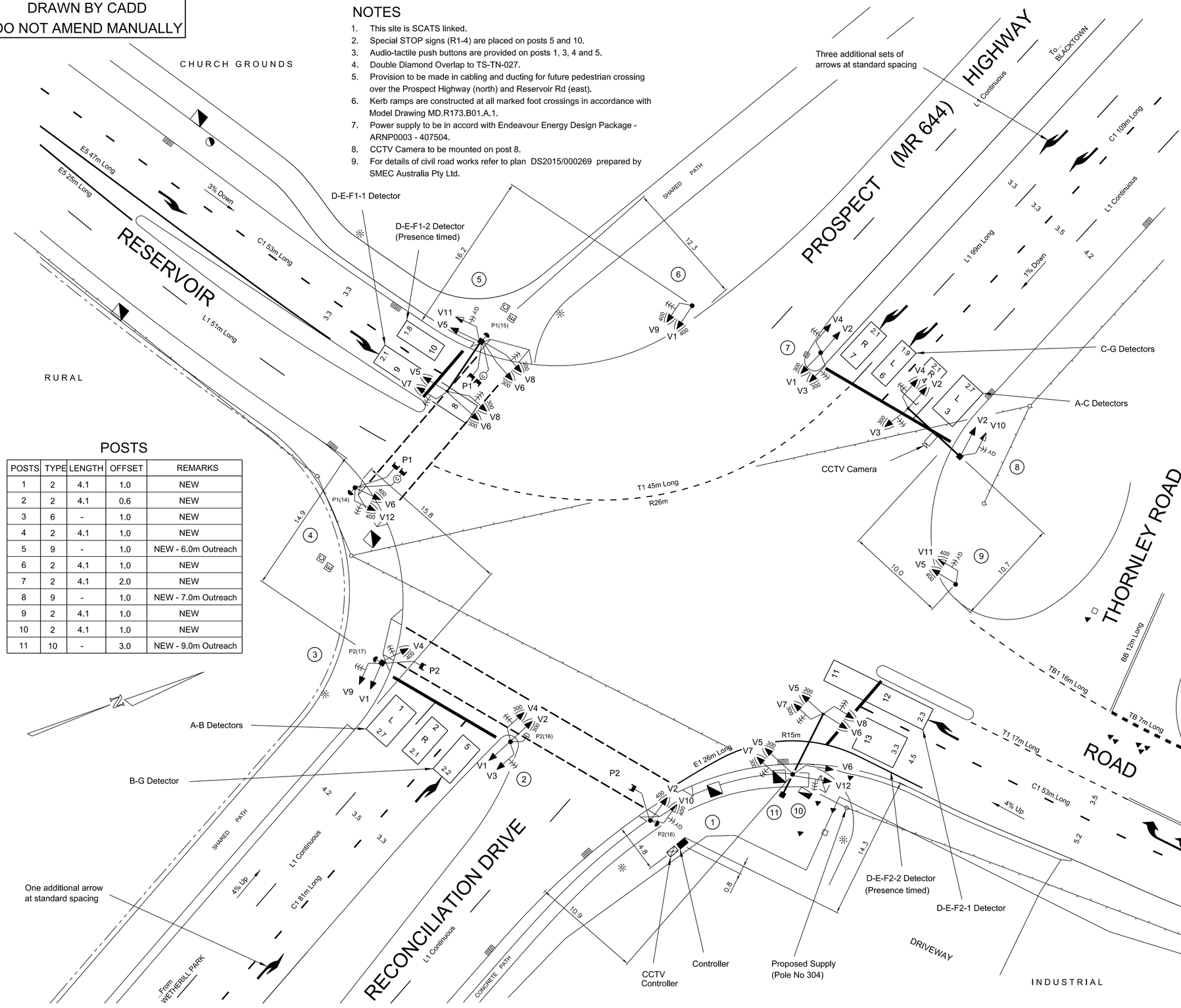
SIGNAL GROUP PHASE CHART

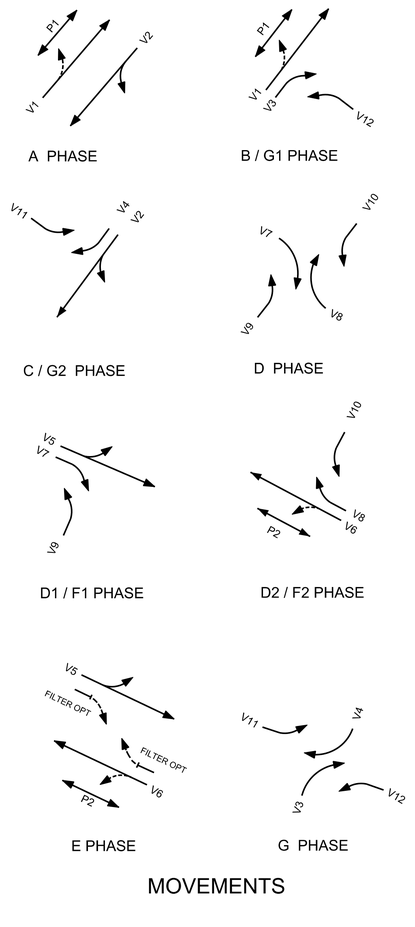
SIGNAL GROUP	PHASE DURING WHICH GREEN IS DISPLAYED											STANDARD TABLES	CONDITIONS
	A	B	C	D	D1	D2	E	F1	F2	G	G1	G2	
V1	X	X									X		TS-TN-027	
V2	X		X									X	TS-TN-027	
V3		X								X	X		TS-TN-027	
V4			X							X		X	TS-TN-027	
V5					X		X	X					TS-TN-027	
V6						X	X		X				TS-TN-027	
V7				X	X			X					TS-TN-027	Timed RA for P2 WALK **
V8				X		X			X				TS-TN-027	
V9				X	X			X					156	Timed RA for P1 WALK ^^
V10				X		X			X				126	
V11			X							X		X	126	
V12		X								X	X		156	Timed RA for P2 WALK **
P1	X	X									X		108	
P2						X	X		X				112	

** RA protection extended by PB on post 3, subject to timer
^^ RA protection extended by PB on post 5, subject to timer

POSTS

POSTS	TYPE	LENGTH	OFFSET	REMARKS
1	2	4.1	1.0	NEW
2	2	4.1	0.6	NEW
3	6	-	1.0	NEW
4	2	4.1	1.0	NEW
5	9	-	1.0	NEW - 6.0m Outreach
6	2	4.1	1.0	NEW
7	2	4.1	2.0	NEW
8	9	-	1.0	NEW - 7.0m Outreach
9	2	4.1	1.0	NEW
10	2	4.1	1.0	NEW
11	10	-	3.0	NEW - 9.0m Outreach





A ORIGINAL ISSUE						

