



stage 1 project application (part 3a) for the mixed use commercial and retail development at 2 australia avenue, homebush

prepared on behalf of capital corporation by **TRAFFIX** traffic & transport planners
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transport and accessibility impact assessment report

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1. introduction

TRAFFIX has been commissioned by Capital Corporation to undertake a transport and accessibility impact assessment in support of a Stage 1 project application relating to the mixed use commercial and retail development located at 2 Australia Avenue, Homebush. The development is located within the Sydney Olympic Park Authority (SOPA) and has been assessed under their controls, as well as having regard for Auburn Council controls and the RTA's Guidelines.

This report documents the findings of our investigations and should be read in the context of the Environmental Impact Assessment prepared separately. The development is a major development and requires referral to the RTA under the provisions of SEPP (Infrastructure) 2007.

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Assesses the parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions.

This report also responds to the Director General's Requirements. In relation to Transport and Accessibility Impacts, the requirements state as follows:

- *Provide a Transport and Accessibility Impact Assessment, to be prepared in accordance with the RTA's Guide to Traffic Generating Developments and other relevant EPIs*



- *Demonstrate a minimalist on-site car parking strategy for the proposal with consideration to the accessibility of the site to public transport and mode share targets including parking provisions for shared cars, under the Sydney Olympic Park Master Plan 2030, local planning controls, RTA Guidelines and Australian Standards.*
- *Assess the implications of the proposed development for the non-car travel modes including the provision of facilities to manage travel demand, increase the use of public and non-car transport modes including pedestrian and bicycle linkages*
- *Address the potential for implementing a location specific sustainable travel plan such as a Workplace travel Plan (WTP) for workers and/or a Travel Access Guide (TAG) for visitors to the site.*
- *Prepare a Construction Traffic Management Plan (CTMP) to mitigate any potential impacts to accessibility, amenity, safety of pedestrians and cyclists during construction, including access arrangements for emergency vehicles and workers and an estimation of the number of truck movements expected during the construction phase.*



2. location and site

The site is located on the western side of Australia Avenue between Herb Elliott Avenue to the north and Figtree Drive to the south and is within Sydney Olympic Park. A commercial and retail development lies opposite the site across Herb Elliott Avenue and the Olympic Park railway station is less than 200 metres to the north-west of the site.

The site currently consists of an existing warehouse development called 'Silex Solar Pty'. It has an northern frontage of 130 metres to Herb Elliott Avenue, an western boundary of 80 metres to the neighbouring Basketball Australia Headquarters, a southern site boundary of 122 metres to a future road and an eastern boundary to Australia Avenue of length 104 metres.

There are currently two driveway crossings accessing the site from Australia Avenue. There is also a loading area on the northern side of the development which is accessed via Herb Elliott Avenue. This access driveway is approximately 8 metres wide.

A Location Plan is presented in **figure 1**, with a Site Plan presented in **figure 2**. Reference should also be made to the Photographic Record presented in **appendix a**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.



figure 1: location



figure 2: site



3. existing traffic conditions

3.1 road hierarchy

The road hierarchy in the vicinity of the site is shown in **figure 3** with the following roads of particular interest:

- The Western Motorway: an RTA State Road (MR 6004) that generally runs in an east-west direction, forming a primary arterial link between Sydney and its western suburbs. The Western Motorway runs between Strathfield in the east and Penrith in the west and carries 83,800 vpd in the vicinity of the site;
- The Great Western Highway: an RTA State Road (MR 5) that generally runs in an east west direction, following a parallel path to the Western Motorway. The Great Western Highway carries 58,700 vpd in the vicinity of the site;
- Homebush Bay Drive: a local road that generally runs in a north-south direction between Holker Street in the north and Homebush Bay Drive in the south.
- Hill Road: a local road that generally runs in a north south direction between The Great Western Highway in the south and Burroway Road in the north.
- Australia Avenue: a local road that generally runs in a north-south direction between Holker Street in the north and Homebush Bay Drive in the south. Two site accesses are currently situated on Australia Avenue.
- Herb Elliott Avenue: a local road that generally runs in an east-west direction linking Australia Avenue in the east with Olympic Boulevard in the west
- Parkview Drive : a local road that generally runs in an east-west direction linking Australia Avenue in the east with Olympic Boulevard in the west.



- 📍 Olympic Blvd: an local that runs in an north-south direction between the intersection of Kevin Coombs Avenue/Edwin Flack Avenue in the north and Sarah Durack Avenue in the south.
- 📍 Kevin Coombs Avenue a local road that generally runs in an east west direction linking Marjorie Jackson Parkway in the east and Edwin Flack Avenue in the west.
- 📍 Marjorie Jackson Pky: a local road that runs in an easterly direction from the unsignalised intersection of Australia Avenue, Kevin Coombs Avenue and Holker Bus way and traverses in a loop to intersect with the junction of Sarah Durack Avenue and Australia Avenue in the south.
- 📍 Holker Street: a local road that runs in an east-west direction between Hill Road and Silverwater Road to the southwest of site.

It can be seen from **figure 3** that the site is conveniently located with respect to the arterial and local road systems serving the region. It is therefore able to effectively distribute traffic onto the wider road network, minimising traffic impacts.

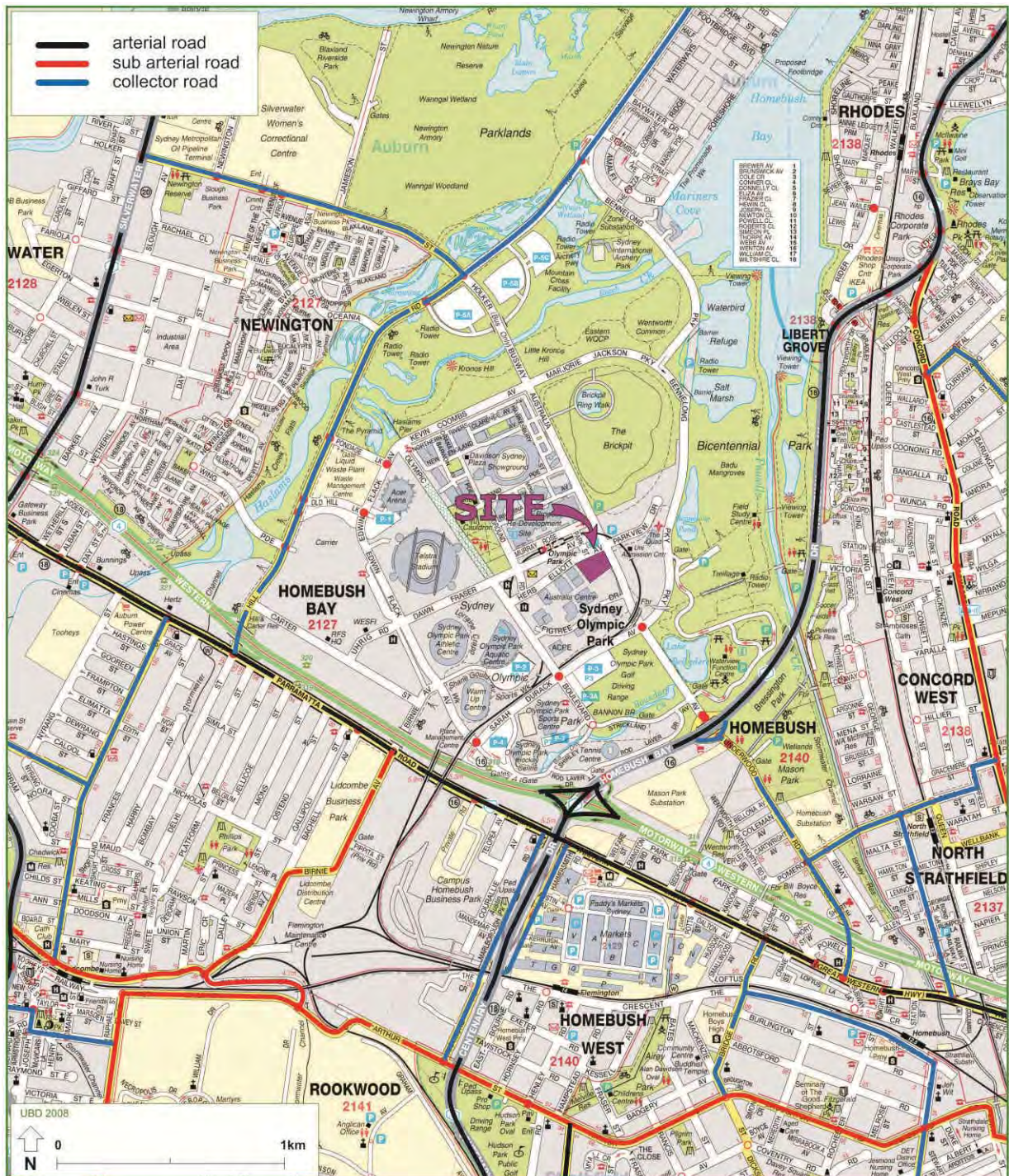


figure 3: road hierarchy



3.2 general description of road environment

The Western Motorway is constructed with two 11 metre wide carriageways separated by a 15 metre wide grass divide and carries two through lanes of traffic in either direction. It forms overpasses at Hill Road and Silverwater Road and is accessed via full on and off ramps at Silverwater Road, but with only western on and off ramps at Hill Road. The Western Motorway is subject to a 90 km/hr speed zoning in the vicinity of the site.

The Great Western Highway is generally constructed with a 17 metre wide undivided carriageway and carries three lanes of traffic in either direction. The Great Western Highway forms the eastern and western approaches to four way signalised intersections with both Hill Road (and Bombay Street) and Silverwater Road (and St. Hilliers Road.) On the easterly approach to the Hill Road intersection an additional 120 metre right turn lane exists. On the easterly approach to the Silverwater Road intersection an additional two 140 metre right turn lanes exist. The Great Western Highway is subject to a 60 km/hr speed zoning.

Australia Avenue is constructed with an 18.5 metre divided carriageway and generally carries two lanes of traffic in either direction. It has a one metre wide cycle lane on either side of the carriageways. Australia Avenue forms a signal controlled intersection with Herb Elliott Avenue Parkview Drive to the north of the site.

Olympic Boulevard is constructed with a 17 metre divided carriageway carrying two lanes of traffic in either direction to the south of the give way intersection with Herb Elliott Avenue. It is subject to a 50 km/hr speed limit adjacent the site. A wide landscaped median of 4.2 metres exists between these carriageways, which extends to the nearest intersection.

Sarah Durack Avenue is constructed with an 18 metre divided carriageway carrying two lanes of traffic, in either direction and is subject to a 60 km/hr speed limit adjacent the site. A wide landscaped median of 4.5 metres exists between these carriageways, which extends to the nearest intersection. Sarah Durack Avenue forms a signal controlled intersection with Australia Avenue to the south of the site.



Herb Elliott Avenue is constructed with a 12.5 metre undivided carriageway and carries a single lane of traffic in either direction. Herb Elliott Avenue is also subject to timed parallel parking restrictions to the north of the site. A 40km/hr speed limit applies on the road.

3.3 public transport

The existing public transport that operates in the locality is shown in **figure 4**. It is evident that the site benefits from good access to the public transport system with the following amenities provided in the Olympic Park:

- Bus services to Lidcombe, Paramatta and Chatswood via Ryde.
- Bus stops on Australia Avenue adjacent to the development and on Murray Rose Avenue adjacent to the railway station.
- The Olympic Park Railway Station is less than 200 metres to the north-west of the site from Australia Avenue. This line provides links to Lidcombe which in turn provides access to the overall metropolitan rail network.

These services will ensure a very high level of public transport accessibility.

