Traffic

TaylorThomsonWhitting

TRAFFIC and PARKING REPORT

Port Macquarie Base Hospital Redevelopment Stage 1

for Health Infrastructure

11 January 2012

Job No: 101549.UT

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1.0 INTRODUCTION

The redevelopment of Port Macquarie Base Hospital has been initiated in order to meet its future demand by the year 2021.

This report discusses traffic and parking aspects and supports a Part 3A Application for Expansion of the Hospital. It includes traffic engineering issues such as pedestrian and traffic access, parking demand and supply and the effect of the development on the surrounding street system.

2.0 DEVELOPMENT PROPOSAL

Port Macquarie Base Hospital (PMBH) is the major referral hospital for the Hastings Macleay Network and provides the clinical care hub for services and is the largest facility within the Network. The majority of specialist medical, surgical and other services within Hastings Macleay Network are provided at Port Macquarie Base Hospital. Kempsey Health Campus and Wauchope District Memorial Hospital refer patients to Port Macquarie Base Hospital.

The proposal involves the redevelopment of Port Macquarie Base Hospital in order to meet its future demand for the next decade.

In response to the capital infrastructure challenges that Port Macquarie Base Hospital faces a Master Development Plan was completed in September 2006. The Plan suggested the construction of a fourth pod in response to service expansion requirements including expanded inpatient capacity and a redeveloped/refurbished Day Surgery/Day Procedures service.

Between 2008/09 and 2021/22 it is projected that the number of hospital visits / stays (separations) provided at PMBH will increase by 22% and the bed-days by 40%. This compares with an estimated 21% increase in population projected for the Hastings LGA over the same period.

The Draft Clinical Service Plan PMBH (September 2010) identifies, the major infrastructure requirements at Port Macquarie Base Hospital. It is recommended in this plan for a redevelopment of the Emergency Department to increase capacity and functionality, expansion and relocation of the critical care unit, the proposed expansion of operating theatres and Day Surgical services, the development of increased acute medical and surgical bed capacity and expansion and reconfiguration of mental health capacity.

There will be a particular need for increased capacity in aged care and rehabilitation, both fast and slow stream, to cater for the elderly population.

The current capacity in maternity, newborn and paediatric services is expected to be adequate to meet future needs. In-centre renal dialysis is at capacity within the Hastings Macleay Network and additional chairs will need to be provided.

3.0 HOSPITAL CHARACTERISTICS

Port Macquarie Base Hospital, located on the Mid North Coast of New South Wales, provides 24 hour Emergency Services, Critical Care, Obstetrics/Gynaecology, Medicine, General and Vascular Surgery, Orthopaedic Surgery, ENT, ophthalmology, Gastroenterology, Paediatric Care and Mental Health inpatients (voluntary) and a Mental Health Community Service. It is 161 bed facility with 4 operating tables.

The NSW Department of Health, through the North Coast Area Health Service, commenced management of the facility on 31 January 2005. The location of the Hospital site is shown in Figure 1.

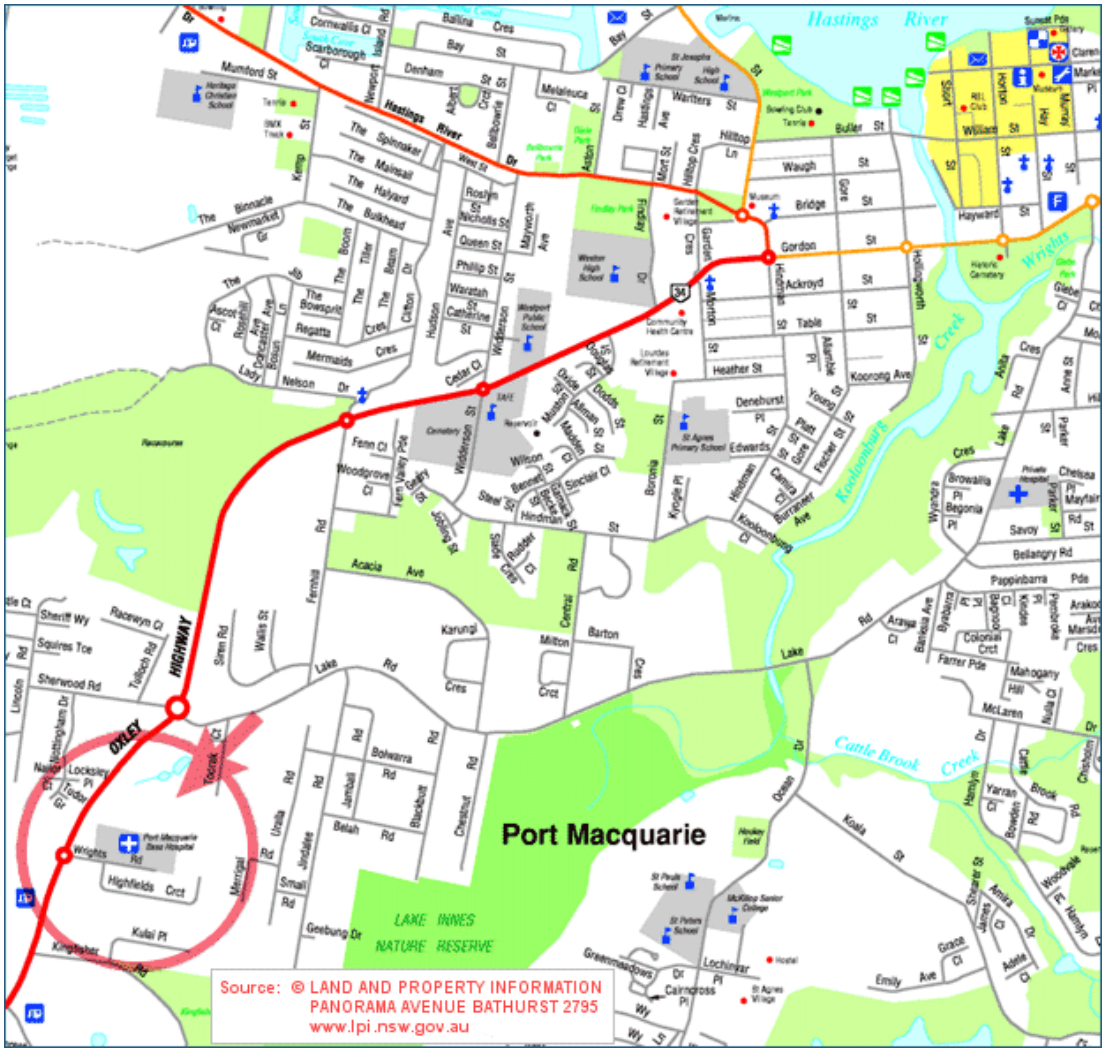


Figure 1: Site Location

The current staff population of the Hospital comprises of the some 235 admin and support staff, 350 nurses and 105 medical/specialists staff. The current number of non inpatients services (including emergency department, pathology and radiology and primary/community services) for the year 2009/10 is 74,644 while total of admissions per year is 18,693 (Clinical Services Plan PMBH September 2010).

4.0 PARKING DEMAND AND SUPPLY

The current review of the site indicates that a total of some 464 parking spaces are available plus some 64 additional temporary spaces. It is expected that these temporary parking spaces will be lost as the result of the redevelopment proposal.

Car Parking Usage

A survey of car parking usage was carried out on 22 November 2010. The results of the parking survey for the Hospital car parking areas revealed that currently there is a high demand for parking in association with the Hospital's activities. The existing car parking spaces within the Hospital is recorded at 464 (with additional 64 temporary spaces). The survey included a total of some 481 car parking spaces (out of 464+64=528) based on relativity and appropriateness of locations.

Table 4.1 Parking Occupancy - Number of Empty Spaces

Type	830	930	1030	1130	1230	1330	1430	1530	1630	1730
Eng.	0	0	0	0	0	0	0	1	6	7
NW	0	0	0	0	0	0	2	3	12	20
SC	0	0	0	1	0	1	2	7	25	34
SE	11	6	0	0	0	1	6	6	26	55
NE	46	30	0	0	0	0	0	0	34	50
Total	**57**	**36**	**0**	**1**	**0**	**2**	**10**	**17**	**103**	**166**

Survey Date: Monday 22.11.2010 note: NW: North west corner of campus; SC: Southern Centre of Campus

^ Doctor and Emergency parking areas with capacity of 20 combined experienced a high usage (90%+)

Table 4.1 show that by about 10.00 AM, the car park experiences a parking occupancy of over 98% and will continue by about 3.30PM. The parking survey also observed the use of an area at the entry point to the campus (west of the roundabout) as an overflow parking accommodating some 10-15 cars.

Mode of Travel

The community profile for Port Macquarie- Hasting area based on ABS data indicates that in 2006, there were 162 people who caught public transport to work (train, bus, tram or ferry) in the area, compared with 18,434 who drove in private vehicles (car –as driver, car – as passenger, motorbike, or truck).

Analysis of the method of travel to work of the residents in Port Macquarie-Hastings Council area in 2006 compared to Mid-North Coast shows that 0.6% used public transport, while 73.0% used a private vehicle, compared with 0.7% and 70.8% respectively in Mid-North Coast.

It should also be noted that the assessment of travel patterns among staff and visitors at other Hospitals such as Wagga Wagga Hospital (URaP-TTW 2009), Hornsby Hospital (URaP-TTW, 2006 & 2011) and Concord Hospital (URaP-TTW, 2008) all showed overall a

car use of about or over 80% among staff and visitors (with 100% among VMO's and doctors).

Accordingly, a similar assumption has been made for the Port Macquarie Base Hospital with consideration to its community profile with respect to travel mode of journey to work data.

4.1 Existing Parking Demand

Considering the population of the Hospital and travel patterns among the users of the Hospital (with respect to other similar facilities) the following peak daily parking demand has been evaluated based on the Draft Clinical Service Plan PMBH (September 2010).

Staff Parking (number of spaces):

Nurses: 150 nurses (out of 350) per main shift and use of 80% of car use = 120 spaces

Admin/Support: 210 staff (out of 234, 10% holidays, sick, seminar) and 80% car use = 170

Medical: 75% (out of 105) attending during the main working hours with 100% car use = 80

Total Parking Demand for Staff = **370** spaces

Visitors and Patients Parking:

Non inpatient Services: 74, 644 cases equivalent to 300 patients per day, assuming 85% car use with average stay of 1.5-2 hours during a 6 hour period = 85 spaces

Visitors: 161 bed x 2 visitor groups/bed x 50% during the day time with average stay 1.5 hours per 6 hour period = 40 spaces

Inpatients (with relative/friends) = 18,693 per year equivalent to 75 occasions per day with 50% stay during a day = 40 spaces

Other uses e.g. volunteers = 40 spaces

Total Parking Demand for Visitors/Patients: **205** spaces

Total Parking Demand for the existing situation: **575** spaces (i.e. 370+205)

4.2 Future Parking Demand

The Clinical Service Plan PMBH (September 2010) indicates a higher level of activity for the Hospital by the Year 2021. For example it estimates an increase of emergency outpatients from the current 31,000 to 45,000 with annual increase of some 2 to 4% inn various services. Therefore assuming a growth rate of 2.5% for the Hospital's activities the number of non inpatient services would increase from 74,644 to some 95,000 per year. The staff population however is expected to increase marginally by some 50-60 additional personnel.

It is also considered that the number of students visiting the Hospital would be in order of 30 to 120 training specialists/researcher. There would also be a demand for higher level of activities in various departments while a higher efficiency with shorter stay is also expected

among patients.

Accordingly, the parking demand for staff is expected to increase from 370 to 410 spaces with additional provision of some 40-50 spaces for educational and research activities.

The parking demand for visitors and patients would be in order of some 230-250 spaces allowing for increased number of non inpatients (i.e. an additional 25 parking spaces) and other uses (inpatients, volunteers, etc)

Therefore a total parking demand of some **700** spaces would be required (i.e. **460** for staff and educational use and **240** for visitors/patients).

Summary Future Parking Demand

Additional 60 staff : based on 80% car use = additional 48 spaces

Additional 100 outpatients/visitors per day = assuming 85% car use with average stay of 1.5-2 hours during a 6 hour period = 29 spaces

Additional some 100 students/training specialists researchers = considering 60% attendance as not all attend every day and 80% car use = 48 spaces

Total additional parking demand = **125 - 130** spaces

Future Staff Parking = 370+48 say **420** spaces

Educational and Professional Visitors Parking = **50** spaces

Future Outpatients and Visitors Parking Demand = 205 + 29 say **235 spaces**

Total Future Parking Demand = 420+50+235 = 705 spaces

4.3 Parking Requirements

The Port Macquarie Council DCP 18 requires parking provision of (for hospitals):

- 1 space per 5 beds
- 1 space per 4 staff

Existing Situation:
160 beds/5 = 32 spaces
440 staff/4 = 110 spaces (based on assumed peak)
Total required = **142** spaces

The site currently provides 464 spaces + 64 "temporary" = 528

The additional parking requirements based on redevelopment of the Hospital would require the following based on Council's DCP:

106 beds/5 = 21
100 staff/4 = 25 spaces (staff and students/professional visitors per day)
Total additional required = **46** spaces

On this basis, Council's requirements are met without provision of additional parking areas. The concern is that the DCP does not totally make any consideration of parking for outpatients or reflect actual car usage which is the reason for adopting a broader demand assessment.

4.4 Parking Provision

The total future parking demand for the Hospital is on order of 700 spaces. The proposed master plan will provide some 719 parking spaces as part of the Hospital's redevelopment program.

This level of parking provision will improve the amenity for the Hospital's users, considering that generally some 10% additional parking provisions would be desirable to reduce vehicular circulation within the campus and to meet the parking demand for special/unexpected occasions.

The parking proposal for the Hospital Campus is shown in Figure 4.1.

CARPARK NUMBERS - EARLY WORKS

	CARPARKS
EXISTING CARPARKS (AS PER TTW EVALUATION)	=464 EXISTING + 64 TEMPORARY
TOTAL EXISTING CARPARKS (AS PER TTW EVALUATION)	=528
NEW CARPARKS TO EAST (AS REQUIRED PER TTW EVALUATION)	=259 ADDITIONAL
NUMBER OF DDA SPACES REQUIRED WITHIN THE EXISTING CAR PARK (9 ADDITIONAL SPACES)	=26
NUMBER OF CAR PARKING SPACES LOST WITHIN EXISTING CAR PARK THROUGH DDA LINE MARKING ALTERATIONS/ADDITIONS	= -11
NUMBER OF PARKING SPACES LOST WITHIN EXISTING AND PROPOSED CAR PARK THROUGH LINE MARKING ALTERATIONS	= -6
TOTAL CARPARKS (EXISTING AND NEW)	=770

NOTES

Refer to survey drawing prepared by Hopkins Consultants for all existing services locations and site contractor levels. Survey information shown on Architectural drawings are for reference purposes only.

Contractor to maintain a secondary 24hr emergency access to PMBH requirements.

Contractor to allow for rotor wash affect on temporary fencing from helicopter.

SEE DRAWINGS :

AR-0011-LX-SP FOR EXISTING SITE PLAN

AR-0031-LX-SP FOR HELIPAD EXCLUSION ZONE PARAMETERS

SPECIFICATION

FEN1 - Continious 2400mm high chain wire fencing equal to ARC 'cyclone security fencing' with 'black' fence shade cloth equal to shade Australia #263 'premium shade cloth fence mesh fitted to the works area side.

GAT1 - Provide 1 x 3m wide (nom) chain wire access gate and 1 x 1m wide access gate to the oxygen and gas compound as shown.

FEN2 - Continious 1100mm high proprietary handrail system equal to Webforge Monowills hot dipped galvanised steel tube system, installed in accordance with the manufacturers details.

FEN3 - Proprietary metal profile fencing to match existing adjoining. Refer to civil engineers drawing

FEN4 - Existing proprietary metal profile fencing

FEN5 - Existing chain wire fence

FEN6 - Existing chain link fence aligned to new path - extend as required to encompass landscape area as identified.

FEN7 - Proprietary temporary construction fencing equal to ATF Services 2100mm x 2650mm panels with 1800mm high 'mesh fence panels' and proprietary 'block feet'. In addition provide 'black' fence shade cloth equal to shade Australia #263 'premium shade cloth fence mesh' fitted on the inside (TPZ side) of the fence.
Provide a proprietary 'Tree Protection Zone - No Access' sign to the outside (Site wroks side) of the fence.
All temporary fencing should be able to withstand rotor wash.

BOL1 - Proprietary bollard for crash prevention equal to Leda security product 'Industrial base plate bollard'.

BOL2 - Proprietary bollard for crash prevention equal to Leda security product 'Industrial fixed bollard'.

BOL3 -Proprietary bollard for crash prevention equal to Leda security product 'Industrial padlock bollard'.

KEY

(red dash-dot line)	PMBH / Neighbouring Boundary Line
(red dashed line)	Extents of proposed early works development
(green dashed line)	Easement Line (Right of Carriageway)
(red dash-dot-dot line)	Existing 33kv overhead HV powerline. Refer to Electrical Engineers drawing.
GAS GAS	Approx. location of new high pressure LPG pipe. See Hydraulic Engineers drawing.
CW CW	Proposed 32mm connection to existing in-ground CW service. See Hydraulic Engineers drawing.
(green line with posts)	Proposed chain wire fence and proprietary metal fencing to match existing.
(blue line with posts)	Temporary site hoarding - See Civil Engineers drawing.
(purple line with posts)	Proposed temporary TPZ chain wire fence - See Aborist report
(grey fill)	EXISTING BUILDINGS
(yellow fill)	LANDSCAPE SEATING. SEE LANDSCAPE DRAWING LA-001-L0-SP FOR DETAILS
DDA CAR PARKING	LINE MARKING ALLOWANCE FOR 2.6m WIDE DDA SPACES THROUGHOUT THE EXISTING CAR PARK

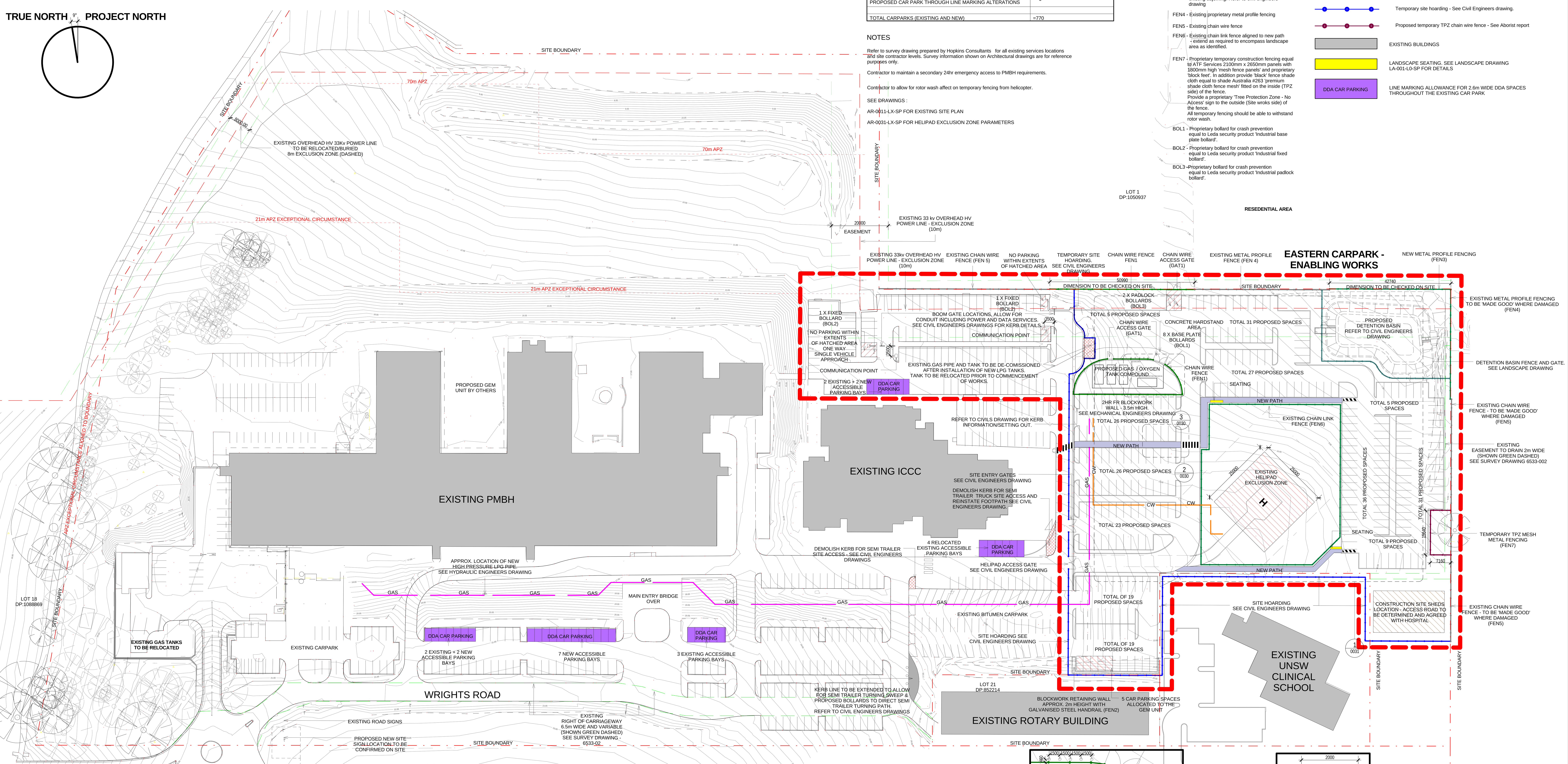
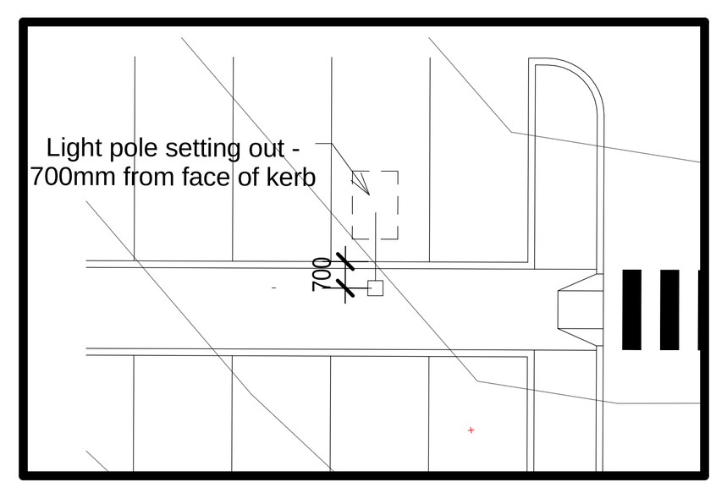
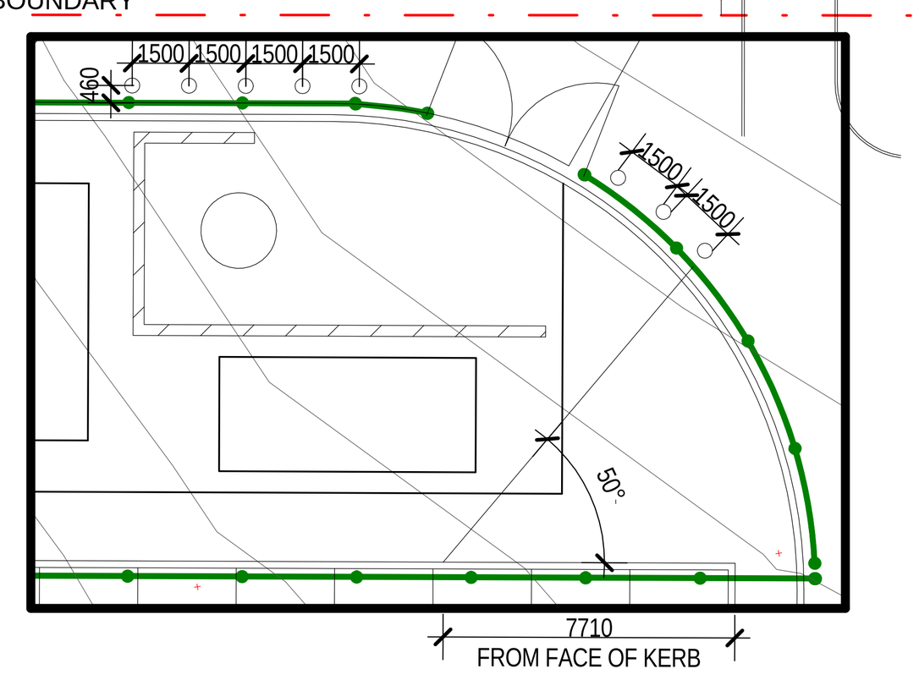


