Figure 5.1: Proposed Car Parks

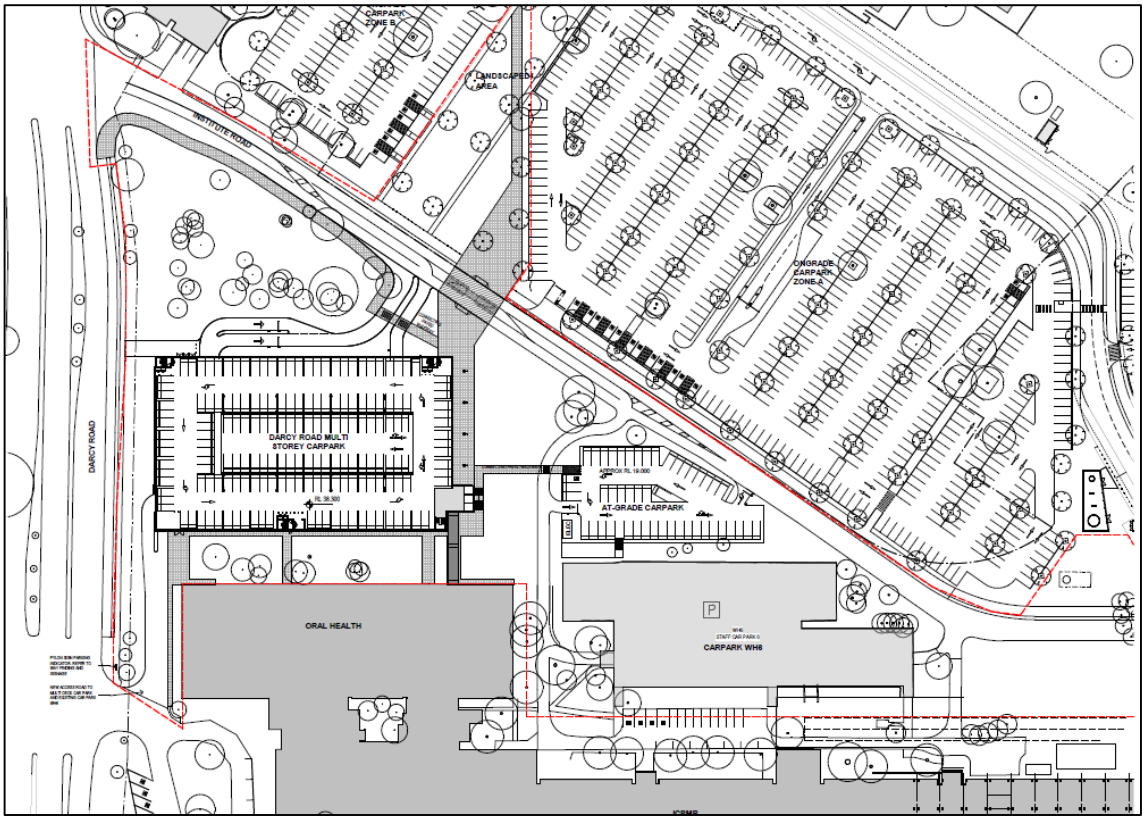


Image source: HDR Rice Daubney

5.2 Forecast Campus Activity

The initial stage of the redevelopment, as described above is anticipated to be completed by December 2020 and is intended to support an expansion of services and employment at the Campus.

For the purposes of this report, the relevant details for the future of the Campus are included in Table 5.2. It is understood that no change is anticipated for the patient/ visitor activity at CHW.

Table 5.2: Future Campus Activity

Redevelopment	Existing Activity	Future Activity (Dec 2020)	Growth
Campus Staff FTE [1]	9,987	13,873	3,887
Westmead Hospital Beds [2]	743	1,052	309
Westmead Hospital Annual ED Presentations	66,857	86,300	19,400
Westmead Hospital Annual Outpatient Occasions	573,065	1,102,400	529,400

[1] Includes Westmead Hospital, CHW, ICPMR, WMI, CMRI, Education/ University given that from a traffic perspective the staff access points for these services cannot be separated.

[2] Includes sub-acute and acute beds, as summarised in the Westmead Hospital Redevelopment Final Business Case.

6. Car Parking

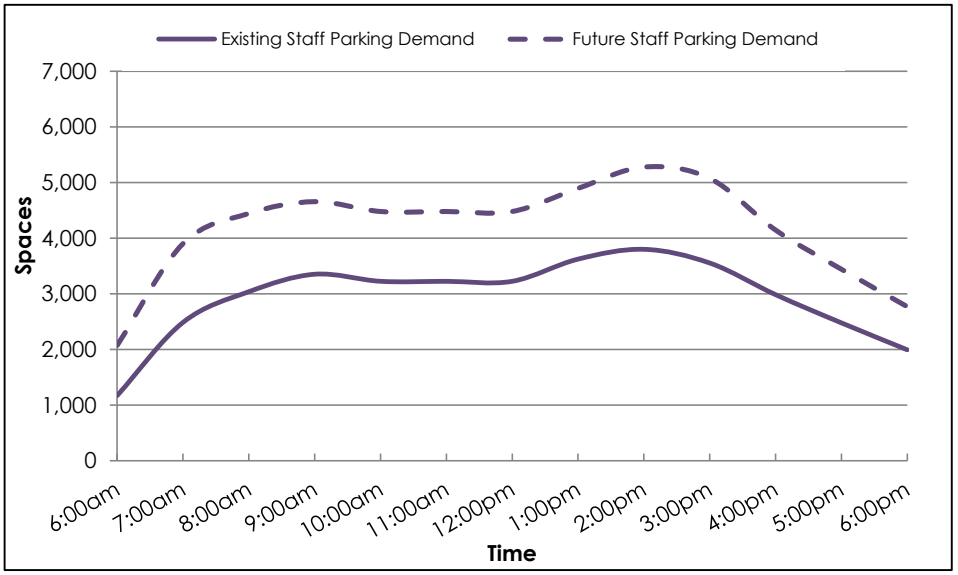
6.1 Future Parking Requirements

6.1.1 Staff Parking Demand

With consideration for the future staff FTE of 13,873 and assuming a proportional increase in parking demand (0.35-0.40 spaces per staff FTE), it is estimated that the short-term staff peak parking demand would be between 5,000 and 5,400 vehicles. This equates to a net increase of between 1,400 and 1,600 vehicles during the 2:00pm peak staff shift changeover period. This assumes that the current vehicle mode share and occupancy rates would be maintained.

The estimated future staff parking demand profile is shown in Figure 6.1.

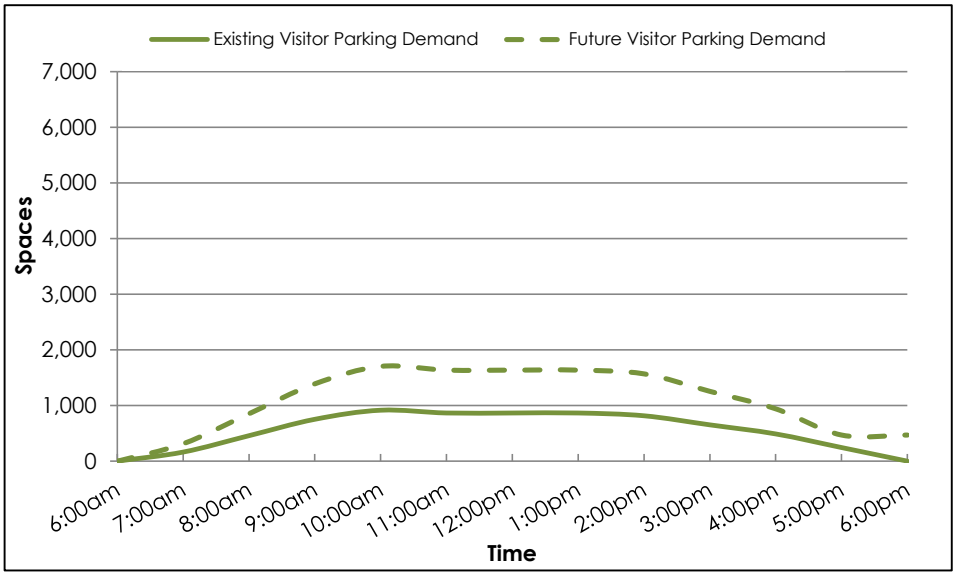
Figure 6.1: Future Staff Parking Demand Profile



6.1.2 Visitor Parking Demand

A future parking demand profile has been estimated based on the estimated visitor activity and assuming a similar daily profile to existing. It is expected that Westmead Hospital would have a peak visitor parking demand of approximately 1,700 vehicles. This equates to a net increase of approximately 780 vehicles, as shown in Figure 6.2.

Figure 6.2: Future Visitor Parking Demand Profile [1]



[1] Excludes CHW visitors, noting that there is no expected growth

6.1.3 Cumulative Parking Demand

With consideration for the existing parking conditions and the forecast staff and visitor activity, the parking demand for both staff and visitors would increase, as summarised in Table 6.1.

Table 6.1: Future Parking Demand Summary

User	Parking Demand		
	Existing	Future	Net Increase
Campus Staff (2:00pm)			
Existing Campus Staff Parking Supply	3,068	-	-
Campus Staff Peak Parking Demand	**3,800**	**5,500**	**1,700**
Westmead Hospital Visitors (10:00am)			
Existing Westmead Hospital Visitor Parking Supply	748		
Westmead Hospital Visitor Peak Parking Demand	**920**	**1,700**	**780**
CHW Visitors (11:00am)			
Existing CHW Visitor Parking Supply	548 [1]		
CHW Visitor Peak Parking Demand	**520**	**520**	**0**
Combined (@ 2:00pm)			
Combined Parking Supply	4,364	-	
Combined Peak Parking Demand	**5,240**	**7,720**	**2,480**

[1] Excludes Ronald McDonald House parking supply and demand

Table 6.1 indicates that the peak parking demand for the various users occurs at different times across a typical weekday. Overall, the peak parking demand would occur around 1:00pm to 2:00pm, with a total car parking demand of up to 7,720 spaces. Based on this, the anticipated future parking demand for the Campus would not be met by the current parking supply.

6.2 Off-site Parking Impacts

The surrounding local area is likely to undergo considerable transformation over the next 5-10 years, not only associated with the Campus upgrades though also associated with modifications to other nearby sites. This includes the WSU Westmead Campus noting that the recently commenced construction works have resulted in the loss of parking frequently used by the Campus.

Given that Campus already has an impact to on-street parking in the surrounding areas, it would not be appropriate to assume that use of this should continue, let alone significantly increase.

6.3 Adequacy of Parking Supply

The proposed MSCP will provide parking for a total of 1,254 spaces, including 12 disabled spaces over 8 levels. Given that this would be constructed over CP7 which currently provides parking for 250 vehicles (80 visitor, 170 staff), the net increase in car parking supply would be 1,004 spaces.

The MSCP presents a practical solution to the anticipated future parking conditions in and around the Campus and will be able to accommodate a significant proportion of the forecast growth in short to medium term staff and visitor demand for parking.

In addition, the car park would help to improve the current parking conditions, including the following specifics:

- reduces the current Campus impact to publicly available parking in the surrounding areas
- extent of campus related parking on the surrounding road network
- consolidates on-campus parking to one accessible location, with fairly direct access
- improves the efficiency of existing parking by potentially reducing the level of informal parking which occurs across the Campus.

The proposed MSCP location lends itself to high utilisation by staff and would be less desirable for patients/ visitors, other than the dental building. As such, it is recommended that existing staff parking fronting Hawkesbury Road (Car Park 3) be converted to visitor parking.

7. Car Park Design

7.1 Car Park Layout

The proposed MSCP has been designed to present an efficient, safe and convenient car park with three distinct car parking aisles. With a sloped floor incorporated into the design to achieve additional efficiency and ease of circulation, approximately 75% of all areas are proposed to be on a flat level, with the central aisle designed with a 1 in 20 slopping floor to provide for circulation between levels.

The layout of a typical MSCP level is shown in Figure 7.1.

Figure 7.1: Typical MSCP Floor Layout

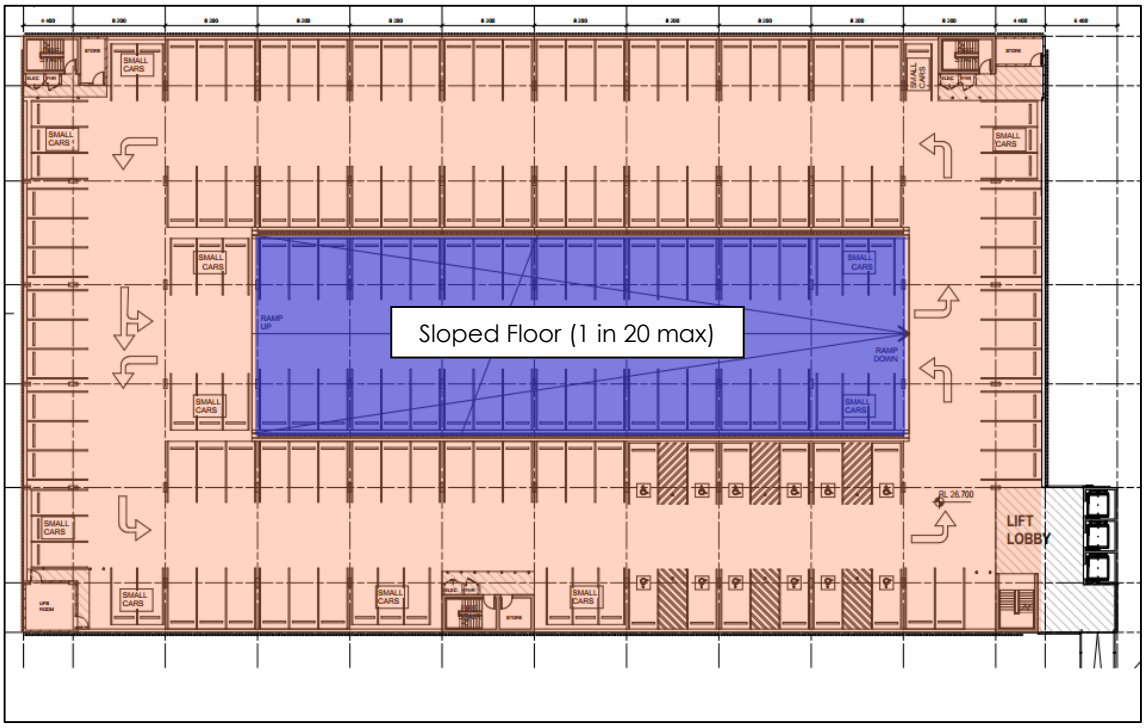


Image source: HDR Rice Daubney

The proposed MSCP and at-grade car park has been designed as a User Class 3 facility and in accordance with relevant Australian Standards (AS2890.1:2004, AS2890.6:2009). Each space is a minimum 2.6m wide and 5.4m long with adjacent 5.8m wide aisles.

The central sloping section provides a wider 6.6m wide aisle to provide additional manoeuvring space at the intersecting points on each level. Small car spaces (2.3m wide by 5.0m) are proposed in locations where space is limited and where traffic volumes are highest to ensure sufficient manoeuvring space. Small car spaces are also beneficial from a travel planning perspective as they encourage the use of smaller and more environmentally sustainable vehicles.

7.2 Circulation

The proposed MSCP has been designed with one-way anti-clockwise circulation aisles which minimises the likelihood of vehicle crossover and conflict points. The central aisle has been designed for two-way traffic and provides the main path of travel between levels.

The car park circulation is shown in Figure 7.2 and illustrates that two independent circulation paths are created for entering and exiting vehicles. Circulation up (on entry) would be via the northern and central aisles while circulation down (on exit) would be via the southern and central aisles.

Figure 7.2: MSCP Circulation

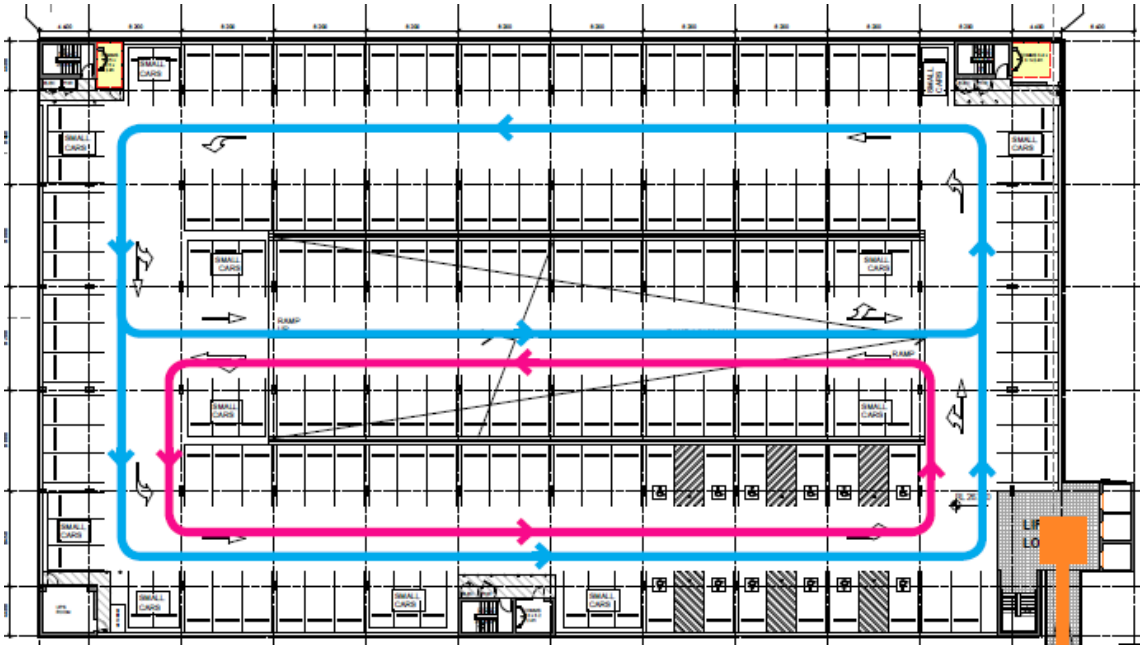


Image source: HDR Rice Daubney

It is noted that as vehicles circulate up on entry, not all car spaces within the southern aisle will be completely visible. While it is recognised that this may equate to up to 15-20% of spaces, it is not anticipated to negatively affect the functionality of the car park having regard to the following:

- proportion of users that can be considered to be regular (staff) and thus have a detailed understanding of the way the car parks fills etc. (similar to a commuter car park)
- net benefit of distributing parking demand more evenly and to the higher levels which also reduces any such delay associated with waiting for vehicles manoeuvring in/ out of individual spaces.

A full compliance review and swept path assessment has been completed to confirm the design generally complies with the relevant Australian Standards. Relevant swept paths are included in this report as Appendix C.

7.3 Car Park Options Assessment

Several detailed car parking layout options and access arrangements/ locations have been considered as part of design development for the proposed MSCP. This process has enabled the proposed configuration to be finalised by targeting the following key goals:

- maximising car park efficiency, including built form
- two independent travel paths for up and down vehicles movements (due to car park size).

A review of the three layout options is presented in Table 7.1. The table shows that a car park with external ramps provides the optimum operational performance however due to the additional construction costs, ultimately achieves the least efficient design. Given the MSCP size and multiple-aisle configuration, a sloped aisle design provided the most efficient design while minimising both real and perceived disadvantages.

Table 7.1: Car Park Design Options

Design Option	Advantage	Disadvantage
Sloped Aisle (Preferred Option)	○ all spaces have access to lifts without the need for stairs ○ two independent travel paths for upwards and downwards movement of vehicles is created ○ intersections within the car park are standard T-intersections	○ ~23% (42/176 per level) of spaces are located on a ramped surface, in accordance with AS2890.1:2004 ○ vehicles are required to circulate through parking aisles ○ vehicles would circulate upwards through half the car park, resulting in potential underutilisation of parking on downward travel path ○ complexity of constructing ramped aisle within car park ○ loss of spaces on roof level due to ramped aisle
Split/ Half Level	○ all parking is on flat surfaces (split into half levels) ○ the downwards path of travel can be shortened via positioning ramps closer together	○ only 67% of parking spaces have at-grade access to lifts ○ travel paths of upwards and downwards movement of vehicles cross over; e.g. multiple conflict and give-way points within the car park ○ primarily appropriate for lower rise and lower capacity car parks due to above and required circulation ○ vehicles would circulate upwards through 2 of 3 parking aisles of the car park, resulting in potential underutilisation of parking in the 3rd aisle ○ in some locations vehicles may be required to go up half a level before the can travel downwards to exit ○ due to additional ramps being negotiated, drivers may be reluctant to utilise upper levels of the car park ○ small blind aisle parking area could be created between ramps and extent of car park structure ○ loss of spaces due to construction of ramps ○ difficult to integrate into car parks with more than two aisles
External Ramps	○ all parking is on flat surfaces (complete levels) ○ all spaces have at-grade access to lifts ○ ramps provided external to the car park results in reduced loss of parking spaces to incorporate internal ramps ○ ability to provide express ramps up/ down the car park ○ two independent travel paths for upwards and downwards movement of vehicles could be created	○ higher cost of construction, primarily as a result of lower parking space efficiency ○ potential impacts on shape/ form of building

7.4 Car Park Access

As discussed, the MSCP has been designed with primary access via the signalised intersection with Darcy Road and a secondary access via Institute Road, as shown in Figure 7.3 and Figure 7.4.