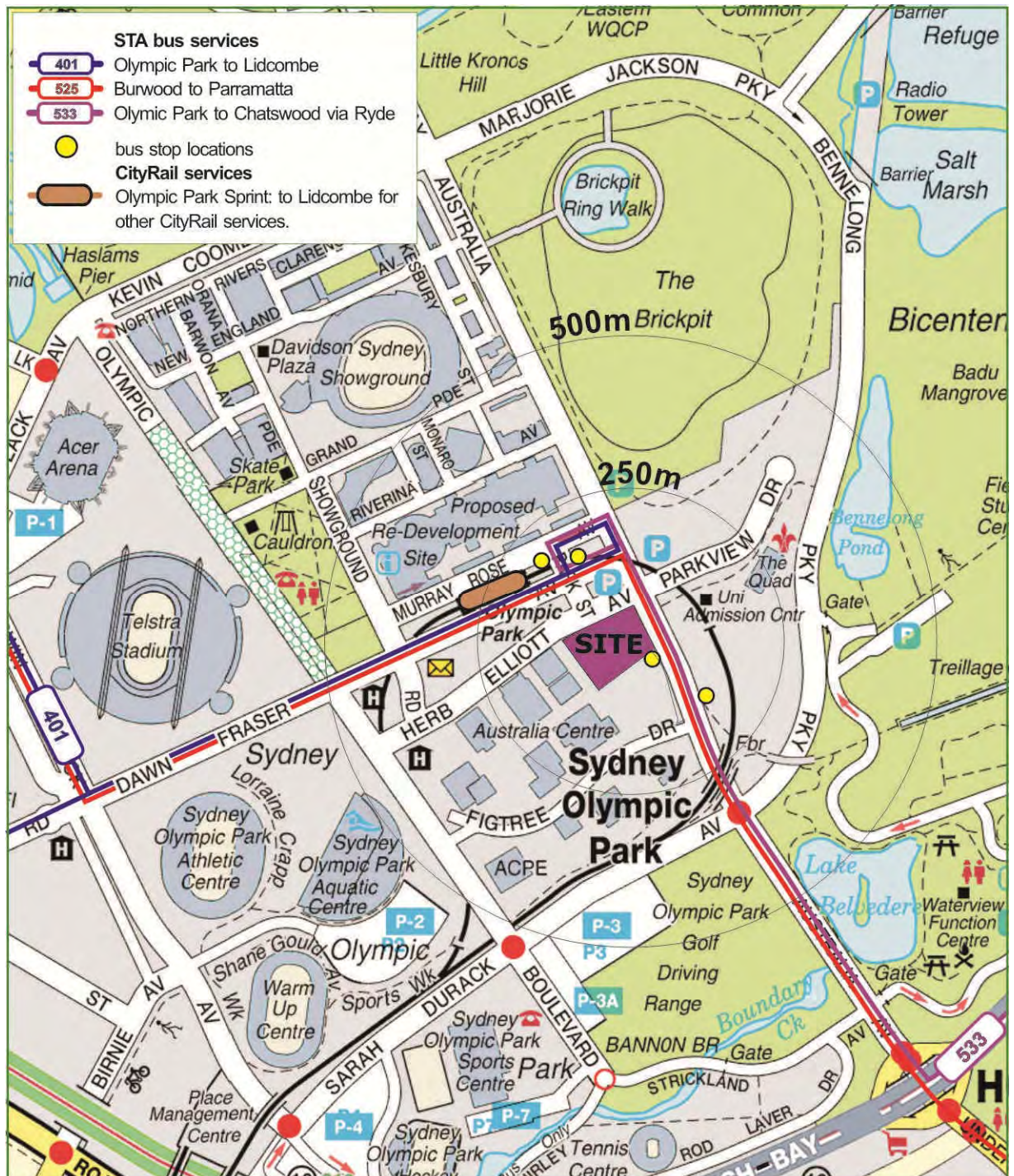


figure 4: public transport



3.4 existing site generation

The existing warehouse building currently generates traffic which is accommodated in the nearby intersections as is evident from the further discussion in Section 3.5.

3.5 existing intersection performances

The scope of the analysis has been broadened to examine other intersections that are expected to be impacted and apart from the Australia Avenue, Parkview Drive and Herb Elliott Avenue, the following intersections have been identified as the most critical intersections and have also been assessed:

- Herb Elliott Avenue and Olympic Boulevard
- Australia Avenue, Kevin Coombs Avenue, Holker Street and Majorie Jackson Parkway
- Australia Avenue, Bennelong Parkway and Sarah Durack Avenue
- Hill Road and M4 Off Ramp

These surveys were undertaken between the 7-9AM and 4-6PM peak periods on Wednesday 13th October 2010. The survey for Hill Road and M4 off ramp was carried out on Thursday 1st April 2010. The results of these surveys were analysed using the SIDRA computer program to determine their performance characteristics under existing traffic conditions. The SIDRA model produces a range of outputs, the most useful of which are the Degree of Saturation (DOS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LOS) criteria. These performance measures can be interpreted using the following explanations:

DOS - the DOS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DOS approaches 1, it is usual to attempt to keep DOS to less than 0.9. When DOS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DOS of 0.8 or less.



AVD - the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LOS - this is a comparative measure which provides an indication of the operating performance of an intersection as shown below:

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

A summary of the modelled results are provided below. Reference should also be made to the SIDRA outputs provided in **appendix d** which provide detailed results for individual lanes and approaches.



table 1: existing intersection performance: am and pm peak hour

Intersection Description	Period	Control Type	Degree of Saturation	Intersection Delay	Level of Service
Herb Elliott & Australia Ave	AM	Signals	0.472	17.0	B
	PM		0.451	15.6	B
Herb Elliott & Olympic Blvd	AM	Giveway	0.045	8.5	A
	PM		0.673	19.9	B
Australia Ave & Kevin Coombs	AM	Stop (Two-way)	0.040	16.1	B
	PM		0.015	14.4	A
Australia Ave & Sarah Durack	AM	Signals(Actuated)	0.976	39.7	C
	PM		1.157	35.2	C
Hill and M4 Off-Ramp	AM	Giveway	1.078	112.9	F
	PM		0.727	18.7	B

It can be seen from Table 1 that the intersections operate satisfactorily with Level of Service C or better, with the exception of intersection of Hill Road and the M4 off-ramp which is currently operating with Level of Service F during the AM peak period.

The Sidra output for 'Australia Avenue and Sarah Durack Avenue' is also consistent with the 2009 results obtained in the separate modelling undertaken by SKM on behalf of Auburn Council. Nevertheless, it is stressed that the most relevant use of this analysis is to compare the relative change in the performance parameters as a result of the proposed development. This is discussed further in Section 5.

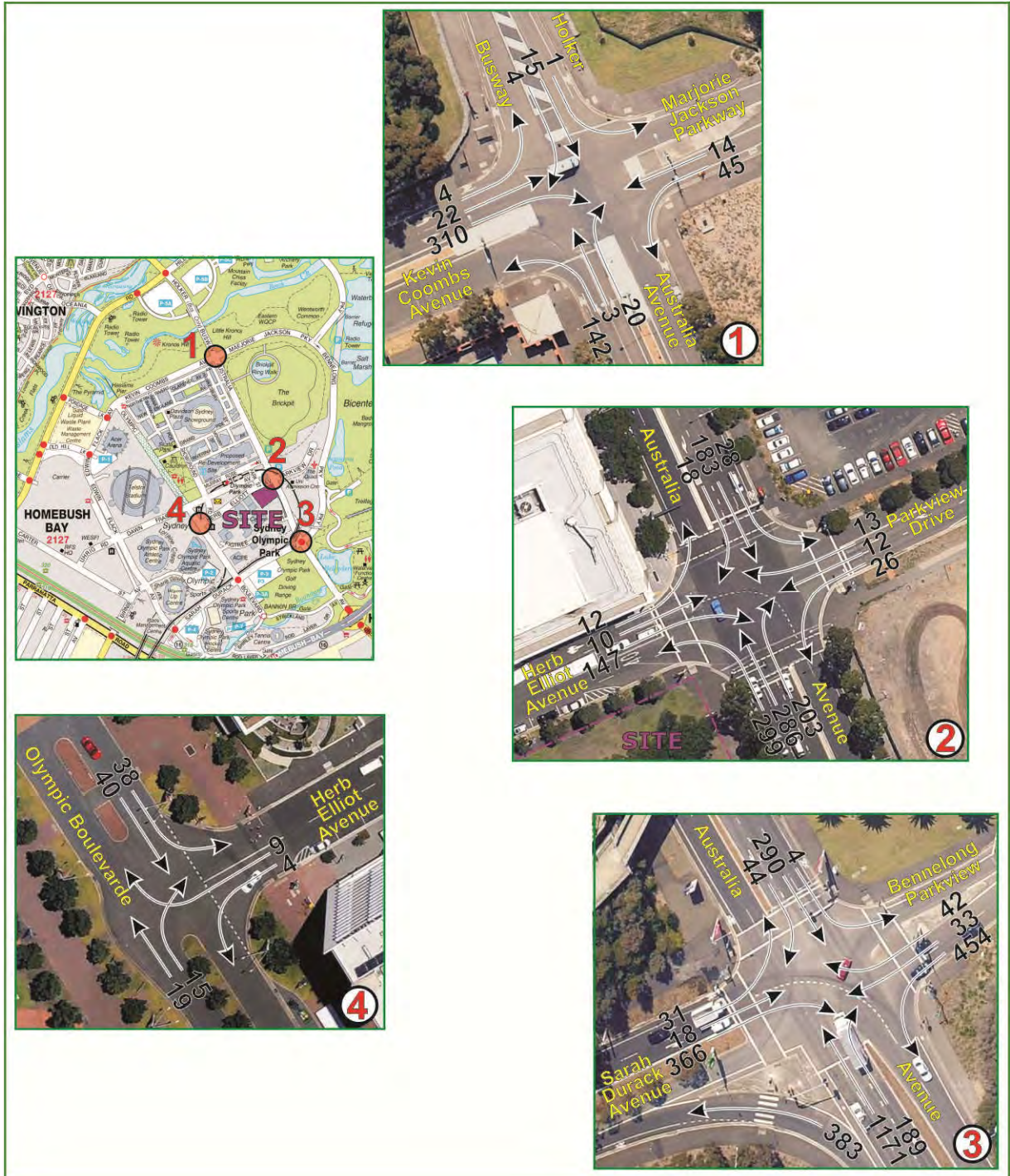


figure 5: existing am peak hourly traffic volumes (07.00-09.00 hrs)

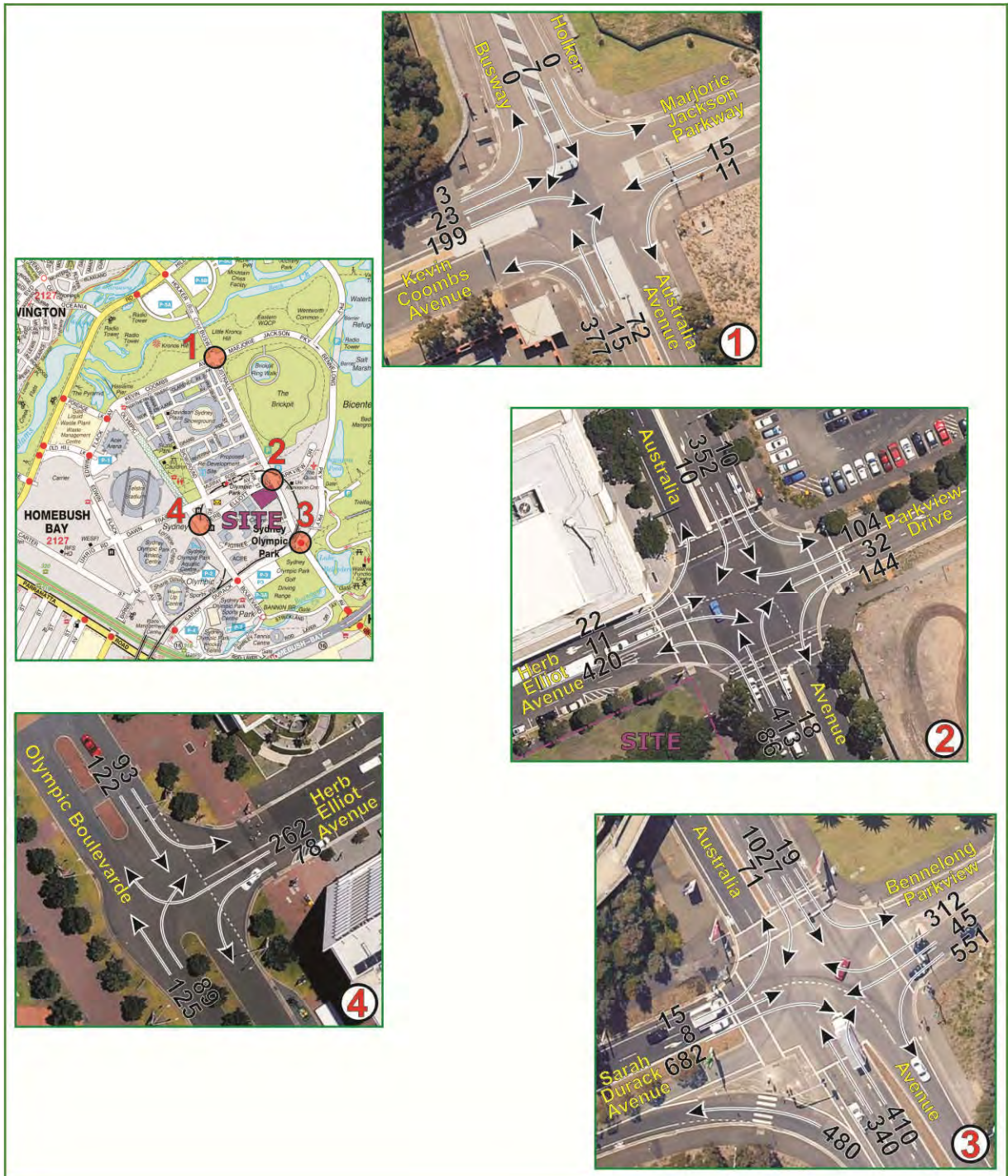


figure 6: existing pm peak hourly traffic volumes (16.00-18.00 hrs)



4. description of proposed development

A detailed description of the proposed development is provided in the Environmental Impact Assessment prepared separately, of which this report forms a part. In summary, the development for which approval is now sought comprises the following components and has broken into two separate stages. The master plan for the site can be found in **appendix b** – reduced plans. The staged development is proposed as follows:

Stage 1: Facing Australia Avenue:

- Site Preparation works including of all removal of trees and excavation;
- Construction of a 7 storey retail and commercial development with ground level retail sections and 7 levels of office units totalling an area of 16,749m²;
- The provision of two basement level's car parking with a total of 229 parking spaces including the following:
 - 193 standard parking spaces;
 - 24 small car parking spaces (10% of all parking);
 - 4 courier spaces; and
 - 8 disabled spaces.
- Additional parking for the existing warehouse on site (66 spaces) with access from Herb Elliott Avenue and a further 19 visitor spaces with access from Australia Avenue (85 spaces in total);

Stage 2: Facing New Road 10 & Herb Elliott Avenue

- Removal of car park access ramp;
- Construction of a building facing New Road 10 with a total area of 6,713m² comprising of a 7 storey commercial development with ground level retail;
- The provision of 150 parking spaces for this building;



- Construction of a building facing Herb Elliot Avenue with a total area of 18,697m² comprising of a 7 storey commercial development with ground level café and retail;
- The provision of 145 parking spaces for the aforementioned building.