FIGURE 4.1

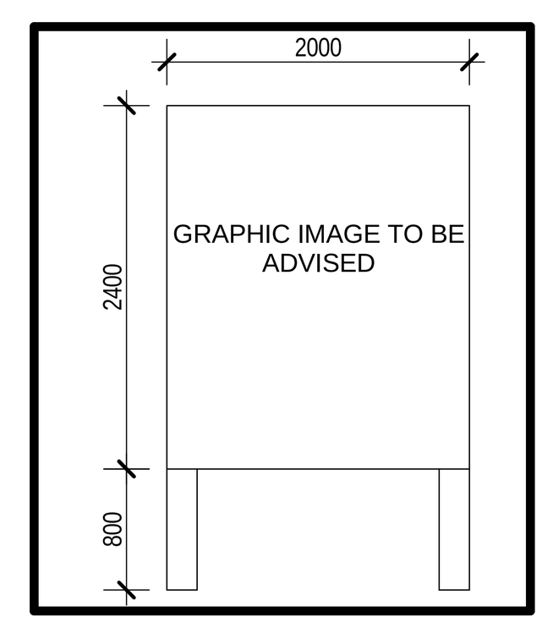
1 ENABLING WORKS SITE PLAN
1 : 500



2 LIGHT POLESETTING OUT
1 : 200



3 COMPOUND BOLLARD SETTING OUT
1 : 200



4 MAIN ENTRANCE SIGN
1:200

FOR TENDER

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02	ISSUED FOR TENDER - Review comments added	30.11.2011						
01	ISSUED FOR TENDER	28.11.2011						

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PROJECT
PORT MACQUARIE HOSPITAL EXPANSION
Wrights Rd, Port Macquarie NSW 2444, Australia

DRAWING TITLE
SITE WORKS / ENABLING WORKS PLAN

STATUS				JOB NO.
SCHEMATIC DESIGN				003145
SCALE AT A0	DRAWN	CO-ORDINATED	CHECKED	APPROVED
As indicated	MD	MD	GS	GS

DISC.	DWG NO.	LEVEL	REGION	STAGE	ISSUE
AR	0030	LX	SP	SD	02

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Original Sheet Size A0 -1188 x 841mm

5.0 ACCESS AND ROAD NETWORK

5.1 Road System

The main access routes to the site are via Oxley Highway and Wrights Road. The immediate vehicular access points to the site are off Wrights Road.

The main entry to the Hospital Campus is controlled with a small roundabout at intersection of Wrights Road, Highfields Circuit and entry points to the Campus. A 50 kph speed zone applies along Wrights Road and Highfields Circuit.

The intersection of Wrights Road and Oxley Highway is controlled with a major roundabout. An initial meeting with Hastings Council (12/10/2010) indicate that the existing roundabout will not need to be upgraded as a result of the proposed development considering its capacity and recent upgrade.

Data collection on vehicular traffic volumes and speed along Wrights Road and the main entry road to the Campus were carried out for a period of one week between 10 to 17 December 2010. The results of these surveys are shown in Appendix A.

The assessment of traffic volumes and speed along Wrights Road indicates an average daily vehicular traffic volume of **4622** for a 5 day period and 3858 vehicles per day (vpd) for a 7 day period. The 85 percentile speed is recorded at **47**kph for both directions along Wrights Road (between Oxley Hwy and Hospital roundabout).

Traffic volumes along the entry road to the Hospital Campus (between Hospital roundabout and car parking area) is recorded at **2931** vehicles per day (for 5 day period) and 2420 vpd for a 7 day period. The 85 percentile speed is recorded at **38**kph (36 kph for eastbound and 40kph for westbound).

Based on the above figure of 2931, the traffic generation for the Campus therefore is about 1440 vpd in each direction (in and out movements – per data as shown in the Appendix).

The results of the intersection counts (as shown in Appendix A) indicate a peak hourly (AM or PM) traffic generation of 285 vehicles per hour (vph) - to and from the Hospital (two way).

Wrights Road experiences park hourly traffic volumes of 382 vph and 365 vph (two way movements) during an AM and PM peak periods, respectively. The peak hourly traffic volume for Highfields Circuit is recorded at 64vph. Highfields Circuit currently is being used by parkers and activities associated with clinics and surgeries.

Vehicular traffic counts at intersection of Oxley Highway and Wrights Road has also been carried out on 3rd and 4th of November 2011 during AM and PM peak periods and the results are shown in Appendix A.

The above results indicate that the street system operate at a good level of service with ample capacity based on traffic engineering terms/guidelines.

Street System Operation

The term "level of service" for **road capacity** has been defined by AUSTROADS as:

A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and or passengers.

A level of service definition generally describes these conditions in terms of factors such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort, convenience and safety. In general there are six levels of service designated from A to F, with level of service A representing the best operating conditions (ie free flow) and level of service F the worst (ie forced or breakdown flow).

One-way hourly volumes for urban roads during peak hours and recommended level of service are shown in **Table 5.1**

Table 5.1 Urban Road Peak Hour Flows per Direction

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

Source: RTA Guidelines 1995

Intersections Operation

The adequacy of the capacity of an intersection is judged by whether it can physically and operationally cater for the traffic using it. The parameters of the performance of an intersection include the degree of saturation (DoS) and the average delay per vehicle (AD). Satisfactory operation of an intersection would normally continue up to 56 seconds as Average Delay/Vehicle. At this Level of Service (LoS), operating speeds are still reasonable and acceptable delays are experienced. The recommended criteria for evaluating capacity of intersections are shown in **Table 5.2**.

Table 5.2 Criteria for Evaluating Capacity of Intersection

Level of Service	Degree of Saturation	Ave. Delay/ Veh. (sec)
A/B good operation	**less than 0.80**	**Less than 28**
C satisfactory	**0.80 to 0.85**	**29-42**
D poor but manageable	**0.85 to 0.90**	**43-56**
E at capacity	**0.90 to 1.0**	**57-70**
F unsatisfactory, extra capacity req'd.	**Over 1.0**	**Over 70**

5.2 Traffic Impact

As discussed in Sections 4.2 and 4.3 of this report an additional of some 130 parking spaces would be required as part of the future development of the Hospital. On this basis, it is assumed that additional vehicular traffic generation for the site should not exceed 260vph during a peak hour period (as not all traffic arrive and depart at the same time while considering a conservative measure of maximum 70% of arrival/departure in one hour time, it would result a traffic generation of 180vph for in and out movements i.e. 90vph in each direction).

Therefore, in traffic engineering terms the road system will continue to operate at good level of service after the completion of the Hospital's redevelopment program based on the available road network capacity and its level of service.

The assessment of intersection operation at the entry to the Hospital (roundabout at intersection of Wrights Road and Hospital entrance) indicates that the intersection will continue to operate at a good level of service (see Table 5.3).

Similarly, the assessment of operation of Oxley Highway and Wrights Road intersection with consideration to the future traffic volumes from the Hospital and growths along the Highway indicates that the intersection will continue to operate at a good level of service.

The results of the assessment are shown in Appendix B.

Table 5.3a Performance of Access Intersection Existing and Future

AM and PM Commuter Peak Hour Traffic on a Weekday

Intersection	Traffic Controls	Degree of Saturation (DoS)	Level of Service (LoS)	Highest Delay/Veh (Sec/Veh)	Average Delay/Veh (Sec/Veh)
Wrights Rd & Hospital Entry	**Roundabout**				
AM Peak Hour	Existing	0.19	A	7.9	3.8
PM Peak Hour	Existing	0.16	A	8.2	3.8
AM Peak Hour	Future	0.27	A	9.0	4.6
PM Peak Hour	Future	0.29	A	9.8	4.4

Table 5.3b Performance of Oxley/Wrights Intersection Existing and Future

AM and PM Commuter Peak Hour Traffic on a Weekday

Intersection	Traffic Controls	Degree of Saturation (DoS)	Level of Service (LoS)	Highest Delay/Veh (Sec/Veh)	Average Delay/Veh (Sec/Veh)
Wrights Rd & Oxley Hwy	**Roundabout**				
AM Peak Hour	Existing	0.48	A	17.0	8.8
PM Peak Hour	Existing	0.48	A	16.9	9.0
AM Peak Hour	Future	0.60	A	17.3	9.1
PM Peak Hour	Future	0.57	A	18.5	9.9

5.3 Access

The access to the Hospital Campus will be from Wrights Road per existing situation. The access to the Campus off Wrights Road is controlled with a roundabout which provides a safe and efficient facility for vehicular movements to and from the site.

As part of the redevelopment process consideration is given to the temporary relocation of the existing gas cylinders during early works construction and are currently located within the north eastern part of the campus. Access to the gas cylinders has taken in consideration the truck refill area and the appropriate approach road network. All truck access will be off Wrights Road as it is preferred by Hastings Council.

A way finding signage plan for the Hospital campus would improve the existing situation for the users of the area.

A new loading dock is being provided on the western boundary of the Hospital site. The loading dock entry / exit is off Wrights Road. The entry / exit allows for access of all trucks up to 19m semi-trailers. All trucks enter and exit the loading dock area in forward direction and turn around within the site. Turning paths are shown in Appendix D.

Ambulance access is off Wrights Road into the emergency access area. West of the emergency access and East of the new loading dock is a separate entry / exit ambulance parking area which provides spaces for waiting ambulances.

As part of the Master Plan, consideration could be given to the provision of a second access to the Hospital site. A link to Toorak Court could be an option for future investigation. An initial meeting with Hastings Council indicate that it would consider the option as a secondary access to the Hospital.

5.4 Pedestrian and Cyclist Access

Currently the Hospital experiences some issues with pedestrian movements within the campus particularly access between the car parking areas on southern side of the campus and the main buildings.

Accordingly, as part of the master planning process pedestrian desire lines have been identified and are shown in **Figure 5.2** (next page). Appropriate pedestrian facilities will be provided as part of the future development / expansion.

Pedestrian access between the Hospital site and clinics and surgeries along Highfields Circuit is also recommended.

Introduction of bicycle parking at various locations within the Hospital Campus will also provide additional amenities for the users of the Hospital and would promote active transport particularly among Hospital's staff.

5.5 Public Transport

Busways provide bus services to the Hospital along: Wauchope (Bransdon St), Base Hospital, TAFE (Oxley Hwy), Settlement City, Port Macquarie Town Centre and Private Hospital. Buses run every 1 hour during the AM and PM peak hour periods and every 2 hour during a weekday with limited frequencies on weekends. A bus timetable is provided in Appendix C.

Buses access the Hospital campus and improvements to their manoeuvrability have been considered as shown in **Figure 5.3**.

Taxi on call is also available from the Hospital while patient transport and community transport provide services to their patrons.

Table 5.4 Bus Routes Timetables **Route 335—Wauchope–Port Macquarie via Base Hospital**

Weekday		Saturday		Sunday		Public Holiday	
Timetable	Waiting	Timetable	Waiting	Timetable	Waiting	Timetable	Waiting
7:31	-	10:00	-	11:00	-	11:00	-
8:27	56 mins	12:00	2hrs	16:00	5hrs	16:00	5hrs
10:00	1.5hrs	15:00	3hrs				
12:00	2hrs	17:00	2hrs				
14:00	2hrs						
16:05	2hrs5mins						
17:15	1hr10mins						
18:15	1hr						

Route 335---- Port Macquarie- Wauchope

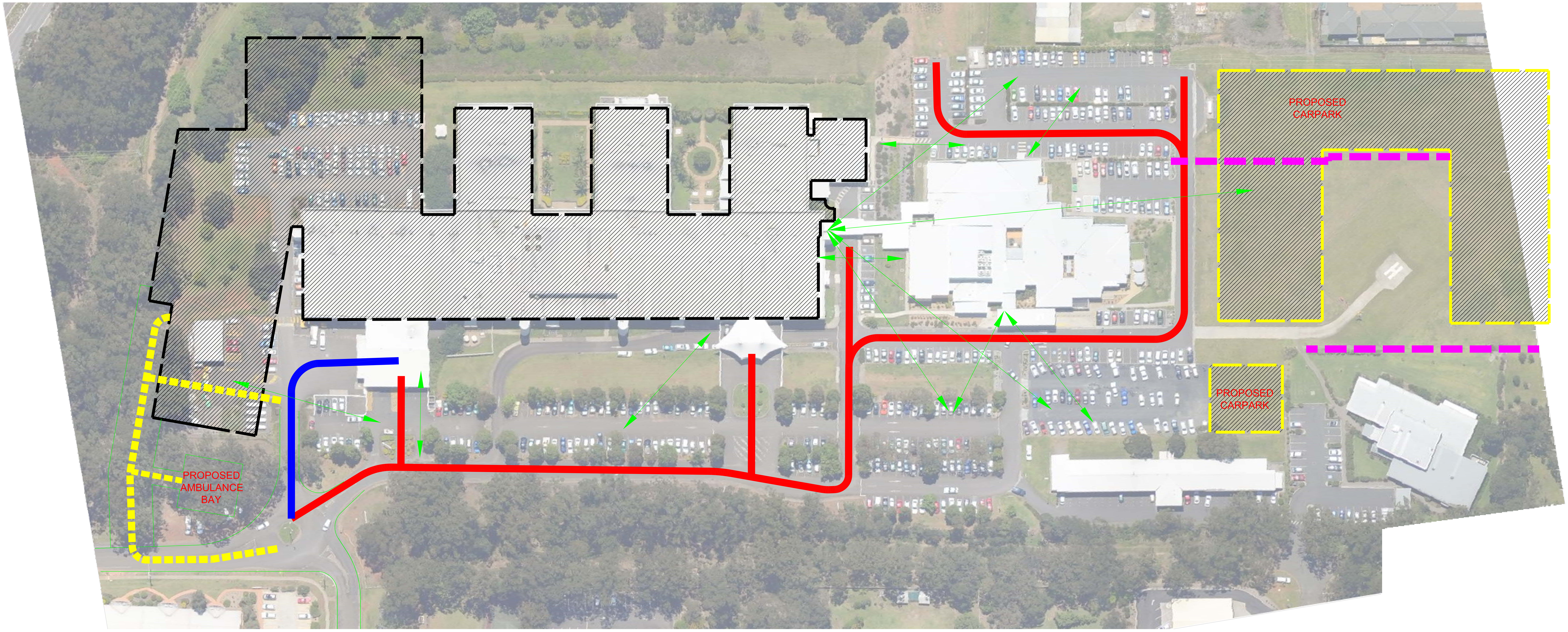
Weekday		Saturday		Sunday		Public Holidays	
Time	Waiting	time	Waiting	Time	Waiting	Time	Waiting
9:03	-	9:03	-	10:03	-	10:03	-
11:03	2hrs	11:03	2hrs	15:03	3hrs	15:03	3hrs
13:03	2hrs	14:03	3hrs				
15:03	2hrs	16:03	2hrs				
16:23	1hr20mins						
17:23	1hr						

Route 325 Port Macquarie—Base Hospital & The Runs Way

Weekday		Saturday		Sunday		Public Holidays	
Time	Waiting	Time	Waiting	Time	Waiting	Time	Waiting
7:33	-	8:31	-	8:24	-	8:24	-
8:33	1hr	9:31	1hr	10:31	2hrs7mins	10:31	2hr7m
9:33	1hr	10:31	1hr	12:42	2hr11min	12:42	3h11m
10:31	1hr	11:31	1hr	14:42	2hrs	14:42	2hrs
11:31	1hr	12:42	1hr11mins				
12:42	1hr11mins	13:42	1hr				
13:42	1hr	14:42	1hr				
14:42	1hr	15:42	1hr				
15:42	2hr	16:42	1hr				
16:44	1hr2mins						

Route 325 Base Hospital & The Runs Way-- Port Macquarie

Weekday		Saturday		Sunday		Public Holidays	
Time	Waiting	Time	Waiting	Time	Waiting	Time	Waiting
7:33	-	8:31	-	8:24	-	8:24	-
8:33	1H	9:31	1H	10:31	2H	10:31	2H5m
9:33	1H	10:31	1H	12:42	2H11mins	12:42	2h11m
10:31	1H	11:31	1H	14:42	2H	14:42	2H
11:31	1H	12:42	1H				
12:42	1H	13:42	1H				
13:42	1H	14:42	1H				
14:42	1H	15:42	1H				
15:42	1H	16:42	1H				



CURRENT MAIN VEHICULAR ROUTES

Blue line	CURRENT MAIN VEHICULAR ROUTES NOT REQUIRED AFTER NEW WORK
Green arrow	PEDESTRIAN DESIRE LINES (ORIGIN / DESTINATION)
Red line	CURRENT MAIN VEHICULAR ROUTES
Yellow dashed line	OPTIONAL VEHICULAR ROUTES PROPOSAL
Magenta dashed line	PEDESTRIAN FOOTPATH/LINK TO MAIN BUILDING

FIGURE 5.2

FOR INFORMATION

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Rev	Description	Date
05	AMENDED TITLE BLOCK	20.12.11
04	AMENDED TITLE BLOCK	13.12.11
03	PRELIMINARY	12.12.11
02	PRELIMINARY	10.02.11
01	PRELIMINARY	09.02.11

CONSULTANT

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MILSONS POINT NSW 2061

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HASSELL

ROJECT
PORT MACQUARIE HOSPITAL EXPANSION
Wrights Rd, Port Macquarie NSW 2444, Australia

DRAWING TITLE
PEDESTRIAN AND VEHICULAR PATHS

STATUS	JOB NO.
	003145

SCALE AT A0	DRAWN	CO-ORDINATED	CHECKED	APPROVED
1:500	KH			

DISC.	DWG NO.	LEVEL	REGION	STAGE	ISSUE
TR	SKC03	LX	SP	SD	05

Original Sheet Size A0 -1188 x 841mm

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CARPARK NUMBERS - EARLY WORKS

	CARPARKS
EXISTING CARPARKS (AS PER TTW EVALUATION)	=464 EXISTING + 64 TEMPORARY
TOTAL EXISTING CARPARKS (AS PER TTW EVALUATION)	=528
NEW CARPARKS TO EAST (AS REQUIRED PER TTW EVALUATION)	=259 ADDITIONAL
NUMBER OF DDA SPACES REQUIRED WITHIN THE EXISTING CAR PARK (9 ADDITIONAL SPACES)	=26
NUMBER OF CAR PARKING SPACES LOST WITHIN EXISTING CAR PARK THROUGH DDA LINE MARKING ALTERATIONS/ADDITIONS	= -11
NUMBER OF PARKING SPACES LOST WITHIN EXISTING AND PROPOSED CAR PARK THROUGH LINE MARKING ALTERATIONS	= -6
TOTAL CARPARKS (EXISTING AND NEW)	=770

NOTES

Refer to survey drawing prepared by Hopkins Consultants for all existing services locations and site contractor levels. Survey information shown on Architectural drawings are for reference purposes only.

Contractor to maintain a secondary 24hr emergency access to PMBH requirements.

Contractor to allow for rotor wash affect on temporary fencing from helicopter.

SEE DRAWINGS :

AR-0011-LX-SP FOR EXISTING SITE PLAN

AR-0031-LX-SP FOR HELIPAD EXCLUSION ZONE PARAMETERS

SPECIFICATION

FEN1 - Continious 2400mm high chain wire fencing equal to ARC 'cyclone security fencing' with 'black' fence shade cloth equal to shade Australia #263 'premium shade cloth fence mesh fitted to the works area side.

GAT1 - Provide 1 x 3m wide (nom) chain wire access gate and 1 x 1m wide access gate to the oxygen and gas compound as shown.

FEN2 - Continious 1100mm high proprietary handrail system equal to Webforge Monowills hot dipped galvanised steel tube system, installed in accordance with the manufacturers details.

FEN3 - Proprietary metal profile fencing to match existing adjoining. Refer to civil engineers drawing

FEN4 - Existing proprietary metal profile fencing

FEN5 - Existing chain wire fence

FEN6 - Existing chain link fence aligned to new path - extend as required to encompass landscape area as identified.