Figure 7.3: Darcy Road – Access Points

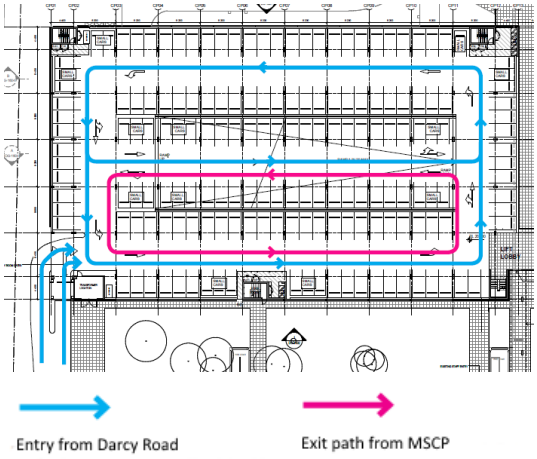
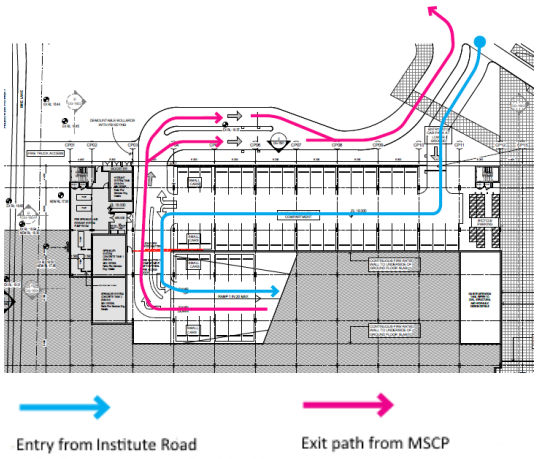


Figure 7.4: Institute Road - Access Points



The Institute Road access will be for the use of hospital staff only with targeted wayfinding signage to reinforce this intent. Signage would be required at the Darcy Road/ Mons Road/ Institute Road intersection to appropriately direct vehicles on approach to the MSCP.

Given recent technological advancements in car park access systems, there are now several proven products that would ensure a fast, efficient, cost-effective and low maintenance solution to paid parking infrastructure as part of the MSCP. Select options are detailed as follows.

7.4.1 Conventional Parking Systems

Conventional paid parking systems typically incorporate a card reader as access control for entering and exiting vehicles. This system is widely established in retail/ public car parks and has proven to be a reliable, cost effective arrangement over a sustained period of time. The system largely relies on on-site capacity to provide at least two entry lanes for car park access, though this is also regularly determined by entry traffic volumes and on-site queuing capacity.

Automatic pay stations for self-service payment of parking fees by visitors are commonly used in conjunction with this system. These pay stations are typically conveniently located within the car park and/ or foyer areas and avoid the need to pay a cashier on exiting the site, hence improving overall efficiency and user satisfaction.

The main limitation of this conventional system for the MSCP site remains the operational efficiency of the entry card reader and hence the entry queuing capacity internal to the Campus. Under a conventional system, three entry lanes would be required at the Darcy Road access with such a system not possible given the limited distance separating the MSCP from the property boundary.

7.4.2 New Technology Systems

Technological advancements over recent years have resulted in a number of innovative systems that provide practical alternatives to the traditional paid parking system discussed above.

One such technology is Automatic Number Plate Recognition (ANPR) systems that are now being installed to track vehicle movements in both short-term and long-term car parks. ANPR systems allow the car park operator to collect the number plate and photograph of every vehicle passing through the car park. Car park users no longer need to carry a ticket, with the ANPR system determining payment on exit based on duration of stay (number plate matching). Figure 7.5 and Figure 7.6 illustrate the type and extent of infrastructure required.

Figure 7.5: Car Park Exit Infrastructure

Figure 7.6: Automatic Number Plate Recognition Camera

Feedback has been previously sought from industry leaders Sensor Dynamics in relation to the ANPR systems with the benefits including:

- Minimal infrastructure (bollard mounted camera) required on entry.
- No impact on entry operational efficiency and on-site queuing.
- Quoted 95%+ accuracy for number plate recognition on entry.
- Ability to cater system to unique conditions and specific requirements.
- Car park user disputes can be promptly resolved with vehicle search queries returning time of entry and corresponding photographs for each vehicle in the car park.
- Quoted technological improvements in recent years have resulted in a cost effective and reliable alternative to traditional paid parking infrastructure.

To maximise car park efficiency and limit the need for multiple entry lanes to accommodate the anticipated traffic volumes, an ANPR system is proposed for use within the MSCP. Flexibility has been built into the design with provision for visitor access control via a second boom gate to allow for conventional ticket operation at the Darcy Road access.

7.5 Queuing Assessment

Approximately 80% of the MSCP is proposed to be allocated to staff parking which would see a more intense arrival and departure profile, particularly during the weekday peak hour around 7:00am. This is anticipated to result is an overall (combined staff and visitor) entry split during the AM peak arrival period of approximately 60% via Darcy Road and 40% via Institute Road.

Based on the traffic assessment (see Section 8), this profile equates to approximately 400 vehicles entering via Darcy Road and 250 vehicles entering via Institute Road during the weekday AM peak hour.

It is also estimated that approximately 390 vehicles would exit the MSCP directly to Institute Road during the PM peak hour.

Given that ANPR technology is proposed to be implemented as part of the MSCP, the requirements as set out in AS2890.1:2004 (Section 3.4) does not apply in this instance. ANPR technology results in entry/ exit movements that approach free flow conditions, or 600 vehicles per hour. For the purpose of completing a robust analysis of the potential queue at the access control points, a service rate of 550 vehicles/ hour/ lane has been assessed.

The existing Campus visitor car parks provide paid parking facilities that require the user to pay at a pay station prior to returning to their vehicle; that is, it is not possible to pay at the exit boom gate. This is common practice for paid parking facilities in similar locations.

Given this, visitors will be able to pay for parking by entering their vehicle number plat. This will ensure that the ANPR system will be able to raise the boom gate on exit after number plate recognition. As such, the exit boom gates are also able to be assessed with a service rate of 550 vehicles/ hour/ lane. Payment at the boom gate may also be permitted to allow for those who may forget to pay prior to exit. This proportion would be low and would represent a minor delay to the service rates.

Based on the above, a queuing assessment has been completed to determine the extent of queues, if any that may form during the weekday AM and PM peak periods on entry and exit to/ from the MSCP.

The equation for calculating queue lengths is detailed in Figure 7.7 with a summary of the analysis presented below.

Figure 7.7: Equation for Calculating Queue Lengths

Equation 17-37 is used to calculate the 95th-percentile queue.

$$Q_{95} \approx 900T\left[\frac{v_x}{c_{m,x}} - 1 + \sqrt{\left(\frac{v_x}{c_{m,x}} - 1\right)^2 + \frac{\left(\frac{3600}{c_{m,x}}\right)\left(\frac{v_x}{c_{m,x}}\right)}{150T}}\right]\left(\frac{c_{m,x}}{3600}\right)$$

where

Q_{95} = 95th-percentile queue (veh),
v_x = flow rate for movement x (veh/h),
$c_{m,x}$ = capacity of movement x (veh/h), and
T = analysis time period (h) (T = 0.25 for a 15-min period).

Source: Highway Capacity Manual 2000

Table 7.2: MSCP Queuing Assessment

	Entry Location		Exit Location
	Darcy Road	Institute Road	Institute Road
Approach Volume	400	250	390
Service Capacity	550 vehicles/ lane/ hour		
Number of Lanes	2	1	2
95th Percentile Queue Length	2 vehicles / lane	4 vehicles / lane	2 vehicles / lane
	12 metres / lane	24 metres / lane	12 metres / lane
	4 vehicles (24m)	**4 vehicles (24m)**	**4 vehicles (24m)**
99th Percentile Queue Length	3 vehicles / lane	6 vehicles / lane	2-3 vehicles / lane
	18m/ lane	36m/ lane	12-18m/ lane
	6 vehicles (36m)	**6 vehicles (36m)**	**5 vehicles (30m)**

With an available queuing area of up to 35m per lane (70m across the 2 lanes) between the Darcy Road boom gates and the adjacent traffic signals (at Darcy Road), the anticipated queue of up to 3 vehicles per lane (or 18m per lane) will not have an impact on traffic associated with the Dental Building and the Darcy Road traffic signals.

The Institute Road access provides a queuing area of 15m between the boom gate and Institute Road plus a 40m long right turn bay along Institute Road. This ensures a maximum queuing area of 65m before impacting on through traffic on Institute Road. With an anticipated maximum queue length of 6 vehicles (or 36m), during the AM arrival, this queuing area will be able to appropriately accommodate such demand.

The exit profile would result in minor queuing back into the lower ground level of the car park.

The assessment is based on approximately 80% of the MSCP being allocated for use by staff and 20% by visitors. This is considered to be representative of a 'worst-case' scenario from a vehicle access perspective given the more intense arrival and departure profiles associated with staff activity/ work shift times etc. To further substantiate the suitability of the design and access control, high level analysis assuming a 50:50 split between staff and visitor parking confirms that the access control locations would operate more efficiently that those detailed above.

7.5.1 Internal Car Park Circulation

As part of design development, the interaction of vehicles entering and exiting the MSCP and vehicles manoeuvring in/ out of the lower ground and ground levels has been assessed. These spaces will likely prove the most convenient given their proximity to the Campus uses, the lifts/ stairs and ease of exit at the end of staff shift times. As such, they would tend to fill earliest and before the main peak arrival period. That said, any minor delay associated with manoeuvring vehicle would be minor and similar to that experienced daily within commuter car parks across Sydney.

This is based on the understanding that up 10% of staff (representing 100 vehicles) arrive in the hour before the peak 7:00am to 8:00am period. The ground level provides parking for 170 vehicles (including 42 on the sloped central aisle) so it can be safely assumed that more approximately 70% of these spaces would be occupied prior to the peak arrival period. This would obviously also reduce any perceived delay to circulation and efficiency within the car park.

7.6 Emergency Vehicle Access

It is proposed construct an emergency vehicle only access on the eastern side of Darcy Road and adjacent to the MSCP to provide access to the fire booster pumps. The emergency access has been designed to accommodate the Fire and Rescue NSW standard appliance vehicle and would be signposted as "Emergency Vehicles Only" to restrict usage of the access by private vehicles.

7.7 Bicycle Parking

The proposed MSCP includes provision of bicycle parking facilities, with the majority conveniently located on the lower levels. These are provided in-line with the broader strategy to provide bicycle parking close to Campus facilities within all new developments.

It is recommended that these bicycle parking spaces be provided in accordance with the requirements of AS2980.3:2015 and with consideration for the following:

- parking to be located adjacent to the main pedestrianised area and close to the building accesses
- parking to be located either within the MSCP or with suitable weather protection
- convenient connections between parking locations and the external road network which includes the dedicated Darcy Road cycle path.

7.8 Motorcycle Parking

The proposed MSCP includes motorcycle parking spaces in accordance with general guidance and relatively evenly spread across all levels. This will ensure the spaces are relatively conveniently to pedestrian access points and not unnecessarily clustered.

DCP 2011 does not include a specific requirement for motorcycle parking outside of the City Centre. The City Centre rate is 4 motorcycle spaces per 50 car parking spaces which is considered high having regard to the location of the MSCP, the type of facility and being within a large health precinct.

The motorcycle spaces are to be provided in accordance with AS2890.1:2004, specifically that each space is required to be 1.2m wide and 2.5m long. Motorcycle parking should be located to not be at risk of being struck by circulating vehicles.

7.9 Pedestrian Amenity

The MSCP has a high level of pedestrian amenity with an elevated walkway on level 2 conveniently connecting with the Dental Building. While it is somewhat less conveniently located for the broader Campus uses including being 400m from the existing main entrance and further, having regard to its proximity to proposed ASB, the MSCP remains an essential parking facility to address both existing and future demand for parking. This level of convenience is reflected by the indicative split between staff and visitor parking and maintains the broader intent of staff vehicle activity being limited to the northern section of the Campus.

A new Institute Road pedestrian crossing facility is proposed to conveniently and safely connect the at-grade staff car parks currently under construction (as part of the Stage 1 Early Works) north of Institute Road with Campus facilities further to the south. A footpath along the northern side of Institute Road is also included as part of the Stage 1 Early Works scope.

These pedestrian facilities are illustrated in Figure 7.8.

Figure 7.8: Institute Road Pedestrian Facilities

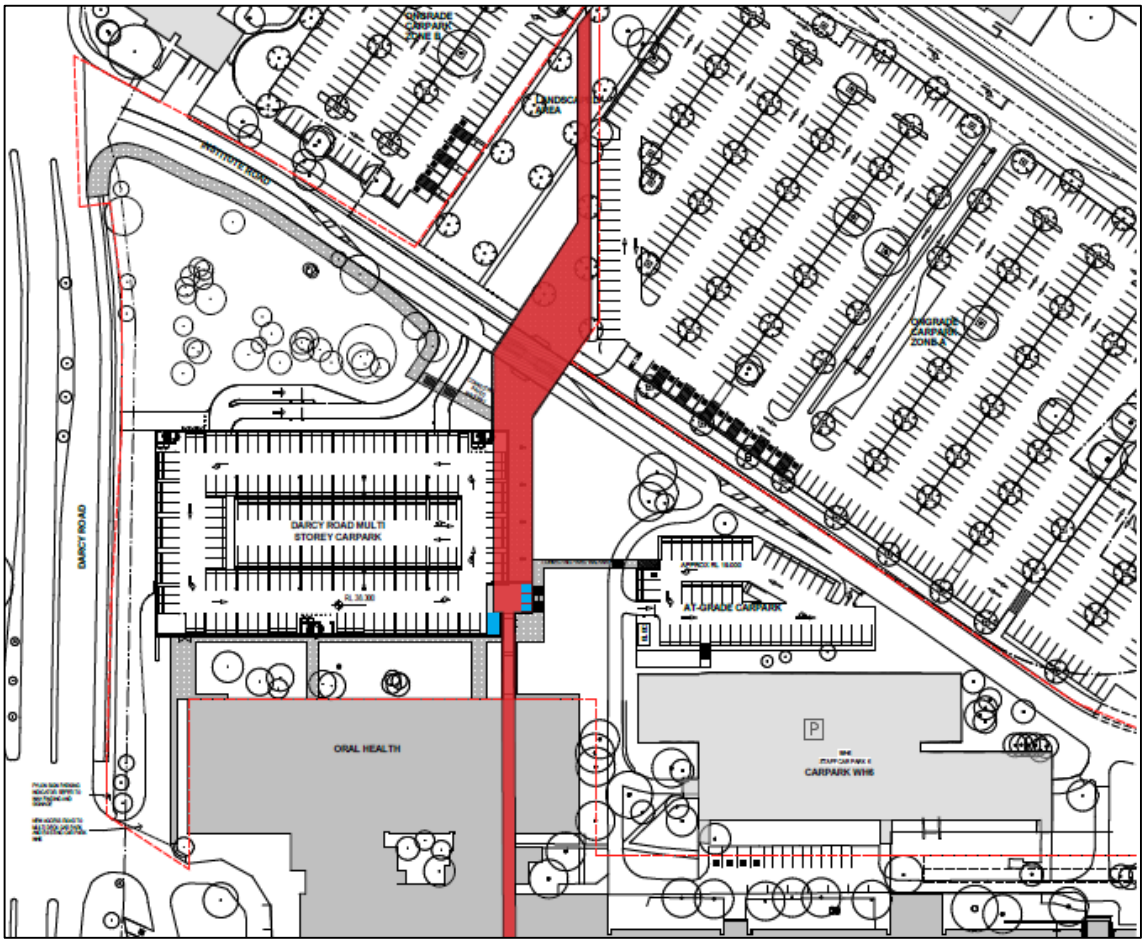


Image source: HDR Rice Daubney

8. Traffic Impact Assessment

8.1 Traffic Generation

Conservatively referencing the traffic volume data collected at car park access points, trip generation rates for the proposed MSCP are set out in Table 8.1.

Table 8.1: Trip Generation Rates

User	Trip Generation Rates (vehicles/ space/ hour)			
	AM Peak		PM Peak	
	In	Out	In	Out
Staff	0.60	0.10	0.05	0.30
Visitor	0.15	0	0.15	0.30

Having consideration for the size of the MSCP, Table 8.2 sets out peak hourly traffic generation estimates for the proposed MSCP.

Table 8.2: Traffic Generation Estimates

User	Number of Spaces	Trip Generation (vehicles/ hour)					
		AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Darcy Road MSCP							
Staff	1,003 (80%)	602	100	702	50	301	351
Visitor	251 (20%)	50	0	50	38	75	113
Total	**1,253**	**652**	**100**	**752**	**88**	**376**	**464**
Existing Car Park							
Staff	170	166	4	170	2	96	98
Visitor	80	15	0	15	3	32	35
Total	**250**	**181**	**4**	**185**	**5**	**128**	**133**
Net Change							
Net Increase	1,003	471	96	555	83	248	331

Table 8.2 indicates the proposed MSCP could be expected to generate up to 740 vehicle trips and 470 vehicle trips during the weekday AM and PM peak hours respectively. The site's current at-grade car park typically generates 185 vehicle trips and 133 vehicle trips during the AM and PM peak hours. This equates to a net increase 555 vehicle trips and 331vehicle trips.

The 47 space at-grade Coroners Court car park has also been included as part of the traffic generation analysis, including all SIDRA Intersection modelling.

8.2 Distribution and Assignment

It is assumed that the traffic distribution for the MSCP would be similar to that of existing conditions. However, given that the primary access to the MSCP would be via the Dental Building access, a small percentage of people will alter their approach routes further afield for a more efficient travel time to the new primary car park access location. The anticipated entry and exit split is detailed as follows:

Staff

- 60% entry via Dental access
- 40% entry via Institute Road
- 100% exit via Institute Road.

Visitor

- 90% entry via Dental access
- 10% entry via Institute Road
- 100% exit via Institute Road.

It is recognised that some staff may choose to use Redbank Road and travel through the Campus to access the MSCP. The extent of this would however depend on future car park allocation and/ or restrictions but would otherwise be balanced against with volumes accessing other car parks.

Based on the above, Figure 8.1 and Figure 8.2 have been prepared to show the estimated increase in turning movements within the Campus following full development. The estimated increase in turning movements in the vicinity of the Campus (on the external road network) are shown in Figure 8.3 and Figure 8.4.