The traffic and parking impacts arising from the development are discussed in Sections 5 and 6. Reference should be made to the plans submitted separately to Council which are presented at reduced scale in **appendix b**.



5. transport, traffic and accessibility

5.1 parking

The Sydney Olympic Park Authority requires parking for commercial and retail uses to be determined at the maximum rates shown in **table 2**:

table 2: SOPA parking rates and provision

Type	GFA	SOPA Parking Rates	Spaces Required	Spaces Provided
Stage 1 Commercial	15,297 m ²	1 space per 80m ²	191	191*
Stage 1 Retail	1,452 m ²	1 space per 50m ² **	29	34
Stage 2	25,410 m ²	1 space per 80m ²	318	295
Totals			538	520

* Excludes 4 courier spaces.

** Based on the SOPA local retail parking rate.

5.1.1 Stage 1 Parking

It is evident from Table 2 that under the SOPA Master Plan 2030, Stage 1 requires *maximum* parking of 220 spaces and 225 spaces are provided. This excludes the courier parking spaces (4 spaces in Stage 1) as these are service spaces. It should also be noted that the ground level retail comprises a supermarket with 785m² Net Lettable Area. Under the SOPA controls, supermarkets require a parking rate of 4 spaces per 100m² which is also consistent with the RTA Guidelines for an 'unrestrained' situation where the supermarket follows the car-dependent 'model'. However it is considered that this rate is not applicable to the development without adjustment. In this regard, the supermarket is a small local (neighbourhood) facility that is smaller than those that underpin the RTA's Guideline rate; while the site also benefits from close proximity to a large local catchment (including the development itself). These customers will walk to the supermarket and create no parking demand. Having regard for these particular characteristics, it is therefore considered that application of the local



retail parking rate (1 space per 50m²) is more appropriate and this equates to a 50% discount to accommodate these factors. Bases on this parking rate, the development requires 29 parking spaces for the retail area. In response the development has provided 34 parking spaces which is considered appropriate with regard to the reduced parking rate. In summary, the overall provision of 225 (excluding 4 courier spaces) parking spaces is considered appropriate for the proposed Stage 1 development.

5.1.2 Stage 2 Parking

The SOPA parking rate of 1 space per 80m² has been applied to Stage 2 of the development. It is acknowledged that the development incorporates retail/café units which would normally apply the parking rate of 1 space per 50m². These retail unit areas for Stage 2 are not currently available and will create a slight additional parking demand. This can be further assessed at development application (Project Application) stage for this future stage. Nevertheless, it can be seen that with a total GFA of 42,159m², a maximum provision of 538 parking spaces is required, without any adjustment for local factors. The development provides 520 parking spaces and as such complies with the parking controls of SOPA which are maximum requirements.

5.1.3 Summary on Parking

In summary, the provision of 520 parking spaces as proposed will ensure that all demands will be readily accommodated on site for all stages. The SOPA rates are premised upon a relatively high level of reliance on non-car modes of transport so that SOPA's and Government objectives are both met. The only concession sought relates to a relaxation in the supermarket parking rate which is acceptable for the reasons given and this approach also achieves these objectives.

5.2 disabled parking

This disabled parking for further stages is a matter for assessment during later Project Application/s and compliance with relevant Australian Standards is proposed. As a guide based on AS 2890.6 (2009), it is reasonable to assume that 2-3% of all parking should be provided as disabled parking and this will need to be assessed in the context of future applications.



Stage 1 parking provides 8 disabled parking spaces in total with 4 on basement level 1 and 2 which is sufficient. These spaces also comply with AS 2890.6 (2009).

5.3 motorcycle parking

Stage 1 has provided a total of 20 motorcycle spaces within basement level 1 and 2. This is considered appropriate and should satisfy the requirements of the development.

5.4 bicycle facilities

SOPA requires that commercial developments provide a minimum of 1 space per 150m² for staff 1 space per 750m² for visitors. Bicycle parking areas have been provided on both levels of basement parking. A total of 104 bicycles are provided on Basement Levels 1 and 2 which is satisfactory for employees. It should be noted that visitors availing of bicycle facilities will not use the basement parking provided and a provision of 22 bicycle parking spaces is required. In response the development provides 20 bicycle parking spaces on ground level which is sufficient. Change-room facilities have been provided next to the bicycle parking areas which will in turn encourage sustainable transport options as specified in SOPA's Master Plan 2030.

5.5 servicing

A loading dock is provided on the southern side of the development with access via Australia Avenue. It is suitable for use by a standard service vehicle as required under AS 2890.2 (2002) which is an 8.8m MRV and this design vehicle will be utilised by supermarket delivery and waste collection vehicles (see **Appendix C**).

The 'Silex' building car park has two loading docks of which one is currently in use. With the new car park layout, both loading docks remain readily accessible and relevant swept paths are also provided in **Appendix C**.



5.6 public transport usage

The proposed pedestrian connection to Olympic Park railway station and the nearby bus stops has the most significant potential to improve traffic conditions and reduce car dependency. In addition, it is expected that a Workplace Travel Plan and/or a Travel Access Guide would be prepared in support of the application at a later time. It is proposed that the Travel Access Guide will be prepared in response to a suitable condition of consent. This would include the promotion of alternate travel modes and travel demand measures including car sharing, public transport availability (bus, rail and taxi), cycle and pedestrian routes and linkages, bicycle end-user facilities and motorcycle parking. The provision of a drop-off area within the site will be of particular benefit to taxi use, which is a form of public transport.

This Travel Access Guide would address the primary objective of increasing public transport use to achieve the 40% Journey to Work public transport mode share target that is identified in Master Plan 2030.

5.7 bicycle and pedestrian linkages

Pedestrian and bicycle linkages should be provided within the site. Safe crossing opportunities are available on all major desire-lines, most importantly including the pedestrian crossing at the intersection of Herb Elliott Avenue and Australia Avenue which provides access to bus and rail services.

Australia Avenue incorporates a dedicated cycle path along its eastern and western side and connects directly to the development access. Bicycle paths are also found on Sarah Durack Avenue, Kevin Coombs Avenue and Holker Busway. It is clear that the Olympic park is well facilitated with bicycle paths and these dedicated paths along with the provision of bicycle parking bays and changing facilities will encourage employees to make use of the excellent facilities in the locality.



5.8 car share provision

It is considered that car share arrangements will form an integral part of future Project Applications and this can be conditioned. This will be prepared having regard for relevant guidelines when available. In general, a parking system such as “GoGet” is contemplated which has potential application to all non-resident land uses and this will be effective in reducing retail and commercial tenant parking demands. In this regard, as a general proposition, one “GoGet” car is able to meet the needs of many users, substantially reducing the need for a ‘designated’ car and thereby reducing parking demands. Based on the experience of “GoGet”, one shared space is equivalent to 5 ‘normal’ spaces. It is therefore recommended that consideration be given to the dedication of one or two car share spaces within the site, subject to discussion with candidate operators.

The implementation of a car share policy is a matter that can be conditioned having regard for relevant guidelines in association with individual applications.

5.9 event access and closures

Events of varying scale and duration are a regular occurrence in Sydney Olympic Park. On these occasions, road closures will generally have only a minor effect on the proposed development. Specifically, the Sydney Olympic Park Master Plan 2030 and in particular ‘Figure 4.3 Event Access Plan’, identifies that Kevin Coombs Avenue, Olympic Boulevard and the northern section of Australia Avenue, which would normally be popular routes to access/depart the site, are the main closures which would affect the proposed development. Nevertheless and most importantly, the southernmost part of Australia Avenue remains open throughout the year and is the most direct route to the development for vehicles travelling from the north, south and east. Vehicles travelling from the west access Sydney Olympic Park from Hill Road and therefore will be affected by road closures. The access off Australia Avenue provides the best arrival and departure route during these events for Stage 1 of the development.



5.10 trip generation

Notwithstanding that this Project Application is for Stage 1, the opportunity has been taken to assess a worst-case scenario with full development under the master plan taking account of all stages. It is acknowledged however that the master plan for this development will be implemented in stages and subject to later Project Applications.

5.10.1 Commercial Trip Rates

The trip rate used for assessment purposes as discussed in the following section has been based on the surveys of the basement car park for Site 8a on Murray Rose Avenue which is considered to be very similar. This survey provided the following results for vehicles entering and exiting the car park:

- AM Peak: 0.4 trips/space/hr (peak 7-8am)
- PM Peak: 0.2 trips/space/hr (peak 4:15-5:15pm)

These rates have also been validated by additional surveys of Sites 6 and 7 (8 Herb Elliott Avenue) which is directly opposite the site. This site has 712 spaces (although this include retail and public parking components) but nevertheless yielded lower trip rates those obtained at Site 8a, which was therefore adopted to assess a worst case scenario. .

5.10.2 Commercial Stage 1 and Stage 2 (Commercial Trip Generation)

Based on the trip rates obtained above from surveys, the 486 commercial parking spaces will generate trips as follows:

- AM Peak 195 trips per hour (156 in, 39 out) during the morning peak (7-8am) and;
- PM Peak 98 trips (20 in, 78 out) during the afternoon peak (4:15-5:15pm).



5.10.3 Supermarket & Secondary Retail Trip Stage 1 Generation

Stage one proposes 1452m² of retail area which comprises a supermarket, secondary retail and café. A trip rate of 3 trips per space during the critical PM peak period is appropriate and this is based on the RTA's Guideline and is also underpinned by more recent survey data. When applied to the 30 spaces allocated to these areas under the SOPA controls, these uses will therefore generate approximately 90 trips during the critical PM peak period. Trips in the AM peak will be about 20% of these trips and will relate mainly to supermarket staff arrivals. Accordingly, the retail uses in Stage 1 are predicted to generate trips as follows:

- ➡ AM Peak 18 trips per hour (9 in, 9 out) during the morning peak; and
- ➡ PM Peak 90 trips (45 in, 45 out) during the afternoon peak.

5.10.4 Combined Uses

The overall development under the master plan will be as follows:

- ➡ AM Peak 213 trips per hour (165 in, 48 out) during the morning peak (7-8am) and;
- ➡ PM Peak 188 trips (65 in, 123 out) during the afternoon peak (4:15-5:15pm).

These trips will be associated exclusively with the access driveways onto the Herb Elliott Avenue and Australia Avenue (with a left-in and left-out arrangement). It is emphasised that this level of activity is comparable to the previous generation associated with the Site 8A Murray Rose Avenue.

5.11 peak period Intersection performances

The external traffic impacts arising from the development have been based on the basis of the trip rates discussed above, with 213 veh/hr in the AM peak and 188 veh/hr in the PM peak. These trips have been distributed onto the existing road network on the basis of journey to work data and having regard for the attractiveness of available routes with the following assumed distributions:



- 38% of trips to the west via Hill Road
- 26% of trips to the north via Australia Avenue and Homebush Bay Drive
- 20% of trips to the south and 16% of trips east via Australia Avenue, Homebush Bay Drive and the Western Motorway

It should be noted that assumed travel paths have been identified separately for vehicles arriving and departing to/from the site. The intersection performance has been remodelled and the results are provided in Appendix D and summarised in Table 2.

table 2: existing plus development intersection performance: am and pm peak hour

Intersection Description	Period	Control Type	Degree of Saturation	Intersection Delay	Level of Service
Herb Elliott & Australia Ave	AM	Signals	0.472	17.2(17.0)	B
	PM		0.550(0.451)	16.0(15.6)	B
Herb Elliott & Olympic Blvd	AM	Give-Way	0.064(0.045)	8.5(8.5)	A
	PM		0.716(0.673)	21.4(19.9)	B
Australia Ave & Kevin Coombs	AM	Stop (Two-way)	0.043(0.040)	16.6(16.1)	B
	PM		0.015	14.7(14.4)	B(A)
Australia Ave & Sarah Durack	AM	Signals(Actuated)	1.041(0.976)	54.4(39.7)	D (C)
	PM		1.200(1.157)	36.5(35.2)	C
Hill and M4 Off-Ramp	AM	Give-Way	1.228(1.078)	235.2(112.9)	F
	PM		0.769(0.727)	19.9(18.7)	B

It is evident that the traffic impacts from the proposed development have a minimal effect on the road network and the traffic modelling undertaken is based on a worst case assessment. The 213 trips generated in the AM peak and the 188 trips in the PM peak are readily accommodated with the exception of the M4 Off-Ramp which is currently operating at a level of Service F and this will continue. The actuated intersection of Australia Avenue and Sarah Durack Avenue reduces slightly to a level of service D in the AM Peak and this is primarily due to the increase in northbound vehicles.



Nevertheless, it is considered that the intersection will operate satisfactorily and can accommodate the increased traffic demand. The intersection of Australia Avenue with Homebush Bay Drive has not been separately assessed as it has been extensively assessed by others; and improvements are already proposed and have been funded to provide increased capacity.