FEN7 - Proprietary temporary construction fencing equal to ATF Services 2100mm x 2650mm panels with 1800mm high 'mesh fence panels' and proprietary 'block feet'. In addition provide 'black' fence shade cloth equal to shade Australia #263 'premium shade cloth fence mesh' fitted on the inside (TPZ side) of the fence.
Provide a proprietary 'Tree Protection Zone - No Access' sign to the outside (Site wroks side) of the fence.
All temporary fencing should be able to withstand rotor wash.

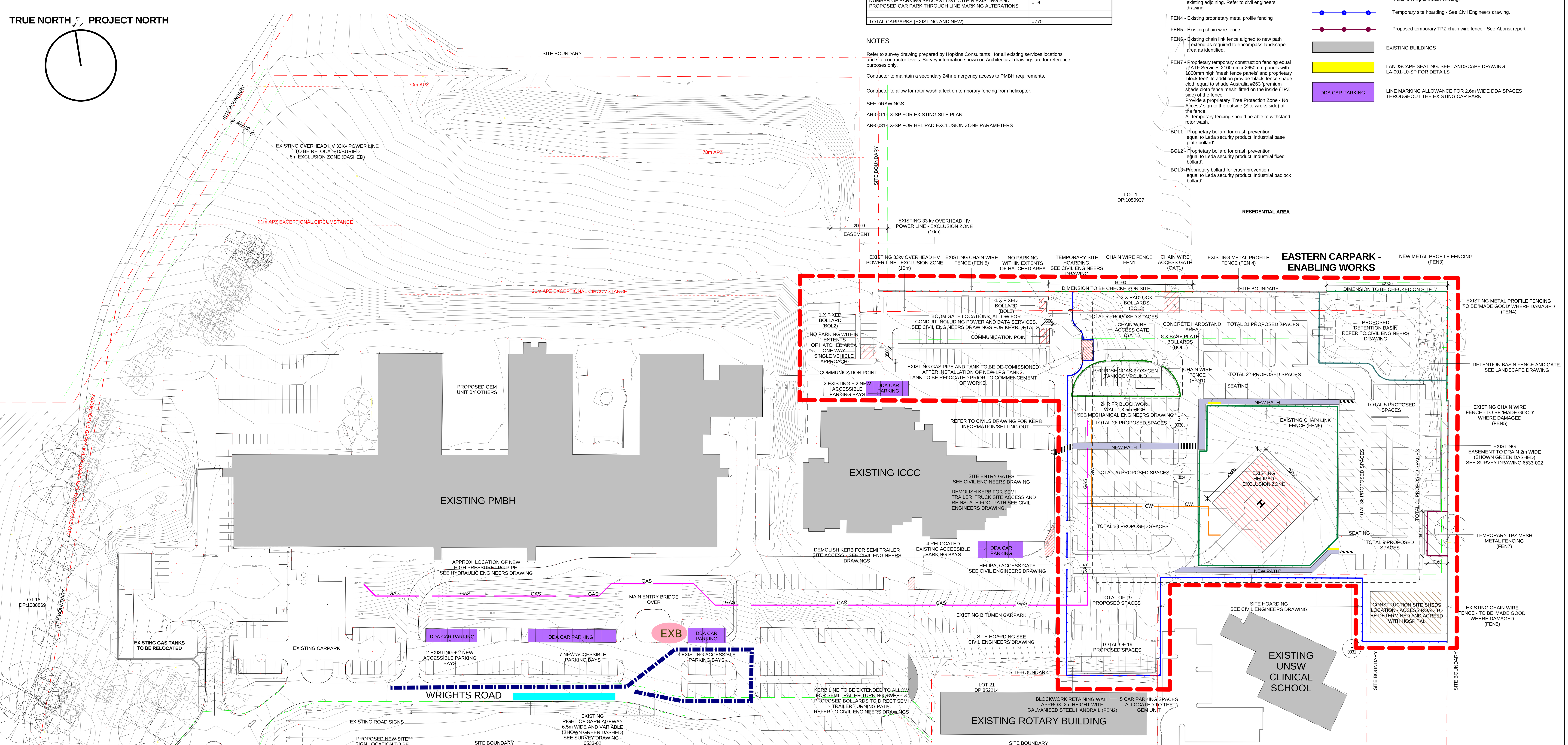
BOL1 - Proprietary bollard for crash prevention equal to Leda security product 'Industrial base plate bollard'.

BOL2 - Proprietary bollard for crash prevention equal to Leda security product 'Industrial fixed bollard'.

BOL3 - Proprietary bollard for crash prevention equal to Leda security product 'Industrial padlock bollard'.

KEY

- PMBH / Neighbouring Boundary Line
- Extents of proposed early works development
- Easement Line (Right of Carriageway)
- Existing 33kv overhead HV powerline. Refer to Electrical Engineers drawing.
- GAS — Approx. location of new high pressure LPG pipe. See Hydraulic Engineers drawing.
- CW — Proposed 32mm connection to existing in-ground CW service. See Hydraulic Engineers drawing.
- Proposed chain wire fence and proprietary metal fencing to match existing.
- Temporary site hoarding - See Civil Engineers drawing.
- Proposed temporary TPZ chain wire fence - See Aborist report
- EXISTING BUILDINGS
- LANDSCAPE SEATING. SEE LANDSCAPE DRAWING LA-001-L0-SP FOR DETAILS
- DDA CAR PARKING — LINE MARKING ALLOWANCE FOR 2.6m WIDE DDA SPACES THROUGHOUT THE EXISTING CAR PARK

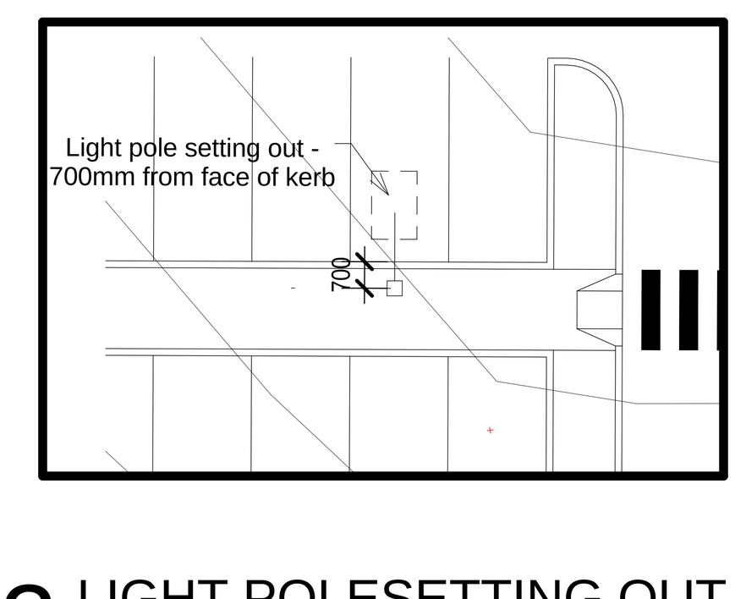


BUS ARRANGEMENTS

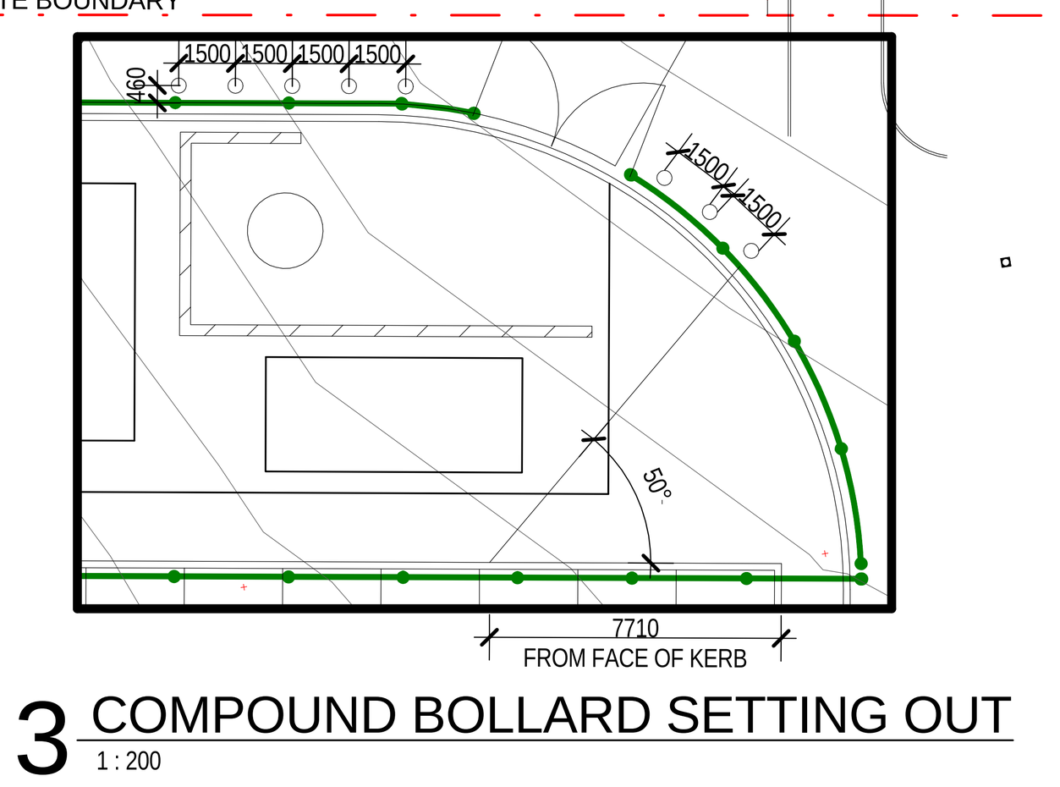
1 ENABLING WORKS SITE PLAN
1 : 500

PROPOSED BUS STOP
BUS PATH
EXISTING BUS STOP

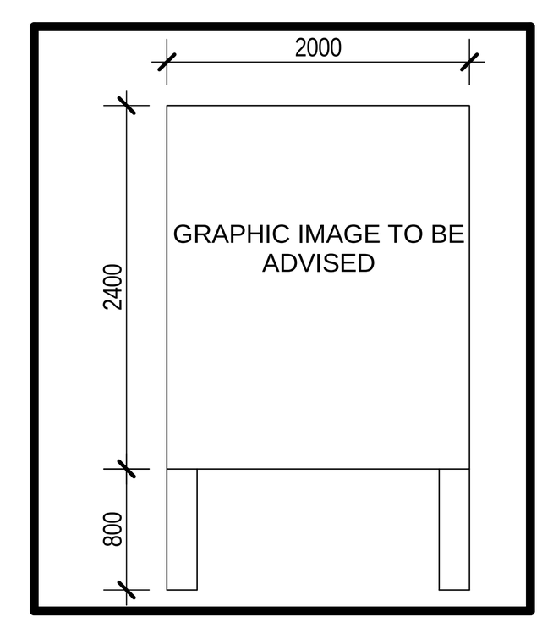
EXB



2 LIGHT POLESETTING OUT
1 : 200



3 COMPOUND BOLLARD SETTING OUT
1 : 200



4 MAIN ENTRANCE SIGN
1:200

FOR TENDER

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Rev	Description	Date	Rev	Description	Date	Rev	Description	Date
02	ISSUED FOR TENDER - Review comments added	30.11.2011						
01	ISSUED FOR TENDER	28.11.2011						

CONSULTANT
aurecon — PROJECT MANAGEMENT — AURECON CONSULTANTS PTY LTD, LEVEL 2, 116 MILITARY ROAD, NEUTRAL BAY, NSW 2089
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PROJECT
PORT MACQUARIE HOSPITAL EXPANSION
Wrights Rd, Port Macquarie NSW 2444, Australia

DRAWING TITLE
SITE WORKS / ENABLING WORKS PLAN

STATUS				JOB NO.
SCHEMATIC DESIGN				003145
SCALE AT A0	DRAWN	CO-ORDINATED	CHECKED	APPROVED
As indicated	MD	MD	GS	GS

DISC.	DWG NO.	LEVEL	REGION	STAGE	ISSUE
AR	0030	LX	SP	SD	02

Original Sheet Size A0 -1188 x 841mm

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6.0 TRANSPORT MANAGEMENT STRATEGY RECOMMENDATIONS

As part of the transport strategy for Port Macquarie Base Hospital, a number of strategies are suggested for implementation or further investigations. It is of paramount importance to take into account the future level of population increase within the region, and to provide solutions that are complementary to State, regional and local transport plans. Therefore, the higher use of public transport will not only create a healthier environment but will also improve the road safety and character of the built environment.

Further, decreased use of the car, particularly by staff, will reduce the need for construction of carparks and their associated costs. This means freeing funds for other activities and needs. The following measures are put forward as a guide to encouraging a reduction in car usage:

- provision of incentive schemes among staff e.g. subsidised bus tickets
- negotiation with bus agencies for provision of frequent bus services with faster and more direct destinations e.g. shuttle bus between city centre/shopping areas and the Hospital.
- establishment of a waiting list for parking space for new Hospital staff. This means that any new staff will not have a parking space until one becomes available.
- higher parking fees for new Hospital staff, possibly combined with provision of subsided public transport tickets.
- provision of better, safer (in terms of route alignment as well as security) bicycle and pedestrian routes. This measure should be devised in consultation with Council and other authorities.
- promotion of the merits of walking and bicycle riding in order to encourage staff living near the Hospital to leave their cars at home.
- provision of safer and higher quality bus shelters or waiting areas.

7.0 CONSTRUCTION TRAFFIC

It is envisaged that a Construction Traffic Management Plan (CTMP) will be prepared prior to commencement of major works. However, the designated heavy vehicle routes would be via Oxley Highway and Wrights Road. It is expected that 70% of trips would have an origin-destination from the north-eastern area while the remaining will come from south-western part of the area. It is anticipated that some 50 - 70 vehicular trips associated with construction staff would occur, most trips outside each AM and PM peak period.

Parking for construction staff will be provided on site as part of the Enabling Works on formalisation of car parking areas.

Provision for pedestrian and cyclist's access will be made as part of the CTMP.

8.0 CONCLUSION

The proposed redevelopment of Hospital will provide some 719 parking spaces in order to meet the future demand of Hospital by the year 2021. However, it should be noted that the current parking provision meets the previous Hasting Council's DCP 18 for car parking requirements. The current DCP 2011 does not provide specific requirements for Hospital developments.

The existing road system and access arrangements operate at good level of service and will continue to operate at similar level of service once the redevelopment of the Hospital is completed.

Pedestrian desire lines have been identified and are included as part of the master plan for the campus.

Provision of a second access to the Hospital Campus could be considered as part of the future redevelopment proposal.

Adequate truck access and manoeuvring for a 19m semi trailer and fire truck have been considered within the site. The turning paths for gas truck movements within the site have examined and are shown in the Appendix.

Prepared/Authorised by:
TAYLOR THOMSON WHITTING
(NSW) PTY LTD

KAM TARA
Director
URaP-TTW PTY LTD

APPENDIX A

Count Number 6814 **Lat/Long : S31 27 10.4 / E152 52 34.3** GOOGLE MAP

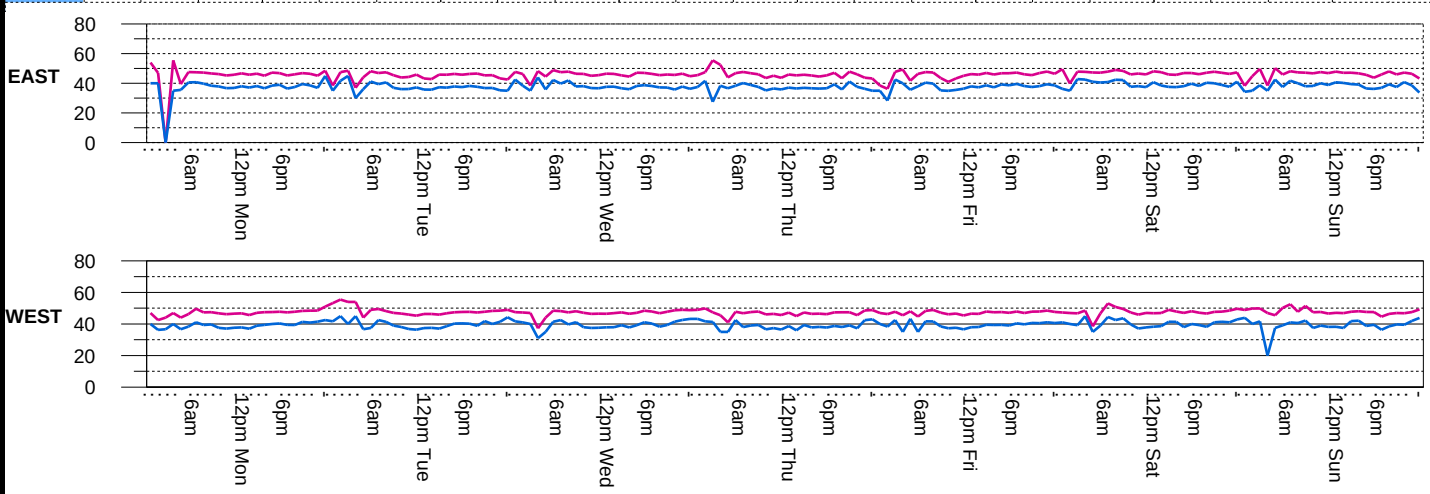
Street **WRIGHTS ROAD, PORT MACQUARIE : Between OXLEY HIGHWAY & ROAD END IN HOSPITAL (bidirecti**

Location Between Oxley Highway and Hospital Roundabout, on Roundabout Sign

Start Date	10-DEC-10
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 50	EAST	WEST	COMBINED
Weekly 50th Percentile Speed	**38**	**39**	**38**
Weekly 85th Percentile Speed	**46**	**47**	**47**
Five Day AADT	**2321**	**2301**	**4622**
Seven Day AADT	**1937**	**1921**	**3858**

	MON 13-DEC-10			TUE 14-DEC-10			WED 15-DEC-10			THU 16-DEC-10			FRI 10-DEC-10			SAT 11-DEC-10			SUN 12-DEC-10			SEVENDAY AVERAGE		
	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir
85%ile	46.4	47.3	46.9	45.7	47.1	46.5	46.5	47.3	46.9	45.8	46.8	46.3	45.9	47.2	46.6	47.0	47.8	47.4	47.0	47.6	47.3	46.3	47.3	46.8
50%ile	37.9	38.8	38.4	37.1	38.7	37.8	37.9	38.9	38.4	37.1	38.0	37.5	37.2	38.7	37.9	38.8	39.8	39.3	38.8	39.5	39.1	37.8	38.9	38.3
> 60 k	0	5	5	0	3	3	0	2	2	1	1	2	0	3	3	0	3	3	0	0	0	.1429	2.429	2.571
%age	.0	.2	.1	.0	.1	.1	.0	.1	.0	.0	.0	.0	.0	.1	.1	.0	.3	.1	.0	.0	.0	.0	.1	.1
> 70 k	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
%age	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0



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Short %	96.1	95.1	95.6	96.0	94.2	95.1	96.1	95.4	95.7	95.5	94.5	95.0	95.1	93.9	94.5	94.1	92.5	93.3	95.0	94.6	94.8	95.6	94.5	95.0
Med %	3.8	4.8	4.3	4.0	5.8	4.9	3.9	4.6	4.3	4.4	5.5	5.0	4.9	6.1	5.5	5.8	7.5	6.6	5.0	5.4	5.2	4.4	5.5	4.9
Long %	.1	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0
AM Pk Vo	235	169	355	260	166	355	267	188	381	269	180	363	235	180	348	83	76	158	104	88	157	208	150	302
PM Pk Vo	186	263	438	187	248	400	231	280	461	218	301	471	159	216	375	98	101	182	89	91	160	167	214	355
7-7pm	1975	1984	3959	1919	1929	3848	2140	2142	4282	2118	2141	4259	1789	1821	3610	775	770	1545	709	699	1408	1632	1641	3273
24Hr Tot	2300	2286	4586	2245	2203	4448	2499	2480	4979	2464	2459	4923	2097	2079	4176	1026	1005	2031	928	934	1862	1937	1921	3858
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Class 1	2199	2162	4361	2141	2055	4196	2398	2359	4757	2344	2312	4656	1978	1935	3913	964	927	1891	873	876	1749	1842	1804	3646
Class 2	8	10	18	12	16	28	2	6	8	5	7	12	12	14	26	1	3	4	8	8	16	7	9	16
Class 3	83	104	187	86	119	205	92	107	199	97	120	217	85	106	191	59	73	132	45	48	93	78	97	175
Class 4	4	5	9	2	7	9	4	7	11	12	14	26	17	19	36	0	1	1	1	1	2	6	8	13
Class 5	1	1	2	1	1	2	2	1	3	0	1	1	1	1	2	1	1	2	0	1	1	1	1	2
Class 6	0	0	0	0	1	1	0	0	0	0	1	1	0	1	1	1	0	1	0	0	0			1
Class 7	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0			
Class 8	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
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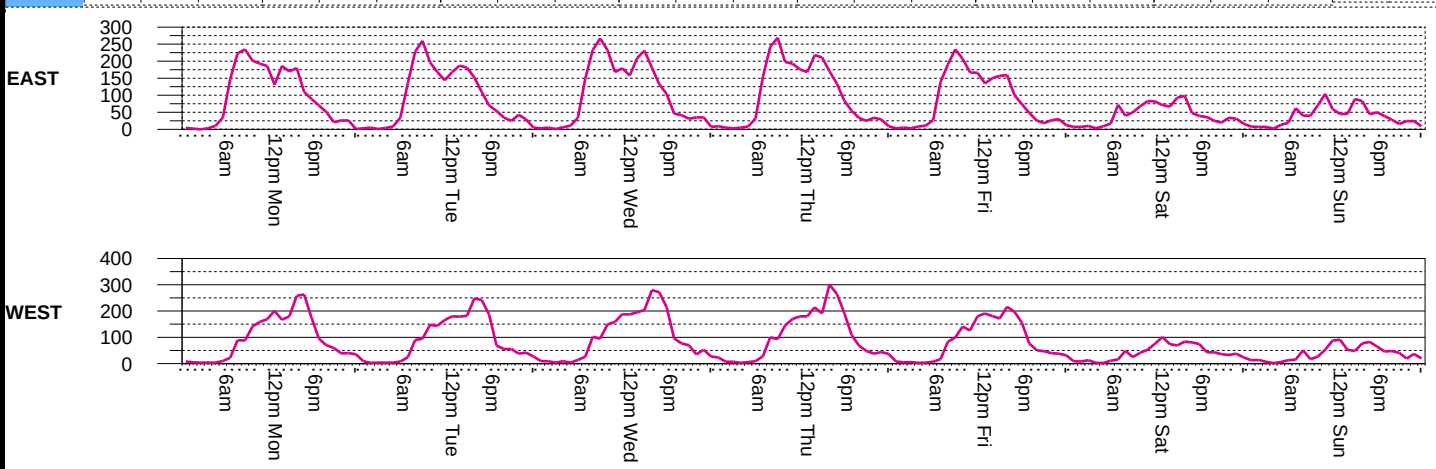