Figure 8.1: Existing Internal AM Peak Hour Traffic plus Development Traffic

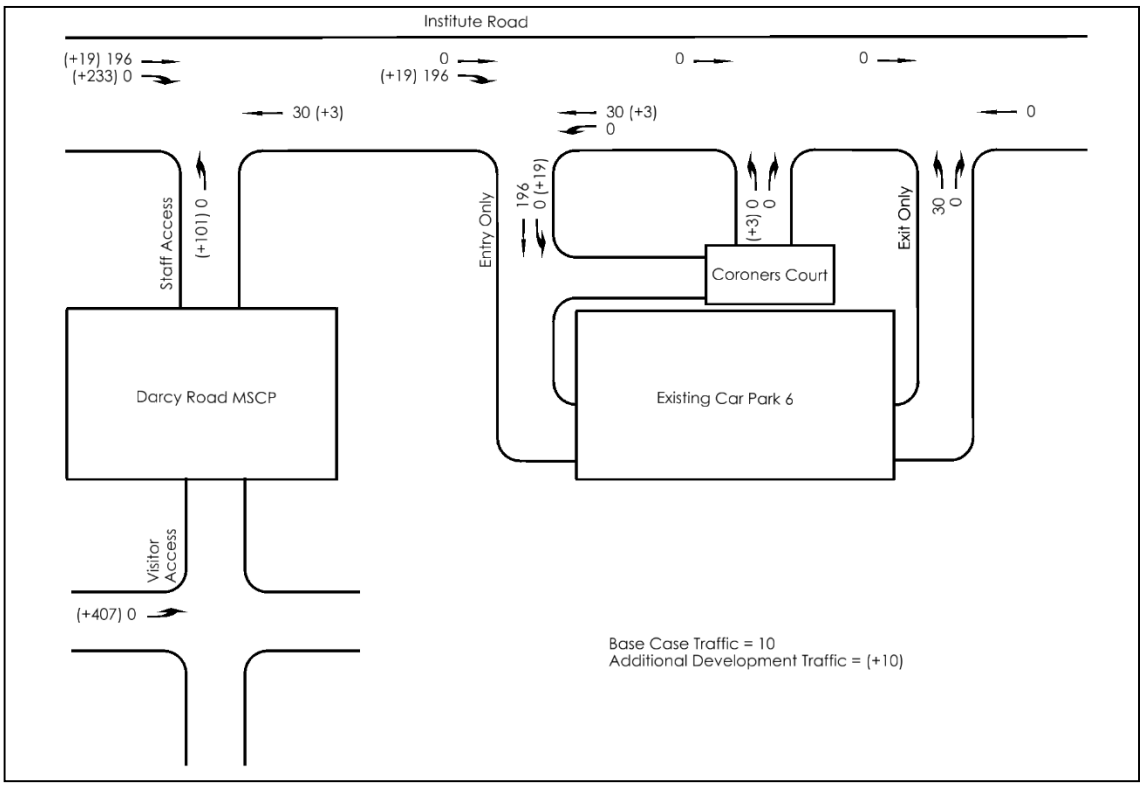


Figure 8.2: Existing Internal PM Peak Hour Traffic plus Development Traffic

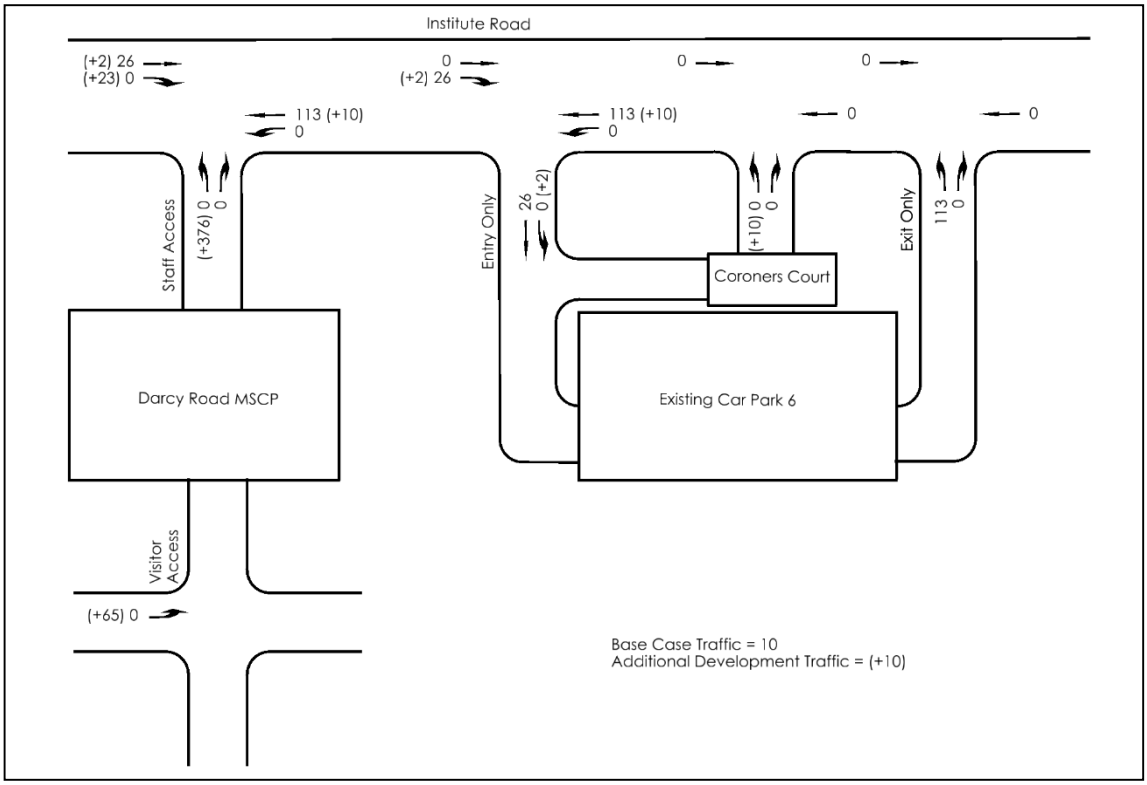


Figure 8.3: Existing External AM Peak Hour Traffic plus Development Traffic

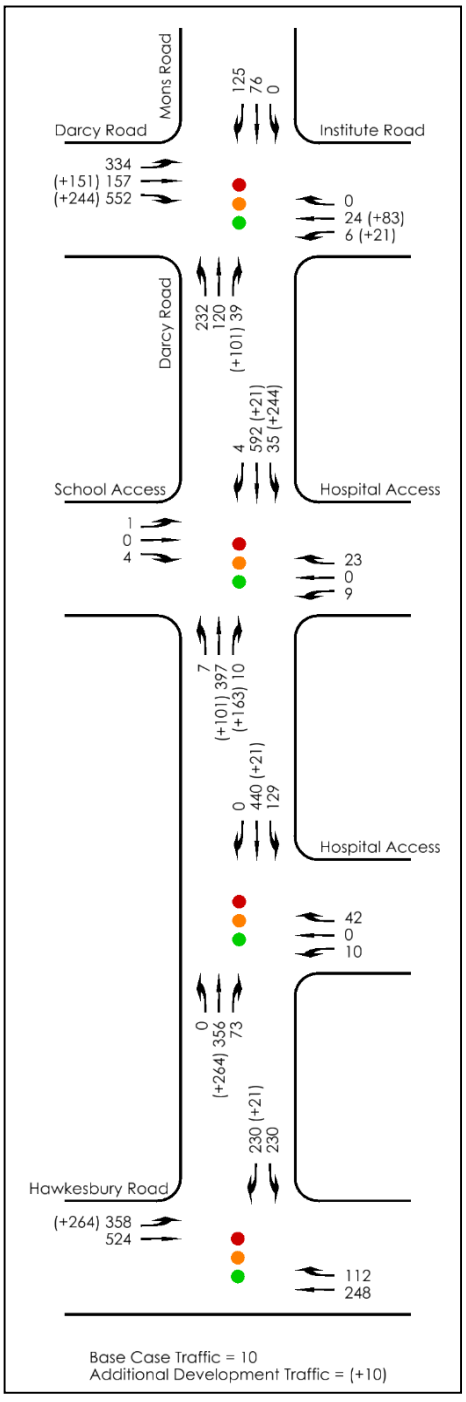
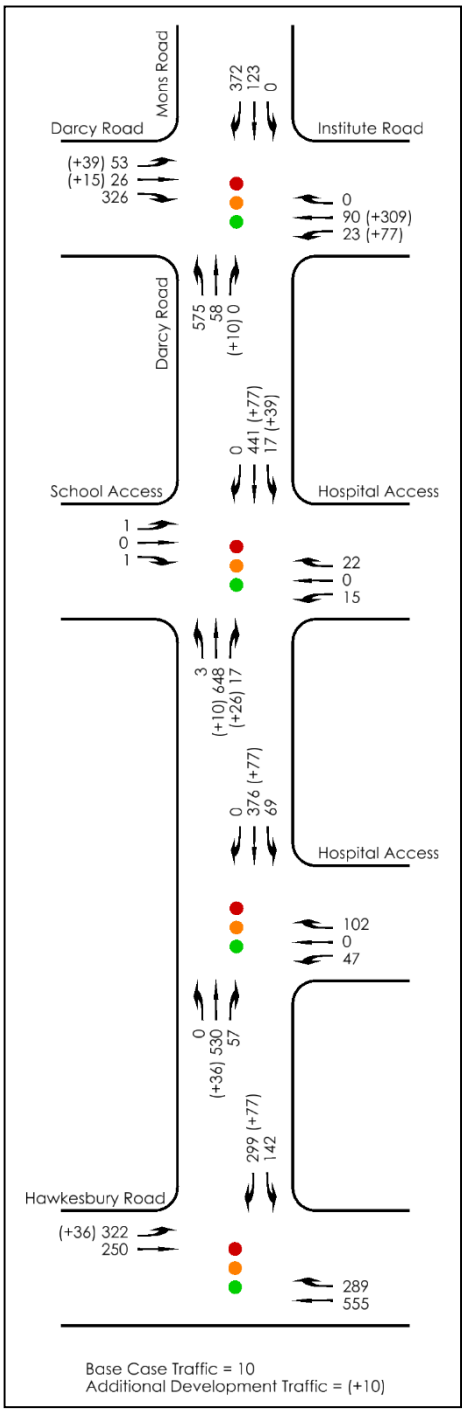


Figure 8.4: Existing External AM Peak Hour Traffic plus Development Traffic



As discussed, the MSCP offers several benefits for the broader Westmead area and the Campus operation. Therefore the above assessment is considered conservative and does not directly consider any re-assignment of existing traffic associated with existing informal parking across the Campus.

In addition, the MSCP is likely to accommodate a level of existing staff who currently park in the surrounding area. Therefore much of the additional traffic presented above would also include

re-assignment of these vehicles from the broader road network and associated intersections to the assessed intersections.

8.3 Forecast Intersection Operation

An assessment of the impacts that the additional traffic would have on the surrounding road network can be made by comparing intersection performance prior to and following completion of the MSCP.

The impact of this additional traffic on the intersections in the vicinity of the Campus has been assessed using SIDRA INTERSECTION. Table 8.3 presents a summary of the anticipated future operation of the key intersections following the completion of MSCP, with full results included in Appendix B.

SIDRA assessment also includes the approved WSU Westmead Redevelopment, adopting the traffic volumes referenced in UWS Westmead: Estate Major Works Transport Assessment (Arup, 15/08/14).

Table 8.3: Future Operating Conditions – Post Development

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Darcy Road/ Mons Road/ Institute Road	AM	South	0.89	34	113	C
		East	0.68	63	30	E
		North	0.86	65	60	E
		West	0.92	40	341	C
		Total	**0.92**	**41**	**341**	**C**
	PM	South	0.86	39	123	C
		East	0.98	88	165	F
		North	1.02	95	246	F
		West	1.01	100	209	F
		Total	**1.02**	**76**	**246**	**F**
Darcy Road/ Hospital Access (Dental)	AM	South	0.86	20	45	B
		East	0.07	16	4	B
		North	0.74	19	91	B
		West	0.02	20	1	C
		Total	**0.86**	**20**	**91**	**B**
	PM	South	0.58	16	63	B
		East	0.07	14	4	A
		North	0.55	15	57	B
		West	0.01	20	1	B
		Total	**0.58**	**15**	**63**	**B**
Darcy Road/ Hospital Access (Main)	AM	South	0.60	28	42	B
		East	0.24	26	9	B
		North	0.84	32	66	C
		West	0.59	28	24	B
		Total	**0.84**	**30**	**66**	**C**
	PM	South	0.80	52	135	D
		East	0.28	37	36	C
		North	0.78	50	92	D
		West	0.80	45	98	D
		Total	**0.80**	**49**	**135**	**D**

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Darcy Road/ Hawkesbury Road	AM	East	0.33	24	72	B
		North	0.64	48	94	D
		West	0.66	20	181	B
		Total	**0.66**	**28**	**181**	**B**
	PM	East	0.90	48	224	D
		North	0.82	53	173	D
		West	0.69	35	117	C
		Total	**0.90**	**45**	**224**	**D**

On the basis of the above assessment, there is expected to be increases in the delay and queuing experienced at the Darcy Road/ Mons Road/ Institute Road intersection following the completion of the MSCP. The most notable impact is to the northern and western approaches.

The remainder of the study intersections would continue to operate with an acceptable LOS during the respective peak hours. However, it is noted that the 95th percentile queue for the right turn into the Dental Building access from Darcy Road would exceed the available 35m long storage area (subject to intersection cycle time implemented). To allow for future traffic growth within the precinct and to minimise the risk of Darcy Road delay, it is recommended that the length of this right run bay be increased to approximately 100m.

8.4 Intersection Works and Network Improvements

A concept plan illustrating the extent of proposed upgrade works for the Darcy Road/ Mons Road/ Institute Road intersection has been included in Appendix D. The proposed intersection works, as well as specific details regarding the proposed development were presented to RMS and TfNSW on 22 October 2015. Further stakeholder consultation relating to the specific details of these works is ongoing.

Several proposed measures were also discussed with Parramatta City Council on several occasions. Similarly, further consultation with Parramatta City Council is ongoing.

Detailed design (and additional stakeholder consultation) will follow any such SSDA approval to determine a final layout.

Key aspects of the proposed intersection upgrade works (as shown in Appendix D) include the following:

- Removal of small amount of Mons Road kerbside parking to accommodate longer turn bays and extended bus priority lane.
- Widening Institute Road on approach to Darcy Road to provide two traffic lanes (55m long lane second lane).
- Implementation of a right turn ban from Darcy Road into Institute Road (this requires those accessing the MSCP to do so via the Dental Building access only).
- Removal of any non T-Way bus services from turning left into Darcy Road (to travel west) from the Mons Road T-Way.
- Provision of a short left-turn slip lane from Darcy Road (eastbound) into Mons Road.

In addition to the above, it is proposed to extend the Darcy Road right turn lane at the Dental Access from the existing length of approximately 35m to 100m (as shown in Appendix D).

Further to the above, traffic signal cycle time adjustments for several key intersections in the vicinity of the Campus have been assumed as part of the SIDRA Intersection modelling. Assuming a typical peak period network cycle time of 120 seconds (between the Darcy Road/ Mons Road/ Institute Road intersection and the Darcy Road/ Main Hospital access intersection), the following timing adjustments have been included:

- Darcy Road/ Dental Building access modelled at 60 seconds during the AM and PM peak hours (half the typical network cycle time).
- Darcy Road/ Main Hospital access modelled with a double cycle at 60 seconds during the AM peak hour (half the network cycle time) and 120 seconds during the PM peak hour.
- Darcy Road/ Hawkesbury Road intersection does not appear to operate as part of the linked corridor, with on-site observations indicating that it typically operates with a cycle time of 140 seconds during the respective peak periods.

The anticipated intersection operation with consideration for the above proposed intersection improvements is summarised in Table 8.4.

Table 8.4: Future Operating Conditions – Post Development with Network Improvements

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Darcy Road/ Mons Road/ Institute Road	AM	South	0.64	22	44	B
		East	0.64	65	32	E
		North	0.66	52	55	D
		West	0.70	15	160	A
		Total	**0.70**	**22**	**160**	**B**
	PM	South	0.65	41	128	C
		East	0.71	50	104	D
		North	0.71	39	143	C
		West	0.73	44	118	D
		Total	**0.73**	**43**	**143**	**D**

Table 8.4 indicates that the Darcy Road/ Mons Road/ Institute Road intersection improvements would result in additional capacity and improved overall intersection operation. In particular, the following key benefits could be achieved:

- Reduction to vehicle queues of up to 100m on the north approach during the PM peak, with associated minimised impacts to the operation of the southbound bus priority lane.
- Reduction in vehicle queues of approximately 60m on the east approach during the PM peak.
- Reduction in vehicle queues of up to 70m on the south approach during the AM peak.
- Reduction in vehicle queues of up to 180m on the western approach.

With the implementation of the above mitigation measures, the external road network would operate satisfactorily, with manageable queuing and delays.

8.5 Construction Traffic Impact

A construction traffic management plan has been prepared as part of this assessment and detailed in a separate report prepared by GTA Consultants[7].

[7] Westmead Redevelopment, Multi-Storey Car Park, Preliminary Construction Traffic Management Plan, 23/10/15.

9. Sustainable Transport Initiatives

While it is recognised that car parking facilities per se are not able to necessarily contribute a great deal to broader sustainable transport initiatives, they can facilitate implementation of specific measures.

In addition to the bicycle parking discussed in Section 7.7, bicycle parking facilities are proposed as part of the future ASB with such facilities to potentially include the following:

- bicycle parking, both public accessible and for private uses
- bicycle repair station
- end-of-trip facilities including showers and lockers for both staff and public users
- convenient, well-lit pedestrian links.

When planning sustainable transport options careful consideration needs to be given to factors that may affect the level of use. For example, the implicit provision for walkers and cyclists include:

- security and safety
- visibility
- shelter
- convenience
- signage.

Other initiatives currently being investigated for the Westmead Redevelopment include:

- prepare a green travel plan
- increase the number of carpooling spaces on-site
- increase the level of active involvement with Western Sydney Carpool website (to increase utilisation from existing 90 staff)
- increase parking fees to encourage the use of other transport modes
- allocate additional parking spaces to specific groups including afternoon shift staff and reallocation of existing parking spaces to visitors
- provision of a shuttle bus services within the Campus to improve the connectivity
- provide financial incentives for staff to use public transport e.g. salary sacrifice, transit pass subsidy, parking cash-out programs, guaranteed ride home program
- increase the level of non face-to-face appointments
- increase the level of enforcement and/ or communication to minimise informal on-site parking
- promote the availability of sustainable transport measures
- provide increased security on walking routes to public transport after dark (e.g. lighting and/or security patrols)
- implement innovative bicycle programs including a bicycle share scheme, potentially linking with other key locations
- provide financial incentives for staff to travel via bicycle and walking
- maximise small car space allocation and motorbike spaces to encourage use of smaller, low emitting forms of transport
- ensure high quality pedestrian and cyclist links internal and external to the Campus, including pedestrian crossing facilities and local area traffic management
- provide additional shared path connections to areas such as PNUT, Parramatta Park and the WSU Redevelopment.

10. Conclusion

Health Infrastructure is proposing to construct a Multi-Storey Car Park at Westmead Hospital, on the corner of Darcy Road and Institute Road, Westmead. The car park would support future growth of the Westmead Health Precinct, as well as future development associated with the broader Westmead Redevelopment. The proposed Multi-Storey Car Park follows the recently approved Early Works package which facilitates key development sites, including the Multi-Storey Car Park.

The project scope includes a 1,254 space multi-storey car park (8 levels), a 47 space at-grade car park, and associated internal road works. While the project scope includes some at-grade bicycle parking and disabled parking provisions, the broader transport infrastructure and initiatives including public transport, walking and cycling provisions (as well as a campus-wide mobility parking strategy) will be included as part of the forthcoming Acute Services Building State Significant Development Application.

The primary car park access would be via the existing signalised intersection of Darcy Road (otherwise known as the Dental access), with a secondary access from Institute Road. All traffic exiting the car park would do so via Institute Road. The proposed access arrangements and associated internal road configuration is compatible with the master plan strategy of using Institute Road as the primary ambulance access route.

The car park would help to improve the current parking conditions, including the following specifics:

- reduces the current Campus impact to publicly available parking in the surrounding areas
- reduces the extent of campus related parking on the surrounding road network
- consolidates on-campus parking to one accessible location, with fairly direct access
- improves the efficiency of existing parking by potentially reducing the level of informal parking which occurs across the Campus.

Several external intersection improvements would assist in mitigating the traffic impacts of both proposed Multi-Storey Car Park as well as the cumulative traffic impacts of the Western Sydney University Redevelopment, including:

Intersection of Darcy Road, Mons Road and Institute Road:

- Removal of small amount of Mons Road kerbside parking to accommodate longer turn bays and extended bus priority lane.
- Widening Institute Road on approach to Darcy Road to provide two traffic lanes (55m long lane second lane).
- Implementation of a right turn ban from Darcy Road into Institute Road (this requires those accessing the MSCP to do so via the Dental Building access only).
- Removal of any non T-Way bus services from turning left into Darcy Road (to travel west) from the Mons Road T-Way.
- Provision of a short left-turn slip lane from Darcy Road (eastbound) into Mons Road.

Intersection of Darcy Road and Westmead Dental Access:

- Extend the Darcy Road right turn lane (southern approach) from approximately 35m to 100m long.

With the implementation of the above mitigation measures, the external road network would operate satisfactorily, with manageable queuing and delays.

A construction traffic management plan has been prepared as part of this assessment and detailed in a separate report prepared by GTA Consultants.

Appendix A

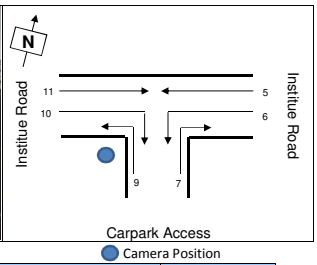
Survey Results

Intersection of Westmead Hospital

Thursday, 15 October 2015

Austraffic

Survey Start	**6:00 AM 14:00 PM**
Intersection Type	T Junction
Intersection No.	1
North Approach	
East Approach	**Institue Road**
South Approach	**Carpark Access**
West Approach	**Institue Road**
Date	**15/10/15**
Classification	**Light Heavy**



TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL		
	5			6			7			9			10			11					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	6	0	6	0	0	0	0	0	0	0	0	0	4	0	4	30	1	31	40	1	41
6:15 - 6:30	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	38	0	38	41	0	41
6:30 - 6:45	1	0	1	0	0	0	0	0	0	0	0	0	5	0	5	66	0	66	72	0	72
6:45 - 7:00	5	0	5	0	0	0	0	0	0	0	0	0	4	0	4	103	0	103	112	0	112
7:00 - 7:15	5	0	5	1	0	1	0	0	0	0	0	0	15	0	15	91	1	92	112	1	113
7:15 - 7:30	16	0	16	4	0	4	0	0	0	0	0	0	32	0	32	91	1	92	143	1	144
7:30 - 7:45	24	0	24	12	0	12	0	0	0	0	0	0	51	0	51	74	0	74	161	0	161
7:45 - 8:00	13	1	14	11	0	11	4	0	4	0	0	0	40	0	40	68	0	68	136	1	137
8:00 - 8:15	27	0	27	1	0	1	2	0	2	5	0	5	5	0	5	59	0	59	99	0	99
8:15 - 8:30	9	0	9	1	0	1	0	0	0	0	0	0	0	0	0	26	0	26	36	0	36
8:30 - 8:45	9	0	9	4	0	4	1	0	1	3	0	3	0	0	0	28	0	28	45	0	45
8:45 - 9:00	11	0	11	2	0	2	2	0	2	1	0	1	1	0	1	19	0	19	36	0	36
Σ	129	1	130	36	0	36	9	0	9	9	0	9	157	0	157	693	3	696	1033	4	1037

TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL		
	5			6			7			9			10			11					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
14:00 - 14:15	28	0	28	1	0	1	0	0	0	1	0	1	1	0	1	19	0	19	50	0	50
14:15 - 14:30	16	1	17	0	0	0	0	0	0	0	0	0	0	0	0	15	1	16	31	2	33
14:30 - 14:45	38	0	38	0	0	0	3	0	3	2	0	2	1	0	1	15	1	16	59	1	60
14:45 - 15:00	16	1	17	0	0	0	0	0	0	4	0	4	1	0	1	18	0	18	39	1	40
15:00 - 15:15	34	0	34	0	0	0	0	0	0	4	0	4	0	0	0	5	0	5	43	0	43
15:15 - 15:30	44	1	45	0	0	0	0	0	0	2	0	2	0	0	0	5	0	5	51	1	52
15:30 - 15:45	68	0	68	0	0	0	0	0	0	5	0	5	1	0	1	7	0	7	81	0	81
15:45 - 16:00	50	0	50	0	0	0	0	0	0	7	0	7	0	0	0	18	0	18	75	0	75
16:00 - 16:15	66	0	66	1	0	1	2	0	2	13	0	13	0	0	0	9	0	9	91	0	91
16:15 - 16:30	53	0	53	0	0	0	0	0	0	6	0	6	1	0	1	12	1	13	72	1	73
16:30 - 16:45	90	0	90	0	0	0	1	0	1	15	0	15	0	0	0	16	0	16	122	0	122
16:45 - 17:00	56	0	56	0	0	0	2	0	2	19	0	19	0	0	0	14	0	14	91	0	91
17:00 - 17:15	64	1	65	0	0	0	7	0	7	45	0	45	1	0	1	6	0	6	123	1	124
17:15 - 17:30	49	0	49	0	0	0	2	0	2	5	0	5	0	0	0	9	0	9	65	0	65
17:30 - 17:45	18	0	18	0	0	0	1	0	1	10	0	10	4	0	4	7	0	7	40	0	40
17:45 - 18:00	21	0	21	0	0	0	4	0	4	4	0	4	2	0	2	7	0	7	38	0	38
Σ	711	4	715	2	0	2	22	0	22	142	0	142	12	0	12	182	3	185	1071	7	1078