The Master Plan 2030 also identifies that a number of the intersections analysed in this report to be upgraded gradually as required. The following improvements are notable and will provide further traffic capacity, the benefits of which are not taken into account in Table 2 above.

- New M4 East Facing ramp at Hill Road; and
- Intersection upgrades for Sarah Durack/Australia Avenue, Herb Elliott Avenue/Australia Avenue and Kevin Coombs Avenue/ Australia Avenue.

5.12 demolition and construction impacts

A condition is invited seeking the preparation of a detailed Demolition and Construction Traffic Management Plan. It is anticipated that all such activity will be focussed on Australia Avenue and the Plan will need to be prepared in consultation with the appointed builder. It will need to address requirements during each stage (demolition, site preparation, excavation, construction, fit-out and landscaping) and will need to include consideration of times of operation, truck access routes, site access, average truck frequencies, truck sizes, parking for construction workers, work zone requirements, pedestrian control, traffic management plans and any road occupancy applications. These are matters that cannot be addressed at this time although in principle, there are considered to be no obvious constraints to the preparation of a safe and efficient Management Plan.

5.13 site access arrangements

The development will rely on the proposed combined entry-exit driveway onto Australia Avenue. This has sufficient capacity to accommodate all entry volumes for Stage one and the entry driveway is



indicated on the plans. The use of a temporary ramp is proposed as this will provide safe and direct access to the basement parking levels.

The master plan for the site also proposes an entry-exit driveway onto the Herb Elliott Avenue and this will be constructed in the future stages and will be subject to later assessment. This driveway is to be located adjacent to Park Street about 70 metres from its intersection with Australia Avenue. It is emphasised that traffic exiting the site intending to travel south, east or north will use this exit, which will therefore accommodate 62% of overall traffic with the remainder of traffic travelling to the north effectively split onto both exits. The traffic impact assessment undertaken above assumes these arrangements.



6. access and internal design

6.1 access design

The proposed development would require a Category 2 Driveway under AS 2890.1 (2004), being a combined entry-exit driveway of width 6 to 9 metres. In response, the development proposes combined entry/exit driveway over 10 metres wide. This exceeds (is superior to) the requirements of AS 2890.1 (2004). Visual splays are sufficient at the kerb line of the entry driveway to permit turns from within the kerbside lane. This is the case for the largest vehicle permitted to enter the site (MRV) which can turn from the inside lane and does not encroach into the offside lane. This is shown in the swept paths that are included in appendix c.

The proposed driveways will operate with two way flow and due to the existing landscaped median dividing Australia Avenue access and egress from the site allows for only left-in, left-out movements. This scenario has been modelled accordingly and this is a worst case scenario for the intersection of Herb Elliott Avenue and Australia Avenue. It is acknowledged that Figure 5.4 'Town Centre Precinct Illustrative Plan' from the Master Plan 2030 shows an artist's impression which indicates the median on Australia Avenue may be removed at the New Road/Australia Avenue intersection. This would also therefore permit right in, right out movements to/from the site. No further information has been provided in the Master Plan regarding the removal of the median. If this however were to be adapted as the future case scenario, it would result in the improved operation of both intersections discussed above.

In summary, the proposed site access will operate safely and efficiently.



6.2 internal design

The internal basement car park generally complies with the requirements of AS 2890.1 (2004) and the following characteristics are noteworthy:

- The internal access ramps have a maximum gradient of 16.7% (1 in 6) and transition ramp of 2 metres in length at maximum gradient of 8.3% (1 in 12) which exceeds the requirements of AS 2890.1 (2004);
- The service ramp into the loading area has a maximum gradient of 6.25% (1 in 16) is acceptable and meets the requirements of AS 2890.1 (2004);
- All internal ramps have been designed for two way flow. All ramps are constructed with a 7 metre width (in excess of the 5.5metre width required under AS 2890.1(2004)). A swept path analysis is provided in **appendix c** and this demonstrates satisfactory performance;
- Parking spaces have a minimum width of 2.4 metres and a length of 5.4 metres with all aisles varying in width and a minimum aisle width of 6.2 metres. This provision meets the requirements of User Class 1 which requires bay and aisle widths of 2.4 metres and 6.2 metres. The proposed layout is compliant and will operate satisfactorily. It is noted that the parking aisle to the north of basement 1 & 2 has a width of 6.0 metres. This section of the car park complies and exceeds the requirements of User Class 1A which is permissible for employee parking also and allows for three point turn entry and exit;
- Small parking spaces have a minimum width of 2.3 metres and a length of 5.0 metres and meet the requirements of AS 2890.1 (2004);
- All columns are located outside of the parking space design envelope as shown in Figure 5.2 of AS 2890.1 (2004);
- Disabled parking spaces are a minimum of 2.4 metres wide and 5.4 metres in length. The spaces also meet the layout requirements of AS 2890.6 (2009) with the shared area for all spaces provided.
- Swept path analysis has been undertaken for the existing warehouse building car park which provides access for employees and also accommodates 2 loading bays. The swept paths for these two loading bays are found in **appendix c**.



Notwithstanding the above, it is expected that a condition of consent can be imposed requiring compliance with AS 2890.1 (2004) and any minor adjustments which may be required (if any) can be made at a future stage. In summary, the internal design of the car park is acceptable and will provide a satisfactory standard of safety and efficiency.



7. response to DGR's

- Development traffic generation and peak traffic movements are discussed in detail in Section 5.10 and 5.11;
- The report has identified that the only road/intersection upgrade that is currently necessary is the intersection of M4 off ramp with Hill Road which is operating presently at a Level of Service F during the AM Peak and requires improvement even under existing conditions;
- The development incorporates a loading facility which is expected to accommodate all demands. The largest design truck is an 8.8m MRV, which is the 'standard' design truck based on AS 2890.1 (see **appendix c** for swept path analysis). This size of truck will need to be the subject of a suitable condition of consent and should be suitable for waste collection and supermarket delivery vehicles;
- Parking is provided at the SOPA rate which is a moderate level of provision (generally only 50% of the RTA's 'unrestrained' requirement) so that parking is suppressed to a significant extent;
- Bicycle storage facilities are to be provided in all Project Applications and in the case of Stage 1 PA, these are indicated on the submitted plans. The provision of these facilities along with changing facilities for users will only encourage their use and further promote a non-car transport mode. Pedestrian and bike linkages have been further analysed in Section 5.7;
- The site is very accessible to public transport as discussed in Section 5.6. It is recommended that the development will incorporate a Transport Access Guide (to be formulated under a suitable condition of consent), which will encourage use of bus and rail services; as well as bicycles, car share spaces and car pooling. It is evident that promoting alternate travel modes as discussed above supports the 'minimalist' approach to on-site car parking, based on SOPA rates. Further Bicycle facilities are proposed for the Stage 2 Project Application;
- A Construction Traffic Management Plan will be prepared in response to a suitable condition of consent as discussed in Section 5.12.

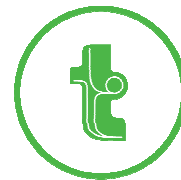


8. conclusions

In summary:

- The proposed use of the site as a mixed use commercial and retail development is considered appropriate in traffic/transport planning terms;
- The traffic generation arising from the 42,159m² development (inclusive of Stage 1 and Stage 2) has been assessed as a net increase over and above existing traffic conditions. The predicted increase is 213 veh/hr and 188 veh/hr for the AM and PM peak periods respectively. These trips will be split onto all available routes and can be accommodated, with moderate impacts on the surrounding road system;
- Specifically, the road network has been assessed with the overall master plan development and operates generally satisfactorily, including both site accesses and local intersections. The notable exception is the major intersection of Hill Road with the M4 off-ramp, where average delays are already unacceptable and will increase in the AM peak. This however is an existing problem;
- With 225 off-street parking spaces for Stage 1, the development is compliant and will contain all parking demands wholly within the site.
- The proposed access driveways comply fully with the requirements of AS 2890.1 (2004). The two-way flow-through system is considered satisfactory and appropriate;
- The proposed car park complies with the requirements of AS 2890.1 (2004). The car park has also been assessed using the computer program Auto Track, as permitted by AS 2890.1: 2004 and operates safely and efficiently;

In conclusion, the Project Application for Stage 1 development is supportable in traffic and transport planning terms, subject to appropriate conditions as discussed. Indeed, this conclusion is made on the basis of the traffic impacts associated with the overall master plan for the site (Stage 1 and Stage 2).



appendix a

photographic record



View looking east from Herb Elliott Avenue, with the proposed site to the right of the picture.



View looking south at the intersection of Australia Avenue with Herb Elliott Avenue.





View looking west across the intersection of Herb Elliott and Australia Avenue.



View looking west along Herb Elliott Avenue with site frontage on the left hand side.





View looking west along the Herb Elliott Avenue at the current entrance to the existing warehouse of 'Silex Solar'.



View looking east from Herb Elliott Avenue at the site for stage 1 of the development.





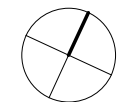
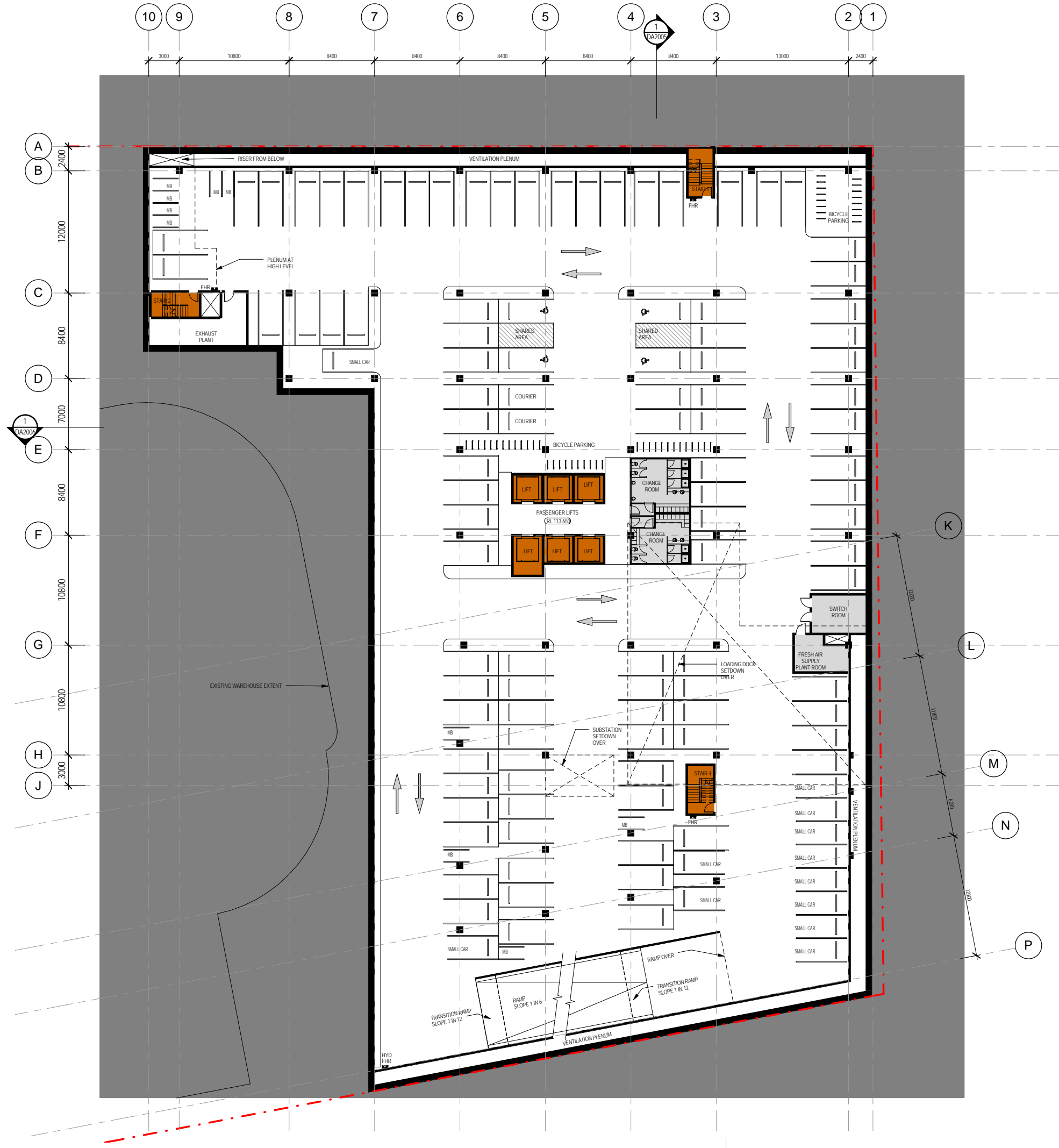
appendix b

reduced plans

Do not scale drawings. Verify all dimensions on site

issue	amendment	date
A	ISSUE FOR DA	26.08.11

PARKING SCHEDULE - BASEMENT LEVEL 1		
TYPE	Size	Count
BICYCLE PARKING	1800 x 600	52
CAR PARKING	2400x5400	94
CAR PARKING - DISABLED	2400x5400	4
COURIER PARKING	2400x5400	2
MOTORCYCLE PARKING	1200x2500	10
SMALL CAR PARKING	2300x5000 small car	12



