Appendix E

Traffic Study and Road Safety Audit

Traffic Impact Assessment

Coffs Harbour Health Campus - New Car park

Prepared for: NSW Health Infrastructure

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quality solutions sustainable future

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Executive Summary

NSW Health Infrastructure (Health Infrastructure) commissioned a car parking demand study from Parking and Traffic Consultants (PTC) to determine the shortfall in car parking to meet demand at the Coffs Harbour Health Campus. The findings of the PTC study indicate a current shortfall of approximately 450 spaces increasing to 750 car parks in future years depending on future demand for services at the campus. To address this shortfall, Health Infrastructure is proposing to construct additional car parking on land adjacent to the Coffs Harbour Health Campus (CHHC) currently owned by Coffs Harbour City Council.

The proposal is construct a new car park and associated works in the following stages:

Stage 1

- construction of 462 car parks;
- reconstruction and extension of existing internal gravel access road to a to a 6.5 metre sealed pavement;
- earthworks including the introduction of fill to construct the proposed car park;
- stormwater infrastructure;
- lighting infrastructure;
- erection of security fencing around the car park; and
- creation of appropriate rights of carriageway to provide legal access from Stadium Drive to the car park and to the CHHC and any required legal access for Coffs Harbour City Council to its land to the north.

Stage 2

- construction of a further 352 car parks and associated infrastructure when demand dictates and funding becomes available.

GeoLINK has been engaged by Health Infrastructure to assess traffic related impacts of the proposal on the local road network. This traffic impact assessment has determined that the proposed location and improvements to access to the new car park is likely to change how some staff and, to a lesser extent, some visitors gain access to and from the CHHC. It is considered that some staff, mainly because of where they live, will choose to access and leave the CHHC via Phil Hawthorne Drive. This is likely to reduce traffic movements at the main access to the campus (from the Pacific Highway) and increase movements at the Phil Hawthorne Drive/Stadium Drive Intersection. We are advised that emergency egress from the hospital via Phil Hawthorn Drive is already catered for through a Memorandum of Understanding between Council and Mid North Coast Local Health District.

The traffic impact assessment has determined, through SIDRA traffic modelling, that the Stadium Drive/Phil Hawthorne Drive intersection currently has sufficient capacity to accommodate the likely increase in traffic movements from Stage 1 of the proposal without reducing its Level of Service (LoS) to an unacceptable level. The modelling does however suggest that at some time after Stage 2 may be built, one traffic movement (the right hand turn from Phil Hawthorne Drive onto Stadium Drive) could potentially drop to a LoS of F in the peak afternoon period. This will need to be monitored and signage may need to be installed prohibiting this manoeuvre in the peak afternoon period if it drops to an unacceptable LoS.

The traffic impact assessment determined that there would be no other impediments to the local road network as a result of the proposal.

1 Introduction

1.1 Background

Health Infrastructure commissioned a parking demand study from Parking and Traffic Consultants (PTC) to determine car parking usage at the Coffs Harbour Health Campus (CHHC). The parking study (refer Appendix A) determined that sufficient demand exists at the CHHC to warrant provision of additional car parking. Funding has been approved for the design and approval phase for an on-grade car park to better service the CHHC. GeoLINK has been engaged by the Health Infrastructure to prepare a traffic impact assessment to accompany a statement of environmental effects and development application for the new car park.

The proposed car park site is located south of the existing Integrated Cancer Care Centre Service building. The new car park will be able to be accessed from both the main access of the Pacific Highway and also an upgraded secondary access off Phil Hawthorne Drive. The CHHC is an acute major rural referral hospital that was built in 2001and is operated by the Mid North Coast Local Health District (MNCLHD). It is located on the Pacific Highway approximately four kilometres from the central business district of Coffs Harbour. The car park is proposed to be constructed on land that is currently owned by Coffs Harbour City Council (Council). Health Infrastructure is currently in negotiations with Council to purchase the land.

The locality of the site is shown in Illustration 1.1 and the site is shown in Illustration 1.2.