HOURLY FLOW

TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL			
	5			6			7			9			10			11						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	15	0	15	0	0	0	0	0	0	0	0	0	13	0	13	237	1	238	265	1	266	
6:15 - 7:15	14	0	14	1	0	1	0	0	0	0	0	0	24	0	24	298	1	299	337	1	338	
6:30 - 7:30	27	0	27	5	0	5	0	0	0	0	0	0	56	0	56	351	2	353	439	2	441	
6:45 - 7:45	50	0	50	17	0	17	0	0	0	0	0	0	102	0	102	359	2	361	528	2	530	
7:00 - 8:00	**58**	**1**	**59**	**28**	**0**	**28**	**4**	**0**	**4**	**0**	**0**	**0**	**138**	**0**	**138**	**324**	**2**	**326**	**552**	**3**	**555**	**Peak**
7:15 - 8:15	80	1	81	28	0	28	6	0	6	5	0	5	128	0	128	292	1	293	539	2	541	
7:30 - 8:30	73	1	74	25	0	25	6	0	6	5	0	5	96	0	96	227	0	227	432	1	433	
7:45 - 8:45	58	1	59	17	0	17	7	0	7	8	0	8	45	0	45	181	0	181	316	1	317	
8:00 - 9:00	56	0	56	8	0	8	5	0	5	9	0	9	6	0	6	132	0	132	216	0	216	

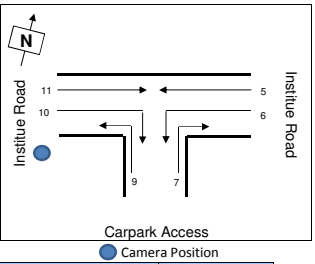
TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL			
	5			6			7			9			10			11						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
14:00 - 15:00	98	2	100	1	0	1	3	0	3	7	0	7	3	0	3	67	2	69	179	4	183	
14:15 - 15:15	104	2	106	0	0	0	3	0	3	10	0	10	2	0	2	53	2	55	172	4	176	
14:30 - 15:30	132	2	134	0	0	0	3	0	3	12	0	12	2	0	2	43	1	44	192	3	195	
14:45 - 15:45	162	2	164	0	0	0	0	0	0	15	0	15	2	0	2	35	0	35	214	2	216	
15:00 - 16:00	196	1	197	0	0	0	0	0	0	18	0	18	1	0	1	35	0	35	250	1	251	
15:15 - 16:15	228	1	229	1	0	1	2	0	2	27	0	27	1	0	1	39	0	39	298	1	299	
15:30 - 16:30	237	0	237	1	0	1	2	0	2	31	0	31	2	0	2	46	1	47	319	1	320	
15:45 - 16:45	259	0	259	1	0	1	3	0	3	41	0	41	1	0	1	55	1	56	360	1	361	
16:00 - 17:00	265	0	265	1	0	1	5	0	5	53	0	53	1	0	1	51	1	52	376	1	377	
16:15 - 17:15	**263**	**1**	**264**	**0**	**0**	**0**	**10**	**0**	**10**	**85**	**0**	**85**	**2**	**0**	**2**	**48**	**1**	**49**	**408**	**2**	**410**	**Peak**
16:30 - 17:30	259	1	260	0	0	0	12	0	12	84	0	84	1	0	1	45	0	45	401	1	402	
16:45 - 17:45	187	1	188	0	0	0	12	0	12	79	0	79	5	0	5	36	0	36	319	1	320	
17:00 - 18:00	152	1	153	0	0	0	14	0	14	64	0	64	7	0	7	29	0	29	266	1	267	

Intersection of Westmead Hospital

Thursday, 15 October 2015

Austraffic

Survey Start	**6:00 AM 14:00 PM**
Intersection Type	T Junction
Intersection No.	**2**
North Approach	
East Approach	**Institue Road**
South Approach	**Carpark Access**
West Approach	**Institue Road**
Date	**15/10/15**
Classification	**Light Heavy**



TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL		
	5			6			7			9			10			11					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	6	0	6	2	0	2	0	0	0	0	0	0	23	0	23	7	1	8	38	1	39
6:15 - 6:30	3	0	3	3	0	3	0	0	0	0	0	0	20	0	20	18	0	18	44	0	44
6:30 - 6:45	1	0	1	5	0	5	0	0	0	0	0	0	36	0	36	30	0	30	72	0	72
6:45 - 7:00	5	0	5	6	0	6	0	0	0	0	0	0	42	0	42	61	0	61	114	0	114
7:00 - 7:15	6	0	6	5	0	5	0	0	0	0	0	0	59	0	59	32	1	33	102	1	103
7:15 - 7:30	20	0	20	6	0	6	0	0	0	0	0	0	46	0	46	45	1	46	117	1	118
7:30 - 7:45	36	0	36	16	0	16	0	0	0	0	0	0	39	0	39	35	0	35	126	0	126
7:45 - 8:00	24	1	25	8	0	8	0	0	0	0	0	0	17	0	17	55	0	55	104	1	105
8:00 - 8:15	28	0	28	7	0	7	0	0	0	0	0	0	9	0	9	52	0	52	96	0	96
8:15 - 8:30	10	0	10	1	0	1	0	0	0	0	0	0	4	0	4	22	0	22	37	0	37
8:30 - 8:45	13	0	13	5	0	5	0	0	0	0	0	0	9	0	9	20	0	20	47	0	47
8:45 - 9:00	13	0	13	3	0	3	0	0	0	0	0	0	4	0	4	17	0	17	37	0	37
Σ	165	1	166	67	0	67	0	0	0	0	0	0	308	0	308	394	3	397	934	4	938

TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL		
	5			6			7			9			10			11					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
14:00 - 14:15	29	0	29	5	0	5	0	0	0	0	0	0	7	0	7	12	0	12	53	0	53
14:15 - 14:30	16	1	17	0	0	0	0	0	0	0	0	0	8	0	8	7	1	8	31	2	33
14:30 - 14:45	38	0	38	2	0	2	0	0	0	0	0	0	9	0	9	9	1	10	58	1	59
14:45 - 15:00	16	1	17	6	0	6	0	0	0	0	0	0	6	0	6	12	0	12	40	1	41
15:00 - 15:15	34	0	34	2	0	2	0	0	0	0	0	0	2	0	2	3	0	3	41	0	41
15:15 - 15:30	44	1	45	2	0	2	0	0	0	0	0	0	2	0	2	3	0	3	51	1	52
15:30 - 15:45	68	0	68	1	0	1	0	0	0	0	0	0	2	0	2	5	0	5	76	0	76
15:45 - 16:00	50	0	50	1	0	1	0	0	0	0	0	0	6	0	6	12	0	12	69	0	69
16:00 - 16:15	67	0	67	2	0	2	0	0	0	0	0	0	7	0	7	4	0	4	80	0	80
16:15 - 16:30	53	0	53	2	0	2	0	0	0	0	0	0	8	0	8	4	1	5	67	1	68
16:30 - 16:45	90	0	90	2	0	2	0	0	0	0	0	0	11	0	11	6	0	6	109	0	109
16:45 - 17:00	56	0	56	1	0	1	0	0	0	0	0	0	6	0	6	10	0	10	73	0	73
17:00 - 17:15	64	1	65	0	0	0	0	0	0	0	0	0	1	0	1	12	0	12	77	1	78
17:15 - 17:30	49	0	49	1	0	1	0	0	0	0	0	0	4	0	4	7	0	7	61	0	61
17:30 - 17:45	18	0	18	1	0	1	0	0	0	0	0	0	2	0	2	6	0	6	27	0	27
17:45 - 18:00	21	0	21	1	0	1	0	0	0	0	0	0	4	0	4	7	0	7	33	0	33
Σ	713	4	717	29	0	29	0	0	0	0	0	0	85	0	85	119	3	122	946	7	953

HOURLY FLOW

TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL			
	5			6			7			9			10			11						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	15	0	15	16	0	16	0	0	0	0	0	0	121	0	121	116	1	117	268	1	269	
6:15 - 7:15	15	0	15	19	0	19	0	0	0	0	0	0	157	0	157	141	1	142	332	1	333	
6:30 - 7:30	32	0	32	22	0	22	0	0	0	0	0	0	183	0	183	168	2	170	405	2	407	
6:45 - 7:45	**67**	**0**	**67**	**33**	**0**	**33**	**0**	**0**	**0**	**0**	**0**	**0**	**186**	**0**	**186**	**173**	**2**	**175**	**459**	**2**	**461**	**Peak**
7:00 - 8:00	86	1	87	35	0	35	0	0	0	0	0	0	161	0	161	167	2	169	449	3	452	
7:15 - 8:15	108	1	109	37	0	37	0	0	0	0	0	0	111	0	111	187	1	188	443	2	445	
7:30 - 8:30	98	1	99	32	0	32	0	0	0	0	0	0	69	0	69	164	0	164	363	1	364	
7:45 - 8:45	75	1	76	21	0	21	0	0	0	0	0	0	39	0	39	149	0	149	284	1	285	
8:00 - 9:00	64	0	64	16	0	16	0	0	0	0	0	0	26	0	26	111	0	111	217	0	217	

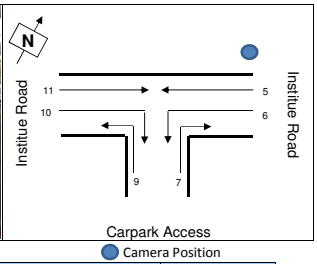
TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL			
	5			6			7			9			10			11						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
14:00 - 15:00	99	2	101	13	0	13	0	0	0	0	0	0	30	0	30	40	2	42	182	4	186	
14:15 - 15:15	104	2	106	10	0	10	0	0	0	0	0	0	25	0	25	31	2	33	170	4	174	
14:30 - 15:30	132	2	134	12	0	12	0	0	0	0	0	0	19	0	19	27	1	28	190	3	193	
14:45 - 15:45	162	2	164	11	0	11	0	0	0	0	0	0	12	0	12	23	0	23	208	2	210	
15:00 - 16:00	196	1	197	6	0	6	0	0	0	0	0	0	12	0	12	23	0	23	237	1	238	
15:15 - 16:15	229	1	230	6	0	6	0	0	0	0	0	0	17	0	17	24	0	24	276	1	277	
15:30 - 16:30	238	0	238	5	0	5	0	0	0	0	0	0	23	0	23	25	1	26	292	1	293	
15:45 - 16:45	260	0	260	7	0	7	0	0	0	0	0	0	32	0	32	26	1	27	325	1	326	
16:00 - 17:00	**266**	**0**	**266**	**7**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**32**	**0**	**32**	**24**	**1**	**25**	**329**	**1**	**330**	**Peak**
16:15 - 17:15	263	1	264	5	0	5	0	0	0	0	0	0	26	0	26	32	1	33	326	2	328	
16:30 - 17:30	259	1	260	4	0	4	0	0	0	0	0	0	22	0	22	35	0	35	320	1	321	
16:45 - 17:45	187	1	188	3	0	3	0	0	0	0	0	0	13	0	13	35	0	35	238	1	239	
17:00 - 18:00	152	1	153	3	0	3	0	0	0	0	0	0	11	0	11	32	0	32	198	1	199	

Intersection of Westmead Hospital

Thursday, 15 October 2015

Austraffic

Survey Start	**6:00 AM 14:00 PM**
Intersection Type	T Junction
Intersection No.	**3**
North Approach	
East Approach	**Institue Road**
South Approach	**Carpark Access**
West Approach	**Institue Road**
Date	**15/10/15**
Classification	**Light Heavy**



TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL		
	5			6			7			9			10			11					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
6:00 - 6:15	4	0	4	0	0	0	1	0	1	4	0	4	0	0	0	7	1	8	16	1	17
6:15 - 6:30	3	0	3	0	0	0	0	0	0	2	0	2	0	0	0	16	0	16	21	0	21
6:30 - 6:45	6	0	6	0	0	0	0	0	0	2	0	2	0	0	0	25	0	25	33	0	33
6:45 - 7:00	9	0	9	0	0	0	0	0	0	0	0	0	0	0	0	59	0	59	68	0	68
7:00 - 7:15	9	0	9	0	0	0	3	0	3	0	0	0	0	0	0	32	0	32	44	0	44
7:15 - 7:30	22	0	22	0	0	0	0	0	0	6	0	6	0	0	0	41	2	43	69	2	71
7:30 - 7:45	42	0	42	0	0	0	3	0	3	8	0	8	0	0	0	40	0	40	93	0	93
7:45 - 8:00	23	1	24	0	0	0	4	0	4	6	0	6	0	0	0	55	0	55	88	1	89
8:00 - 8:15	26	0	26	0	0	0	4	0	4	4	0	4	0	0	0	51	0	51	85	0	85
8:15 - 8:30	6	0	6	0	0	0	2	0	2	3	0	3	0	0	0	21	0	21	32	0	32
8:30 - 8:45	12	0	12	0	0	0	4	0	4	5	0	5	0	0	0	20	0	20	41	0	41
8:45 - 9:00	11	0	11	0	0	0	3	0	3	2	0	2	0	0	0	15	0	15	31	0	31
Σ	173	1	174	0	0	0	24	0	24	42	0	42	0	0	0	382	3	385	621	4	625

TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL		
	5			6			7			9			10			11					
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ
14:00 - 14:15	13	0	13	0	0	0	5	0	5	17	0	17	0	0	0	12	0	12	47	0	47
14:15 - 14:30	7	1	8	0	0	0	1	0	1	9	0	9	0	0	0	7	1	8	24	2	26
14:30 - 14:45	11	0	11	0	0	0	5	0	5	30	0	30	0	0	0	8	1	9	54	1	55
14:45 - 15:00	11	1	12	0	0	0	3	0	3	8	0	8	0	0	0	8	0	8	30	1	31
15:00 - 15:15	19	0	19	0	0	0	1	0	1	19	0	19	0	0	0	4	0	4	43	0	43
15:15 - 15:30	29	1	30	0	0	0	3	0	3	13	0	13	0	0	0	4	0	4	49	1	50
15:30 - 15:45	37	0	37	0	0	0	6	0	6	28	0	28	0	0	0	5	0	5	76	0	76
15:45 - 16:00	22	0	22	0	0	0	4	0	4	29	0	29	0	0	0	11	0	11	66	0	66
16:00 - 16:15	31	0	31	0	0	0	8	0	8	35	0	35	0	0	0	1	0	1	75	0	75
16:15 - 16:30	31	0	31	0	0	0	2	0	2	23	0	23	0	0	0	4	1	5	60	1	61
16:30 - 16:45	53	0	53	0	0	0	8	0	8	35	0	35	0	0	0	5	0	5	101	0	101
16:45 - 17:00	33	1	34	0	0	0	6	0	6	22	0	22	0	0	0	9	0	9	70	1	71
17:00 - 17:15	41	0	41	0	0	0	5	0	5	22	0	22	0	0	0	11	0	11	79	0	79
17:15 - 17:30	34	0	34	0	0	0	3	0	3	12	0	12	0	0	0	7	0	7	56	0	56
17:30 - 17:45	11	0	11	0	0	0	3	0	3	8	0	8	0	0	0	7	0	7	29	0	29
17:45 - 18:00	15	0	15	0	0	0	4	0	4	10	0	10	0	0	0	7	0	7	36	0	36
Σ	398	4	402	0	0	0	67	0	67	320	0	320	0	0	0	110	3	113	895	7	902

HOURLY FLOW

TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL			
	5			6			7			9			10			11						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
6:00 - 7:00	22	0	22	0	0	0	1	0	1	8	0	8	0	0	0	107	1	108	138	1	139	
6:15 - 7:15	27	0	27	0	0	0	3	0	3	4	0	4	0	0	0	132	0	132	166	0	166	
6:30 - 7:30	46	0	46	0	0	0	3	0	3	8	0	8	0	0	0	157	2	159	214	2	216	
6:45 - 7:45	82	0	82	0	0	0	6	0	6	14	0	14	0	0	0	172	2	174	274	2	276	
7:00 - 8:00	96	1	97	0	0	0	10	0	10	20	0	20	0	0	0	168	2	170	294	3	297	
7:15 - 8:15	**113**	**1**	**114**	**0**	**0**	**0**	**11**	**0**	**11**	**24**	**0**	**24**	**0**	**0**	**0**	**167**	**2**	**169**	**335**	**3**	**338**	**Peak**
7:30 - 8:30	97	1	98	0	0	0	13	0	13	21	0	21	0	0	0	167	0	167	298	1	299	
7:45 - 8:45	67	1	68	0	0	0	14	0	14	18	0	18	0	0	0	147	0	147	246	1	247	
8:00 - 9:00	55	0	55	0	0	0	13	0	13	14	0	14	0	0	0	107	0	107	189	0	189	

TIME PERIOD	VEHICLE MOVEMENT																		GRAND TOTAL			
	5			6			7			9			10			11						
	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	Light	Heavy	Σ	
14:00 - 15:00	42	2	44	0	0	0	14	0	14	64	0	64	0	0	0	35	2	37	155	4	159	
14:15 - 15:15	48	2	50	0	0	0	10	0	10	66	0	66	0	0	0	27	2	29	151	4	155	
14:30 - 15:30	70	2	72	0	0	0	12	0	12	70	0	70	0	0	0	24	1	25	176	3	179	
14:45 - 15:45	96	2	98	0	0	0	13	0	13	68	0	68	0	0	0	21	0	21	198	2	200	
15:00 - 16:00	107	1	108	0	0	0	14	0	14	89	0	89	0	0	0	24	0	24	234	1	235	
15:15 - 16:15	119	1	120	0	0	0	21	0	21	105	0	105	0	0	0	21	0	21	266	1	267	
15:30 - 16:30	121	0	121	0	0	0	20	0	20	115	0	115	0	0	0	21	1	22	277	1	278	
15:45 - 16:45	137	0	137	0	0	0	22	0	22	122	0	122	0	0	0	21	1	22	302	1	303	
16:00 - 17:00	148	1	149	0	0	0	24	0	24	115	0	115	0	0	0	19	1	20	306	2	308	
16:15 - 17:15	**158**	**1**	**159**	**0**	**0**	**0**	**21**	**0**	**21**	**102**	**0**	**102**	**0**	**0**	**0**	**29**	**1**	**30**	**310**	**2**	**312**	**Peak**
16:30 - 17:30	161	1	162	0	0	0	22	0	22	91	0	91	0	0	0	32	0	32	306	1	307	
16:45 - 17:45	119	1	120	0	0	0	17	0	17	64	0	64	0	0	0	34	0	34	234	1	235	
17:00 - 18:00	101	0	101	0	0	0	15	0	15	52	0	52	0	0	0	32	0	32	200	0	200	

Appendix B

SIDRA INTERSECTION Results

MOVEMENT SUMMARY

Site: Darcy Rd Mons Rd Institute Rd - AM - Base Case

Darcy Road/ Mons Road/ Institute Road
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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: Darcy Road - S											
1	L2	244	3.0	0.105	7.4	LOS A	1.1	7.9	0.17	0.52	34.9
2	T1	126	17.5	0.648	59.1	LOS E	8.3	58.1	0.99	0.80	20.3
3	R2	41	0.0	0.648	60.0	LOS E	8.3	58.1	0.99	0.81	21.0
Approach		412	7.2	0.648	28.5	LOS C	8.3	58.1	0.50	0.63	26.3
East: Institute Road - E											
4	L2	6	16.7	0.161	39.7	LOS C	0.7	5.6	0.97	0.68	25.2
5	T1	25	4.2	0.161	50.8	LOS D	0.9	6.6	0.98	0.68	24.2
6	R2	1	0.0	0.161	65.5	LOS E	0.9	6.6	0.99	0.68	23.8
Approach		33	6.5	0.161	49.2	LOS D	0.9	6.6	0.98	0.68	24.3
North: Mons Road - N											
7	L2	1	0.0	0.237	51.8	LOS D	3.3	27.7	0.91	0.71	26.1
8	T1	80	38.2	0.237	48.2	LOS D	3.3	27.7	0.91	0.69	22.4
9	R2	132	0.0	0.654	61.5	LOS E	7.8	54.3	1.00	0.82	22.2
Approach		213	14.4	0.654	56.4	LOS D	7.8	54.3	0.96	0.77	22.3
West: Darcy Road - W											
10	L2	352	0.0	0.622	23.5	LOS B	19.4	136.8	0.65	0.69	31.1
11	T1	165	2.5	0.622	20.1	LOS B	19.4	136.8	0.65	0.69	31.1
12	R2	581	1.1	0.622	23.3	LOS B	19.4	136.8	0.65	0.73	27.7
Approach		1098	1.0	0.622	22.9	LOS B	19.4	136.8	0.65	0.71	29.6
All Vehicles		1755	4.1	0.654	28.8	LOS C	19.4	136.8	0.66	0.70	27.5

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	26	51.4	LOS E	0.1	0.1	0.93	0.93
P3	North Full Crossing	4	27.3	LOS C	0.0	0.0	0.68	0.68
P4	West Full Crossing	27	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		58	51.0	LOS E			0.92	0.92

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: Darcy Rd Mons Rd Institute Rd - PM - Base Case