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project
SITE 43/44 SYDNEY OLYMPIC PARK

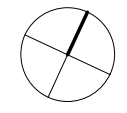
drawing
BASEMENT LEVEL 1 PLAN

scale 1:200 @ A1 drawing no.
 drawn AWL **DA1002**
 checked CO issue
 project no 090086 **A**

Do not scale drawings. Verify all dimensions on site

issue	amendment	date
A	ISSUE FOR DA	26.08.11

PARKING SCHEDULE - BASEMENT LEVEL 2		
TYPE	Size	Count
BICYCLE PARKING	1800 x 600	52
CAR PARKING	2400x5400	99
CAR PARKING - DISABLED	2400x5400	4
COURIER PARKING	2400x5400	2
MOTORCYCLE PARKING	1200x2500	10
SMALL CAR PARKING	2300x5000 small car	12



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project
SITE 43/44 SYDNEY OLYMPIC PARK

drawing
BASEMENT LEVEL 2 PLAN

scale 1:200@ A1 drawing no.
 drawn AWL **DA1001**
 checked CO issue
 project no 090086 **A**



appendix c

swept path analysis

notes
 This drawing is prepared for information purposes only. It is not to be used for construction.

no. revision note
 by. date



client
 Capital Corporation
 Bankstown Hills
 NSW 2153

scale
 1:200 @ A3
 0m 2 4 6 8

project
 Mixed Use Commercial & Retail
 Development
 2 Australia Avenue
 Homebush

drawing prepared by
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drawing title
 Ground Floor Swept Path:Service Area Entry

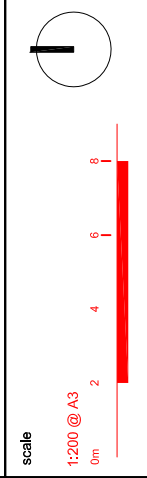
drawn: checked: date:

project no. **10 228** drawing phase. **TX_01** rev **A**

notes
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no.	revision note	by	date

client
Capital Corporation
Bankstown Hills
Newry District
NSW 2153



project
Mixed Use Commercial & Retail
Development
2 Australia Avenue
Homebush

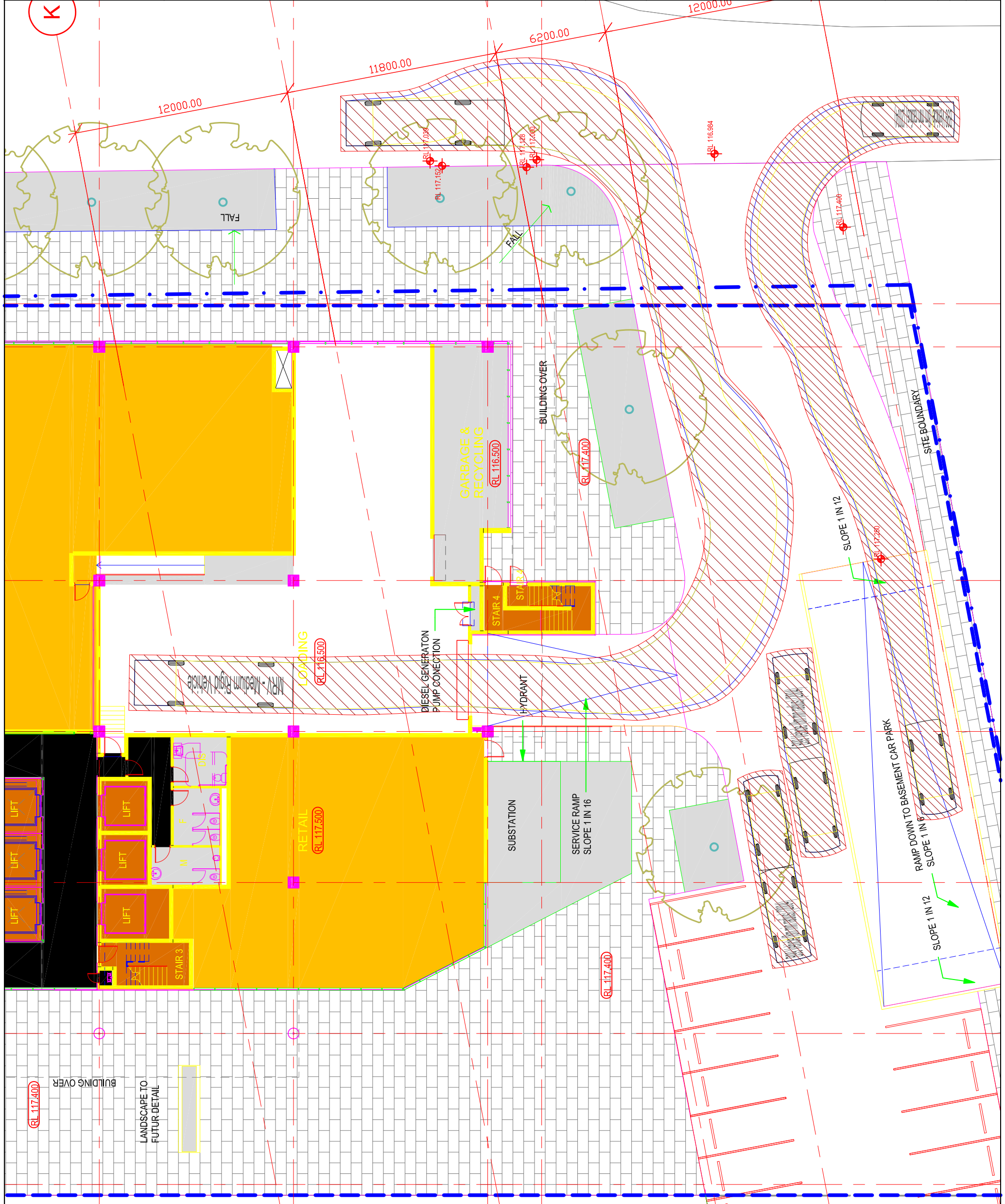
drawing prepared by
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traffic & transport planners

drawing title
Ground Floor Swept Path:Service Area Exit

drawn:	checked:	date:

project no. **10 228** drawing phase. **TX 02** rev **A**



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 by. date

client
 Capital Corporation
 111 Railway Cliff
 Bankstown Hills
 NSW 2153

scale
 1:400 @ A3
 0m 4 8 12 16

project
 Mixed Use Commercial & Retail
 Development
 2 Australia Avenue
 Homebush

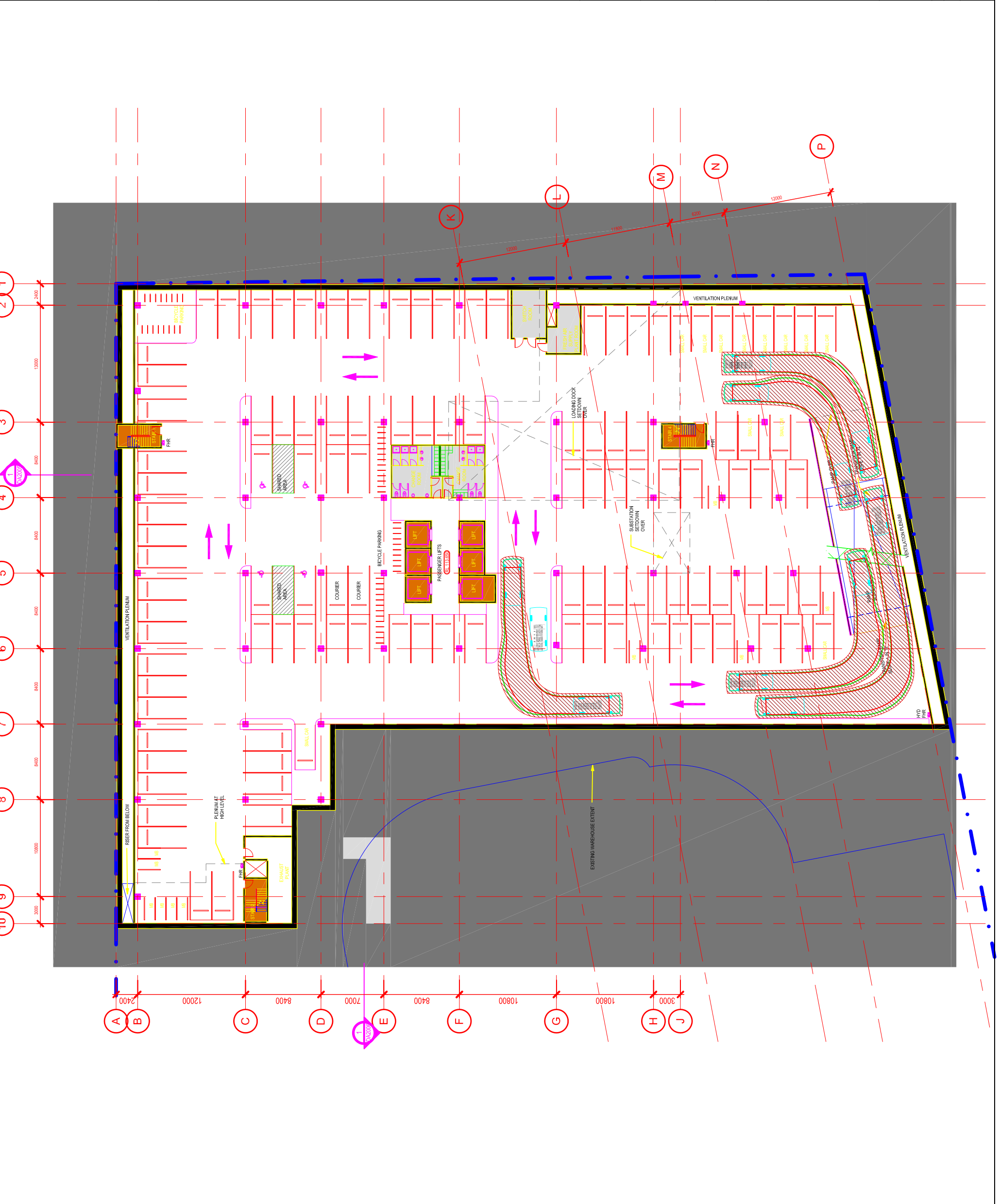
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drawing title
Basement 1 Swept Path - Ramp

drawn: checked: date:

project no. **10 228** drawing phase. **TX_03** rev **A**



notes
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 Bankstown Hills
 NSW 2153

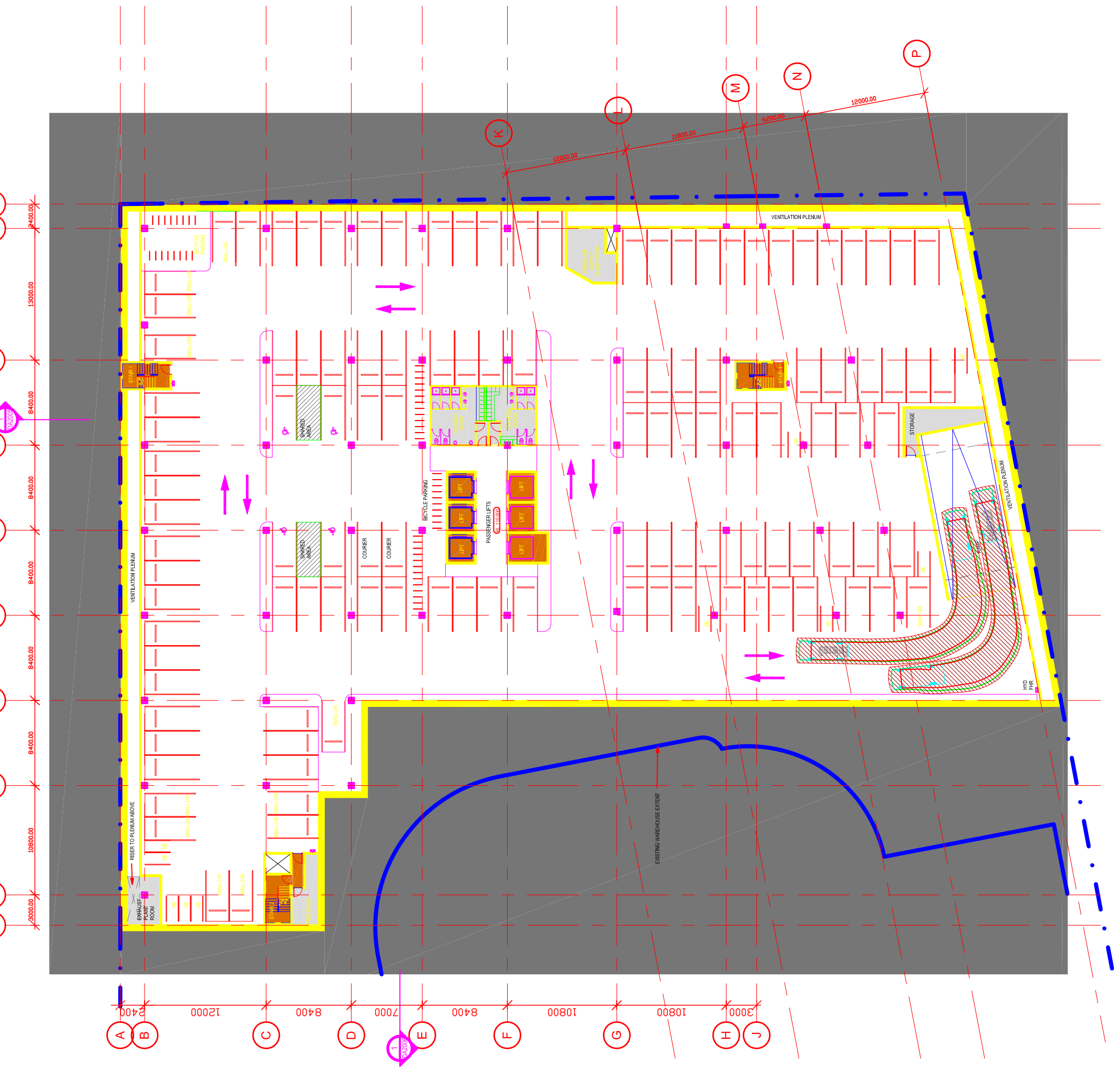
scale
 1:400 @ A3
 0m 4 8 12 16

project
 Mixed Use Commercial & Retail
 Development
 2 Australia Avenue
 Homebush