Information shown is for illustrative purposes only

Drawn by: PPT Checked by: SJW Reviewed by: SJW Date: April 2014
Source of base data: Coffs Harbour City Council

LEGEND

Study Area

0 1 km

North

Site Locality

GeoLINK environmental management and design

Traffic Impact Assessment: Coffs Harbour Health Campus - New Car Park

2292-1016

Illustration 1.1

Information shown is for illustrative purposes only

Drawn by: PPT Checked by: SJW Reviewed by: SJW Date: April 2014
Source of base data: Google Earth Imagery (2013)

LEGEND

The Site

0 50

North

The Site

1.2 Scope and Purpose

The purpose of this assessment is to review the existing traffic and access conditions of the site and assess the impacts of the proposal during construction and operation. The proposal involves provision of additional car parking to cater for existing excess demand for car parks within the CHHC. The proposal itself will not increase traffic movements. The proposal is, however, likely to change how some staff and visitors gain access to and from the campus. It is considered likely that the location of the new car park and proposed improvements to the secondary access (off Phil Hawthorn Drive) will result in increased traffic movements at the Stadium Drive/Phil Hawthorne Drive intersection and reduced traffic movements at the Pacific Highway intersection. This report assesses the impacts associated with these likely changes in traffic movements.

This traffic impact study has been prepared in accordance with Table 2.1 of the RMS's *Guide to Traffic Generating Developments.* The study also provides:

- details and analysis of the proposed access to the site;
- appropriate arrangements for the provision of road and public transport infrastructure needed to service the site;
- pedestrian and cycle access within and to the site;
- an assessment based on the current speed zonings; and
- an assessment of the impact on the surrounding road network.

This traffic impact study has been carried out in accordance with the following documents:

- Austroads *Guide to Traffic Management Part 3: Traffic Studies*;
- Austroads *Guide to Traffic Management Part 12: Traffic Impacts of Developments;*
- RMS *Guide to Traffic Generating Developments;*
- Coffs Harbour City Council's *Development Control Plan 2013;* and
- relevant Australian Standards.

1.3 Further Information

Should Council require any additional information, or wish to clarify any matter raised by this proposal, please contact Michelle Erwin or Simon Waterworth of GeoLINK on 02 6651 7666.

2

Existing Conditions

2.1 Site Description

The site of the proposed car park forms part of land described as Lot 204 DP 1165897. Lot 204 has frontage to Stadium Drive, Hogbin Drive and the Pacific Highway. Access to lot 204 is from Stadium Drive. The total area of lot 204 is 38.53ha. Lot 204 is currently owned by Coffs Harbour City Council. NSW Health is proposing to acquire approximately 3.18ha to accommodate the car park. The land proposed for acquisition is shown in Appendix B.

Surrounding land uses include the Coffs Health Campus to the north, the Coffs Coast Sport and Leisure Park to the south, the F1 Kart Hire complex to the east and vegetated land to the west. If purchased by NSW Health, the site may be accessed from the existing CHHC and it is proposed that it would also be accessed via a gravel road off Phil Hawthorne Drive which intersects with Stadium Drive (under Right of Way arrangements). It should be noted that Phil Hawthorne Drive is not a dedicated road, although it is managed by Council.

2.2 Coffs Health Campus

CHHC provides a broad range of specialist services to the residents of Coffs Harbour, Bellingen and Nambucca LGA's. The hospital includes specialist wards/units for general medicine, surgery, day surgery, planned and emergency theatre service, coronary care, including coronary angiography unit, intensive care, obstetrics, paediatrics, 24 hour emergency department, oncology, palliative care, rehabilitation, stroke, acute renal dialysis, high dependency and mental health and extensive range of outpatient clinics. Allied health services, including occupational therapy, speech pathology, social work, physiotherapy, dietetics, radiology, pathology, and pharmacy, are an integral part of the organisation and contribute to the high level of patient care at Coffs Harbour Health Campus.

There is also the North Coast Cancer Institute (NCCI) located within the campus, providing integrated cancer services to North Coast NSW residents. The campus also houses a University of New South Wales Health Facility and Shearwater Lodge, which provides accommodation for families of patients attending the NCCI for treatment. A new private medical centre has also recently been completed adjacent to the CHHC.

2.3 Existing Traffic Conditions

2.3.1 General

The main access to the CHHC is from the intersection of the Pacific Highway and Isles Drive. A secondary access to the campus exists via an informal gravel access track off Phil Hawthorne Drive. Phil Hawthorne Drive intersects with Stadium Drive. Recent peak hour traffic counts undertaken by GeoLINK indicate very few staff utilise the informal access off Phil Hawthorne Drive to gain access to the CHHC. Most staff and visitors therefore enter and exit the campus via the Pacific Highway intersection.