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CfeIT bob.white@cfeit.com (02) 9740 8600

One Page Summary

Count Number 6815 **Lat/Long : S31 27 09.9 / E152 52 38.4** GOOGLE MAP

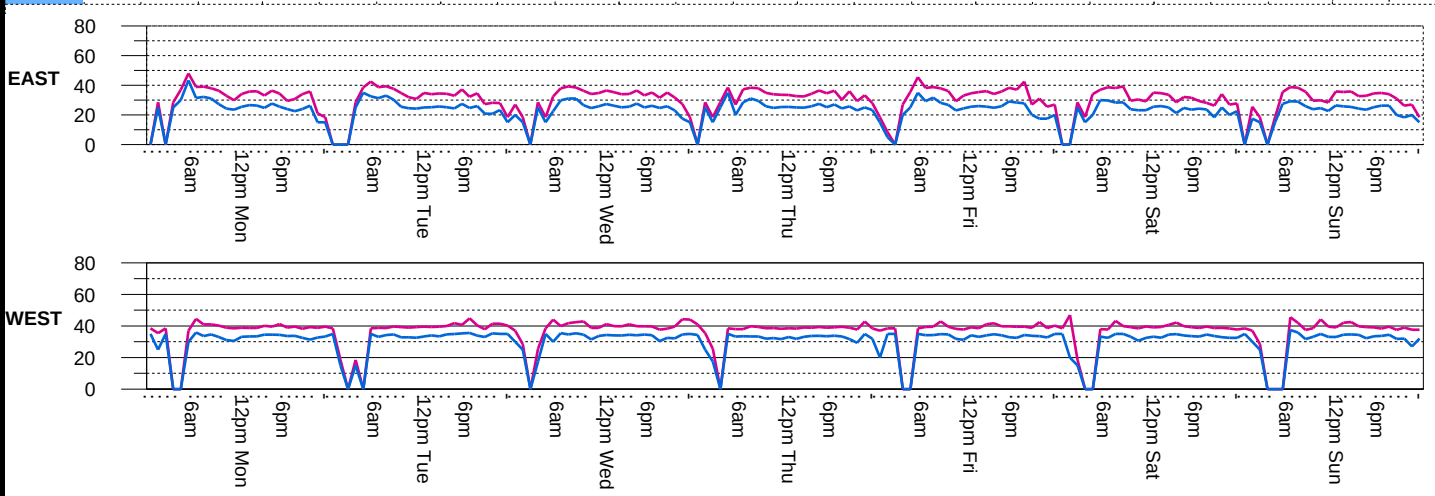
Street **WRIGHTS ROAD, PORT MACQUARIE : Between OXLEY HIGHWAY & ROAD END IN HOSPITAL (bidirecti**

Location Between Hospital Roundabout and adjacent to the car park, on tree

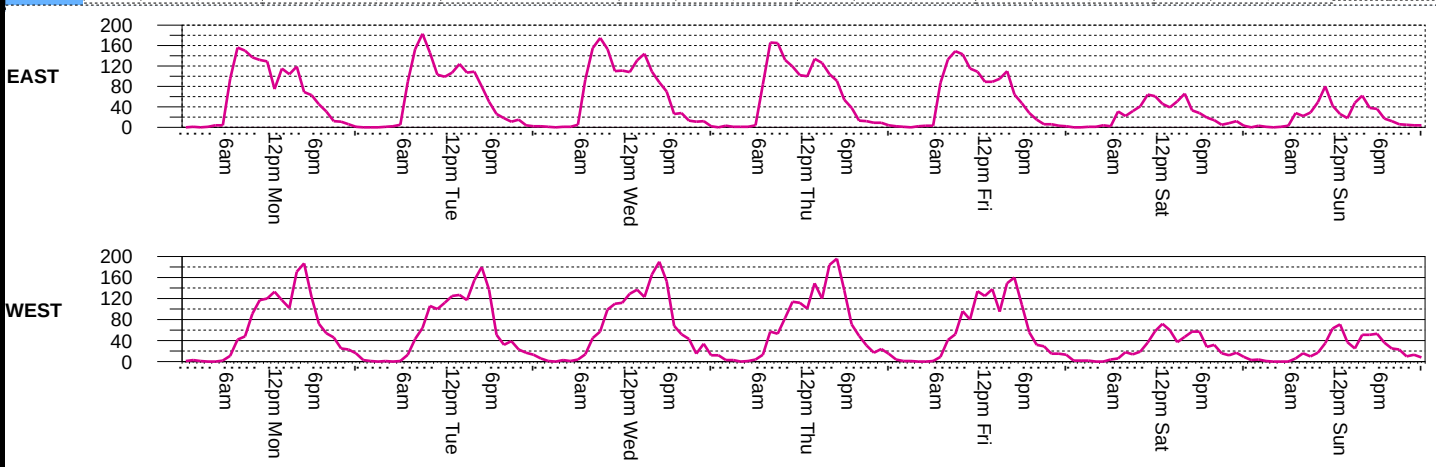
Start Date	10-DEC-10
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Speed Limit 50	EAST	WEST	COMBINED
Weekly 50th Percentile Speed	**26**	**34**	**31**
Weekly 85th Percentile Speed	**36**	**40**	**38**
Five Day AADT	**1443**	**1488**	**2931**
Seven Day AADT	**1190**	**1229**	**2420**

	MON 13-DEC-10			TUE 14-DEC-10			WED 15-DEC-10			THU 16-DEC-10			FRI 10-DEC-10			SAT 11-DEC-10			SUN 12-DEC-10			SEVENDAY AVERAGE		
	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir
85%ile	36.3	39.4	38.3	36.2	39.8	38.6	36.5	39.9	38.7	35.7	38.9	37.9	36.3	39.4	38.4	32.9	39.5	37.9	33.5	39.5	38.0	35.3	39.5	38.3
50%ile	26.8	33.4	30.6	26.6	34.1	31.1	26.9	33.9	31.0	26.4	33.0	30.1	26.4	33.6	30.7	24.4	33.5	28.9	24.8	33.5	29.2	26.0	33.6	30.2
> 60 k	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
%age	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 70 k	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
%age	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0



	MON 13-DEC-10			TUE 14-DEC-10			WED 15-DEC-10			THU 16-DEC-10			FRI 10-DEC-10			SAT 11-DEC-10			SUN 12-DEC-10			SEVENDAY AVERAGE		
	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir
Short %	97.3	97.5	97.4	96.9	97.2	97.1	97.4	97.5	97.4	97.1	97.2	97.2	96.9	97.5	97.2	96.2	96.9	96.5	97.8	97.8	97.8	97.1	97.4	97.2
Med %	2.7	2.5	2.6	3.1	2.8	2.9	2.6	2.4	2.5	2.8	2.8	2.8	3.1	2.5	2.8	3.8	3.1	3.5	2.2	2.2	2.2	2.9	2.6	2.7
Long %	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
AM Pk Vo	156	120	249	183	112	252	175	112	252	166	114	233	149	134	243	64	58	119	80	63	115	139	102	209
PM Pk Vo	119	187	290	124	180	264	144	190	278	134	196	288	110	160	259	66	72	118	62	71	113	108	151	230
7-7pm	1294	1323	2617	1287	1317	2604	1380	1389	2769	1331	1376	2707	1171	1234	2405	502	503	1005	467	465	932	1062	1087	2148
24Hr Tot	1460	1505	2965	1434	1460	2894	1549	1574	3123	1472	1548	3020	1301	1354	2655	583	605	1188	534	558	1092	1190	1229	2420
Class 0	1	1	2	2	3	5	1	1	2	2	2	4	0	2	2	1	0	1	0	0	0	1	1	2
Class 1	1414	1463	2877	1384	1412	2796	1506	1531	3037	1426	1500	2926	1256	1315	2571	560	586	1146	519	544	1063	1152	1193	2345
Class 2	5	3	8	4	4	8	1	3	4	2	2	4	5	3	8	0	0	0	3	2	5	3	2	5
Class 3	40	38	78	44	40	84	41	34	75	41	44	85	37	34	71	22	19	41	12	12	24	34	32	65
Class 4	0	0	0	0	1	1	0	3	3	0	0	0	3	0	3	0	0	0	0	0	0		1	1
Class 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 7	0	0	0	0	0	0	2	2	1	0	0	1	0	0	0	0	0	0	0	0	0			
Class 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			



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CfeIT bob.white@cfeit.com (02) 9740 8600

Traffic Count Summary Report

Count Number	**6815**	Ref : **URAP**	**Lat/Long : S31 27 09.9 / E152 52 38.4**	**GOOGLE MAP**
Street	**WRIGHTS ROAD, PORT MACQUARIE : Between OXLEY HIGHWAY & ROAD END IN HOSPITAL (bidirectional) :**			
Location	Between Hospital Roundabout and adjacent to the car park, on tree			*Carriageway*

TOTAL COUNT MATRIX

Start Date	10-DEC-10
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	31
Weekly 85th Percentile Speed	38
Five Day AADT	2931
Seven Day AADT	2420

	MON *13TH*	TUE *14TH*	WED *15TH*	THU *16TH*	FRI *10TH*	SAT *11TH*	SUN *12TH*	5 Day Total	5 Day Average	7 Day Total	7 Day Average
Midnight - 1am	1	3	8	12	6	2	3	**30**	**6**	**35**	**5**
1am - 2am	4	1	2	6	2	2	7	**15**	**3**	**24**	**3**
2am - 3am	1	0	0	4	1	3	2	**6**	**1**	**11**	**2**
3am - 4am	1	2	4	1	2	1	0	**10**	**2**	**11**	**2**
4am - 5am	4	2	2	2	3	4	1	**13**	**3**	**18**	**3**
5am - 6am	6	6	9	8	4	6	3	**33**	**7**	**42**	**6**
6am - 7am	106	102	107	97	96	37	34	**508**	**102**	**579**	**83**
7am - 8am	198	196	200	223	174	40	38	**991**	**198**	**1069**	**153**
8am - 9am	198	247	232	218	201	46	39	**1096**	**219**	**1181**	**169**
9am - 10am	228	**252**	**252**	215	239	60	66	**1186**	**237**	**1312**	**187**
10am - 11am	**249**	203	220	**233**	195	100	**115**	**1100**	**220**	**1315**	**188**
11am - Midday	**249**	211	223	214	**243**	**119**	105	**1140**	**228**	**1364**	**195**
Midday - 1pm	208	232	237	201	214	**118**	97	**1092**	**218**	**1307**	**187**
1pm - 2pm	232	251	268	283	227	99	55	**1261**	**252**	**1415**	**202**
2pm - 3pm	206	224	267	246	190	88	73	**1133**	**227**	**1294**	**185**
3pm - 4pm	**290**	**264**	275	**288**	**259**	113	**113**	**1376**	**275**	**1602**	**229**
4pm - 5pm	256	260	**278**	287	224	90	89	**1305**	**261**	**1484**	**212**
5pm - 6pm	186	187	223	190	155	85	89	**941**	**188**	**1115**	**159**
6pm - 7pm	117	77	94	109	84	47	53	**481**	**96**	**581**	**83**
7pm - 8pm	85	50	80	62	47	46	37	**324**	**65**	**407**	**58**
8pm - 9pm	58	50	56	43	35	21	29	**242**	**48**	**292**	**42**
9pm - 10pm	36	38	26	26	21	20	15	**147**	**29**	**182**	**26**
10pm - 11pm	29	21	46	33	18	29	17	**147**	**29**	**193**	**28**
11pm - Midnight	17	15	14	19	15	12	12	**80**	**16**	**104**	**15**
Total	**2965**	**2894**	**3123**	**3020**	**2655**	**1188**	**1092**	**14657**	**2931**	**16937**	**2419**

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Traffic Count Summary Report

Count Number	**6814**	Ref : **URAP**	**Lat/Long : S31 27 10.4 / E152 52 34.3**	**GOOGLE MAP**
Street	**WRIGHTS ROAD, PORT MACQUARIE : Between OXLEY HIGHWAY & ROAD END IN HOSPITAL (bidirectional) :**			
Location	Between Oxley Highway and Hospital Roundabout, on Roundabout Sign		*Carriageway*	

TOTAL COUNT MATRIX

Start Date	10-DEC-10
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	38
Weekly 85th Percentile Speed	47
Five Day AADT	4622
Seven Day AADT	3858

	MON *13TH*	TUE *14TH*	WED *15TH*	THU *16TH*	FRI *10TH*	SAT *11TH*	SUN *12TH*	5 Day Total	5 Day Average	7 Day Total	7 Day Average
Midnight - 1am	12	12	13	32	11	16	21	**80**	**16**	**117**	**17**
1am - 2am	7	8	14	12	10	15	21	**51**	**10**	**87**	**12**
2am - 3am	4	5	5	10	9	23	14	**33**	**7**	**70**	**10**
3am - 4am	7	8	15	8	11	6	4	**49**	**10**	**59**	**8**
4am - 5am	14	12	15	14	15	11	19	**70**	**14**	**100**	**14**
5am - 6am	44	42	48	41	34	28	32	**209**	**42**	**269**	**38**
6am - 7am	169	159	175	182	155	88	77	**840**	**168**	**1005**	**144**
7am - 8am	312	318	335	343	274	89	91	**1582**	**316**	**1762**	**252**
8am - 9am	323	**355**	362	362	335	75	57	**1737**	**347**	**1869**	**267**
9am - 10am	343	344	**381**	343	**348**	109	98	**1759**	**352**	**1966**	**281**
10am - 11am	352	312	327	**363**	293	136	**157**	**1647**	**329**	**1940**	**277**
11am - Midday	**355**	310	367	356	346	**158**	147	**1734**	**347**	**2039**	**291**
Midday - 1pm	332	348	345	348	326	172	136	**1699**	**340**	**2007**	**287**
1pm - 2pm	353	366	405	432	331	141	98	**1887**	**377**	**2126**	**304**
2pm - 3pm	350	363	435	402	329	162	137	**1879**	**376**	**2178**	**311**
3pm - 4pm	**438**	**400**	**461**	**471**	**375**	**182**	**160**	**2145**	**429**	**2487**	**355**
4pm - 5pm	373	352	404	399	298	129	127	**1826**	**365**	**2082**	**297**
5pm - 6pm	263	257	318	277	230	113	115	**1345**	**269**	**1573**	**225**
6pm - 7pm	165	123	142	163	125	79	85	**718**	**144**	**882**	**126**
7pm - 8pm	121	89	119	101	77	68	76	**507**	**101**	**651**	**93**
8pm - 9pm	81	81	101	73	65	56	57	**401**	**80**	**514**	**73**
9pm - 10pm	65	81	70	72	67	67	43	**355**	**71**	**465**	**66**
10pm - 11pm	66	71	88	73	68	69	61	**366**	**73**	**496**	**71**
11pm - Midnight	37	32	34	46	44	39	29	**193**	**39**	**261**	**37**
Total	**4586**	**4448**	**4979**	**4923**	**4176**	**2031**	**1862**	**23112**	**4622**	**27005**	**3857**

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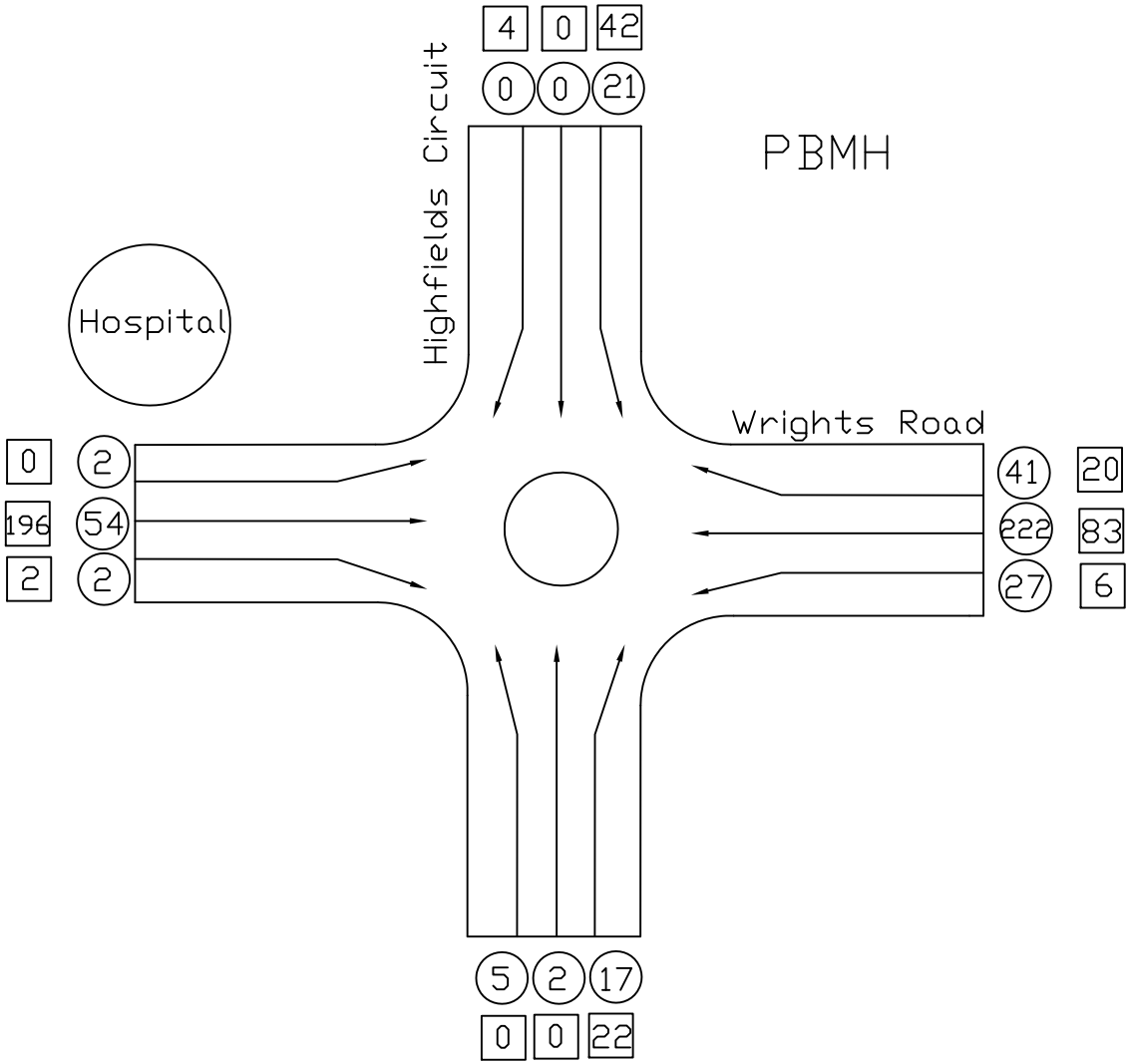


Engineering

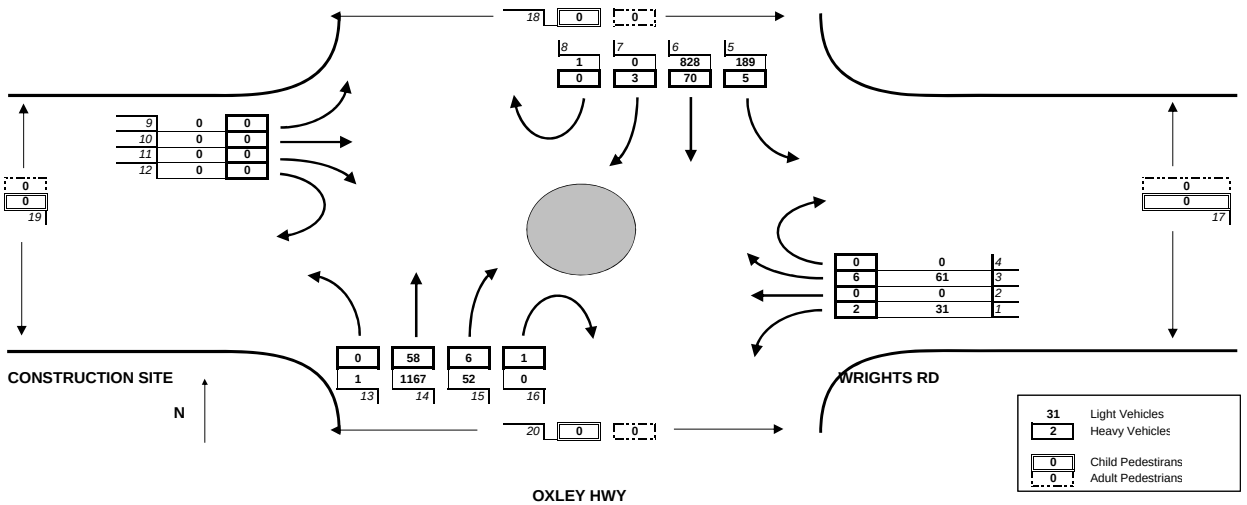
1 : Morning : 7:40-8:40
II : 16:15 - 17:15
AFTERNOON INTERSECTION
ENTRY TI PORT MACQUARIE BASE HOSPITAL

4/11/2011 - WRIGHTS RD / OXLEY HWY, PORT MACQUARIE

9:00 <<< HOUR ENDING **Friday**

Summary: WRIGHTS RD / OXLEY HWY	
2330	Total Light Vehicles
151	Total Heavy Vehicles
0	Total Pedestrians