Darcy Road/ Mons Road/ Institute Road
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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: Darcy Road - S											
1	L2	605	0.7	0.525	39.7	LOS C	13.2	92.5	0.80	0.78	22.2
2	T1	61	55.2	0.509	67.1	LOS E	2.1	27.3	0.99	0.77	19.1
3	R2	1	0.0	0.292	66.3	LOS E	1.7	11.8	0.98	0.70	20.1
Approach		667	5.7	0.525	42.3	LOS C	13.2	92.5	0.82	0.78	21.8
East: Institute Road - E											
4	L2	24	0.0	0.494	43.1	LOS D	2.7	19.2	1.00	0.76	24.4
5	T1	95	0.0	0.494	53.0	LOS D	3.4	23.7	1.00	0.75	23.8
6	R2	1	0.0	0.494	66.0	LOS E	3.4	23.7	1.00	0.75	23.8
Approach		120	0.0	0.494	51.1	LOS D	3.4	23.7	1.00	0.76	23.9
North: Mons Road - N											
7	L2	1	100.0	0.128	21.7	LOS B	3.6	27.2	0.58	0.48	33.3
8	T1	129	20.3	0.128	17.9	LOS B	3.6	27.2	0.58	0.47	30.9
9	R2	392	0.0	0.559	33.5	LOS C	17.6	122.9	0.83	0.80	27.8
Approach		522	5.2	0.559	29.7	LOS C	17.6	122.9	0.76	0.72	28.4
West: Darcy Road - W											
10	L2	56	0.0	0.564	49.9	LOS D	10.9	77.8	0.91	0.79	24.4
11	T1	27	3.8	0.564	46.5	LOS D	10.9	77.8	0.91	0.79	24.5
12	R2	343	3.7	0.564	49.7	LOS D	10.9	77.8	0.91	0.79	20.3
Approach		426	3.2	0.564	49.5	LOS D	10.9	78.1	0.91	0.79	21.3
All Vehicles		1736	4.5	0.564	40.9	LOS C	17.6	122.9	0.84	0.76	23.9

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	74	21.7	LOS C	0.2	0.2	0.60	0.60
P3	North Full Crossing	20	53.2	LOS E	0.1	0.1	0.94	0.94
P4	West Full Crossing	66	28.8	LOS C	0.2	0.2	0.69	0.69
All Pedestrians		160	28.6	LOS C			0.68	0.68

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: Darcy Rd Dental Access - AM - Base Case

Darcy Road, Dental Access and Parramatta Marist School Access
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given 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: Darcy Road											
1	L2	7	0.0	0.170	9.0	LOS A	2.4	17.1	0.22	0.20	21.2
2	T1	418	4.3	0.170	5.5	LOS A	2.4	17.1	0.22	0.19	33.1
3	R2	11	0.0	0.115	65.6	LOS E	0.6	4.4	0.98	0.67	13.4
Approach		436	4.1	0.170	7.0	LOS A	2.4	17.1	0.24	0.20	30.3
East: Dental Access											
4	L2	9	0.0	0.016	6.6	LOS A	0.2	1.3	0.43	0.30	20.5
5	T1	1	0.0	0.016	6.6	LOS A	0.2	1.3	0.43	0.30	25.8
6	R2	24	0.0	0.083	44.1	LOS D	1.2	8.3	0.86	0.63	16.2
Approach		35	0.0	0.083	32.7	LOS C	1.2	8.3	0.73	0.53	17.4
North: Darcy Road											
7	L2	37	0.0	0.271	9.4	LOS A	4.2	29.4	0.25	0.25	21.9
8	T1	623	3.9	0.271	5.9	LOS A	4.2	29.4	0.24	0.23	32.5
9	R2	4	0.0	0.047	64.6	LOS E	0.2	1.7	0.97	0.64	14.3
Approach		664	3.6	0.271	6.5	LOS A	4.2	29.4	0.25	0.23	30.2
West: School Access											
10	L2	1	0.0	0.021	42.2	LOS C	0.3	2.1	0.84	0.57	16.3
11	T1	1	0.0	0.021	42.2	LOS C	0.3	2.1	0.84	0.57	20.6
12	R2	4	0.0	0.021	42.2	LOS C	0.3	2.1	0.84	0.57	15.5
Approach		6	0.0	0.021	42.2	LOS C	0.3	2.1	0.84	0.57	16.6
All Vehicles		1141	3.7	0.271	7.7	LOS A	4.2	29.4	0.26	0.23	28.7

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	75	13.1	LOS B	0.1	0.1	0.47	0.47
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	42	13.1	LOS B	0.1	0.1	0.47	0.47
All Pedestrians		169	25.9	LOS C			0.62	0.62

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.

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MOVEMENT SUMMARY

Site: Darcy Rd Dental Access - PM - Base Case

Darcy Road, Dental Access and Parramatta Marist School Access
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given 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: Darcy Road											
1	L2	3	0.0	0.269	9.4	LOS A	4.3	30.0	0.24	0.22	21.2
2	T1	682	5.7	0.269	5.9	LOS A	4.3	30.0	0.24	0.21	32.7
3	R2	18	0.0	0.196	66.2	LOS E	1.1	7.5	0.99	0.69	13.3
Approach		703	5.5	0.269	7.4	LOS A	4.3	30.0	0.26	0.22	30.3
East: Dental Access											
4	L2	16	0.0	0.022	4.9	LOS A	0.3	1.8	0.37	0.27	20.8
5	T1	1	0.0	0.022	4.9	LOS A	0.3	1.8	0.37	0.27	26.1
6	R2	23	4.5	0.081	44.1	LOS D	1.1	8.2	0.86	0.63	16.2
Approach		40	2.6	0.081	27.6	LOS B	1.1	8.2	0.65	0.48	17.9
North: Darcy Road											
7	L2	18	0.0	0.193	9.1	LOS A	2.8	19.3	0.23	0.22	22.0
8	T1	464	6.3	0.193	5.6	LOS A	2.8	19.3	0.22	0.20	32.9
9	R2	1	0.0	0.012	63.6	LOS E	0.1	0.4	0.97	0.58	14.4
Approach		483	6.1	0.193	5.8	LOS A	2.8	19.3	0.23	0.20	31.4
West: School Access											
10	L2	1	0.0	0.010	41.8	LOS C	0.1	1.0	0.83	0.54	16.4
11	T1	1	0.0	0.010	41.8	LOS C	0.1	1.0	0.83	0.54	20.6
12	R2	1	0.0	0.010	41.8	LOS C	0.1	1.0	0.83	0.54	15.6
Approach		3	0.0	0.010	41.8	LOS C	0.1	1.0	0.83	0.54	17.7
All Vehicles		1229	5.7	0.269	7.6	LOS A	4.3	30.0	0.26	0.22	29.2

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	75	13.1	LOS B	0.1	0.1	0.47	0.47
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	42	13.1	LOS B	0.1	0.1	0.47	0.47
All Pedestrians		169	25.9	LOS C			0.62	0.62

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.

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MOVEMENT SUMMARY

Site: Darcy Rd Westmead Main Entry - AM - Base Case

Darcy Road/ Westmead Hospital Main Entry
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given 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: Darcy Road											
2	T1	375	0.8	0.176	10.2	LOS A	3.4	24.1	0.34	0.28	28.9
3	R2	77	0.0	0.315	55.9	LOS D	4.2	29.2	0.95	0.76	9.4
Approach		452	0.7	0.315	18.0	LOS B	4.2	29.2	0.44	0.36	22.7
East: Westmad Hospital Main Entry											
4	L2	11	0.0	0.017	28.2	LOS B	0.4	2.8	0.69	0.49	13.5
6	R2	44	0.0	0.136	45.3	LOS D	2.2	15.4	0.88	0.66	12.4
Approach		55	0.0	0.136	42.0	LOS C	2.2	15.4	0.84	0.63	12.6
North: Darcy Road											
7	L2	136	0.0	0.287	15.7	LOS B	6.1	43.2	0.40	0.48	21.2
8	T1	463	8.0	0.287	11.3	LOS A	6.1	43.2	0.38	0.37	27.6
Approach		599	6.2	0.287	12.3	LOS A	6.1	43.2	0.38	0.39	25.8
All Vehicles		1105	3.6	0.315	16.1	LOS B	6.1	43.2	0.43	0.39	23.4

Level of Service (LOS) Method: Delay (RTA NSW).
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
P11	South Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P12	South Stage 2	53	26.7	LOS C	0.1	0.1	0.67	0.67
P2	East Full Crossing	75	17.7	LOS B	0.1	0.1	0.54	0.54
P31	North Stage 1	53	27.4	LOS C	0.1	0.1	0.68	0.68
P32	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		285	34.6	LOS D			0.74	0.74

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.

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MOVEMENT SUMMARY

Site: Darcy Rd Westmead Main Entry - PM - Base Case

Darcy Road/ Westmead Hospital Main Entry
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given 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: Darcy Road											
2	T1	558	0.9	0.262	10.8	LOS A	5.5	38.6	0.37	0.31	28.5
3	R2	60	0.0	0.246	55.3	LOS D	3.2	22.5	0.94	0.75	9.5
Approach		618	0.9	0.262	15.1	LOS B	5.5	38.6	0.42	0.36	24.8
East: Westmad Hospital Main Entry											
4	L2	49	0.0	0.079	29.0	LOS C	2.0	13.7	0.72	0.55	13.3
6	R2	107	0.0	0.379	47.3	LOS D	5.6	39.1	0.92	0.73	12.1
Approach		157	0.0	0.379	41.5	LOS C	5.6	39.1	0.86	0.67	12.4
North: Darcy Road											
7	L2	73	0.0	0.211	14.5	LOS B	4.2	29.1	0.36	0.41	22.0
8	T1	396	9.0	0.211	10.6	LOS A	4.2	29.1	0.35	0.33	28.2
Approach		468	7.6	0.211	11.2	LOS A	4.2	29.1	0.35	0.34	27.1
All Vehicles		1243	3.3	0.379	17.0	LOS B	5.6	39.1	0.45	0.39	22.9

Level of Service (LOS) Method: Delay (RTA NSW).
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
P11	South Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P12	South Stage 2	53	26.7	LOS C	0.1	0.1	0.67	0.67
P2	East Full Crossing	75	17.7	LOS B	0.1	0.1	0.54	0.54
P31	North Stage 1	53	27.4	LOS C	0.1	0.1	0.68	0.68
P32	North Stage 2	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		285	34.6	LOS D			0.74	0.74

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.

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MOVEMENT SUMMARY

Site: Darcy Rd Hawkesbury Rd - AM - Base Case

Darcy Road/ Hawkesbury Road
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (User-Given Phase Times)

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
East: Hawkesbruy Road											
5	T1	261	3.6	0.321	27.4	LOS B	11.5	83.0	0.70	0.60	28.8
6	R2	118	3.6	0.404	27.0	LOS B	3.4	23.6	0.85	0.73	27.4
Approach		379	3.6	0.404	27.3	LOS B	11.5	83.0	0.75	0.64	28.4
North: Darcy Road											
7	L2	242	1.7	0.298	20.4	LOS B	7.4	51.7	0.69	0.72	29.3
9	R2	242	2.6	0.435	62.4	LOS E	7.5	52.7	0.96	0.78	10.8
Approach		484	2.2	0.435	41.4	LOS C	7.5	52.7	0.82	0.75	19.5
West: Hawkesbury Road											
10	L2	377	7.0	0.340	11.0	LOS A	4.7	33.1	0.37	0.65	28.9
11	T1	552	0.8	0.900	59.2	LOS E	39.1	275.7	1.00	0.99	20.6
Approach		928	3.3	0.900	39.7	LOS C	39.1	275.7	0.75	0.86	21.8
All Vehicles		1792	3.1	0.900	37.5	LOS C	39.1	275.7	0.77	0.78	22.6

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	303	62.1	LOS F	1.1	1.1	0.95	0.95
P31	North Stage 1	74	49.9	LOS E	0.2	0.2	0.85	0.85
P32	North Stage 2	74	37.3	LOS D	0.2	0.2	0.73	0.73
P4	West Full Crossing	71	63.4	LOS F	0.3	0.3	0.95	0.95
All Pedestrians		521	57.0	LOS E			0.90	0.90

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.

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MOVEMENT SUMMARY

Site: Darcy Rd Hawkesbury Rd - PM - Base Case

Darcy Road/ Hawkesbury Road
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (User-Given Phase Times)

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
East: Hawkesbruy Road											
5	T1	584	1.3	0.837	42.0	LOS C	29.5	209.0	0.82	0.82	24.5
6	R2	304	1.7	0.837	69.2	LOS E	15.7	110.4	0.75	0.98	18.2
Approach		888	1.4	0.837	51.3	LOS D	29.5	209.0	0.80	0.88	21.9
North: Darcy Road											
7	L2	149	2.1	0.184	19.6	LOS B	4.3	30.0	0.65	0.69	29.6
9	R2	315	2.0	0.598	63.8	LOS E	10.7	74.7	0.98	0.80	10.6
Approach		464	2.0	0.598	49.6	LOS D	10.7	74.7	0.87	0.77	16.2
West: Hawkesbury Road											
10	L2	339	14.0	0.290	11.4	LOS A	3.9	27.0	0.37	0.65	28.5
11	T1	263	3.2	0.436	41.3	LOS C	12.7	91.2	0.76	0.70	24.4
Approach		602	9.3	0.436	24.5	LOS B	12.7	91.2	0.54	0.67	25.5
All Vehicles		1955	4.0	0.837	42.6	LOS D	29.5	209.0	0.74	0.79	21.4

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	361	62.2	LOS F	1.4	1.4	0.95	0.95
P31	North Stage 1	97	49.9	LOS E	0.3	0.3	0.85	0.85
P32	North Stage 2	97	37.3	LOS D	0.3	0.3	0.73	0.73
P4	West Full Crossing	37	63.3	LOS F	0.1	0.1	0.95	0.95
All Pedestrians		592	56.2	LOS E			0.90	0.90

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.

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MOVEMENT SUMMARY

Site: Darcy Rd Mons Rd Institute Rd - AM - Base Case + MSCP +UWS

Darcy Road/ Mons Road/ Institute Road
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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: Darcy Road - S											
1	L2	331	2.2	0.134	6.0	LOS A	1.1	7.7	0.12	0.50	35.9
2	T1	126	17.5	0.885	65.1	LOS E	16.1	112.7	1.00	0.97	19.2
3	R2	147	0.0	0.885	66.4	LOS E	16.1	112.7	1.00	1.00	19.8
Approach		604	4.9	0.885	33.1	LOS C	16.1	112.7	0.52	0.72	25.1
East: Institute Road - E											
4	L2	28	3.7	0.680	61.9	LOS E	3.7	26.1	1.00	0.91	20.6
5	T1	113	0.9	0.680	62.7	LOS E	4.1	29.1	1.00	0.86	22.2
6	R2	1	0.0	0.680	69.2	LOS E	4.1	29.1	1.00	0.83	23.3
Approach		142	1.5	0.680	62.6	LOS E	4.1	29.1	1.00	0.87	21.9
North: Mons Road - N											
7	L2	1	0.0	0.301	56.3	LOS D	3.5	29.1	0.95	0.73	25.3
8	T1	80	38.2	0.301	52.7	LOS D	3.5	29.1	0.94	0.72	21.5
9	R2	132	0.0	0.852	71.0	LOS F	8.5	59.8	1.00	0.98	20.8
Approach		213	14.4	0.852	64.1	LOS E	8.5	59.8	0.98	0.88	21.0
West: Darcy Road - W											
10	L2	352	0.0	0.912	39.7	LOS C	48.3	340.1	0.94	0.96	26.8
11	T1	324	1.3	0.912	36.3	LOS C	48.3	340.1	0.94	0.96	26.9
12	R2	942	0.7	0.912	39.8	LOS C	48.3	340.1	0.94	0.97	22.5
Approach		1618	0.7	0.912	39.1	LOS C	48.3	340.1	0.94	0.97	24.6
All Vehicles		2577	2.8	0.912	41.0	LOS C	48.3	340.1	0.85	0.90	24.1

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	26	54.2	LOS E	0.1	0.1	0.95	0.95
P3	North Full Crossing	4	27.3	LOS C	0.0	0.0	0.68	0.68
P4	West Full Crossing	27	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		58	52.3	LOS E			0.93	0.93

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: Darcy Rd Mons Rd Institute Rd - PM - Base Case + MSCP +UWS

Darcy Road/ Mons Road/ Institute Road
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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: Darcy Road - S											
1	L2	804	0.5	0.858	36.4	LOS C	17.5	122.4	0.80	0.79	23.0
2	T1	61	55.2	0.858	67.8	LOS E	2.4	31.1	0.96	0.88	19.1
3	R2	11	0.0	0.182	57.0	LOS E	2.0	14.0	0.91	0.69	21.5
Approach		876	4.3	0.858	38.8	LOS C	17.5	122.4	0.81	0.80	22.6
East: Institute Road - E											
4	L2	105	0.0	0.971	89.9	LOS F	23.5	164.3	0.99	1.30	16.8
5	T1	420	0.0	0.971	86.7	LOS F	23.5	164.3	0.96	1.28	19.0
6	R2	1	0.0	0.971	90.3	LOS F	16.2	113.6	0.93	1.26	20.5
Approach		526	0.0	0.971	87.3	LOS F	23.5	164.3	0.97	1.28	18.6
North: Mons Road - N											
7	L2	1	100.0	0.219	38.9	LOS C	5.1	38.3	0.80	0.65	28.7
8	T1	129	20.3	0.219	35.0	LOS C	5.1	38.3	0.80	0.64	25.4
9	R2	392	0.0	1.017	114.6	LOS F	35.1	245.8	1.00	1.25	16.0
Approach		522	5.2	1.017	94.7	LOS F	35.1	245.8	0.95	1.09	17.4
West: Darcy Road - W											
10	L2	97	0.0	1.006	100.0	LOS F	29.3	207.8	1.00	1.23	17.5
11	T1	43	2.4	1.006	96.6	LOS F	29.3	207.8	1.00	1.23	17.6
12	R2	565	2.2	1.006	99.9	LOS F	29.3	207.8	1.00	1.23	13.4
Approach		705	1.9	1.006	99.7	LOS F	29.3	208.7	1.00	1.23	14.3
All Vehicles		2629	3.0	1.017	76.0	LOS F	35.1	245.8	0.92	1.07	17.9

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	74	38.5	LOS D	0.2	0.2	0.80	0.80
P3	North Full Crossing	20	54.2	LOS E	0.1	0.1	0.95	0.95
P4	West Full Crossing	66	45.2	LOS E	0.2	0.2	0.87	0.87
All Pedestrians		160	43.2	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.

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MOVEMENT SUMMARY

Site: Darcy Rd Dental Access - AM - Base Case + MSCP +UWS

Darcy Road, Dental Access and Parramatta Marist School Access
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (User-Given 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: Darcy Road											
1	L2	7	0.0	0.402	16.9	LOS B	5.6	39.0	0.65	0.56	19.8
2	T1	611	2.9	0.402	13.4	LOS A	5.6	39.0	0.65	0.55	26.6
3	R2	182	0.0	0.854	39.4	LOS C	6.3	44.1	1.00	1.08	15.9
Approach		800	2.2	0.854	19.3	LOS B	6.3	44.1	0.73	0.67	21.1
East: Dental Access											
4	L2	9	0.0	0.013	5.5	LOS A	0.1	0.9	0.50	0.35	20.7
5	T1	1	0.0	0.013	5.5	LOS A	0.1	0.9	0.50	0.35	25.9
6	R2	24	0.0	0.065	20.6	LOS B	0.6	4.0	0.82	0.60	19.1
Approach		35	0.0	0.065	16.0	LOS B	0.6	4.0	0.73	0.52	19.7
North: Darcy Road											
7	L2	294	0.0	0.740	21.6	LOS B	12.7	89.1	0.86	0.83	19.4
8	T1	749	3.2	0.740	18.0	LOS B	12.9	90.1	0.85	0.79	23.5
9	R2	4	0.0	0.023	30.9	LOS C	0.1	0.8	0.92	0.63	17.8
Approach		1047	2.3	0.740	19.0	LOS B	12.9	90.1	0.85	0.80	21.3
West: School Access											
10	L2	1	0.0	0.017	19.3	LOS B	0.1	1.0	0.79	0.53	19.3
11	T1	1	0.0	0.017	19.3	LOS B	0.1	1.0	0.79	0.53	23.6
12	R2	4	0.0	0.017	19.3	LOS B	0.1	1.0	0.79	0.53	18.4
Approach		6	0.0	0.017	19.3	LOS B	0.1	1.0	0.79	0.53	19.6
All Vehicles		1888	2.2	0.854	19.1	LOS B	12.9	90.1	0.80	0.74	21.2

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	75	19.3	LOS B	0.1	0.1	0.80	0.80
P3	North Full Crossing	53	24.4	LOS C	0.1	0.1	0.90	0.90
P4	West Full Crossing	42	18.4	LOS B	0.1	0.1	0.78	0.78
All Pedestrians		169	20.6	LOS C			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.