drawing prepared by
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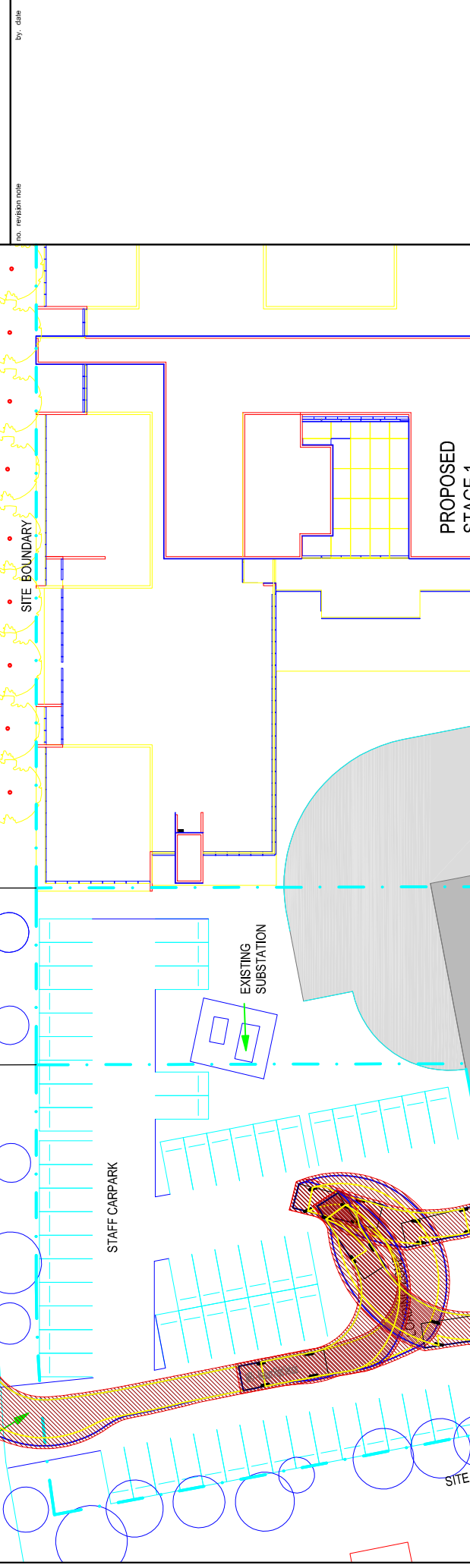
drawing title
Basement 2 Swept Path - Ramp

drawn: checked: date:
 project no. **10 228** drawing phase. **TX_04** rev **A**



notes: This drawing is prepared for information purposes only. It is not to be used for construction.

no. revision note by date




client: **Cherryfields**
 Site No. 12 Glenview Drive
 NSW 2170

scale: 1:400 @ A3
 0m 4 6 8 12 16

project: **Mixed Use Commercial & Retail Development**
 Australia Avenue
 Frobenhausen

drawing prepared by: **TRAFFIX**
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 porters point NSW 2011
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 f: +61 2 8824 8700
 e: info@trafix.com.au

drawing title: **Existing Warehouse Swept Path - Loading Docks**

drawn:	checked:	date:
		
project no.	drawing phase.	rev.
10 228	TX_051 A	



appendix d

sidra outputs



appendix d-1

existing conditions

MOVEMENT SUMMARY

Site: AM Peak Australia Ave, Herb Elliot Ave & Parkview Drive

AM Peak
Australia Avenue, Parkview Drive & Herb Elliot Drive
Signals - Fixed Time Cycle Time = 50 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Australia Avenue											
1	L	315	6.0	0.472	21.5	LOS B	7.6	56.3	0.80	0.81	37.9
2	T	301	6.0	0.422	12.7	LOS A	7.2	53.0	0.78	0.66	42.1
3	R	214	6.0	0.459	23.0	LOS B	5.8	42.4	0.83	0.81	36.9
Approach		829	6.0	0.472	18.7	LOS B	7.6	56.3	0.80	0.76	39.0
East: Parkview Drive											
4	L	27	6.0	0.058	15.3	LOS B	1.0	7.2	0.66	0.69	30.8
5	T	13	6.0	0.058	10.7	LOS A	1.0	7.2	0.66	0.49	31.6
6	R	14	6.0	0.039	15.1	LOS B	0.3	2.5	0.65	0.64	30.7
Approach		54	6.0	0.058	14.2	LOS A	1.0	7.2	0.66	0.63	31.0
North: Australia Avenue											
7	L	29	6.0	0.161	19.7	LOS B	2.6	19.4	0.69	0.84	40.6
8	T	193	6.0	0.161	11.2	LOS A	2.8	20.2	0.69	0.55	43.3
9	R	19	6.0	0.066	24.3	LOS B	0.6	4.3	0.78	0.71	36.1
Approach		241	6.0	0.161	13.3	LOS A	2.8	20.2	0.70	0.60	42.3
West: Herb Elliot Avenue											
10	L	13	6.0	0.156	15.9	LOS B	2.2	16.5	0.69	0.72	30.5
11	T	11	6.0	0.157	11.3	LOS A	2.2	16.5	0.69	0.55	31.1
12	R	155	6.0	0.156	15.7	LOS B	2.2	16.5	0.69	0.70	30.5
Approach		178	6.0	0.156	15.4	LOS B	2.2	16.5	0.69	0.69	30.5
All Vehicles		1302	6.0	0.472	17.0	LOS B	7.6	56.3	0.76	0.71	37.9

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P3	Across E approach	53	15.2	LOS B	0.1	0.1	0.78	0.78
P5	Across N approach	53	18.5	LOS B	0.1	0.1	0.86	0.86
P7	Across W approach	53	16.8	LOS B	0.1	0.1	0.82	0.82
All Pedestrians		212	17.5				0.83	0.83

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: PM Peak Australia Ave, Herb Elliot Ave & Parkview Drive

PM Peak
Australia Avenue, Parkview Drive & Herb Elliot Drive
Signals - Fixed Time Cycle Time = 50 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Australia Avenue											
1	L	91	6.0	0.445	23.5	LOS B	6.8	49.8	0.84	0.84	38.0
2	T	435	6.0	0.445	15.0	LOS B	7.0	51.2	0.84	0.70	39.7
3	R	19	6.0	0.058	24.0	LOS B	0.6	4.2	0.78	0.71	36.3
Approach		544	6.0	0.445	16.7	LOS B	7.0	51.2	0.84	0.73	39.3
East: Parkview Drive											
4	L	152	6.0	0.234	14.2	LOS A	4.1	30.0	0.66	0.73	31.3
5	T	34	6.0	0.234	9.6	LOS A	4.1	30.0	0.66	0.54	32.0
6	R	109	6.0	0.292	14.0	LOS A	2.5	18.2	0.64	0.70	31.3
Approach		295	6.0	0.292	13.6	LOS A	4.1	30.0	0.65	0.70	31.4
North: Australia Avenue											
7	L	11	6.0	0.326	22.8	LOS B	4.9	36.4	0.80	0.87	39.2
8	T	371	6.0	0.326	14.4	LOS A	5.1	37.5	0.80	0.66	40.7
9	R	11	6.0	0.039	25.8	LOS B	0.3	2.5	0.81	0.69	35.2
Approach		392	6.0	0.326	14.9	LOS B	5.1	37.5	0.80	0.66	40.5
West: Herb Elliot Avenue											
10	L	23	6.0	0.450	15.6	LOS B	5.8	42.9	0.74	0.77	30.6
11	T	12	6.0	0.454	11.0	LOS A	5.8	42.9	0.74	0.63	31.2
12	R	442	6.0	0.451	16.4	LOS B	6.0	43.9	0.77	0.76	30.1
Approach		477	6.0	0.451	16.3	LOS B	6.0	43.9	0.77	0.76	30.2
All Vehicles		1707	6.0	0.451	15.6	LOS B	7.0	51.2	0.78	0.72	35.3

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	16.8	LOS B	0.1	0.1	0.82	0.82
P3	Across E approach	53	17.6	LOS B	0.1	0.1	0.84	0.84
P5	Across N approach	53	16.0	LOS B	0.1	0.1	0.80	0.80
P7	Across W approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
All Pedestrians		212	17.5				0.84	0.84

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: AM Peak Herb Elliott Ave & Olympic Blvd

AM Peak Existing
Herb Elliott Avenue & Olympic Blvd
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Olympic Blvd											
2	T	20	6.0	0.023	0.3	LOS A	0.1	1.0	0.18	0.00	56.1
3	R	16	6.0	0.023	8.4	LOS A	0.1	1.0	0.18	0.71	48.9
Approach		36	6.0	0.023	3.9	LOS A	0.1	1.0	0.18	0.31	52.7
East: Herb Elliot Avenue											
4	L	4	6.0	0.016	9.1	LOS A	0.1	0.6	0.21	0.62	48.1
6	R	9	6.0	0.016	8.8	LOS A	0.1	0.6	0.21	0.58	48.3
Approach		14	6.0	0.016	8.9	LOS A	0.1	0.6	0.21	0.59	48.2
North: Olympic Blvd											
7	L	40	6.0	0.045	8.5	LOS A	0.0	0.0	0.00	0.84	49.0
8	T	42	6.0	0.045	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		82	6.0	0.045	4.1	LOS A	0.0	0.0	0.00	0.41	54.1
All Vehicles		132	6.0	0.045	4.5	NA	0.1	1.0	0.07	0.40	53.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: PM Peak Herb Elliott Ave & Olympic Blvd

PM Peak Existing
Herb Elliott Avenue & Olympkpic Blvd
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Olympic Blvd											
2	T	132	6.0	0.153	1.1	LOS A	1.1	8.0	0.37	0.00	52.6
3	R	94	6.0	0.153	9.2	LOS A	1.1	8.0	0.37	0.75	48.6
Approach		225	6.0	0.153	4.5	LOS A	1.1	8.0	0.37	0.31	50.8
East: Herb Elliot Avenue											
4	L	82	6.0	0.673	19.9	LOS B	7.8	57.7	0.70	1.02	39.1
6	R	276	6.0	0.674	19.6	LOS B	7.8	57.7	0.70	1.11	39.2
Approach		358	6.0	0.675	19.7	LOS B	7.8	57.7	0.70	1.09	39.2
North: Olympic Blvd											
7	L	98	6.0	0.123	8.5	LOS A	0.0	0.0	0.00	0.86	49.0
8	T	128	6.0	0.123	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		226	6.0	0.123	3.7	LOS A	0.0	0.0	0.00	0.37	54.7
All Vehicles		809	6.0	0.674	11.0	NA	7.8	57.7	0.41	0.67	45.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: AM Peak Australia Avenue,
Kevin Coomb Ave,

AM Peak
Australia Avenue, Kevin Coombs Ave,
Holker St busway & Majorj Jackson Pkwy
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South: Majorj Jackson Pkwy												
1	L	47	6.0	0.035	8.5	LOS A	0.2	1.7	0.18	0.60	48.4	
2	T	15	6.0	0.035	0.1	LOS A	0.2	1.7	0.18	0.00	55.8	
3	R	1	6.0	0.035	8.0	LOS A	0.2	1.7	0.18	0.59	48.6	
Approach		63	6.0	0.035	6.5	LOS A	0.2	1.7	0.18	0.46	49.9	
East: Holker Street Busway												
4	L	1	6.0	0.040	15.1	LOS B	0.2	1.4	0.40	0.71	43.1	
5	T	16	6.0	0.040	16.1	LOS B	0.2	1.4	0.40	0.93	42.6	
6	R	4	6.0	0.040	15.6	LOS B	0.2	1.4	0.40	0.92	42.9	
Approach		21	6.0	0.040	15.9	LOS B	0.2	1.4	0.40	0.92	42.7	
North: Kevin Coombs Avenue												
7	L	4	6.0	0.002	8.4	LOS A	0.0	0.0	0.00	0.67	49.0	
8	T	23	6.0	0.254	0.3	LOS A	1.6	11.8	0.19	0.00	55.4	
9	R	326	6.0	0.255	8.4	LOS A	1.6	11.8	0.19	0.61	48.4	
Approach		354	6.0	0.255	7.8	LOS A	1.6	11.8	0.19	0.57	48.8	
West: Australia Avenue												
10	L	149	6.0	0.137	11.3	LOS A	0.7	5.0	0.12	0.92	46.3	
11	T	3	6.0	0.137	11.9	LOS A	0.7	5.0	0.12	0.99	45.8	
12	R	21	6.0	0.044	15.8	LOS B	0.2	1.5	0.52	0.91	43.1	
Approach		174	6.0	0.136	11.8	LOS B	0.7	5.0	0.17	0.92	45.9	
All Vehicles		612	6.0	0.255	9.1	NA	1.6	11.8	0.19	0.67	47.8	