Quality Surveys



4/11/2011 - WRIGHTS RD / OXLEY HWY, PORT MACQUARIE

Light Vehicles

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total Vehicles 15 MIN HOUR		Child Pedestrians 17	18	19	20
07:15	6	0	9	0	24	116	0	1	0	0	0	0	0	96	8	0	260		0	0	0	0
07:30	7	0	12	0	27	109	0	2	0	0	0	0	0	134	17	0	308		0	0	0	0
07:45	5	0	19	1	38	124	0	2	0	0	0	0	0	182	18	0	389		0	0	0	0
08:00	5	0	14	0 <	64	175	0	3	0	0	0	0	0	247	17	1 <	526	1483	0	0	0	0
08:15	11	0	14	0 <	41	219	0	0	0	0	0	0	0	295	12	0 <	592	1815	0	0	0	0
08:30	8	0	16	0 <	56	205	0	0	0	0	0	0	0	295	19 <	0 <	599	2106	0	0	0	0
08:45	7 <	0	10	0	44 <	230 <	0	1	0	0	0	0	1 <	300	9	0 <	602	2319	0	0	0	0
09:00	5 <	0	21	0	48	174	0	0	0	0	0	0	0 <	277 <	12	0	537	2330 <	0	0	0	0
09:15	8	0	11	0	28	154	1 <	2	0	0	0	0	0 <	211	5	0	420	2158	0	0	0	0
09:30	8	0	25	0	31	160	0 <	3	0	0	0	0	0 <	161	4	0	392	1951	0	0	0	0
09:45	2	0	20	0	26	168	0 <	1	0	0	0	0	0	189	3	0	409	1758	0	0	0	0
10:00	5	0	28 <	0	49	149	0 <	3 <	0	0	0	0	1 <	169	3	1 <	408	1629	0	0	0	0

Heavy Vehicles

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total Vehicles 15 MIN HOUR		Adult Pedestrians 17	18	19	20
07:15	0	0	0	0	0	7	0	0	0	0	0	0	0	9	1	0	17		0	0	0	0
07:30	0	0	1	0	1	10	0	0	0	0	0	0	0	14	0	0	26		0	0	0	0
07:45	1	0	2	0	3	19	0	0	0	0	0	0	0	11	2	0	38		0	0	0	0
08:00	1	0	0	0	1	23	0	0	0	0	0	0	0	11	0	0	36	117	0	0	0	0
08:15	1 <	0	2	0	0	18	0	0	0	0	0	0	0	14	2	0	37	137	0	0	0	0
08:30	0 <	0	0	0	2 <	16	1	0	0	0	0	0	0	19	2 <	0	40	151	0	0	0	0
08:45	1 <	0	3	0	1	20 <	0	0	0	0	0	0	0	19 <	2 <	1 <	47	160 <	0	0	0	0
09:00	0	0	1 <	0	2	16	2 <	0	0	0	0	0	0	6	0 <	0 <	27	151	1	0	0	0
09:15	2 <	0	0	0	1 <	16	0 <	0	0	0	0	0	0	14	0	0 <	33	147	1	0	0	0
09:30	0 <	0	1	0	0	15	1 <	0	0	0	0	0	0	7	0	0 <	24	131	0	0	0	0
09:45	1 <	0	0	0	1	15	0 <	0	0	0	0	0	1	8	0	0	26	110	0	0	0	0
10:00	0 <	0	0	0	0	17	2 <	0	1 <	0	0	0	1 <	7	0	1 <	29	112	0	0	0	0

All Vehicles

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total Vehicles 15 MIN HOUR	
07:15	6	0	9	0	24	123	0	1	0	0	0	0	0	105	9	0	277	
07:30	7	0	13	0	28	119	0	2	0	0	0	0	0	148	17	0	334	
07:45	6	0	21	1	41	143	0	2	0	0	0	0	0	193	20	0	427	
08:00	6	0	14	0 <	65	198	0	3	0	0	0	0	0	258	17	1	562	1600
08:15	12	0	16	0 <	41	237	0	0	0	0	0	0	0	309	14	0	629	1952
08:30	8	0	16	0 <	58	221	1	0	0	0	0	0	0	314	21 <	0	639	2257
08:45	8 <	0	13	0	45 <	250 <	0	1	0	0	0	0	1	319	11	1 <	649	2479
09:00	5	0	22	0	50	190	2	0	0	0	0	0	0	283 <	12	0	564	2481 <
09:15	10	0	11	0	29	170	1 <	2	0	0	0	0	0	225	5	0	453	2305
09:30	8	0	26	0	31	175	1 <	3	0	0	0	0	0	168	4	0	416	2082
09:45	3	0	20	0	27	183	0 <	1	0	0	0	0	1	197	3	0	435	1868
10:00	5	0	28 <	0	49	166	2 <	3 <	1 <	0	0	0	2 <	176	3	2 <	437	1741

Note : Arrows "<" indicate the end time for the peak hour for each turning movement

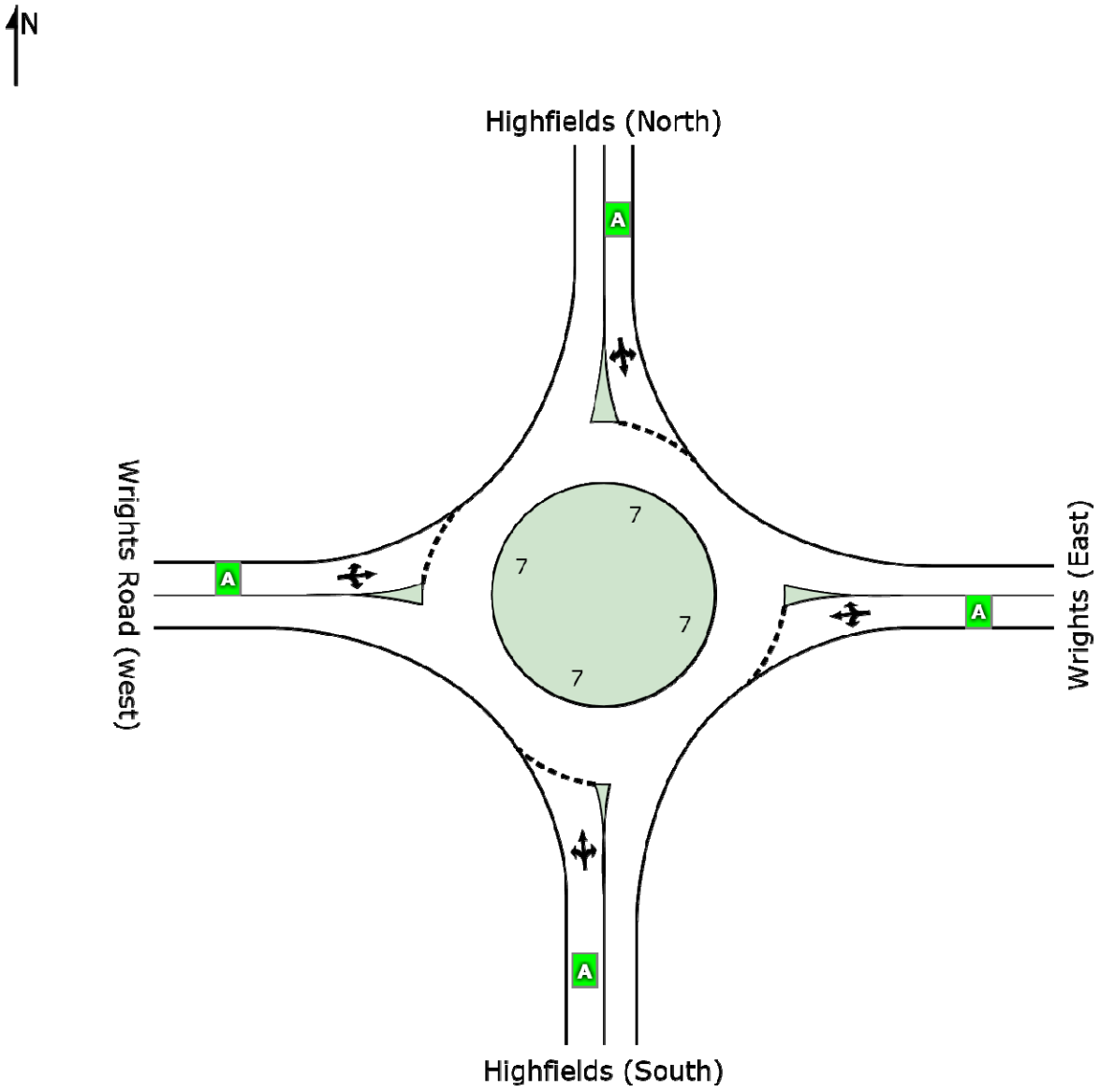
APPENDIX B

LEVEL OF SERVICE SUMMARY

Site: Existing AM Highfields & Wrights

Existing AM - Highfields & Wrights

Roundabout



	South	East	North	West	Intersection
LOS	A	A	A	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: Existing AM Highfields & Wrights

Existing AM - Highfields & Wrights

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Highfields (South)											
1	L	5	0.0	0.024	5.3	LOS A	0.1	0.7	0.37	0.52	28.0
2	T	2	0.0	0.024	4.1	LOS A	0.1	0.7	0.37	0.41	28.8
3	R	18	0.0	0.024	7.9	LOS A	0.1	0.7	0.37	0.64	26.1
Approach		25	0.0	0.024	7.0	LOS A	0.1	0.7	0.37	0.59	26.7
East: Wrights (East)											
4	L	28	0.0	0.187	4.1	LOS A	1.0	7.1	0.04	0.53	30.4
5	T	234	0.0	0.187	3.0	LOS A	1.0	7.1	0.04	0.35	32.4
6	R	43	0.0	0.187	6.8	LOS A	1.0	7.1	0.04	0.80	27.5
Approach		305	0.0	0.187	3.6	LOS A	1.0	7.1	0.04	0.43	31.4
North: Highfields (North)											
7	L	22	0.0	0.021	4.5	LOS A	0.1	0.8	0.24	0.46	29.1
8	T	1	0.0	0.021	3.4	LOS A	0.1	0.8	0.24	0.34	30.2
9	R	1	0.0	0.021	7.2	LOS A	0.1	0.8	0.24	0.65	26.8
Approach		24	0.0	0.021	4.5	LOS A	0.1	0.8	0.24	0.46	29.1
West: Wrights Road (west)											
10	L	2	0.0	0.050	4.4	LOS A	0.2	1.7	0.19	0.52	29.6
11	T	57	0.0	0.050	3.3	LOS A	0.2	1.7	0.19	0.37	31.0
12	R	2	0.0	0.050	7.1	LOS A	0.2	1.7	0.19	0.77	27.3
Approach		61	0.0	0.050	3.4	LOS A	0.2	1.7	0.19	0.39	30.8
All Vehicles		416	0.0	0.187	3.8	LOS A	1.0	7.1	0.09	0.43	30.8

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

Processed: Thursday, December 08, 2011 6:35:43 PM
SIDRA INTERSECTION 5.1.8.2059

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www.sidrasolutions.com

SIDRA INTERSECTION

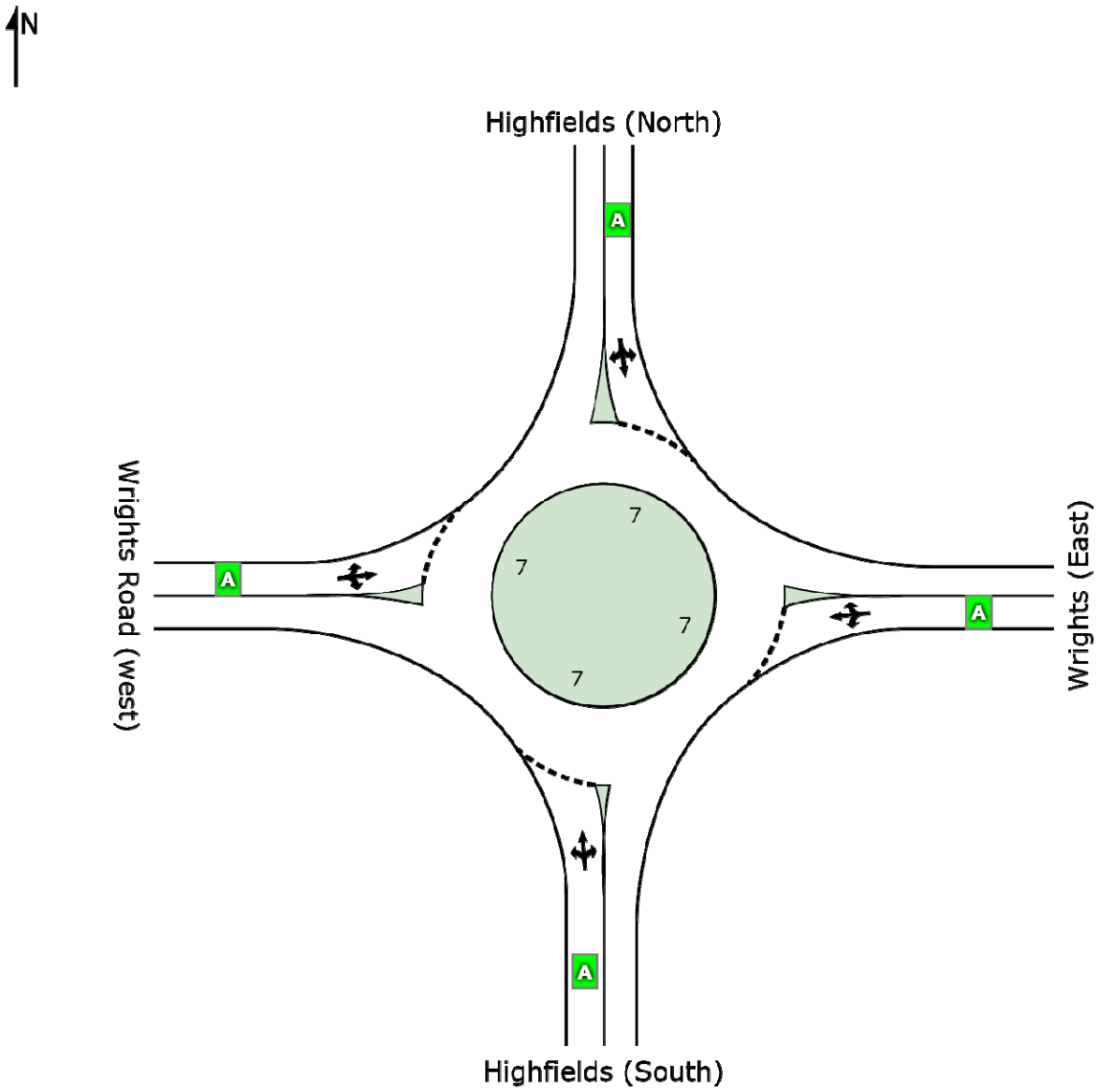
Project: C:\Documents and Settings\Pauld\My Documents\New Project - 2.sip
8001173, TTW PTY, SINGLE

LEVEL OF SERVICE SUMMARY

Site: Existing PM Highfields & Wrights - Copy

Existing PM - Highfields & Wrights

Roundabout



	South	East	North	West	Intersection
LOS	A	A	A	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: Existing PM Highfields & Wrights - Copy

Existing PM - Highfields & Wrights

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Highfields (South)											
1	L	1	0.0	0.021	4.6	LOS A	0.1	0.6	0.23	0.47	28.8
2	T	1	0.0	0.021	3.4	LOS A	0.1	0.6	0.23	0.34	30.1
3	R	23	0.0	0.021	7.2	LOS A	0.1	0.6	0.23	0.60	26.6
Approach		25	0.0	0.021	6.9	LOS A	0.1	0.6	0.23	0.59	26.8
East: Wrights (East)											
4	L	6	0.0	0.076	4.1	LOS A	0.4	2.7	0.05	0.52	30.3
5	T	87	0.0	0.076	3.0	LOS A	0.4	2.7	0.05	0.34	32.3
6	R	21	0.0	0.076	6.8	LOS A	0.4	2.7	0.05	0.79	27.5
Approach		115	0.0	0.076	3.7	LOS A	0.4	2.7	0.05	0.44	31.1
North: Highfields (North)											
7	L	44	0.0	0.050	5.5	LOS A	0.3	1.8	0.42	0.53	27.9
8	T	1	0.0	0.050	4.4	LOS A	0.3	1.8	0.42	0.44	28.4
9	R	4	0.0	0.050	8.2	LOS A	0.3	1.8	0.42	0.67	26.1
Approach		49	0.0	0.050	5.7	LOS A	0.3	1.8	0.42	0.54	27.7
West: Wrights Road (west)											
10	L	1	0.0	0.155	4.3	LOS A	0.8	5.7	0.17	0.53	29.8
11	T	206	0.0	0.155	3.2	LOS A	0.8	5.7	0.17	0.37	31.2
12	R	2	0.0	0.155	7.0	LOS A	0.8	5.7	0.17	0.79	27.4
Approach		209	0.0	0.155	3.2	LOS A	0.8	5.7	0.17	0.37	31.2
All Vehicles		399	0.0	0.155	3.9	LOS A	0.8	5.7	0.17	0.42	30.3

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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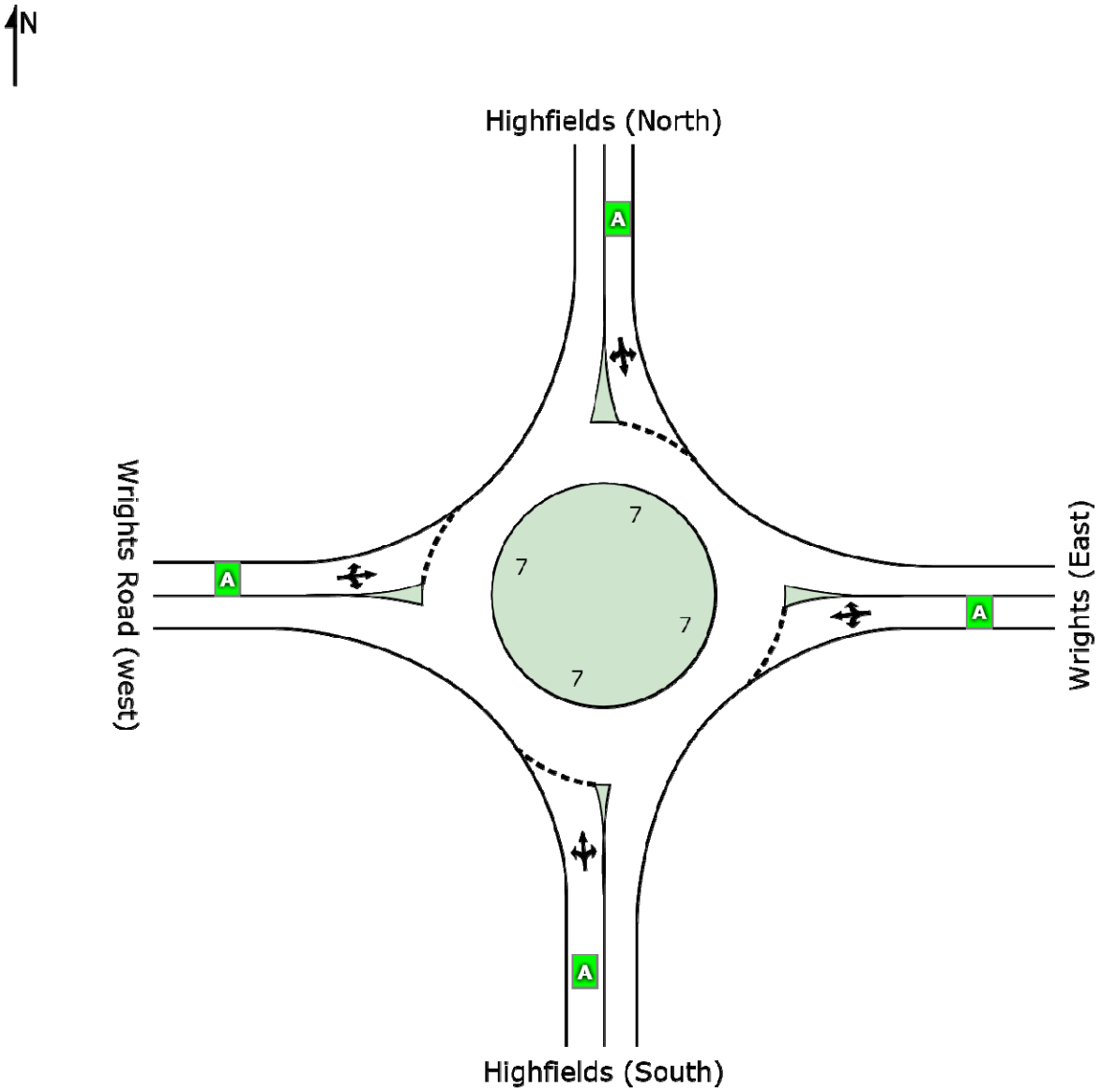
LEVEL OF SERVICE SUMMARY

Site: 2011 With Development - AM Highfields & Wrights - Copy

2011 With Development AM - Highfields & Wrights

Roundabout



	South	East	North	West	Intersection
LOS	A	A	A	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2011 With Development - AM Highfields & Wrights - Copy

2011 With Development AM - Highfields & Wrights

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highfields (South)											
1	L	35	0.0	0.175	6.4	LOS A	0.8	5.9	0.50	0.64	26.9
2	T	14	0.0	0.175	5.2	LOS A	0.8	5.9	0.50	0.55	27.5
3	R	117	0.0	0.175	9.0	LOS A	0.8	5.9	0.50	0.73	25.1
Approach		165	0.0	0.175	8.1	LOS A	0.8	5.9	0.50	0.70	25.6
East: Wrights (East)											
4	L	28	0.0	0.274	4.1	LOS A	1.7	11.8	0.04	0.53	30.4
5	T	381	0.0	0.274	3.0	LOS A	1.7	11.8	0.04	0.35	32.4
6	R	43	0.0	0.274	6.8	LOS A	1.7	11.8	0.04	0.82	27.5
Approach		453	0.0	0.274	3.4	LOS A	1.7	11.8	0.04	0.41	31.7
North: Highfields (North)											
7	L	22	0.0	0.025	5.5	LOS A	0.1	0.9	0.44	0.52	27.8
8	T	1	0.0	0.025	4.5	LOS A	0.1	0.9	0.44	0.43	28.3
9	R	1	0.0	0.025	8.3	LOS A	0.1	0.9	0.44	0.66	26.0
Approach		24	0.0	0.025	5.6	LOS A	0.1	0.9	0.44	0.52	27.8
West: Wrights Road (west)											
10	L	2	0.0	0.124	5.0	LOS A	0.7	4.6	0.37	0.57	28.8
11	T	131	0.0	0.124	3.9	LOS A	0.7	4.6	0.37	0.45	29.5
12	R	2	0.0	0.124	7.7	LOS A	0.7	4.6	0.37	0.77	27.1
Approach		135	0.0	0.124	4.0	LOS A	0.7	4.6	0.37	0.45	29.5
All Vehicles		777	0.0	0.274	4.6	LOS A	1.7	11.8	0.21	0.48	29.6