MOVEMENT SUMMARY

Site: Darcy Rd Dental Access - PM - Base Case + MSCP +UWS

Darcy Road, Dental Access and Parramatta Marist School Access
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (User-Given 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: Darcy Road											
1	L2	3	0.0	0.573	18.1	LOS B	9.0	62.7	0.74	0.64	19.6
2	T1	892	4.4	0.573	14.5	LOS B	9.0	62.7	0.73	0.63	25.9
3	R2	45	0.0	0.248	32.5	LOS C	1.3	9.2	0.96	0.73	16.7
Approach		940	4.1	0.573	15.4	LOS B	9.0	62.7	0.74	0.63	24.6
East: Dental Access											
4	L2	16	0.0	0.019	2.9	LOS A	0.1	1.0	0.40	0.29	21.2
5	T1	1	0.0	0.019	2.9	LOS A	0.1	1.0	0.40	0.29	26.4
6	R2	23	4.5	0.064	20.6	LOS B	0.6	4.0	0.82	0.59	19.1
Approach		40	2.6	0.064	13.2	LOS A	0.6	4.0	0.65	0.47	20.1
North: Darcy Road											
7	L2	59	0.0	0.547	17.9	LOS B	8.1	56.8	0.72	0.64	20.4
8	T1	767	3.8	0.547	14.4	LOS A	8.1	56.8	0.72	0.62	25.8
9	R2	1	0.0	0.006	30.5	LOS C	0.0	0.2	0.92	0.58	17.9
Approach		827	3.6	0.547	14.6	LOS B	8.1	56.8	0.72	0.62	24.8
West: School Access											
10	L2	1	0.0	0.008	19.1	LOS B	0.1	0.5	0.79	0.50	19.3
11	T1	1	0.0	0.008	19.1	LOS B	0.1	0.5	0.79	0.50	23.6
12	R2	1	0.0	0.008	19.1	LOS B	0.1	0.5	0.79	0.50	18.5
Approach		3	0.0	0.008	19.1	LOS B	0.1	0.5	0.79	0.50	20.7
All Vehicles		1811	3.8	0.573	15.0	LOS B	9.0	62.7	0.73	0.62	24.4

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	75	18.5	LOS B	0.1	0.1	0.79	0.79
P3	North Full Crossing	53	24.4	LOS C	0.1	0.1	0.90	0.90
P4	West Full Crossing	42	18.4	LOS B	0.1	0.1	0.78	0.78
All Pedestrians		169	20.3	LOS C			0.82	0.82

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: Darcy Rd Westmead Main Entry - AM - Base Case+MSCP+UWS

Darcy Road/ Westmead Hospital Main Entry
Signals - Fixed Time Coordinated Cycle Time = 60 seconds (User-Given 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: Darcy Road											
1	L2	53	0.0	0.597	29.5	LOS C	5.9	41.3	0.94	0.79	32.8
2	T1	375	0.8	0.597	25.9	LOS B	5.9	41.3	0.93	0.78	20.3
3	R2	77	0.0	0.420	33.6	LOS C	2.3	16.0	0.98	0.76	12.8
Approach		504	0.6	0.597	27.4	LOS B	5.9	41.3	0.94	0.78	20.6
East: Westmad Hospital Main Entry											
4	L2	11	0.0	0.018	14.5	LOS B	0.2	1.5	0.68	0.63	19.1
5	T1	1	0.0	0.018	16.4	LOS B	0.2	1.5	0.68	0.63	35.7
6	R2	44	0.0	0.238	28.8	LOS C	1.3	9.0	0.96	0.70	15.8
Approach		56	0.0	0.238	25.9	LOS B	1.3	9.0	0.90	0.69	16.6
North: Darcy Road											
7	L2	136	0.0	0.831	34.0	LOS C	9.2	65.2	1.00	1.01	15.4
8	T1	463	8.0	0.831	30.2	LOS C	9.2	65.2	0.99	0.99	18.5
9	R2	104	0.0	0.570	36.0	LOS C	3.2	22.4	1.00	0.80	31.3
Approach		703	5.2	0.831	31.8	LOS C	9.2	65.9	0.99	0.97	20.2
West: UWS Access											
10	L2	86	0.0	0.115	17.2	LOS B	1.6	11.0	0.64	0.71	41.0
11	T1	1	0.0	0.115	11.6	LOS A	1.6	11.0	0.64	0.71	41.0
12	R2	108	0.0	0.584	36.1	LOS C	3.3	23.3	1.00	0.80	29.5
Approach		196	0.0	0.584	27.6	LOS B	3.3	23.3	0.84	0.76	33.9
All Vehicles		1459	2.7	0.831	29.5	LOS C	9.2	65.9	0.95	0.86	22.3

Level of Service (LOS) Method: Delay (RTA NSW).
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
P11	South Stage 1	53	24.4	LOS C	0.1	0.1	0.90	0.90
P12	South Stage 2	53	12.1	LOS B	0.1	0.1	0.63	0.63
P2	East Full Crossing	75	24.4	LOS C	0.1	0.1	0.90	0.90
P31	North Stage 1	53	23.5	LOS C	0.1	0.1	0.89	0.89
P32	North Stage 2	53	20.1	LOS C	0.1	0.1	0.82	0.82
P4	West Full Crossing	53	24.4	LOS C	0.1	0.1	0.90	0.90
All Pedestrians		338	21.6	LOS C			0.84	0.84

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: Darcy Rd Westmead Main Entry - PM - Base Case+MSCP+UWS

Darcy Road/ Westmead Hospital Main Entry
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given 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: Darcy Road											
1	L2	112	0.0	0.793	55.3	LOS D	19.2	134.3	0.99	0.90	23.9
2	T1	558	0.9	0.793	51.3	LOS D	19.2	134.3	0.98	0.90	13.6
3	R2	60	0.0	0.188	49.9	LOS D	3.0	21.2	0.89	0.74	10.1
Approach		729	0.7	0.793	51.8	LOS D	19.2	134.3	0.98	0.88	15.2
East: Westmad Hospital Main Entry											
4	L2	49	0.0	0.077	27.8	LOS B	1.9	13.6	0.70	0.43	13.8
5	T1	1	0.0	0.077	30.1	LOS C	1.9	13.6	0.70	0.43	28.5
6	R2	107	0.0	0.279	40.4	LOS C	5.1	35.9	0.86	0.68	13.3
Approach		158	0.0	0.279	36.4	LOS C	5.1	35.9	0.81	0.60	13.6
North: Darcy Road											
7	L2	73	0.0	0.520	48.5	LOS D	10.7	74.9	0.89	0.76	12.8
8	T1	396	9.0	0.520	44.8	LOS D	10.7	74.9	0.88	0.73	14.8
9	R2	222	0.0	0.772	59.8	LOS E	13.0	91.3	0.99	0.88	24.0
Approach		691	5.2	0.772	50.0	LOS D	13.0	91.3	0.91	0.78	18.2
West: UWS Access											
10	L2	199	0.0	0.307	32.0	LOS C	7.9	55.3	0.72	0.76	32.8
11	T1	1	0.0	0.307	26.5	LOS B	7.9	55.3	0.72	0.76	32.1
12	R2	248	0.0	0.791	54.6	LOS D	13.9	97.6	0.94	0.88	23.7
Approach		448	0.0	0.791	44.5	LOS D	13.9	97.6	0.84	0.83	27.2
All Vehicles		2026	2.0	0.793	48.4	LOS D	19.2	134.3	0.91	0.82	18.9

Level of Service (LOS) Method: Delay (RTA NSW).
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
P11	South Stage 1	53	54.3	LOS E	0.2	0.2	0.95	0.95
P12	South Stage 2	53	23.5	LOS C	0.1	0.1	0.63	0.63
P2	East Full Crossing	75	45.2	LOS E	0.2	0.2	0.87	0.87
P31	North Stage 1	53	46.0	LOS E	0.2	0.2	0.88	0.88
P32	North Stage 2	53	30.9	LOS D	0.1	0.1	0.72	0.72
P4	West Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
All Pedestrians		338	41.0	LOS E			0.82	0.82

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: Darcy Rd Hawkesbury Rd - AM - Base Case + MSCP +UWS

Darcy Road/ Hawkesbury Road
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (User-Given 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
East: Hawkesbruy Road											
5	T1	261	3.6	0.272	20.2	LOS B	9.9	71.2	0.60	0.52	31.5
6	R2	118	3.6	0.324	32.2	LOS C	4.3	30.3	0.90	0.75	25.7
Approach		379	3.6	0.324	23.9	LOS B	9.9	71.2	0.70	0.59	29.6
North: Darcy Road											
7	L2	242	1.7	0.351	27.7	LOS B	9.5	66.4	0.72	0.73	26.8
9	R2	373	1.7	0.640	61.1	LOS E	13.4	94.0	0.97	0.81	11.0
Approach		615	1.7	0.640	47.9	LOS D	13.4	94.0	0.87	0.78	17.2
West: Hawkesbury Road											
10	L2	707	3.7	0.605	10.2	LOS A	10.8	75.6	0.41	0.68	29.7
11	T1	552	0.8	0.660	30.8	LOS C	25.6	180.2	0.74	0.72	27.3
Approach		1259	2.4	0.660	19.2	LOS B	25.6	180.2	0.56	0.70	28.0
All Vehicles		2253	2.4	0.660	27.8	LOS B	25.6	180.2	0.67	0.70	24.7

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	303	58.3	LOS E	1.1	1.1	0.92	0.92
P31	North Stage 1	74	37.3	LOS D	0.2	0.2	0.73	0.73
P32	North Stage 2	74	26.5	LOS C	0.2	0.2	0.62	0.62
P4	West Full Crossing	71	64.3	LOS F	0.3	0.3	0.96	0.96
All Pedestrians		521	51.7	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.

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MOVEMENT SUMMARY

Site: Darcy Rd Hawkesbury Rd - PM - Base Case + MSCP +UWS

Darcy Road/ Hawkesbury Road
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (User-Given 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
East: Hawkesbruy Road											
5	T1	584	1.3	0.899	45.7	LOS D	31.5	223.2	0.76	0.83	23.6
6	R2	304	1.7	0.899	50.4	LOS D	19.8	139.0	0.91	0.99	21.4
Approach		888	1.4	0.899	47.3	LOS D	31.5	223.2	0.81	0.89	22.8
North: Darcy Road											
7	L2	149	2.1	0.621	12.3	LOS A	3.1	21.4	0.42	0.61	33.3
9	R2	644	1.0	0.813	61.3	LOS E	24.6	172.5	0.98	0.92	10.9
Approach		794	1.2	0.813	52.1	LOS D	24.6	172.5	0.87	0.86	14.4
West: Hawkesbury Road											
10	L2	488	9.7	0.567	21.2	LOS B	13.5	94.7	0.68	0.75	21.4
11	T1	263	3.2	0.685	57.9	LOS E	16.3	116.9	0.95	0.81	20.8
Approach		752	7.4	0.685	34.1	LOS C	16.3	116.9	0.77	0.77	21.1
All Vehicles		2434	3.2	0.899	44.8	LOS D	31.5	223.2	0.82	0.84	19.8

Level of Service (LOS) Method: Delay (RTA NSW).
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.
The results of iterative calculations indicate a somewhat unstable solution. See the Diagnostics section in the Detailed Output report.

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
P2	East Full Crossing	361	50.5	LOS E	1.2	1.2	0.86	0.86
P31	North Stage 1	97	64.4	LOS F	0.4	0.4	0.96	0.96
P32	North Stage 2	97	49.9	LOS E	0.3	0.3	0.85	0.85
P4	West Full Crossing	37	64.2	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		592	53.5	LOS E			0.88	0.88

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.

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MOVEMENT SUMMARY

Site: Darcy Rd Mons Rd Institute Rd - AM - Base Case + MSCP Upgraded

Darcy Road/ Mons Road/ Institute Road
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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: Darcy Road - S											
1	L2	331	2.2	0.136	6.4	LOS A	1.2	8.5	0.13	0.51	35.6
2	T1	126	17.5	0.641	60.2	LOS E	6.2	43.1	0.99	0.79	20.2
Approach		457	6.5	0.641	21.3	LOS B	6.2	43.1	0.37	0.58	28.6
East: Institute Road - E											
4	L2	28	3.7	0.633	67.5	LOS E	4.3	30.5	1.00	0.81	19.7
5	T1	113	0.9	0.633	64.0	LOS E	4.4	31.1	1.00	0.81	22.0
Approach		141	1.5	0.633	64.7	LOS E	4.4	31.1	1.00	0.81	21.6
North: Mons Road - N											
7	L2	1	0.0	0.145	39.5	LOS C	2.9	23.7	0.80	0.63	28.6
8	T1	80	38.2	0.145	36.1	LOS C	2.9	23.7	0.80	0.61	25.2
9	R2	132	0.0	0.654	61.3	LOS E	7.8	54.3	1.00	0.83	22.4
Approach		213	14.4	0.654	51.7	LOS D	7.8	54.3	0.92	0.75	23.3
West: Darcy Road - W											
10	L2	352	0.0	0.235	3.3	LOS A	0.4	2.6	0.03	0.42	39.0
11	T1	324	1.3	0.695	14.2	LOS A	16.4	115.8	0.53	0.56	33.4
12	R2	942	0.7	0.695	18.5	LOS B	22.7	159.5	0.59	0.68	29.9
Approach		1618	0.7	0.695	14.4	LOS A	22.7	159.5	0.46	0.60	32.8
All Vehicles		2428	3.0	0.695	21.9	LOS B	22.7	159.5	0.51	0.62	29.8

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	26	40.9	LOS E	0.1	0.1	0.83	0.83
P3	North Full Crossing	4	22.8	LOS C	0.0	0.0	0.62	0.62
P4	West Full Crossing	27	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		58	45.9	LOS E			0.87	0.87

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.

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MOVEMENT SUMMARY

Site: Darcy Rd Mons Rd Institute Rd - PM - Base Case + MSCP Upgraded

Darcy Road/ Mons Road/ Institute Road
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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: Darcy Road - S											
1	L2	800	0.0	0.646	38.4	LOS C	18.2	127.7	0.83	0.80	22.5
2	T1	61	55.2	0.550	65.0	LOS E	2.1	27.7	0.99	0.74	19.5
Approach		861	3.9	0.646	40.3	LOS C	18.2	127.7	0.85	0.80	22.2
East: Institute Road - E											
4	L2	105	0.0	0.704	52.8	LOS D	14.8	103.4	0.99	0.85	22.3
5	T1	420	0.0	0.704	49.2	LOS D	14.8	103.4	0.98	0.85	24.5
Approach		525	0.0	0.704	49.9	LOS D	14.8	103.4	0.98	0.85	24.1
North: Mons Road - N											
7	L2	1	100.0	0.148	26.1	LOS B	4.0	30.4	0.65	0.53	32.0
8	T1	129	20.3	0.148	22.4	LOS B	4.0	30.4	0.64	0.52	29.3
9	R2	392	0.0	0.703	43.5	LOS D	20.4	142.8	0.95	0.85	25.7
Approach		522	5.2	0.703	38.2	LOS C	20.4	142.8	0.87	0.76	26.4
West: Darcy Road - W											
10	L2	97	0.0	0.068	3.3	LOS A	0.1	0.5	0.02	0.42	39.0
11	T1	43	2.4	0.725	46.6	LOS D	15.8	112.7	0.94	0.84	24.6
12	R2	565	2.2	0.725	50.0	LOS D	16.5	117.6	0.94	0.84	20.2
Approach		705	1.9	0.725	43.4	LOS D	16.5	117.6	0.81	0.78	22.7
All Vehicles		2614	2.9	0.725	42.7	LOS D	20.4	142.8	0.87	0.80	23.7

Level of Service (LOS) Method: Delay (RTA NSW).
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
P2	East Full Crossing	26	26.7	LOS C	0.1	0.1	0.67	0.67
P3	North Full Crossing	4	50.4	LOS E	0.0	0.0	0.92	0.92
P4	West Full Crossing	27	38.4	LOS D	0.1	0.1	0.80	0.80
All Pedestrians		58	34.0	LOS D			0.75	0.75

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.

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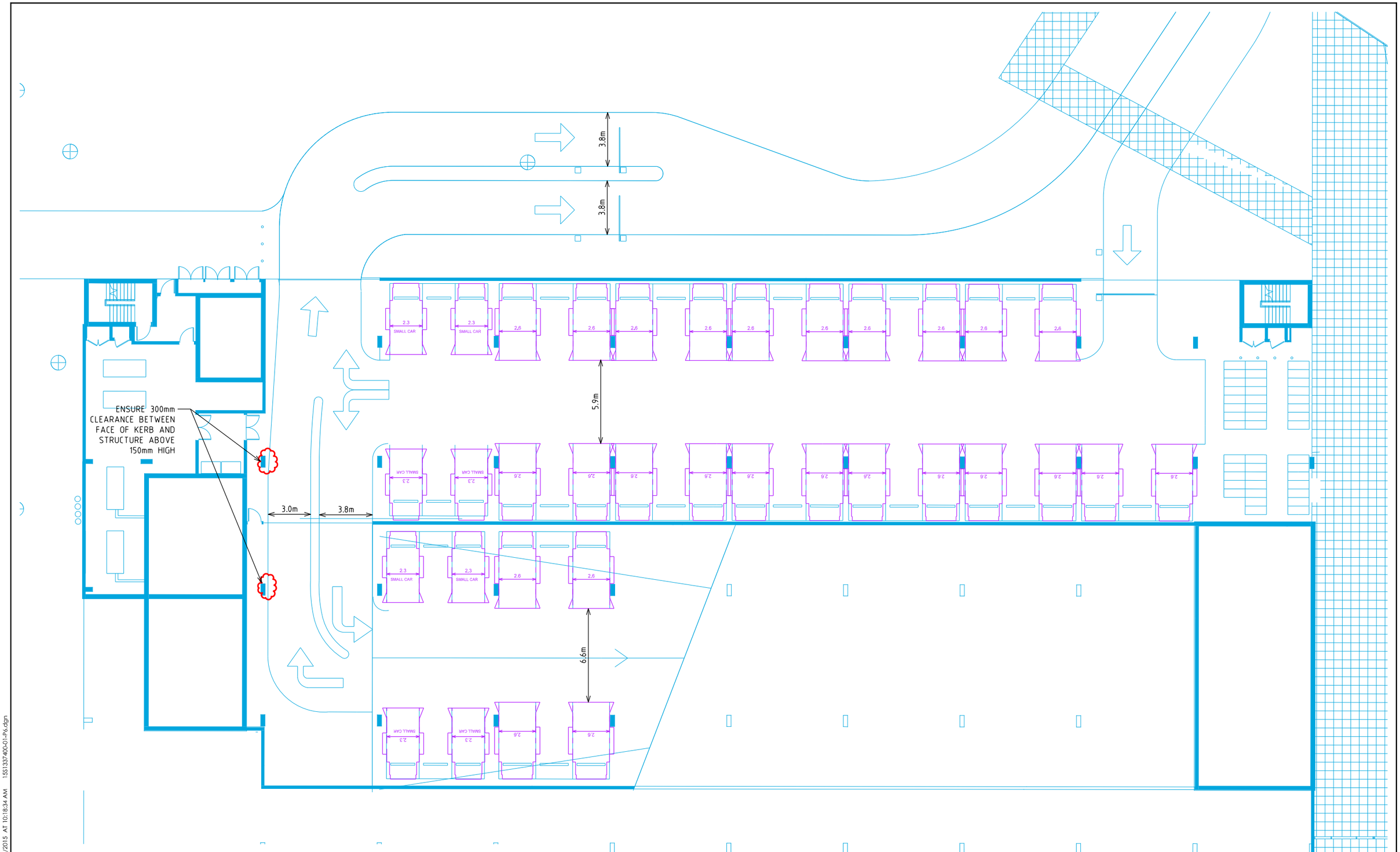
Appendix C

Compliance Review and Swept Path Assessment



NOTES:

ENSURE MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) TO BE PROVIDED ABOVE PARKING SPACES AND ALONG THE CIRCULATION AISLE

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6243 9400
Adelaide 08 8334 3600
Gold Coast 07 5510 4814
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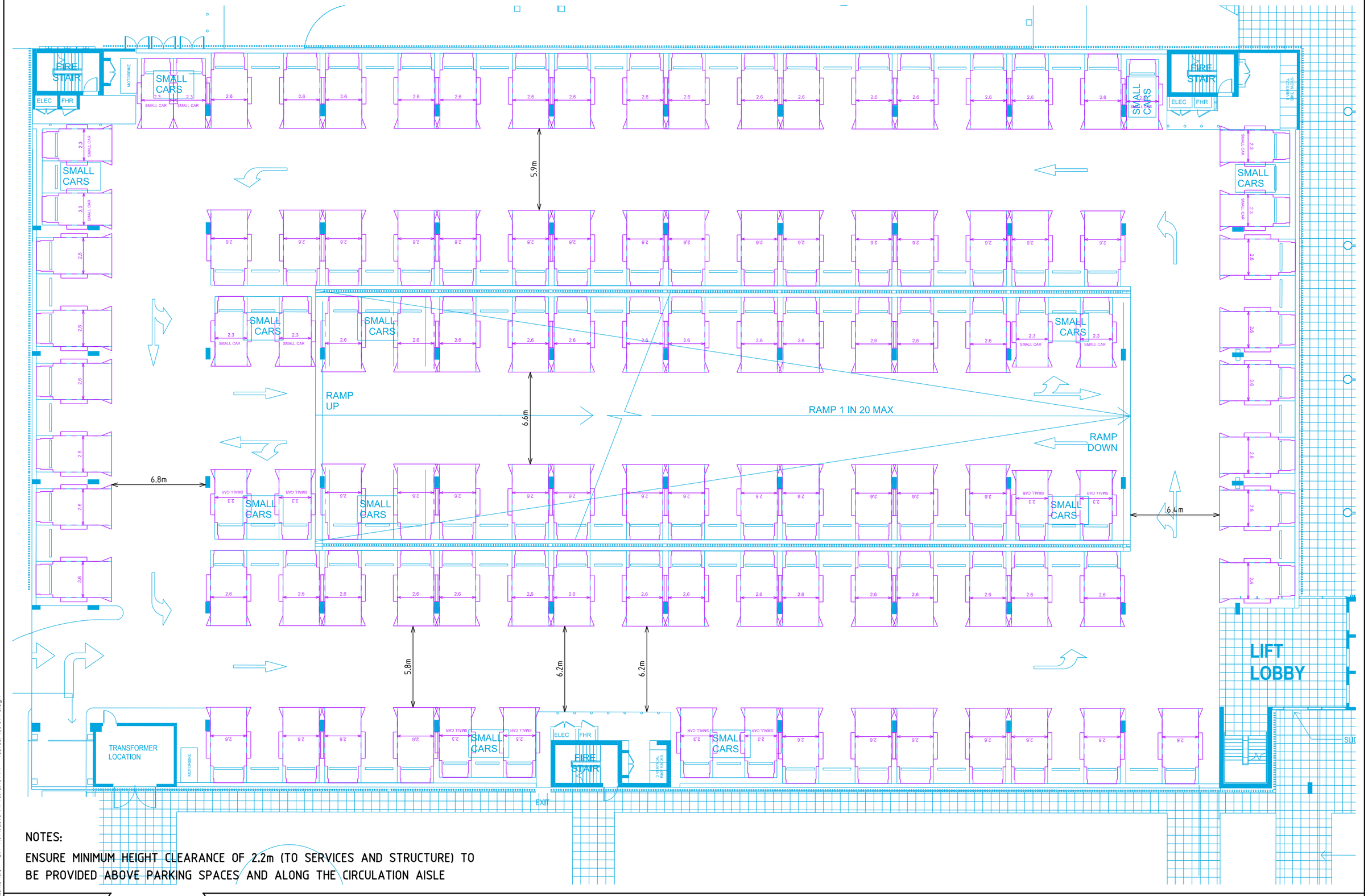
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