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: PM Peak Australia Avenue,
Kevin Coomb Ave,

PM Peak Existing
Australia Avenue, Kevin Coombs Ave,
Holker St busway & Major Jackson Pkwy
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow 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: Major Jackson Pkwy												
1	L	12	6.0	0.016	8.4	LOS A	0.1	0.7	0.12	0.74	48.7	
2	T	16	6.0	0.016	0.1	LOS A	0.1	0.7	0.12	0.00	57.2	
3	R	1	6.0	0.016	8.0	LOS A	0.1	0.7	0.12	0.71	49.0	
Approach		28	6.0	0.016	3.8	LOS A	0.1	0.7	0.12	0.33	53.1	
East: Holker Street Busway												
4	L	1	6.0	0.015	13.4	LOS A	0.1	0.5	0.27	0.80	44.3	
5	T	7	6.0	0.015	14.4	LOS A	0.1	0.5	0.27	0.90	43.8	
6	R	1	6.0	0.015	13.7	LOS A	0.1	0.5	0.27	0.92	44.1	
Approach		9	6.0	0.015	14.2	LOS A	0.1	0.5	0.27	0.89	43.9	
North: Kevin Coombs Avenue												
7	L	3	6.0	0.002	8.4	LOS A	0.0	0.0	0.00	0.67	49.0	
8	T	24	6.0	0.164	0.1	LOS A	1.0	7.0	0.11	0.00	57.4	
9	R	209	6.0	0.164	8.2	LOS A	1.0	7.0	0.11	0.62	48.8	
Approach		237	6.0	0.164	7.4	LOS A	1.0	7.0	0.11	0.56	49.6	
West: Australia Avenue												
10	L	397	6.0	0.364	11.3	LOS A	2.3	17.2	0.11	0.93	46.3	
11	T	16	6.0	0.367	11.9	LOS A	2.3	17.2	0.11	0.99	45.7	
12	R	76	6.0	0.127	14.1	LOS A	0.6	4.6	0.45	0.91	44.4	
Approach		488	6.0	0.364	11.7	LOS A	2.3	17.2	0.16	0.92	46.0	
All Vehicles		763	6.0	0.367	10.1	NA	2.3	17.2	0.14	0.79	47.3	

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: AM Peak Exist Australia Ave,
Bennelong Pky & Sarah Durack
Ave

AM Peak Existing
Australia Ave, Bennelong Pky & Sarah Durack Ave
Signals - Actuated Cycle Time = 100 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Australia Avenue											
1	L	383	5.0	0.207	7.8	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.60	49.8
2	T	1053	5.0	0.976	56.7	LOS E	32.3	235.9	1.00	1.08	22.6
3	R	289	5.0	0.780	51.3	LOS D	15.1	110.6	0.98	0.85	25.0
Approach		1725	5.0	0.976	44.9	LOS D	32.3	235.9	0.77	0.93	26.2
East: Bennelong Pky											
4	L	454	5.0	0.573	13.7	LOS A	10.6	77.4	0.51	0.78	43.7
5	T	33	5.0	0.511	52.0	LOS D	5.1	37.4	0.97	0.74	23.2
6	R	42	5.0	0.511	60.2	LOS E	5.1	37.4	0.97	0.76	23.1
Approach		529	5.0	0.573	19.8	LOS B	10.6	77.4	0.57	0.78	38.8
North: Australia Avenue											
7	L	4	5.0	0.270	39.0	LOS C	7.2	52.3	0.79	0.87	30.4
8	T	290	5.0	0.269	30.6	LOS C	7.2	52.3	0.79	0.64	31.3
9	R	44	5.0	0.097	25.6	LOS B	1.5	10.9	0.79	0.72	35.4
Approach		338	5.0	0.269	30.0	LOS C	7.2	52.3	0.79	0.66	31.7
West: Sarah Durack Avenue											
10	L	31	5.0	0.636	52.0	LOS D	11.3	82.6	0.93	0.82	25.0
11	T	18	5.0	0.637	43.6	LOS D	11.3	82.6	0.93	0.77	25.2
12	R	366	5.0	0.635	51.5	LOS D	11.3	82.6	0.93	0.81	25.0
Approach		415	5.0	0.635	51.2	LOS D	11.3	82.6	0.93	0.81	25.0
All Vehicles		3007	5.0	0.976	39.7	LOS C	32.3	235.9	0.76	0.86	28.2

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS E. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on average delay for all vehicle movements.

⁹ Continuous movement

MOVEMENT SUMMARY

Site: PM Peak Exist Australia Ave,
Bennelong Pky & Sarah Durack
Ave

PM Peak Existing
Australia Ave, Bennelong Pky & Sarah Durack Ave
Signals - Actuated Cycle Time = 112 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Australia Avenue											
1	L	480	5.0	0.260	7.8	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.60	49.7
2	T	573	5.0	0.353	22.6	LOS B	12.0	87.8	0.68	0.59	34.9
3	R	177	5.0	1.156	214.8	LOS F	22.5	164.0	1.00	1.46	8.7
Approach		1230	5.0	1.157	44.4	LOS D	22.5	164.0	0.46	0.72	26.6
East: Bennelong Pky											
4	L	551	5.0	0.582	25.3	LOS B	17.7	129.5	0.72	0.94	35.5
5	T	45	5.0	0.074	19.4	LOS B	2.6	19.0	0.58	0.46	37.4
6	R	12	5.0	0.074	27.6	LOS B	2.6	19.0	0.58	0.84	35.3
Approach		608	5.0	0.582	24.9	LOS B	17.7	129.5	0.71	0.90	35.6
North: Australia Avenue											
7	L	19	5.0	0.617	34.8	LOS C	22.5	164.2	0.80	0.93	32.3
8	T	1027	5.0	0.621	26.4	LOS B	22.5	164.4	0.80	0.72	33.2
9	R	71	5.0	0.185	36.9	LOS C	3.9	28.4	0.71	0.76	29.9
Approach		1117	5.0	0.621	27.2	LOS B	22.5	164.4	0.80	0.72	33.0
West: Sarah Durack Avenue											
10	L	15	5.0	0.800	39.6	LOS C	13.4	97.5	0.91	0.87	29.1
11	T	8	5.0	0.815	31.1	LOS C	13.4	97.5	0.91	0.80	29.5
12	R	448	5.0	0.802	43.8	LOS D	13.4	98.1	0.93	0.86	27.4
Approach		471	5.0	0.802	43.4	LOS D	13.4	98.1	0.93	0.86	27.5
All Vehicles		3426	5.0	1.157	35.2	LOS C	22.5	164.4	0.68	0.77	30.0

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on average delay for all vehicle movements.

⁹ Continuous movement

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	53	50.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	53	50.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	53	50.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		159	50.2				0.95	0.95

Level of Service (Aver. Int. Delay): LOS E. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS E. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: Hill-M4 Off_EX-AM

Hill Rd / M4 Off-ramp
Scenario: Existing
Period: AM
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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: Hill Rd (south)											
2	T	998	7.6	0.268	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		998	7.6	0.269	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
West: M4 Off-Ramp (west)											
10	L	500	8.4	1.078	112.9	LOS F	40.0	300.1	1.00	3.34	12.2
Approach		500	8.4	1.078	112.9	LOS F	40.0	300.1	1.00	3.34	12.2
All Vehicles		1498	7.9	1.078	37.7	NA	40.0	300.1	0.33	1.11	20.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Monday, 26 July 2010 6:53:44 PM
SIDRA INTERSECTION 5.0.4.1498
Project: T:\Traffic\2010\10228\Modelling\2 Australia Avenue, Homebush.sip
8000844, TRAFFIX, SINGLE

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INTERSECTION

MOVEMENT SUMMARY

Site: Hill-M4 Off_EX-PM

Hill Rd / M4 Off-ramp
Scenario: Existing
Period: PM
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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: Hill Rd (south)											
2	T	652	8.2	0.176	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		652	8.2	0.176	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
West: M4 Off-Ramp (west)											
10	L	496	10.0	0.727	18.7	LOS B	8.7	66.0	0.78	1.24	36.7
Approach		496	10.0	0.727	18.7	LOS B	8.7	66.0	0.78	1.24	36.7
All Vehicles		1147	9.0	0.727	8.1	NA	8.7	66.0	0.34	0.54	43.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Monday, 26 July 2010 6:55:02 PM
SIDRA INTERSECTION 5.0.4.1498
Project: T:\Trafix\2010\10228\Modelling\2 Australia Avenue, Homebush.sip
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INTERSECTION



appendix d-2

future scenario

MOVEMENT SUMMARY

Site: AM Peak Exist+Dev Aus Ave,
Herb Elliot Ave & Parkview Drive

AM Peak-Exist+Dev
Australia Avenue, Parkview Drive & Herb Elliot Drive
Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Australia Avenue											
1	L	315	6.0	0.472	21.5	LOS B	7.6	56.3	0.80	0.81	37.9
2	T	301	6.0	0.422	12.7	LOS A	7.2	53.0	0.78	0.66	42.1
3	R	214	6.0	0.459	23.0	LOS B	5.8	42.4	0.83	0.81	36.9
Approach		829	6.0	0.472	18.7	LOS B	7.6	56.3	0.80	0.76	39.0
East: Parkview Drive											
4	L	27	6.0	0.058	15.3	LOS B	1.0	7.2	0.66	0.69	30.8
5	T	13	6.0	0.058	10.7	LOS A	1.0	7.2	0.66	0.49	31.6
6	R	14	6.0	0.039	15.2	LOS B	0.3	2.5	0.65	0.64	30.7
Approach		54	6.0	0.058	14.2	LOS A	1.0	7.2	0.66	0.63	31.0
North: Australia Avenue											
7	L	29	6.0	0.161	19.7	LOS B	2.6	19.4	0.69	0.84	40.6
8	T	193	6.0	0.161	11.2	LOS A	2.8	20.2	0.69	0.55	43.3
9	R	54	6.0	0.187	25.0	LOS B	1.7	12.2	0.81	0.75	35.7
Approach		276	6.0	0.187	14.8	LOS B	2.8	20.2	0.72	0.62	41.3
West: Herb Elliot Avenue											
10	L	21	6.0	0.188	16.1	LOS B	2.7	19.9	0.70	0.73	30.4
11	T	11	6.0	0.188	11.5	LOS A	2.7	19.9	0.70	0.56	31.0
12	R	183	6.0	0.188	15.8	LOS B	2.7	19.9	0.70	0.71	30.4
Approach		215	6.0	0.188	15.6	LOS B	2.7	19.9	0.70	0.70	30.4
All Vehicles		1374	6.0	0.472	17.2	LOS B	7.6	56.3	0.76	0.72	37.6

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
P3	Across E approach	53	15.2	LOS B	0.1	0.1	0.78	0.78
P5	Across N approach	53	18.5	LOS B	0.1	0.1	0.86	0.86
P7	Across W approach	53	16.8	LOS B	0.1	0.1	0.82	0.82
All Pedestrians		212	17.5				0.83	0.83

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: 111010 PM Peak Exist+Dev
(incl supermarket) Aus Ave, Herb
Elliot Ave & Parkview Drive

PM Peak-Exist+Dev
Australia Avenue, Parkview Drive & Herb Elliot Drive
Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Australia Avenue											
1	L	91	6.0	0.445	23.5	LOS B	6.8	49.8	0.84	0.84	38.0
2	T	435	6.0	0.445	15.0	LOS B	7.0	51.2	0.84	0.70	39.7
3	R	19	6.0	0.058	24.0	LOS B	0.6	4.2	0.78	0.71	36.3
Approach		544	6.0	0.445	16.7	LOS B	7.0	51.2	0.84	0.73	39.3
East: Parkview Drive											
4	L	152	6.0	0.234	14.2	LOS A	4.1	30.0	0.66	0.73	31.3
5	T	34	6.0	0.234	9.6	LOS A	4.1	30.0	0.66	0.54	32.0
6	R	109	6.0	0.301	14.7	LOS B	2.6	18.8	0.66	0.70	30.9
Approach		295	6.0	0.301	13.8	LOS A	4.1	30.0	0.66	0.70	31.2
North: Australia Avenue											
7	L	11	6.0	0.326	22.8	LOS B	4.9	36.4	0.80	0.87	39.2
8	T	371	6.0	0.326	14.4	LOS A	5.1	37.5	0.80	0.66	40.7
9	R	24	6.0	0.089	26.1	LOS B	0.8	5.7	0.82	0.72	35.0
Approach		405	6.0	0.326	15.3	LOS B	5.1	37.5	0.80	0.67	40.2
West: Herb Elliot Avenue											
10	L	48	6.0	0.550	16.2	LOS B	7.3	54.0	0.79	0.79	30.3
11	T	12	6.0	0.548	11.6	LOS A	7.3	54.0	0.79	0.68	30.7
12	R	526	6.0	0.550	17.1	LOS B	7.3	54.0	0.81	0.79	29.8
Approach		586	6.0	0.550	16.9	LOS B	7.3	54.0	0.81	0.79	29.9
All Vehicles		1831	6.0	0.550	16.0	LOS B	7.3	54.0	0.79	0.73	34.8