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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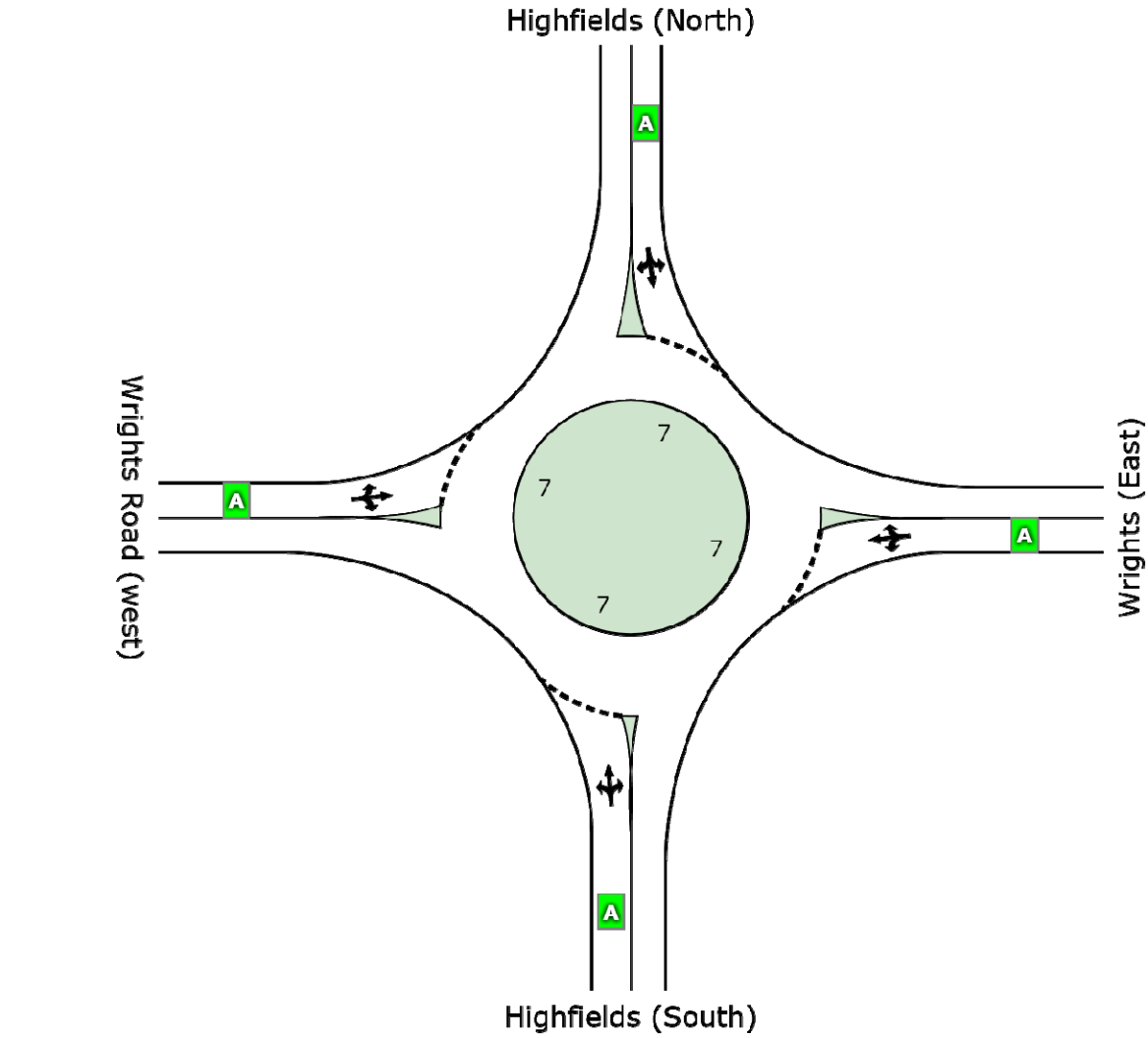
LEVEL OF SERVICE SUMMARY

Site: 2011 With Development PM Highfields & Wrights - Copy - Copy

2011 With Development PM - Highfields & Wrights

Roundabout



	South	East	North	West	Intersection
LOS	A	A	A	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2011 With Development PM Highfields & Wrights - Copy - Copy

2011 With Development PM - Highfields & Wrights

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highfields (South)											
1	L	1	0.0	0.089	5.0	LOS A	0.4	2.7	0.31	0.51	28.2
2	T	1	0.0	0.089	3.8	LOS A	0.4	2.7	0.31	0.39	29.2
3	R	97	0.0	0.089	7.6	LOS A	0.4	2.7	0.31	0.63	26.2
Approach		99	0.0	0.089	7.5	LOS A	0.4	2.7	0.31	0.62	26.2
East: Wrights (East)											
4	L	6	0.0	0.121	4.1	LOS A	0.7	4.7	0.06	0.53	30.3
5	T	161	0.0	0.121	3.0	LOS A	0.7	4.7	0.06	0.35	32.2
6	R	21	0.0	0.121	6.8	LOS A	0.7	4.7	0.06	0.81	27.5
Approach		188	0.0	0.121	3.4	LOS A	0.7	4.7	0.06	0.41	31.5
North: Highfields (North)											
7	L	44	0.0	0.062	7.0	LOS A	0.3	2.4	0.59	0.63	26.2
8	T	1	0.0	0.062	6.0	LOS A	0.3	2.4	0.59	0.56	26.8
9	R	4	0.0	0.062	9.8	LOS A	0.3	2.4	0.59	0.73	24.5
Approach		49	0.0	0.062	7.3	LOS A	0.3	2.4	0.59	0.63	26.0
West: Wrights Road (west)											
10	L	1	0.0	0.291	4.8	LOS A	1.8	12.5	0.34	0.56	28.9
11	T	354	0.0	0.291	3.7	LOS A	1.8	12.5	0.34	0.43	29.8
12	R	2	0.0	0.291	7.5	LOS A	1.8	12.5	0.34	0.77	27.2
Approach		357	0.0	0.291	3.7	LOS A	1.8	12.5	0.34	0.43	29.7
All Vehicles		694	0.0	0.291	4.4	LOS A	1.8	12.5	0.28	0.47	29.3

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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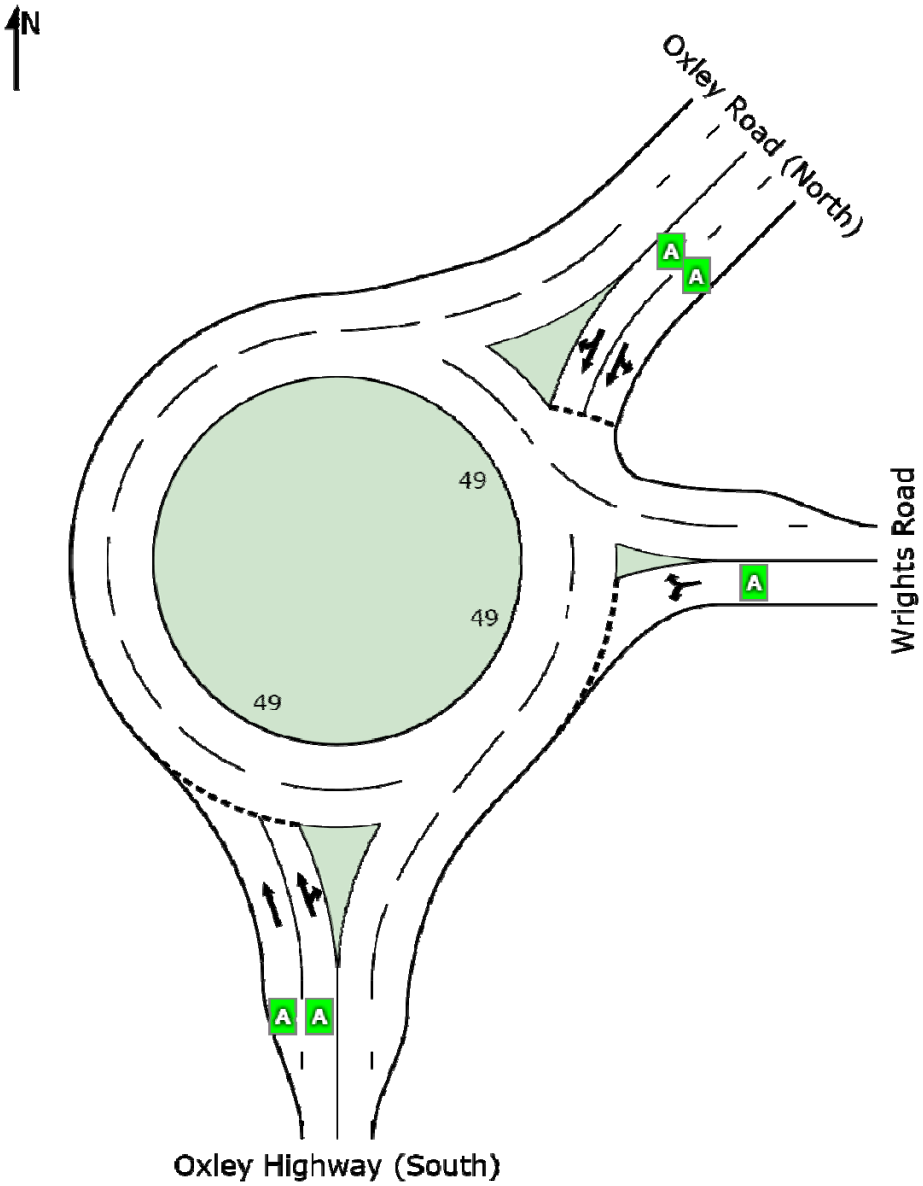
LEVEL OF SERVICE SUMMARY

Site: Existing AM - Oxley Highway & Wrights Road

Existing AM - Oxley Highway & Wright Road, Port Macquarie
Roundabout



	South	East	Northeast	Intersection
LOS	A	A	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: Existing AM - Oxley Highway & Wrights Road

Existing AM - Oxley Highway & Wright Road, Port Macquarie
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oxley Highway (South)											
2	T	1291	4.7	0.464	11.6	LOS A	3.2	23.1	0.29	0.60	47.5
3	R	63	11.7	0.464	8.2	LOS A	3.2	23.1	0.25	0.54	45.8
Approach		1354	5.1	0.464	11.4	LOS A	3.2	23.1	0.28	0.60	47.4
East: Wrights Road											
4	L	34	3.1	0.105	6.6	LOS A	0.5	3.4	0.56	0.60	48.6
6	R	72	8.8	0.105	15.1	LOS B	0.5	3.4	0.56	0.82	44.8
Approach		105	7.0	0.105	12.4	LOS A	0.5	3.4	0.56	0.75	45.8
North East: Oxley Road (North)											
24	L	204	2.6	0.244	6.3	LOS A	1.2	8.7	0.20	0.53	56.5
25	T	948	8.1	0.480	5.1	LOS A	3.2	23.9	0.22	0.39	58.8
26	R	1	0.0	0.480	17.0	LOS B	3.2	23.9	0.23	1.04	49.6
Approach		1154	7.1	0.480	5.3	LOS A	3.2	23.9	0.22	0.41	58.5
All Vehicles		2613	6.0	0.480	8.8	LOS A	3.2	23.9	0.27	0.52	51.4

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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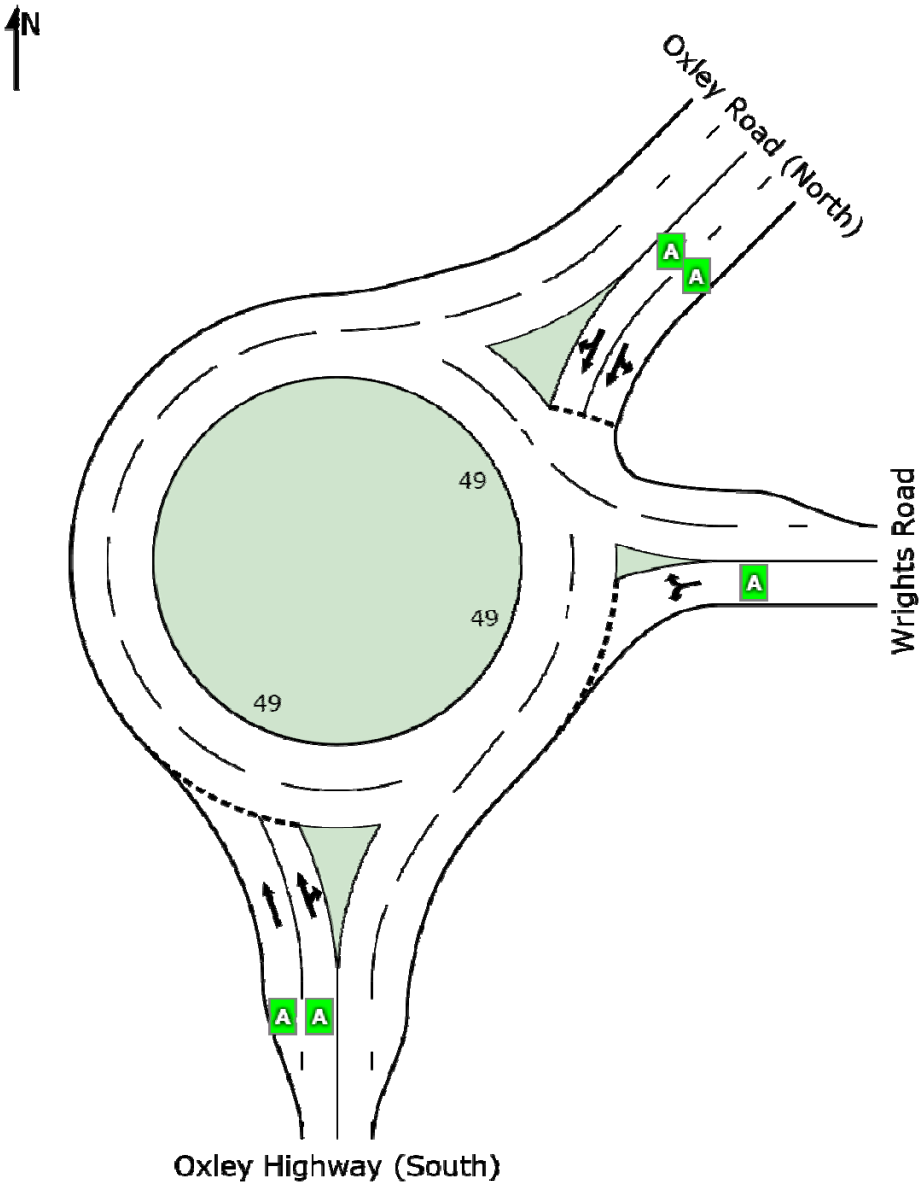
LEVEL OF SERVICE SUMMARY

Site: Existing PM - Oxley Highway & Wrights Road - Copy

Existing PM - Oxley Highway & Wright Road, Port Macquarie
Roundabout



	South	East	Northeast	Intersection
LOS	A	A	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: Existing PM - Oxley Highway & Wrights Road - Copy

Existing PM - Oxley Highway & Wright Road, Port Macquarie
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Oxley Highway (South)											
2	T	1160	4.4	0.446	12.0	LOS A	2.9	20.9	0.42	0.65	46.8
3	R	36	8.8	0.446	9.6	LOS A	2.9	20.9	0.45	0.63	45.0
Approach		1196	4.6	0.446	12.0	LOS A	2.9	20.9	0.43	0.65	46.7
East: Wrights Road											
4	L	88	2.4	0.293	7.1	LOS A	1.4	9.8	0.62	0.65	48.1
6	R	212	1.0	0.293	15.4	LOS B	1.4	9.8	0.62	0.89	44.4
Approach		300	1.4	0.293	13.0	LOS A	1.4	9.8	0.62	0.82	45.3
North East: Oxley Road (North)											
24	L	140	1.5	0.244	6.2	LOS A	1.3	9.1	0.15	0.53	57.0
25	T	1072	4.2	0.479	4.9	LOS A	3.4	24.9	0.17	0.37	59.5
26	R	1	0.0	0.479	16.9	LOS B	3.4	24.9	0.17	1.07	49.6
Approach		1213	3.9	0.479	5.0	LOS A	3.4	24.9	0.17	0.39	59.2
All Vehicles		2708	3.9	0.479	9.0	LOS A	3.4	24.9	0.33	0.55	51.1

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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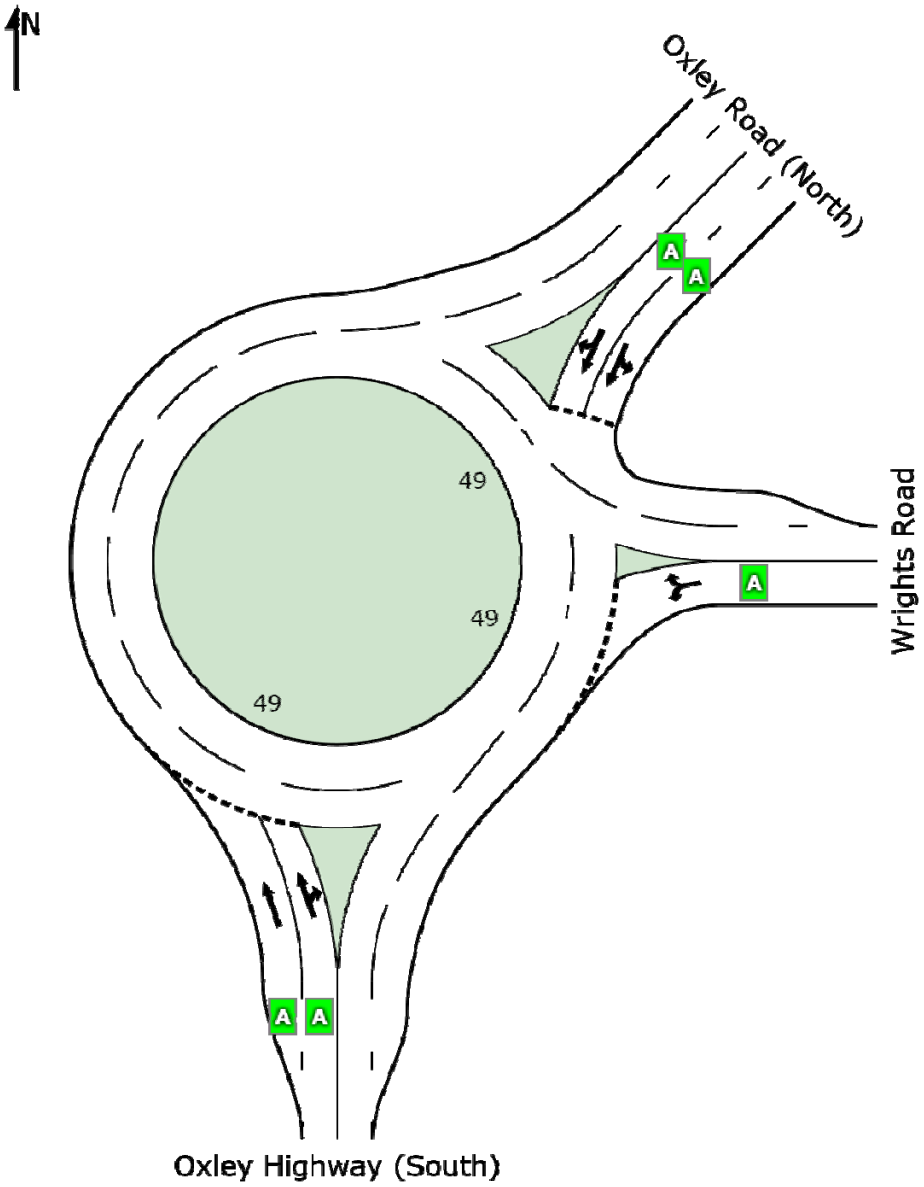
LEVEL OF SERVICE SUMMARY

Site: 2011 With Development AM - Oxley Highway & Wrights Road - Copy

2011 With Development AM - Oxley Highway & Wright Road, Port Macquarie
Roundabout



	South	East	Northeast	Intersection
LOS	A	A	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2011 With Development AM - Oxley Highway & Wrights Road - Copy

2011 With Development AM - Oxley Highway & Wright Road, Port Macquarie
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Oxley Highway (South)											
2	T	1291	4.7	0.493	11.7	LOS A	3.4	25.2	0.36	0.62	47.1
3	R	95	7.8	0.493	8.4	LOS A	3.4	25.2	0.36	0.57	45.2
Approach		1385	4.9	0.493	11.5	LOS A	3.4	25.2	0.36	0.61	47.0
East: Wrights Road											
4	L	60	1.8	0.188	7.3	LOS A	1.0	7.0	0.65	0.67	47.9
6	R	119	5.3	0.188	15.8	LOS B	1.0	7.0	0.65	0.85	44.2
Approach		179	4.1	0.188	12.9	LOS A	1.0	7.0	0.65	0.79	45.3
North East: Oxley Road (North)											
24	L	320	1.6	0.275	6.5	LOS A	1.4	10.3	0.26	0.51	55.8
25	T	948	8.1	0.541	5.2	LOS A	4.0	30.3	0.31	0.41	57.9
26	R	1	0.0	0.541	17.2	LOS B	4.0	30.3	0.31	0.99	49.7
Approach		1269	6.5	0.541	5.6	LOS A	4.0	30.3	0.30	0.44	57.4
All Vehicles		2834	5.6	0.541	8.9	LOS A	4.0	30.3	0.35	0.55	50.8