WESTMEAD REDEVELOPMENT - MSCP
LOWER GROUND
COMPLIANCE REVIEW

DATE: 11.11.2015
SCALE: 1:250@A3
0 2.5 5 7.5
APPROVED: CDW
DRAWING NO. 15S1337400-01-01-P6
SHEET: 01 OF 13

PLOTTED BY: Tom.Napiorkowski ON 11/11/2015 AT 10:18:34 AM 15S1337400-01-P6.dgn



NOTES:

ENSURE MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) TO BE PROVIDED ABOVE PARKING SPACES AND ALONG THE CIRCULATION AISLE

Melbourne 03 9851 9600
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Brisbane 07 3113 5000
Canberra 02 6243 9400
Adelaide 08 8334 3600
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WESTMEAD REDEVELOPMENT - MSCP
GROUND
COMPLIANCE REVIEW

DATE: 11.11.2015
SCALE: 1:250@A3
0 2.5 5 7.5
APPROVED: CDW
DRAWING NO. 15S1337400-01-02-P6
SHEET: 02 OF 13

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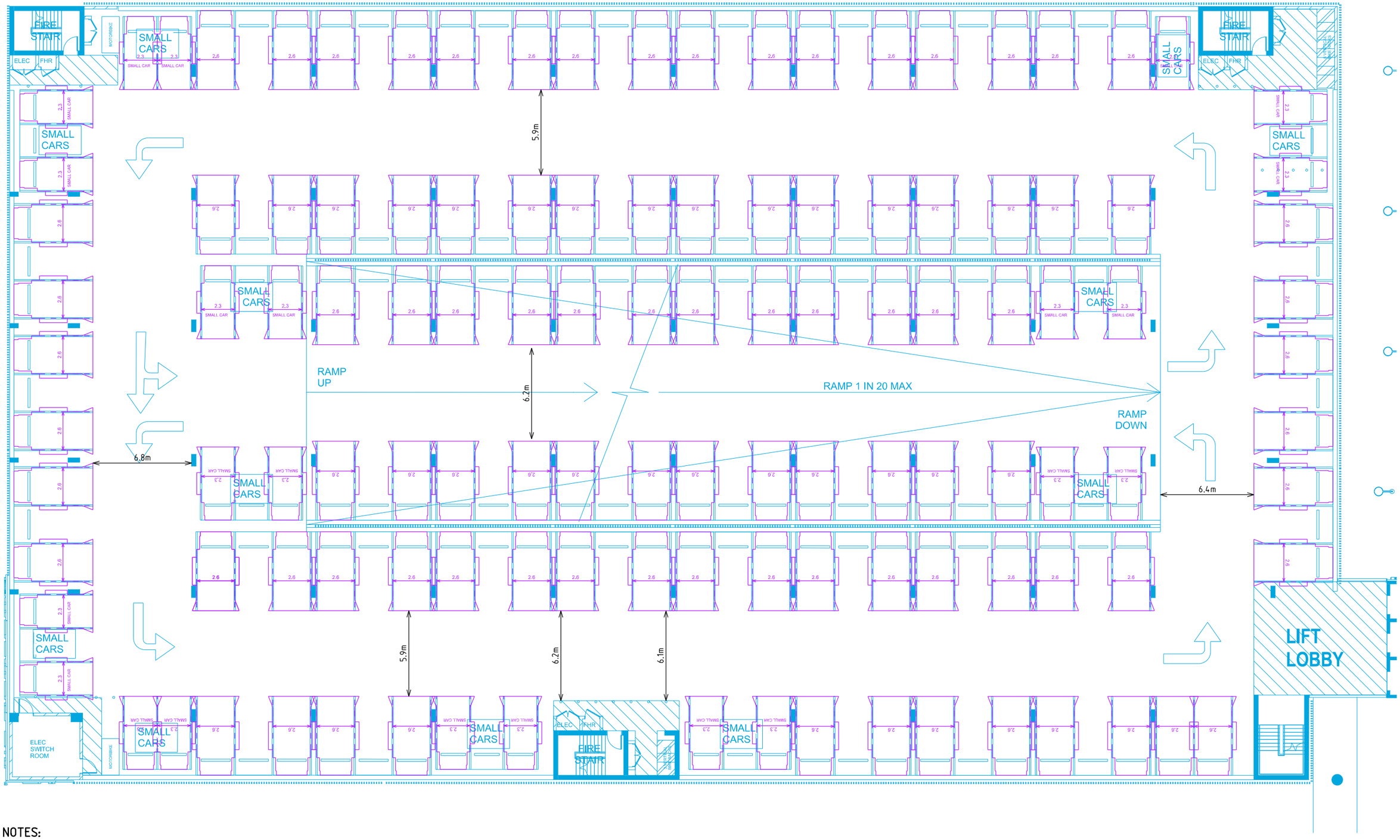

NOTES:

ENSURE MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) TO BE PROVIDED ABOVE PARKING SPACES AND ALONG THE CIRCULATION AISLE

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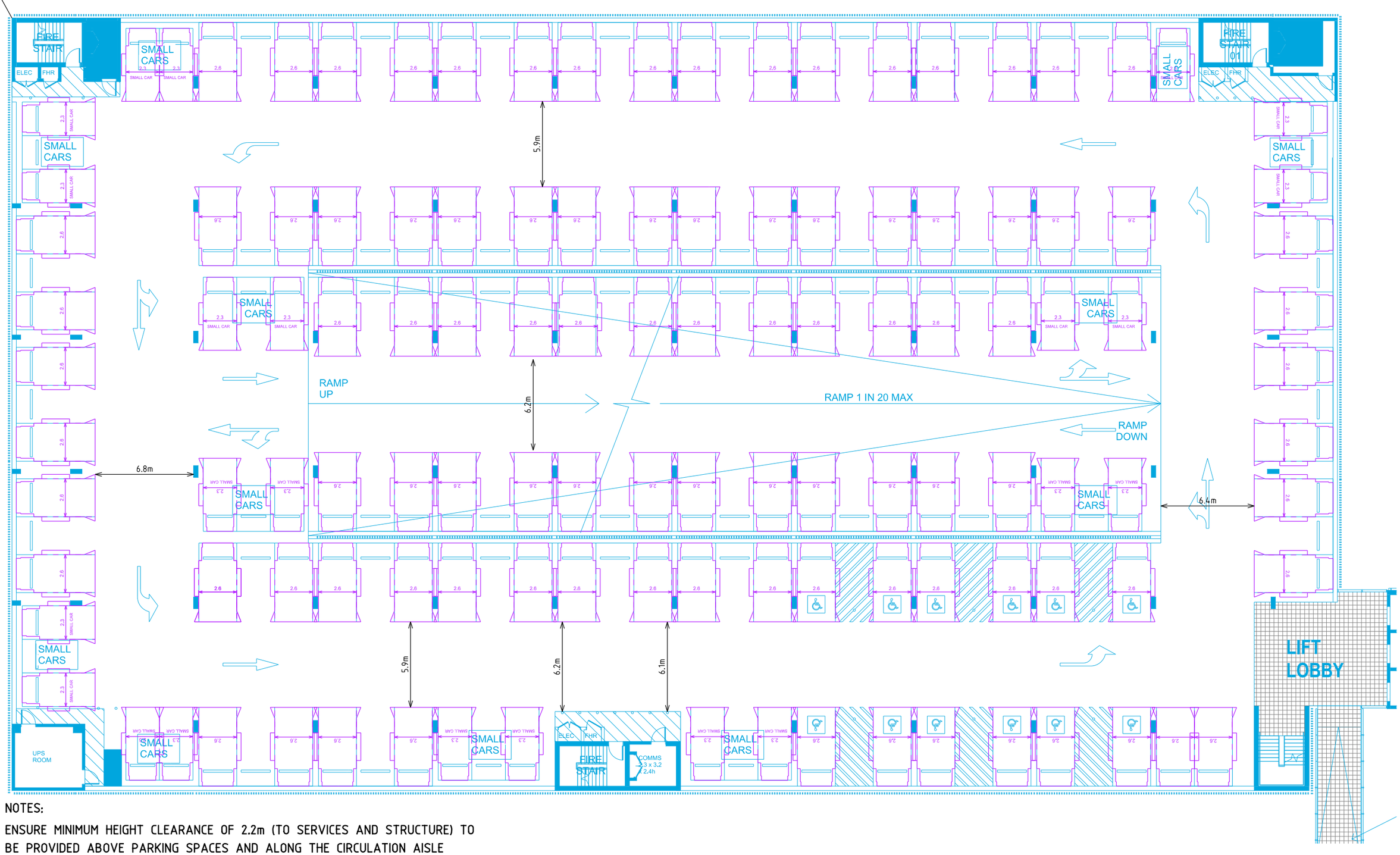
WESTMEAD REDEVELOPMENT - MSCP
LEVEL 01
COMPLIANCE REVIEW

DATE: 11.11.2015
SCALE: 1:250@A3
0 2.5 5 7.5
APPROVED: CDW
DRAWING NO. 15S1337400-01-03-P6
SHEET: 03 OF 13

PLOTTED BY : Tom.Napiorkowski ON 11/11/2015 AT 10:18:45 AM 15S1337400-01-P6.dgn



NOTES:

ENSURE MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) TO BE PROVIDED ABOVE PARKING SPACES AND ALONG THE CIRCULATION AISLE

ENSURE MINIMUM HEIGHT CLEARANCE OF 2.5m (TO SERVICES AND STRUCTURE) TO BE PROVIDED ABOVE ACCESSIBLE PARKING SPACES

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Sydney 02 8448 1800
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WESTMEAD REDEVELOPMENT - MSCP
LEVEL 02
COMPLIANCE REVIEW

DATE: 11.11.2015
SCALE: 1:250@A3
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APPROVED: CDW
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SHEET: 04 OF 13

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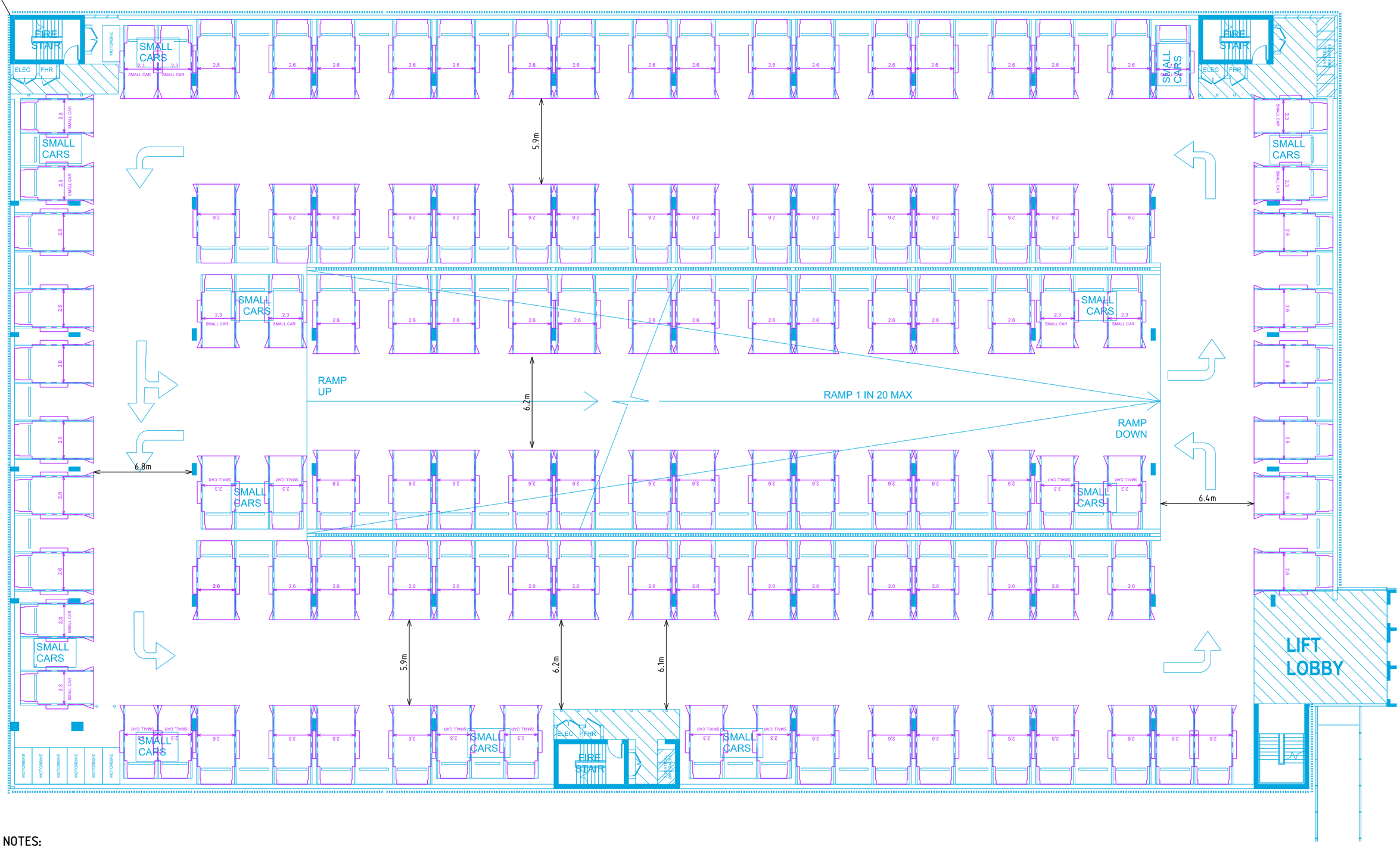

NOTES:

ENSURE MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) TO BE PROVIDED ABOVE PARKING SPACES AND ALONG THE CIRCULATION AISLE

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Sydney 02 8448 1800
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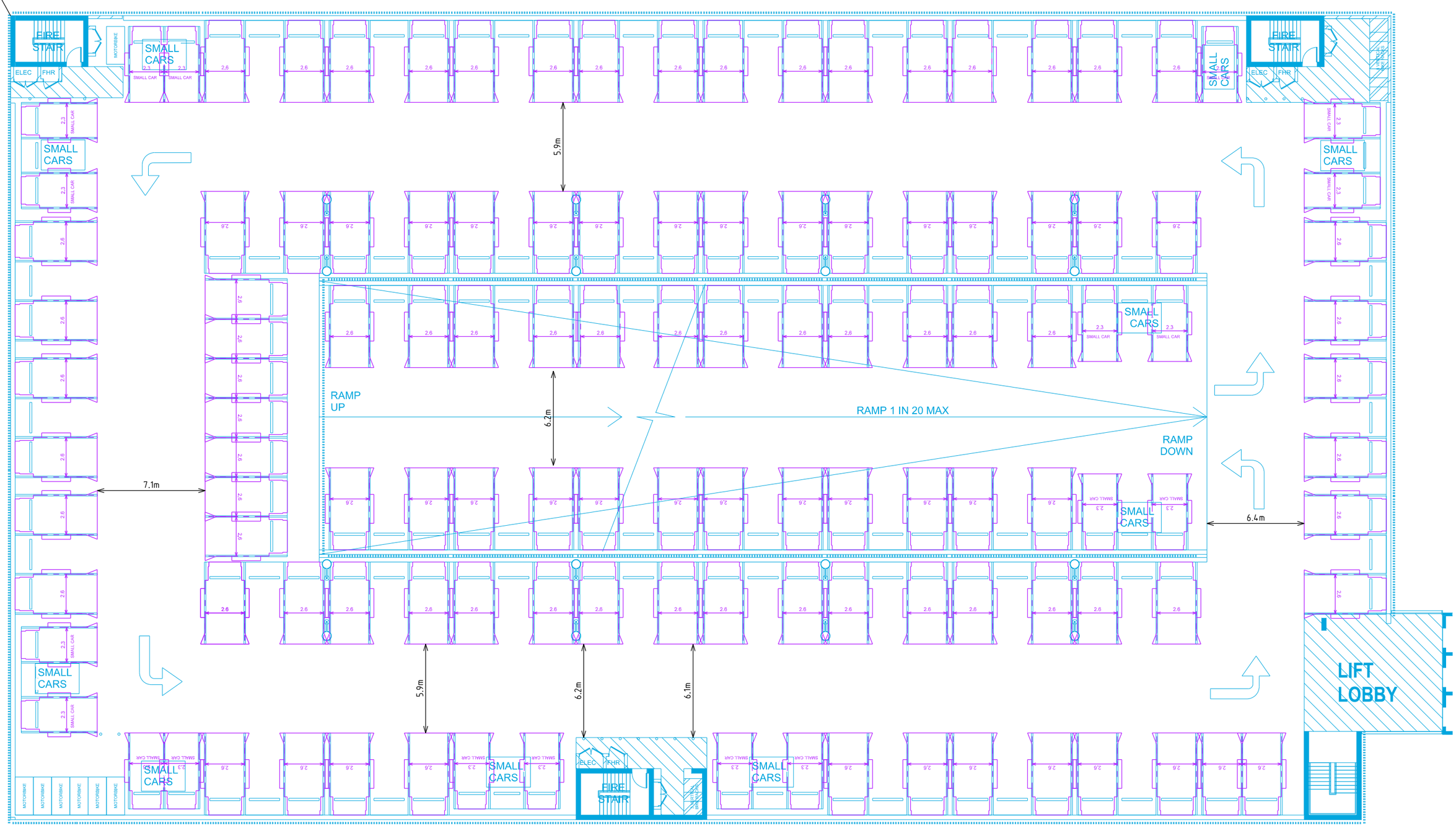
WESTMEAD REDEVELOPMENT - MSCP
LEVEL 03, 04 AND 05
COMPLIANCE REVIEW

DATE: 11.11.2015
SCALE: 1:250@A3
0 2.5 5 7.5
APPROVED: CDW
DRAWING NO. 15S1337400-01-05-P6
SHEET: 05 OF 13

PLOTTED BY : Tom.Napiorkowski ON 11/11/2015 AT 10:18:57 AM 15S1337400-01-P6.dgn



NOTES:

ENSURE MINIMUM HEIGHT CLEARANCE OF 2.2m (TO SERVICES AND STRUCTURE) TO BE PROVIDED ABOVE PARKING SPACES AND ALONG THE CIRCULATION AISLE

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Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6243 9400
Adelaide 08 8334 3600
Gold Coast 07 5510 4814
Townsville 07 4722 2765
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WESTMEAD REDEVELOPMENT - MSCP
LEVEL 06
COMPLIANCE REVIEW

DATE: 11.11.2015
SCALE: 1:250@A3
0 2.5 5 7.5
APPROVED: CDW
DRAWING NO. 15S1337400-01-06-P6
SHEET: 06 OF 13

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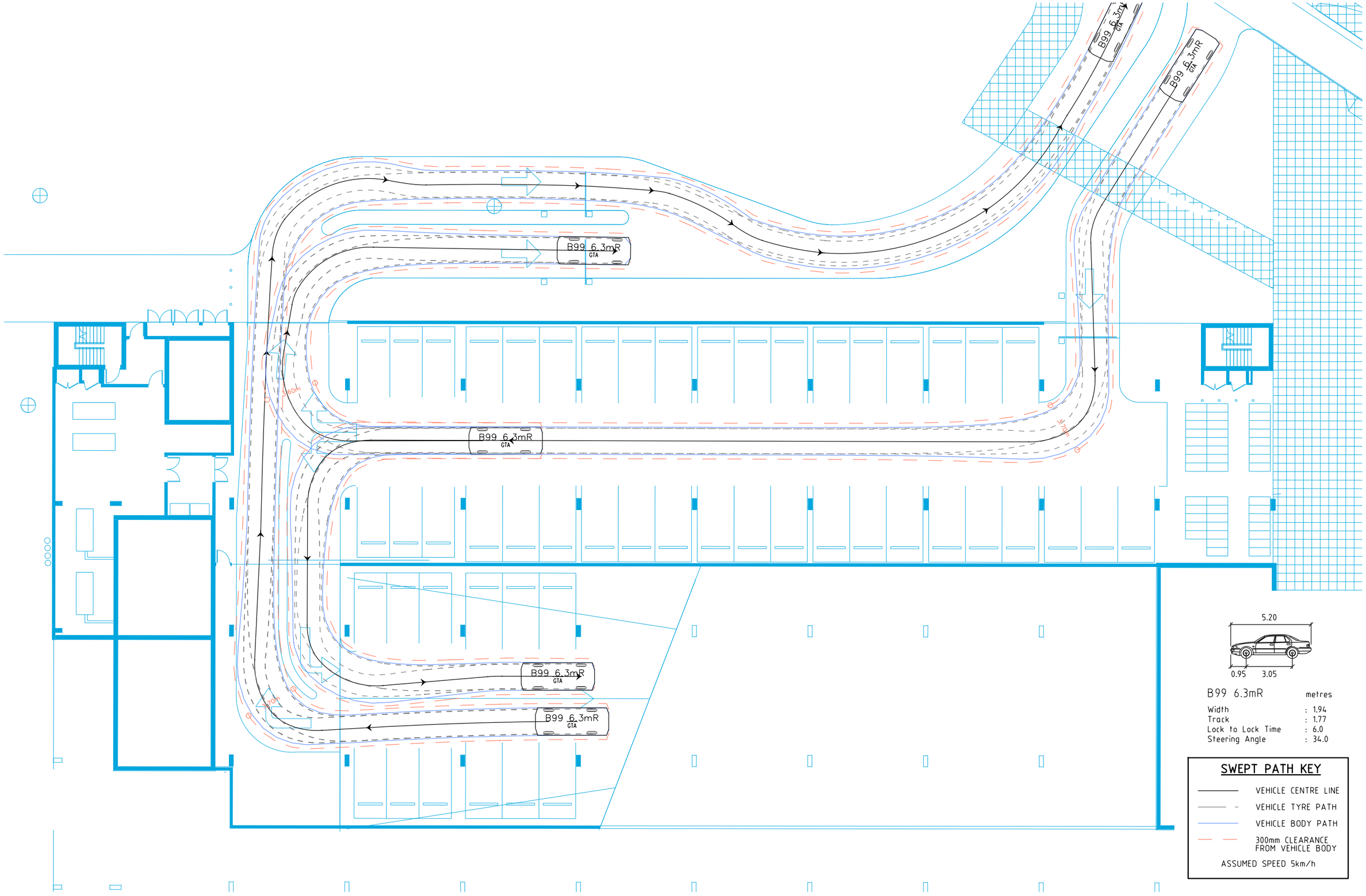