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	16.8	LOS B	0.1	0.1	0.82	0.82
P3	Across E approach	53	17.6	LOS B	0.1	0.1	0.84	0.84
P5	Across N approach	53	16.0	LOS B	0.1	0.1	0.80	0.80
P7	Across W approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
All Pedestrians		212	17.5				0.84	0.84

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: AM Peak Exist+Dev- Herb Elliott Ave & Olympic Blvd

AM Peak Exist+Dev
Herb Elliott Avenue & Olympic Blvd
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South: Olympic Blvd												
2	T	20	6.0	0.023	0.4	LOS A	0.1	1.0	0.23	0.00	55.2	
3	R	16	6.0	0.023	8.5	LOS A	0.1	1.0	0.23	0.71	48.8	
Approach		36	6.0	0.023	4.0	LOS A	0.1	1.0	0.23	0.31	52.2	
East: Herb Elliott Avenue												
4	L	4	6.0	0.028	9.4	LOS A	0.1	1.0	0.25	0.62	48.0	
6	R	18	6.0	0.028	9.0	LOS A	0.1	1.0	0.25	0.59	48.1	
Approach		22	6.0	0.028	9.1	LOS A	0.1	1.0	0.25	0.60	48.1	
North: Olympic Blvd												
7	L	75	6.0	0.064	8.5	LOS A	0.0	0.0	0.00	0.78	49.0	
8	T	42	6.0	0.064	0.0	LOS A	0.0	0.0	0.00	0.00	60.0	
Approach		117	6.0	0.064	5.4	LOS A	0.0	0.0	0.00	0.50	52.4	
All Vehicles		175	6.0	0.064	5.6	NA	0.1	1.0	0.08	0.47	51.8	

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: 111010 PM Peak Exist+Dev
(incl supermarket)- Herb Elliott
Ave & Olympic Blvd

PM Peak Exist+Dev
Herb Elliott Avenue & Olympic Blvd
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Olympic Blvd											
2	T	132	6.0	0.154	1.2	LOS A	1.1	8.1	0.38	0.00	52.4
3	R	94	6.0	0.154	9.3	LOS A	1.1	8.1	0.38	0.75	48.5
Approach		225	6.0	0.154	4.6	LOS A	1.1	8.1	0.38	0.31	50.7
East: Herb Elliot Avenue											
4	L	82	6.0	0.740	22.5	LOS B	9.8	72.3	0.75	1.15	37.4
6	R	302	6.0	0.740	22.1	LOS B	9.8	72.3	0.75	1.21	37.5
Approach		384	6.0	0.741	22.2	LOS B	9.8	72.3	0.75	1.20	37.5
North: Olympic Blvd											
7	L	113	6.0	0.132	8.5	LOS A	0.0	0.0	0.00	0.84	49.0
8	T	128	6.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		241	6.0	0.132	4.0	LOS A	0.0	0.0	0.00	0.39	54.3
All Vehicles		851	6.0	0.741	12.4	NA	9.8	72.3	0.44	0.74	44.4

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: AM Peak Exist+Dev Aus Ave,
Kevin Coomb Ave,

AM Peak -Exist+Dev
Australia Avenue, Kevin Coombs Ave,
Holker St busway & Majorj Jackson Pkwy
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Majorj Jackson Pkwy											
1	L	47	6.0	0.035	8.5	LOS A	0.2	1.7	0.18	0.60	48.4
2	T	15	6.0	0.035	0.1	LOS A	0.2	1.7	0.18	0.00	55.8
3	R	1	6.0	0.035	8.0	LOS A	0.2	1.7	0.18	0.59	48.6
Approach		63	6.0	0.035	6.5	LOS A	0.2	1.7	0.18	0.46	49.9
East: Holker Street Busway											
4	L	1	6.0	0.042	15.6	LOS B	0.2	1.5	0.41	0.70	42.7
5	T	16	6.0	0.043	16.6	LOS B	0.2	1.5	0.41	0.94	42.2
6	R	4	6.0	0.043	16.1	LOS B	0.2	1.5	0.41	0.93	42.5
Approach		21	6.0	0.043	16.5	LOS B	0.2	1.5	0.41	0.92	42.3
North: Kevin Coombs Avenue											
7	L	4	6.0	0.002	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	23	6.0	0.282	0.3	LOS A	1.8	13.3	0.19	0.00	55.3
9	R	361	6.0	0.281	8.4	LOS A	1.8	13.3	0.19	0.60	48.4
Approach		388	6.0	0.281	7.9	LOS A	1.8	13.3	0.19	0.57	48.8
West: Australia Avenue											
10	L	158	6.0	0.144	11.3	LOS A	0.7	5.3	0.12	0.92	46.3
11	T	3	6.0	0.144	11.9	LOS A	0.7	5.3	0.12	0.99	45.8
12	R	21	6.0	0.047	16.4	LOS B	0.2	1.6	0.54	0.92	42.6
Approach		182	6.0	0.144	11.9	LOS B	0.7	5.3	0.17	0.92	45.9
All Vehicles		655	6.0	0.281	9.1	NA	1.8	13.3	0.19	0.67	47.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: 111010 PM Peak Exist+Dev
(incl supermarket) Aus Ave, Kevin
Coomb Ave,

PM Peak - Exist+Dev
Australia Avenue, Kevin Coombs Ave,
Holker St busway & Majory Jackson Pkwy
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Majory Jackson Pkwy											
1	L	12	6.0	0.016	8.4	LOS A	0.1	0.7	0.12	0.74	48.7
2	T	16	6.0	0.016	0.1	LOS A	0.1	0.7	0.12	0.00	57.2
3	R	1	6.0	0.016	8.0	LOS A	0.1	0.7	0.12	0.71	49.0
Approach		28	6.0	0.016	3.8	LOS A	0.1	0.7	0.12	0.33	53.1
East: Holker Street Busway											
4	L	1	6.0	0.015	13.7	LOS A	0.1	0.5	0.27	0.79	44.1
5	T	7	6.0	0.015	14.7	LOS B	0.1	0.5	0.27	0.90	43.6
6	R	1	6.0	0.015	13.9	LOS A	0.1	0.5	0.27	0.92	43.9
Approach		9	6.0	0.015	14.5	LOS B	0.1	0.5	0.27	0.89	43.7
North: Kevin Coombs Avenue											
7	L	3	6.0	0.002	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	24	6.0	0.174	0.1	LOS A	1.0	7.5	0.11	0.00	57.3
9	R	223	6.0	0.174	8.2	LOS A	1.0	7.5	0.11	0.62	48.8
Approach		251	6.0	0.174	7.4	LOS A	1.0	7.5	0.11	0.56	49.5
West: Australia Avenue											
10	L	422	6.0	0.387	11.3	LOS A	2.5	18.8	0.11	0.92	46.3
11	T	16	6.0	0.385	11.9	LOS A	2.5	18.8	0.11	0.99	45.7
12	R	76	6.0	0.130	14.3	LOS A	0.6	4.7	0.46	0.91	44.3
Approach		514	6.0	0.386	11.7	LOS A	2.5	18.8	0.16	0.92	46.0
All Vehicles		802	6.0	0.386	10.1	NA	2.5	18.8	0.14	0.79	47.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: AM Peak Exist+Dev Australia Ave, Bennelong Pky & Sarah Durack Ave

AM Peak Existing +Dev
Australia Ave, Bennelong Pky & Sarah Durack Ave
Signals - Actuated Cycle Time = 100 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Australia Avenue											
1	L	383	5.0	0.207	7.8	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.60	49.8
2	T	1161	5.0	1.041	94.9	LOS F	45.4	331.6	1.00	1.35	16.2
3	R	289	5.0	0.780	51.3	LOS D	15.1	110.6	0.98	0.85	25.0
Approach		1833	5.0	1.041	69.8	LOS E	45.4	331.6	0.79	1.12	20.2
East: Bennelong Pky											
4	L	454	5.0	0.581	13.8	LOS A	10.7	78.4	0.51	0.79	43.7
5	T	33	5.0	0.511	52.0	LOS D	5.1	37.4	0.97	0.74	23.2
6	R	42	5.0	0.511	60.2	LOS E	5.1	37.4	0.97	0.76	23.1
Approach		529	5.0	0.581	19.8	LOS B	10.7	78.4	0.58	0.78	38.8
North: Australia Avenue											
7	L	4	5.0	0.284	38.4	LOS C	7.7	55.9	0.79	0.88	30.6
8	T	317	5.0	0.283	30.0	LOS C	7.7	56.0	0.79	0.64	31.6
9	R	44	5.0	0.097	25.5	LOS B	1.5	10.7	0.79	0.72	35.4
Approach		365	5.0	0.283	29.5	LOS C	7.7	56.0	0.79	0.66	32.0
West: Sarah Durack Avenue											
10	L	31	5.0	0.673	53.1	LOS D	11.5	83.9	0.95	0.82	24.6
11	T	18	5.0	0.674	44.7	LOS D	11.5	83.9	0.95	0.78	24.9
12	R	366	5.0	0.672	52.7	LOS D	11.5	83.9	0.94	0.81	24.7
Approach		415	5.0	0.672	52.4	LOS D	11.5	83.9	0.94	0.81	24.7
All Vehicles		3142	5.0	1.041	54.4	LOS D	45.4	331.6	0.77	0.97	23.7

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on average delay for all vehicle movements.

⁹ Continuous movement

MOVEMENT SUMMARY

Site: 111010 PM Peak Exist+Dev
(incl supermarket) Australia Ave,
Bennelong Pky & Sarah Durack
Ave - Copy

PM Peak Existing +Dev
Australia Ave, Bennelong Pky & Sarah Durack Ave
Signals - Actuated Cycle Time = 112 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Australia Avenue											
1	L	480	5.0	0.260	7.8	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.60	49.7
2	T	632	5.0	0.389	23.0	LOS B	13.2	96.7	0.70	0.60	34.7
3	R	162	5.0	1.200	253.0	LOS F	22.5	164.0	1.00	1.52	7.6
Approach		1274	5.0	1.200	46.5	LOS D	22.5	164.0	0.47	0.72	25.9
East: Bennelong Pky											
4	L	551	5.0	0.590	26.8	LOS B	17.8	130.3	0.73	0.95	34.7
5	T	45	5.0	0.074	19.4	LOS B	2.6	19.0	0.58	0.46	37.4
6	R	12	5.0	0.074	27.6	LOS B	2.6	19.0	0.58	0.84	35.3
Approach		608	5.0	0.590	26.2	LOS B	17.8	130.3	0.72	0.91	34.9
North: Australia Avenue											
7	L	19	5.0	0.665	35.6	LOS C	24.7	180.5	0.83	0.93	31.9
8	T	1107	5.0	0.668	27.2	LOS B	24.8	180.8	0.83	0.74	32.8
9	R	71	5.0	0.199	38.6	LOS C	4.0	29.2	0.73	0.76	29.2
Approach		1197	5.0	0.668	28.0	LOS B	24.8	180.8	0.83	0.75	32.5
West: Sarah Durack Avenue											
10	L	15	5.0	0.820	40.2	LOS C	13.6	99.0	0.92	0.87	28.8
11	T	8	5.0	0.815	31.8	LOS C	13.6	99.0	0.92	0.82	29.2
12	R	448	5.0	0.824	44.7	LOS D	13.6	99.3	0.95	0.86	27.1
Approach		471	5.0	0.824	44.3	LOS D	13.6	99.3	0.94	0.86	27.2
All Vehicles		3550	5.0	1.200	36.5	LOS C	24.8	180.8	0.70	0.78	29.4

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on average delay for all vehicle movements.

⁹ Continuous movement

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Pedestrian	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	53	50.2	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	53	50.2	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	53	50.2	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		159	50.2				0.95	0.95

Level of Service (Aver. Int. Delay): LOS E. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS E. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: Hill-M4 Off_EX+Dev-AM

Hill Rd / M4 Off-ramp
Scenario: Existing+Development
Period: AM
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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: Hill Rd (south)											
2	T	998	7.6	0.268	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		998	7.6	0.269	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
West: M4 Off-Ramp (west)											
10	L	569	8.4	1.227	235.2	LOS F	78.2	586.7	1.00	5.14	6.5
Approach		569	8.4	1.228	235.2	LOS F	78.2	586.7	1.00	5.14	6.5
All Vehicles		1567	7.9	1.228	85.5	NA	78.2	586.7	0.36	1.87	11.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: 111010-PM Hill-M4 Off_EX
+Dev(incl supermarket)-PM

Hill Rd / M4 Off-ramp
Scenario: Existing+Development
Period: PM
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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: Hill Rd (south)											
2	T	652	8.2	0.176	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		652	8.2	0.176	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
West: M4 Off-Ramp (west)											
10	L	524	10.0	0.769	19.9	LOS B	10.2	77.2	0.80	1.32	35.8
Approach		524	10.0	0.769	19.9	LOS B	10.2	77.2	0.80	1.32	35.8
All Vehicles		1176	9.0	0.769	8.9	NA	10.2	77.2	0.36	0.59	42.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: 10 October 2011 4:50:06 PM

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