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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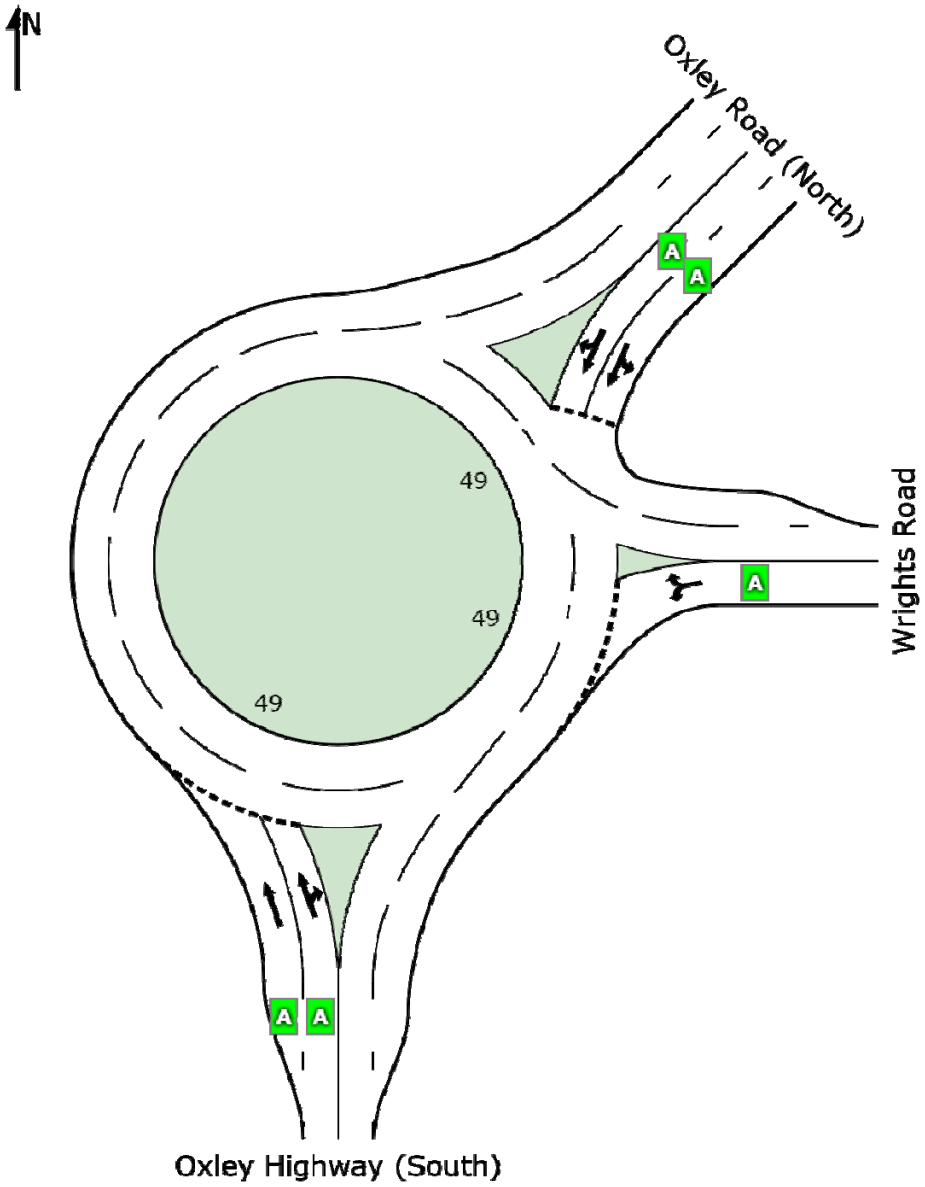
LEVEL OF SERVICE SUMMARY

Site: 2011 With Development PM - Oxley Highway & Wrights Road - Copy - Copy

2011 With Development PM - Oxley Highway & Wright Road, Port Macquarie
Roundabout



	South	East	Northeast	Intersection
LOS	A	A	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2011 With Development PM - Oxley Highway & Wrights Road - Copy - Copy

2011 With Development PM - Oxley Highway & Wright Road, Port Macquarie
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Oxley Highway (South)											
2	T	1160	4.4	0.480	12.5	LOS A	3.3	23.7	0.55	0.70	46.2
3	R	52	6.1	0.480	9.8	LOS A	3.3	23.7	0.57	0.69	44.3
Approach		1212	4.5	0.480	12.4	LOS A	3.3	23.7	0.55	0.70	46.1
East: Wrights Road											
4	L	131	1.6	0.454	8.3	LOS A	2.8	19.4	0.71	0.80	47.4
6	R	317	0.7	0.454	16.7	LOS B	2.8	19.4	0.71	0.97	43.5
Approach		447	0.9	0.454	14.2	LOS A	2.8	19.4	0.71	0.92	44.4
North East: Oxley Road (North)											
24	L	203	1.0	0.261	6.3	LOS A	1.4	10.2	0.19	0.53	56.6
25	T	1072	4.2	0.513	4.9	LOS A	4.0	29.0	0.22	0.38	58.9
26	R	1	0.0	0.513	16.9	LOS B	4.0	29.0	0.23	1.03	49.6
Approach		1276	3.7	0.513	5.2	LOS A	4.0	29.0	0.22	0.40	58.5
All Vehicles		2935	3.6	0.513	9.5	LOS A	4.0	29.0	0.43	0.60	50.2

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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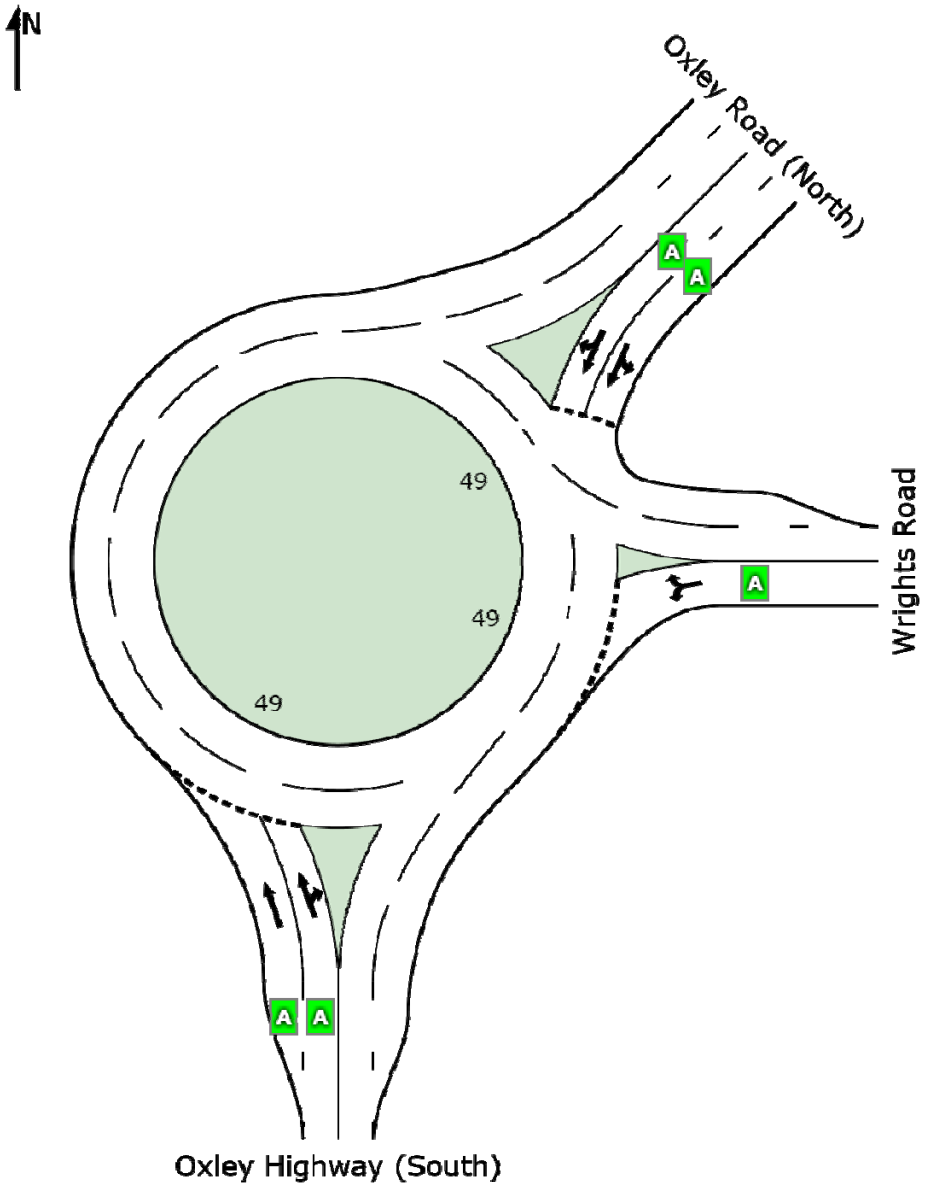
LEVEL OF SERVICE SUMMARY

Site: 2021 With Development AM - Oxley Highway & Wrights Road - Copy - Copy

2021 With Development AM - Oxley Highway & Wright Road, Port Macquarie
Roundabout
Design Life Analysis (Practical Capacity): Results for 10 years



	South	East	Northeast	Intersection
LOS	A	A	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2021 With Development AM - Oxley Highway & Wrights Road - Copy - Copy

2021 With Development AM - Oxley Highway & Wright Road, Port Macquarie
Roundabout
Design Life Analysis (Practical Capacity): Results for 10 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Oxley Highway (South)											
2	T	1420	4.7	0.546	11.8	LOS A	4.2	30.6	0.41	0.62	46.9
3	R	104	7.8	0.546	8.5	LOS A	4.2	30.6	0.41	0.58	45.0
Approach		1524	4.9	0.546	11.6	LOS A	4.2	30.6	0.41	0.62	46.7
East: Wrights Road											
4	L	66	1.8	0.227	8.1	LOS A	1.3	9.2	0.72	0.75	47.3
6	R	131	5.3	0.227	16.6	LOS B	1.3	9.2	0.72	0.88	43.7
Approach		197	4.1	0.227	13.7	LOS A	1.3	9.2	0.72	0.84	44.7
North East: Oxley Road (North)											
24	L	352	1.6	0.305	6.5	LOS A	1.7	11.9	0.28	0.51	55.5
25	T	1044	8.1	0.600	5.3	LOS A	5.0	37.3	0.36	0.42	57.4
26	R	1	0.0	0.600	17.3	LOS B	5.0	37.3	0.37	0.96	49.7
Approach		1397	6.5	0.600	5.7	LOS A	5.0	37.3	0.34	0.45	57.0
All Vehicles		3118	5.6	0.600	9.1	LOS A	5.0	37.3	0.40	0.55	50.4

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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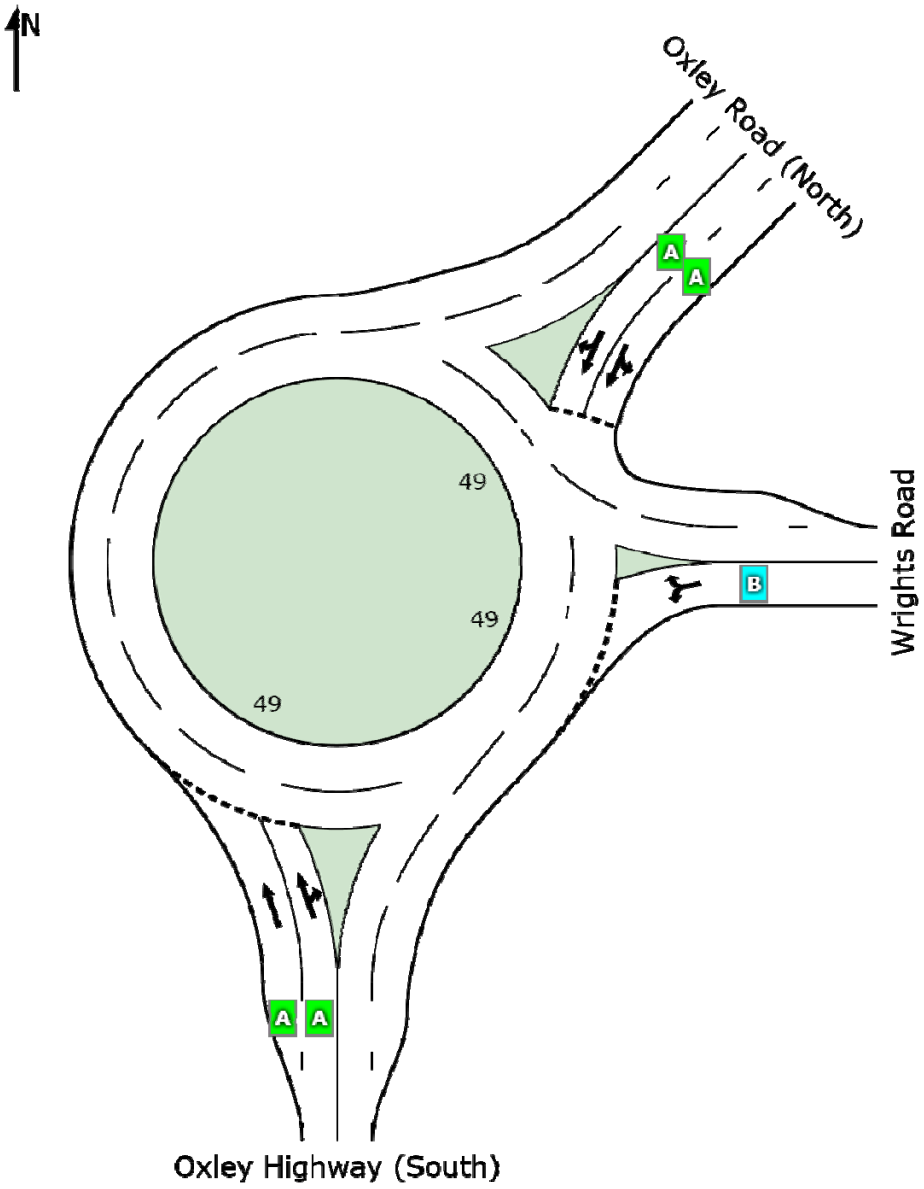
SIDRA INTERSECTION

LEVEL OF SERVICE SUMMARY

Site: 2021 With Development PM - Oxley Highway & Wrights Road - Copy - Copy - Copy

2021 With Development PM - Oxley Highway & Wright Road, Port Macquarie
Roundabout
Design Life Analysis (Practical Capacity): Results for 10 years



	South	East	Northeast	Intersection
LOS	A	B	A	A

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2021 With Development PM - Oxley Highway & Wrights Road - Copy - Copy - Copy

2021 With Development PM - Oxley Highway & Wright Road, Port Macquarie
Roundabout
Design Life Analysis (Practical Capacity): Results for 10 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Average Speed
							Vehicles	Distance			
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Oxley Highway (South)											
2	T	1276	4.4	0.540	12.8	LOS A	4.0	29.2	0.62	0.73	45.9
3	R	57	6.1	0.540	10.1	LOS A	4.0	29.2	0.64	0.72	44.0
Approach		1333	4.5	0.540	12.7	LOS A	4.0	29.2	0.62	0.73	45.8
East: Wrights Road											
4	L	144	1.6	0.540	10.2	LOS A	4.0	27.9	0.79	0.95	46.0
6	R	349	0.7	0.540	18.5	LOS B	4.0	27.9	0.79	1.04	42.2
Approach		492	0.9	0.540	16.1	LOS B	4.0	27.9	0.79	1.01	43.1
North East: Oxley Road (North)											
24	L	224	1.0	0.289	6.3	LOS A	1.7	11.9	0.21	0.53	56.5
25	T	1179	4.2	0.567	5.0	LOS A	4.9	35.6	0.26	0.38	58.5
26	R	1	0.0	0.567	17.0	LOS B	4.9	35.6	0.27	1.01	49.7
Approach		1404	3.7	0.567	5.2	LOS A	4.9	35.6	0.25	0.41	58.2
All Vehicles		3229	3.6	0.567	9.9	LOS A	4.9	35.6	0.49	0.63	49.7

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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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APPENDIX C

Route 335 Wauchope to Port Macquarie via Base Hospital

busways

Monday to Friday

map ref	Route number	335	335	335	335	335	335	335	335
		am	am	am	am	pm	pm	pm	pm
37	Wauchope (Bransdon St)	6.55	7.40	9.20	11.20	1.20	J3.20	4.40	5.40
39	Ellenborough Pl & Fairmont Dr	6.59	7.44	9.24	11.24	1.24	J3.27	4.44	5.44
38	Colonial Cct & Homestead Dr	7.05	7.52	9.30	11.30	1.30	3.33	4.50	5.50
37	Wauchope (Bransdon St)	7.15	8.05	9.42	11.42	1.42	3.47	5.00	6.00
36	Wauchope Station (Randall St)	7.17	....	R	R	1.44	3.49	R	R
16	Base Hospital	7.31	8.27	10.00	12.00	2.00	4.05	5.15	6.15
11	TAFE (Oxley Hwy)	7.35	B8.32	10.05	12.05	2.05	4.10	5.20	6.20
1	Settlement City	7.40	B8.40	10.15	12.15	2.15	4.20	5.25	6.25
2	Port Macquarie Town Centre	7.50	8.50	10.25	12.25	2.25	4.30	....	....
4	Rte 334 at Private Hospital	....	8.54	10.33	12.33	2.33	4.38	....	....

Explanations

B - Public school days bus operates from Oxley Hwy to Settlement City via Findlay Av, Hastings River Dr, Aston St, Warlters St & Park St, omitting Widderson St, Bellbowrie St & Bay St.
J - Public school days bus diverts via Wauchope PS & St Josephs PS, omitting Young St plus Cameron St between Young St & King St.
R - Bus operates via Wauchope Station on request.
X - Change buses at Town Centre to continue journey.

Saturday

map ref	Route number	335	335	335	335
		am	am	pm	pm
37	Wauchope (Bransdon St)	9.20	11.20	2.20	4.20
39	Ellenborough Pl & Fairmont Dr	9.24	11.24	2.24	4.24
38	Colonial Cct & Homestead Dr	9.30	11.30	2.30	4.30
37	Wauchope (Bransdon St)	9.42	11.42	2.42	4.42
36	Wauchope Station (Randall St)	R	R	2.44	4.44
16	Base Hospital	10.00	12.00	3.00	5.00
11	TAFE (Oxley Hwy)	10.05	12.05	3.05	5.05
1	Settlement City	10.15	12.15	3.15	5.15
2	Port Macquarie Town Centre	10.25	12.25	3.25	5.25
4	Rte 334 at Private Hospital	10.33	12.33	3.33	5.33

Sunday & Public Holidays

map ref	Route number	335	335
		am	pm
37	Wauchope (Bransdon St)	10.20	3.20
39	Ellenborough Pl & Fairmont Dr	10.24	3.24
38	Colonial Cct & Homestead Dr	10.30	3.30
37	Wauchope (Bransdon St)	10.42	3.42
36	Wauchope Station (Randall St)	10.44	3.44
16	Base Hospital	11.00	4.00
11	TAFE (Oxley Hwy)	11.05	4.05
1	Settlement City	11.15	4.15
2	Port Macquarie Town Centre	11.25	4.25
4	Rte 334 at Private Hospital	11.33	4.33

Route 340 Kempsey to Port Macquarie

busways

Monday to Friday

map ref	Route number	340	340	340	340
		am	am	pm	pm
41	Kempsey (Belgrave St, Medical Centre)	S7.30	9.10	H3.25	S3.45
40	Telegraph Point (Pacific Hwy & Moorside Rd)	S7.57	9.37	H3.52	S4.42
19	Port Macquarie (Tuffins La & Hastings River Dr)	S8.08	9.46	H4.01	S4.51
18	Port Macquarie Airport	S8.10	9.48	H4.03	S4.53
1	Port Macquarie (Settlement City)	S8.30	10.00	H4.12	S5.02
2	Port Macquarie (Town Centre)	S8.45	10.10	H4.22	S5.12

Explanations

D - Bus runs direct along Hastings River Dr omitting Boundary St & Tuffins La.
H - Bus runs public school holidays only.
S - Bus runs public school days only.
Z - Catch Route 323 & change buses at Settlement City to continue journey.

Weekends

Route 340 Kempsey services do not operate on Weekends & Public Holidays.

Route 335 Port Macquarie to Wauchope via Base Hospital

busways

Monday to Friday

map ref	Route number	335	335	335	335	335	335	335
		am	am	am	pm	pm	pm	pm
4	Rte 334 at Private Hospital	....	....	....	12.30	2.30	....	X4.30
2	Port Macquarie Town Centre	....	8.45	10.40	12.40	2.40	4.05	5.05
1	Settlement City	6.35	8.55	10.55	12.55	2.55	4.15	5.15
11	TAFE (Oxley Hwy)	6.38	8.58	10.58	12.58	2.58	4.18	5.18
16	Base Hospital	....	9.03	11.03	1.03	3.03	4.23	5.23
36	Wauchope Station (Randall St)	....	R	....	R	R	....	R
37	Wauchope (Bransdon St)	6.55	9.20	11.20	1.20	J3.20	4.40	5.40
39	Ellenborough Pl & Fairmont Dr	6.59	9.24	11.24	1.24	J3.27	4.44	5.44
38	Colonial Cct & Homestead Dr	7.05	9.30	11.30	1.30	3.33	4.50	5.50
37	Wauchope (Bransdon St)	7.15	9.42	11.42	1.42	3.47	5.00	6.00

Explanations see page 20

see page 19 for route map

Easter Saturday buses run to Saturday timetable.