B99 6.3mR metres

Width	: 1.94
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

PLOTTED BY : Tom.Napiorkowski ON 11/11/2015 AT 10:19:09 AM 15S1337400-01-P6.dgn

Melbourne	03 9851 9600
Sydney	02 8448 1800
Brisbane	07 3113 5000
Canberra	02 6243 9400
Adelaide	08 8334 3600
Gold Coast	07 5510 4814
Townsville	07 4722 2765
Perth	08 6316 4634

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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
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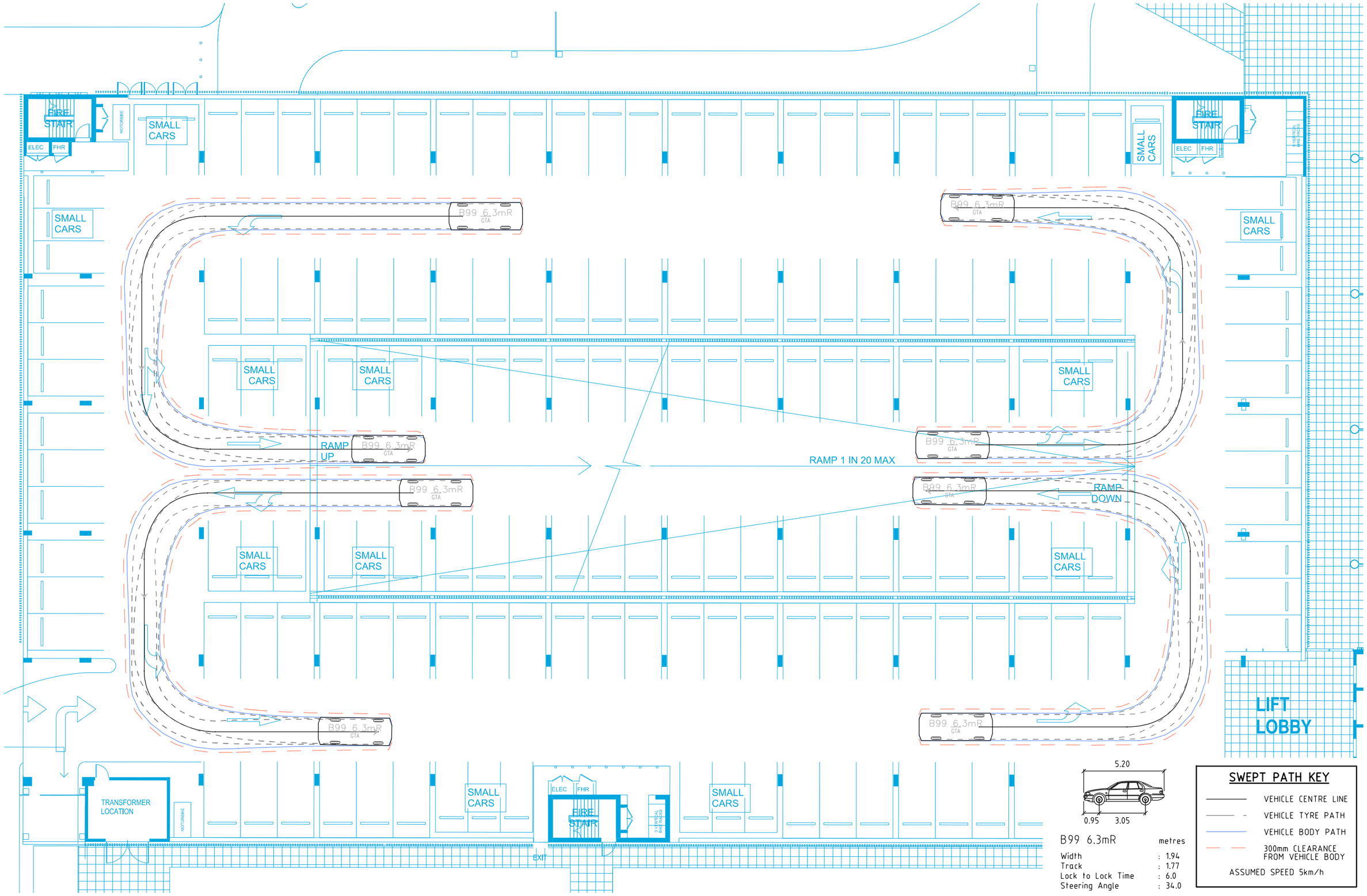
WESTMEAD REDEVELOPMENT - MSCP
LOWER GROUND - SWEPT PATH ASSESSMENT
B99 CARs

DATE: 11.11.2015
SCALE: 1:250@A3
0 2.5 5 7.5
APPROVED: CDW
DRAWING NO. 15S1337400-01-07-P6
SHEET: 07 OF 13



5.20

0.95 3.05

B99 6.3mR

	metres
Width	: 1.94
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6243 9400
Adelaide 08 8334 3600
Gold Coast 07 5510 4814
Townsville 07 4722 2765
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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

WESTMEAD REDEVELOPMENT - MSCP
GROUND - SWEPT PATH ASSESSMENT
B99 CARs

DATE: 11.11.2015
SCALE: 1:250@A3 (0, 2.5, 5, 7.5)
APPROVED: CDW
DRAWING NO. 15S1337400-01-08-P6
SHEET: 08 OF 13

PLOTTED BY : Tom.Napierkowski ON 11/11/2015 AT 10:19:15 AM 15S1337400-01-P6.dgn

CARS

SMALL CARS

SMALL CARS

SMALL CARS

RAMP UP

RAMP 1 IN 20 MAX

RAM DOW

SMALL CARS

SMALL CARS

SMALL CARS

B99 6.3mR GTA

2 ENTRY BOOM GATES

TRANSFORMER LOCATION

MOTORBIKE

SMALL CARS

ELEC

FHR

FIRE STAIR

3 x MOTORCYCLE BIKE RACKS

SMALL CARS

EXIT

B99 6.3mR GTA

B99 6.3mR GTA

FIRE STAIR

5.20

0.95 3.05

B99 6.3mR metres

Width	: 1.94
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

PLOTTED BY : Tom.Napiorkowski ON 11/11/2015 AT 10:19:21 AM 15S1337400-01-P6.dgn

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6243 9400
Adelaide 08 8334 3600
Gold Coast 07 5510 4814
Townsville 07 4722 2765
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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

WESTMEAD REDEVELOPMENT - MSCP
GROUND - SWEPT PATH ASSESSMENT
B99 CARs

DATE: 11.11.2015

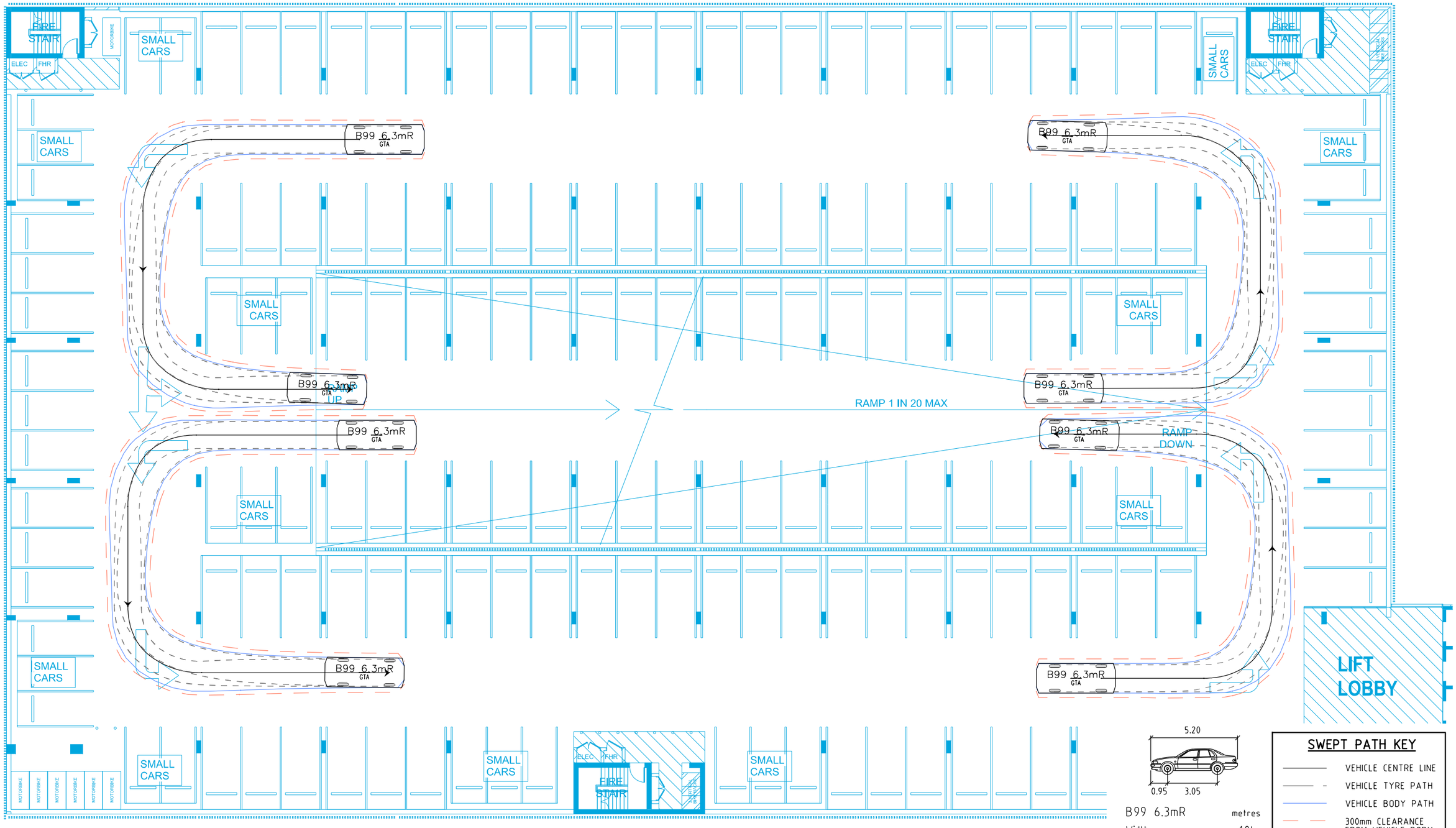
SCALE: 1:250@A3

0 2.5 5 7.5

APPROVED: CDW

DRAWING NO. 15S1337400-01-09-P6

SHEET: 09 OF 13



B99 6.3mR

	metres
Width	: 1.94
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6243 9400
Adelaide 08 8334 3600
Gold Coast 07 5510 4814
Townsville 07 4722 2765
Perth 08 6316 4634

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PRELIMINARY PLAN
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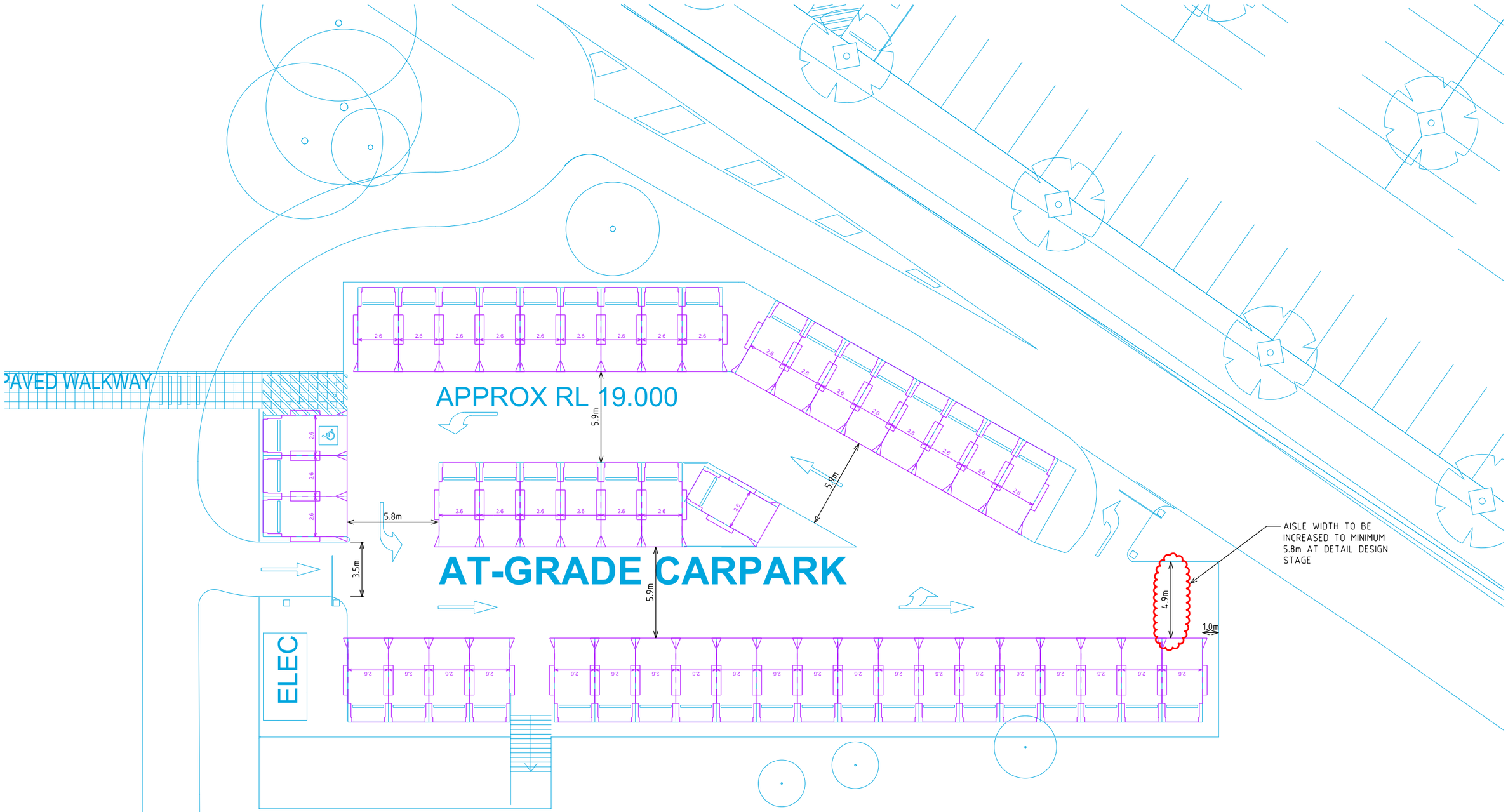
SUBJECT TO CHANGE WITHOUT NOTIFICATION

WESTMEAD REDEVELOPMENT - MSCP
OTHER LEVELS - SWEPT PATH ASSESSMENT
B99 CARs

DATE: 11.11.2015
SCALE: 1:250@A3 (0, 2.5, 5, 7.5)
APPROVED: CDW
DRAWING NO. 15S1337400-01-10-P6
SHEET: 10 OF 13

PLOTTED BY : Tom.Napiorkowski ON 11/11/2015 AT 10:19:26 AM 15S1337400-01-P6.dgn



PLOTTED BY : Tom.Napierkowski ON 11/11/2015 AT 11:17:47 AM 15S1337400-01-P6.dgn

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6243 9400
Adelaide 08 8334 3600
Gold Coast 07 5510 4814
Townsville 07 4722 2765
Perth 08 6316 4634

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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

WESTMEAD REDEVELOPMENT - MSCP
ON GRADE CAR PARK
COMPLIANCE REVIEW

DATE: 11.11.2015
SCALE: 1:250@A3
0 2.5 5 7.5
APPROVED: CDW
DRAWING NO. 15S1337400-01-11-P6
SHEET: 11 OF 13

PAVED WALKWAY

APPROX RL 19.000

B99 6.3mR GTA

B99 6.3mR GTA

B99 6.3mR GTA

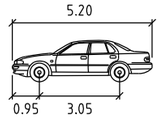
B99 6.3mR GTA

B99 6.3mR GTA

B99 6.3mR GTA

AT-GRADE CARPARK

ELEC



B99 6.3mR metres

Width	:	1.94
Track	:	1.77
Lock to Lock Time	:	6.0
Steering Angle	:	34.0

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6243 9400
Adelaide 08 8334 3600
Gold Coast 07 5510 4814
Townsville 07 4722 2765
Perth 08 6316 4634

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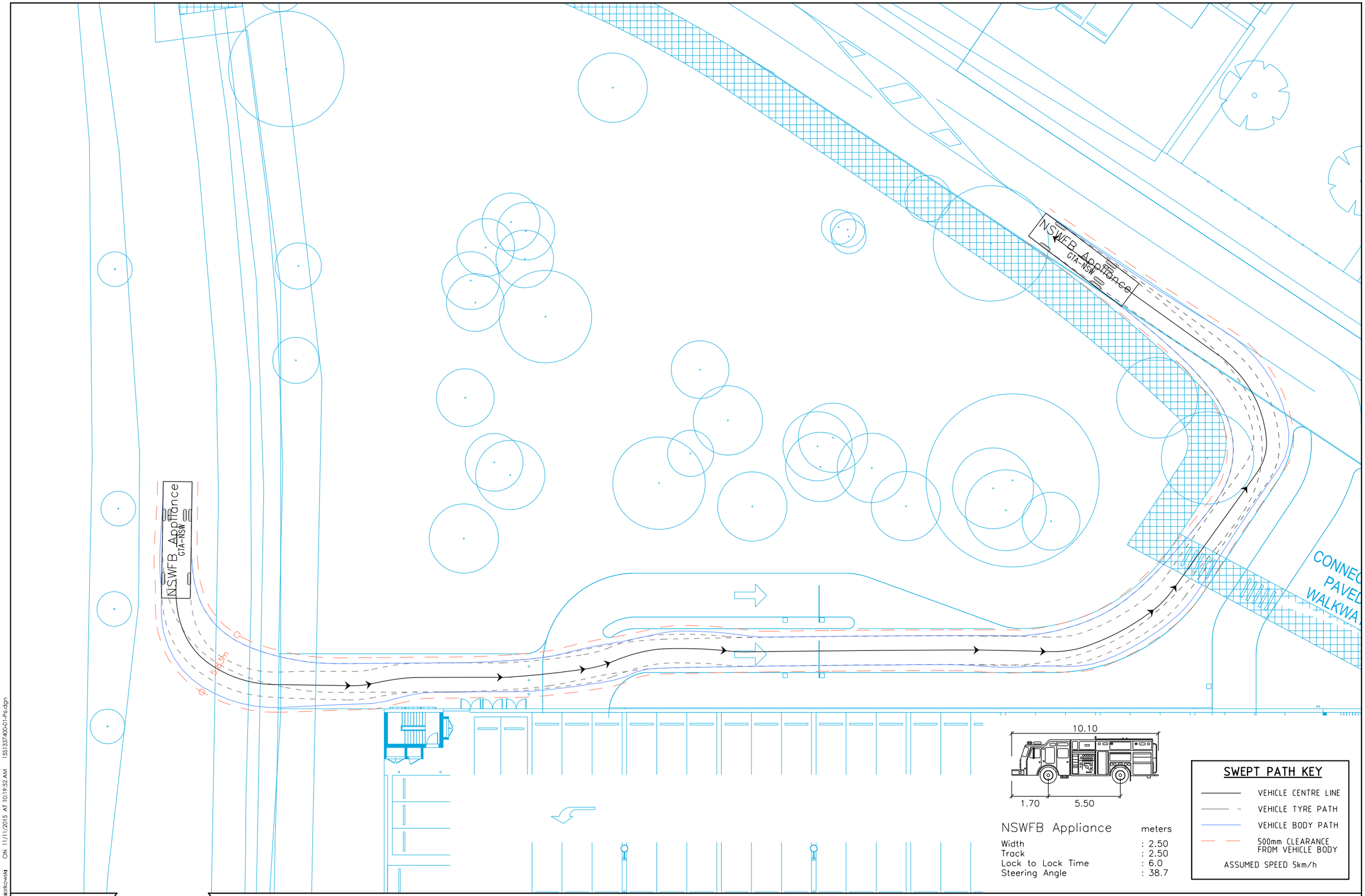
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

WESTMEAD REDEVELOPMENT - MSCP
ON GRADE CAR PARK
B99 CARs

DATE: 11.11.2015
SCALE: 1:250@A3
0 2.5 5 7.5
APPROVED: CDW
DRAWING NO. 15S1337400-01-12-P6
SHEET: 12 OF 13

PLOTTED BY : Tom.Napiorkowski ON 11/11/2015 AT 11:14:56 AM 15S1337400-01-P6.dgn



10.10

1.70 5.50

NSWFB Appliance — meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

PLOTTED BY : Tom.Napiorkowski ON 11/11/2015 AT 10:19:52 AM 15S1337400-01-P6.dgn

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6243 9400
Adelaide 08 8334 3600
Gold Coast 07 5510 4814
Townsville 07 4722 2765
Perth 08 6316 4634

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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

WESTMEAD REDEVELOPMENT - MSCP
LOWER GROUND
NSWFB FIRE TRUCK

DATE: 11.11.2015
SCALE: 1:300@A3
0 3 6 9
APPROVED: CDW
DRAWING NO. 15S1337400-01-13-P6
SHEET: 13 OF 13

Appendix D

Intersection Concept Design