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	▲	STD POSIT	VD001-5
GAS VALVE	#	PRES. DETECT	VC005-17
SEWER MANHOLE	⊛	VEH. GROUP OP	TS-TN-019
TELECOM PIT	◪	DET. LOGIC OP	TS-TN-020
ELECT LIGHT POLE	○	PED. MOVEMNT OP	TS-TN-021
POWER POLE	○	DDO	TS-TN-027
STAY POLE	⊘		
TELEPHONE BOX	T	SURVEYOR : RMS	
TELECOM PILLAR	◕	DATE : 2014	

U.B.D. Ref. Map 209 A1
I.S.G. CO-ORDS E: 292 325 N: 1 257 505

DESIGNED J BATES
CHECKED R BATES
J BATES
SITE CHECKED
J BATES
RECOMMENDED

DESIGN APPROVAL
APPROVED
POSITION
DATE 8/07/16
DESIGN PREPARED BY
B-Line Drafting

RMS ACCEPTANCE
RECOMMENDED
Steve Acreman
POSITION NETWORK OPERATIONS TEAM LEADER
DATE 11/08/2016
ACCEPTED
Nicolas HAMILTON
POSITION MANAGER NETWORK AND SAFETY SERVICES
DATE 16/08/2016

ROADS AND MARITIME SERVICES

BLACKTOWN COUNCIL AREA
TRAFFIC SIGNALS AT
PROSPECT HWAY (MR 644), RECONCILIATION DR AND RESERVOIR ROAD
PROSPECT

DESIGN LAYOUT TCS No 4724

EXISTING □ PROPOSED ☒
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FILE SF2015/182674
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SHEET 1

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Revision 1 - August 2014