Saturday

map ref	Route number	335	335	335	335
		am	am	pm	pm
4	Rte 334 at Private Hospital	8.30	10.30	1.30	3.30
2	Port Macquarie Town Centre	8.40	10.40	1.40	3.40
1	Settlement City	8.55	10.55	1.55	3.55
11	TAFE (Oxley Hwy)	8.58	10.58	1.58	3.58
16	Base Hospital	9.03	11.03	2.03	4.03
36	Wauchope Station (Randall St)	R	....	R	....
37	Wauchope (Bransdon St)	9.20	11.20	2.20	4.20
39	Ellenborough Pl & Fairmont Dr	9.24	11.24	2.24	4.24
38	Colonial Cct & Homestead Dr	9.30	11.30	2.30	4.30
37	Wauchope (Bransdon St)	9.42	11.42	2.42	4.42

Sunday & Public Holidays

map ref	Route number	335	335
		am	pm
4	Rte 334 at Private Hospital	9.30	2.30
2	Port Macquarie Town Centre	9.40	2.40
1	Settlement City	9.55	2.55
11	TAFE (Oxley Hwy)	9.58	2.58
16	Base Hospital	10.03	3.03
36	Wauchope Station (Randall St)	....	R
37	Wauchope (Bransdon St)	10.20	3.20
39	Ellenborough Pl & Fairmont Dr	10.24	3.24
38	Colonial Cct & Homestead Dr	10.30	3.30
37	Wauchope (Bransdon St)	10.42	3.42

Route 340 Port Macquarie to Kempsey

busways

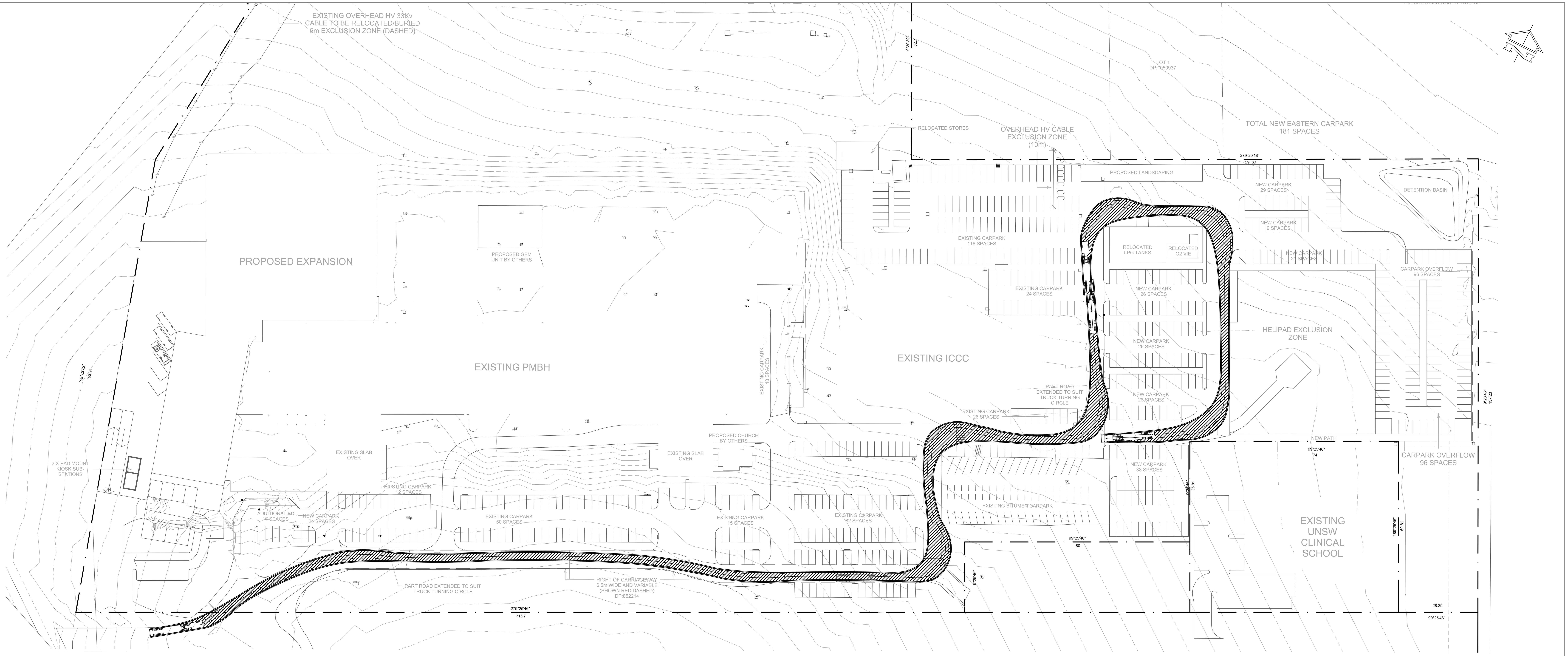
Monday to Friday

map ref	Route number	340	340	340	340
		am	am	pm	pm
2	Port Macquarie (Town Centre)	S7.05	H8.10	2.19	S3.13Z
1	Port Macquarie (Settlement City)	S7.15	H8.20	2.29	S3.52
18	Port Macquarie Airport	D	H8.28	2.37	S4.00
19	Port Macquarie (Tuffins La & Hastings River Dr	S7.22D	H8.30	2.39	S4.02
40	Telegraph Point (Pacific Hwy & Moorside Rd)	S7.30	H8.38	2.47	S4.10
41	Kempsey (Belgrave St, Travelscene)	S8.35	H9.05	3.14	S4.40

Explanations see page 20

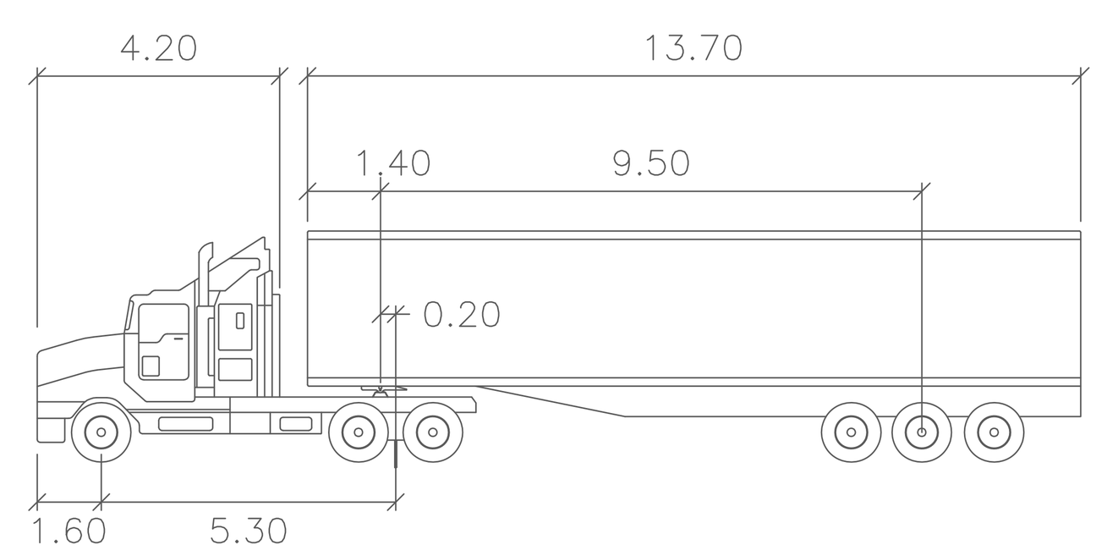
see page 23 for route map

APPENDIX D



19m SEMI VEHICLE TURNING PATH

SCALE 1: 500



S ARTICULATED 19M meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.00
Trailer Width	: 2.50	Steering Angle	: 27.7
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

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04	AMENDED TITLE BLOCK	13.12.11
03	AMENDED TITLE BLOCK	12.12.11
02	PRELIMINARY	28.10.11
01	PRELIMINARY	28.10.11

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HEALTH INFRASTRUCTURE NSW HEALTH

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SYDNEY@HASSELLSTUDIO.COM
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HASSELL

ROJECT

PORT MACQUARIE HOSPITAL EXPANSION
Wrights Rd, Port Macquarie NSW 2444, Australia

DRAWING TITLE
19m SEMI GAS ENCLOSURE TURNING PATH

STATUS				JOB NO.
				003145
SCALE AT A0	DRAWN	CO-ORDINATED	CHECKED	APPROVED
1:500	RP			

DISC.	DWG NO.	LEVEL	REGION	STAGE	ISSUE
TR	SKC08	LX	SP	SD	05

Original Sheet Size A0 -1188 x 841mm

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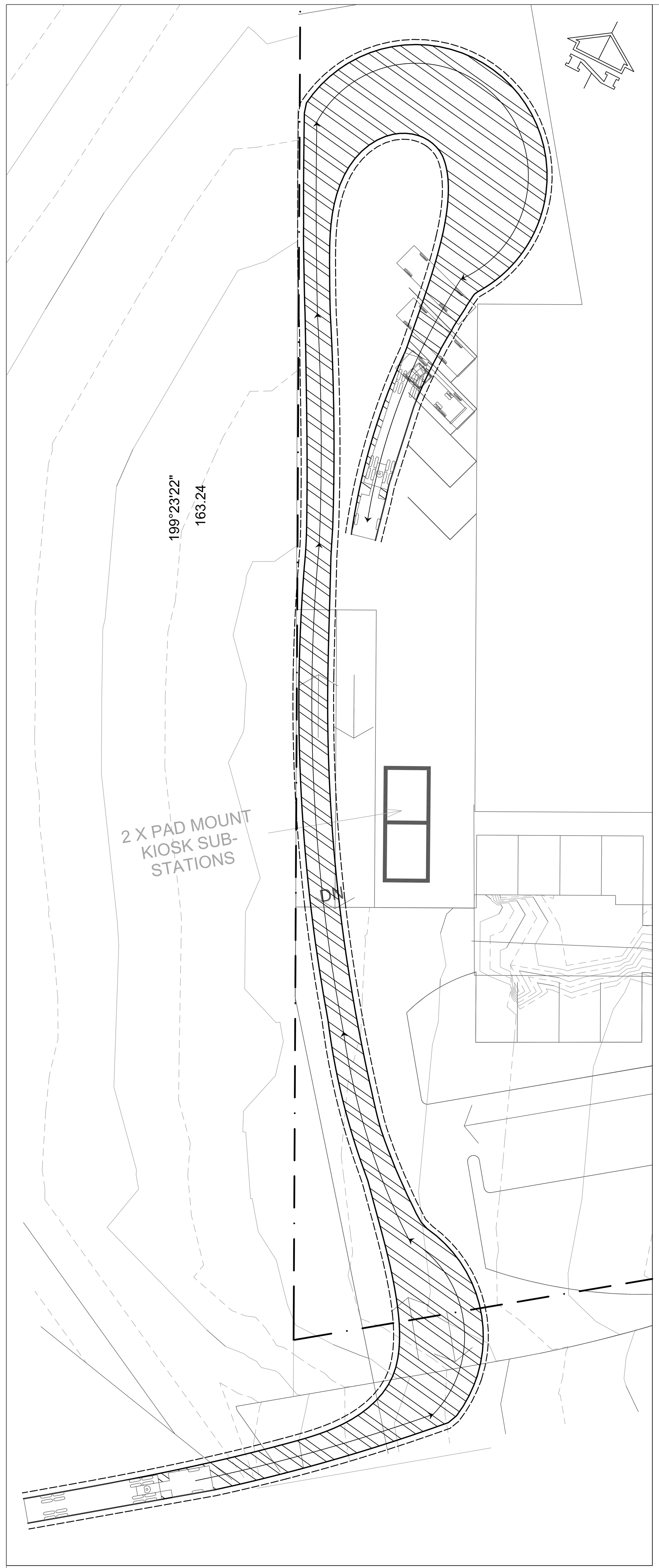
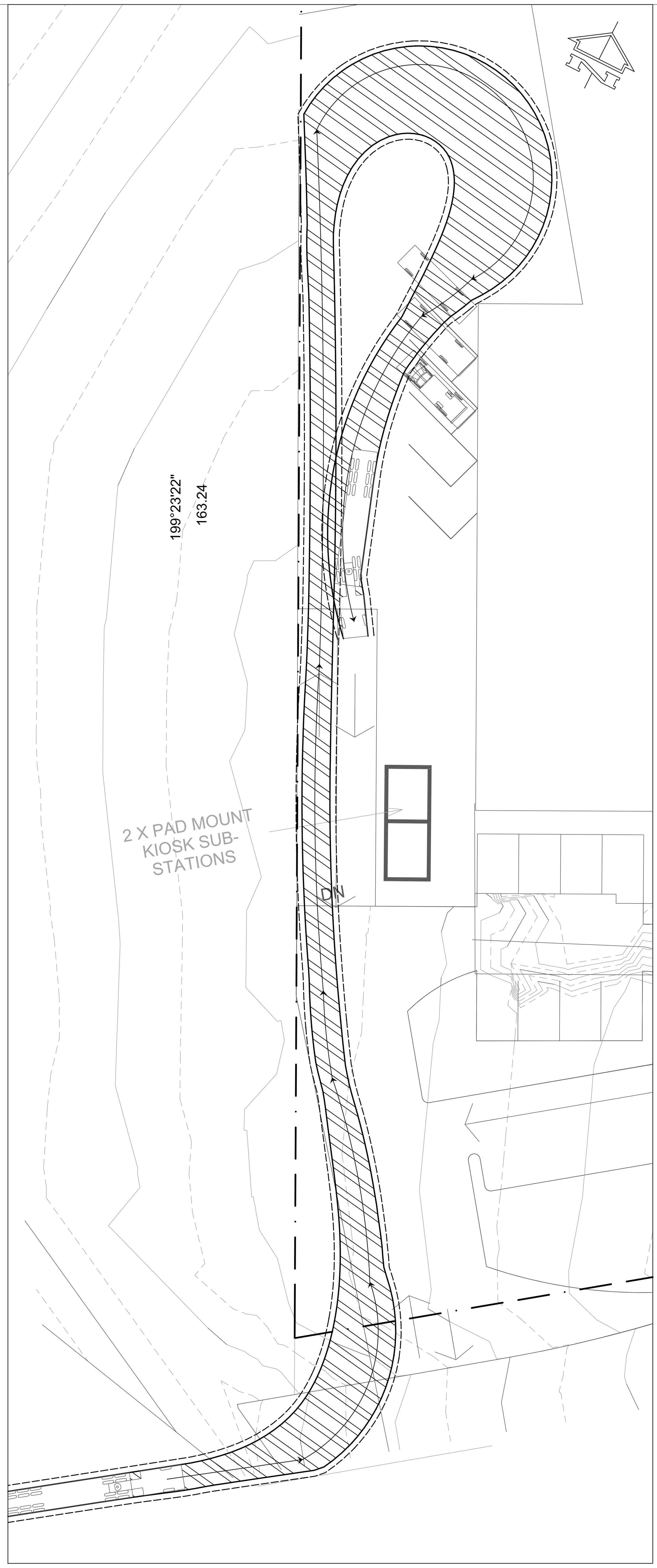


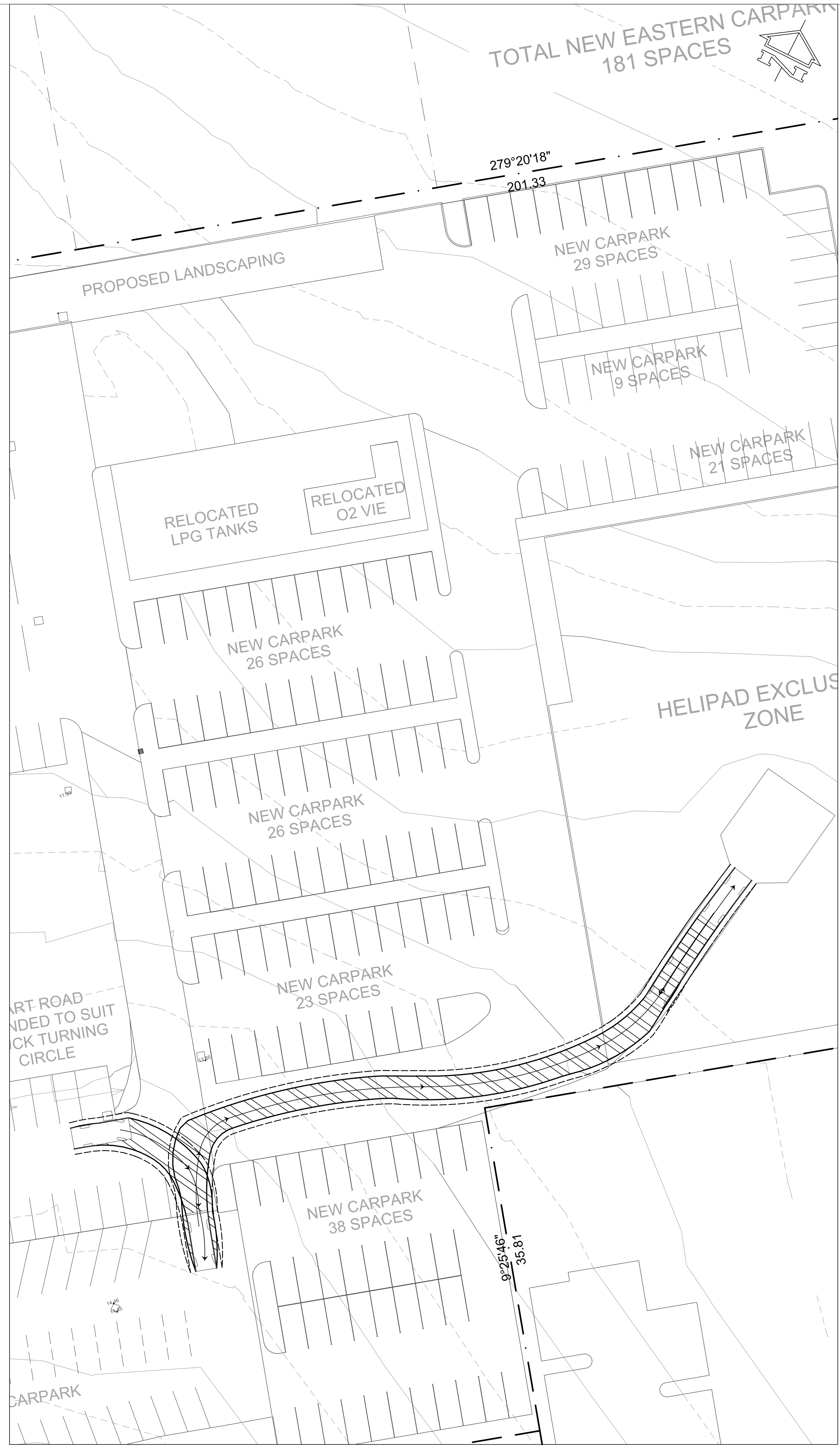
19m SEMI VEHICLE TURNING PATH (WITHOUT SPLAYED CORNER)

SCALE 1: 250



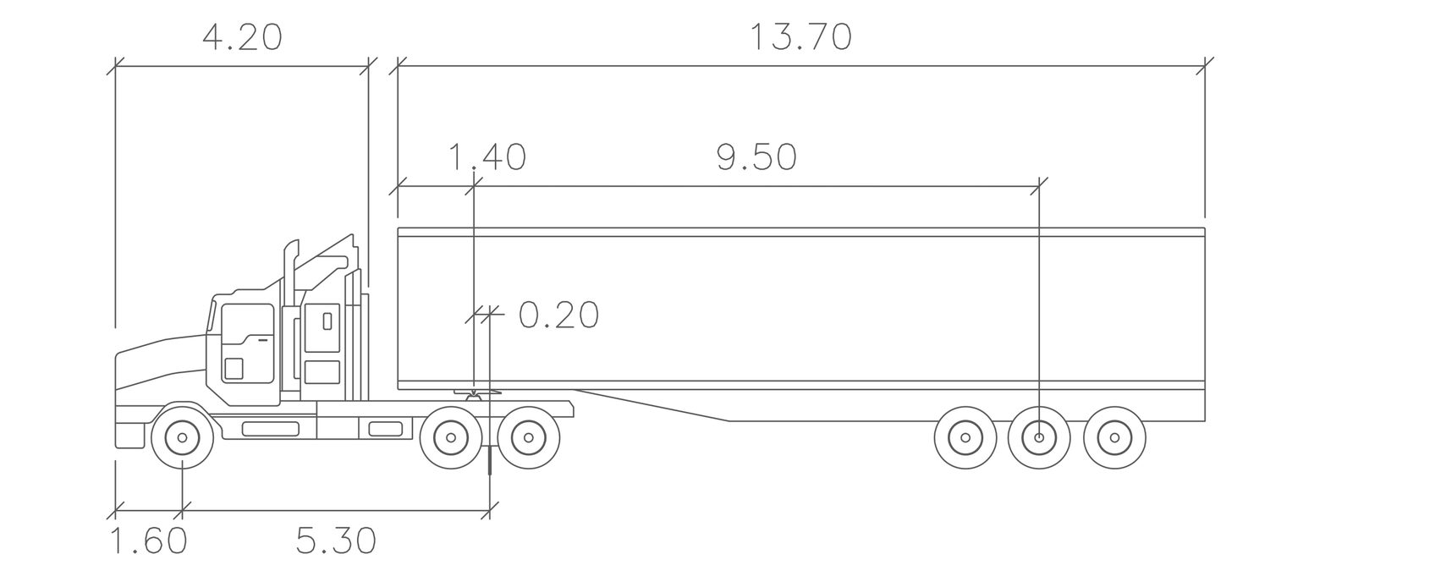
19m SEMI VEHICLE TURNING PATH (WITH SPLAYED CORNER)

SCALE 1: 250



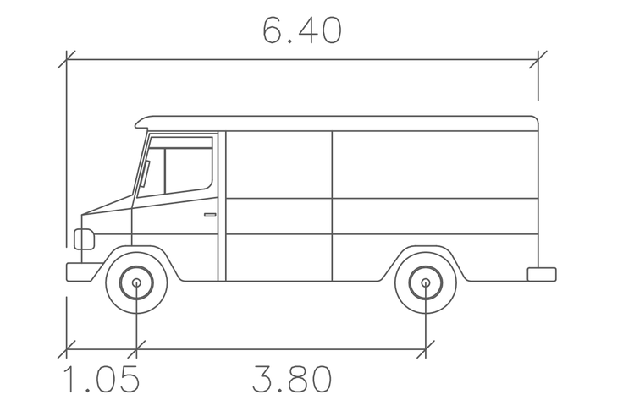
6.4m SERVICE VEHICLE (AMBULANCE) REVERSE MANOEUVRE TO HELIPAD

SCALE 1: 250



S ARTICULATED 19M meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.00
Trailer Width	: 2.50	Steering Angle	: 27.7
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		



SRV meters

Width	: 2.30
Track	: 2.30
Lock to Lock Time	: 6.00
Steering Angle	: 38.0

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03	AMENDED TITLE BLOCK	13.12.11						
02	AMENDED TITLE BLOCK	12.12.11						
01	PRELIMINARY	26.10.11						

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SYDNEY@HASSELLSTUDIO.COM
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ROJECT

PORT MACQUARIE HOSPITAL EXPANSION
Wrights Rd, Port Macquarie NSW 2444, Australia

DRAWING TITLE

SERVICE VEHICLE ACCESS PLAN

STATUS				JOB NO.
				003145
SCALE AT A0	DRAWN	CO-ORDINATED	CHECKED	APPROVED
1:250	RP			

DISC.	DWG NO.	LEVEL	REGION	STAGE	ISSUE
TR	SKC09	LX	SP	SD	04

Original Sheet Size A0 -1188 x 841mm

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