2.3.2 Local Road Network

The Pacific Highway/Isles Drive intersection is a signalised intersection with turning bays and deceleration and acceleration lanes. Plate 2.1 shows the intersection. As it is located on the Pacific Highway and services Coffs Harbour's main industrial estate (to the west) and the new medical centre and the Coffs Health Campus (to the east), the intersection experiences high traffic flows throughout the day especially during peak times. The proposal is likely to result in reduced traffic movements at this intersection. This is discussed further in Section 4.

Stadium Drive is a link road between the Pacific Highway and Hogbin Drive. Stadium Drive intersects with Phil Hawthorne Drive which currently provides informal access to the CHHC. These roads and intersection are shown in Plates 2.2 – 2.4. The proposal is likely to increase traffic movements at the intersection of Stadium Drive and Phil Hawthorne Drive. Traffic counts undertaken by GeoLINK show very little traffic movements currently occur at this intersection in the peak hour. SIDRA modelling indicates that currently the intersection of Stadium Drive and Phil Hawthorn generally operates at a LoS of A. Level of service (LoS) is 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 and convenience, and safety. Generally a LoS of A-C are considered acceptable with D-F unacceptable. The traffic data, SIDRA modelling and the impacts of the proposal on the LoS on the LoS of the intersection of Stadium Drive and Phil Hawthorne Drive are discussed further in Section 4.

Plate 2.1 Pacific Highway Intersection with the access to the CHHC

Plate 2.2 Stadium Drive

Plate 2.3 Stadium Drive/Phil Hawthorne Drive intersection

Plate 2.4 Phil Hawthorne Drive

Phil Hawthorne Drive receives limited traffic during standard business hours. The exception to this is when there are large events held at the Coffs Coast Sport and Leisure Park. Traffic movements would be highest during these sporting, musical and other recreation events. Most of these events would occur outside of standard business hours at weekends and evenings and generally outside of peak hour traffic.

The Stadium Drive road pavement is in fair to good condition with some sections having recently been upgraded. The condition of the pavement of Phil Hawthorne Drive is understood to be acceptable to Council considering its use. The gravel access from Phil Hawthorne Drive to the CHHC would not accommodate the proposed increase in traffic and will therefore be reconstructed as part of the proposal.

2.3.3 Public Transport

CHHC is serviced by several bus routes which provide connections in and around Coffs Harbour and also to and from Toormina, Urunga, Nambucca Heads, Macksville, Bellingen and Bowraville. The bus routes have a frequency on average of one bus every half hour between 8:00 am and 6:00 pm. The bus stop is located within the hospital site, near the main entry to the hospital. Public transport does not generally suit staff users.

2.3.4 Pedestrians and Cyclists

The CHHC can be accessed by pedestrians by concrete footpaths along both sides of the Pacific Highway. These footpaths link to a number of industrial and commercial areas and further to the Coffs Harbour CBD. A designated bike path along Stadium Drive links existing bike paths along both the Pacific Highway and Hogbin Drive. These bike paths link the suburban areas of Sawtell, Toormina and Boambee to Coffs Harbour.

3

The Proposal

3.1 Description of the Proposal

The Development Application seeks consent for the staged construction and use of new car park facility adjacent to the Coffs Harbour Health Campus containing approximately 816 on-grade car parks. The stages will be subject to funding and actual project costs but will involve:

Stage 1

- construction of approximately 462 car parks;
- reconstruction and extension of existing internal access road to a to a 6.5 metre sealed pavement;
- earthworks including the introduction of fill to construct the proposed car park;
- stormwater infrastructure;
- lighting infrastructure;
- erection of security fencing around the car park; and
- creation of appropriate rights of carriageway to provide legal access from Stadium Drive to the car park and to the CHHC and any required legal access for Coffs Harbour City Council to its land to the north.

Stage 2

- construction of a further approximately 352 car parks and associated infrastructure when demand dictates and funding becomes available.

Further information regarding the proposed car park may be found in *Statement of Environmental Effects* prepared for the proposal by GeoLINK (2014).

Plans for the proposed new car park and associated works are attached as Appendix C.

4.1 Traffic Generation/Changes from Proposal

The car park is being constructed to assist in reducing the instance of shortages in car parks within the CHHC. The existing gravel track from Phil Hawthorne Drive is proposed to be upgraded to accommodate the likely redirection of traffic from the main access on the Pacific Highway as a result of the new car park. Any required improvements to Phil Hawthorne Drive are subject to negotiations between Health Infrastructure and Council.

Although the proposal will not result in any increase in traffic movements to and from the CHHC, it is likely that the proposal will change how staff and service vehicles and to a lesser extent visitors access the hospital. When the car park is operational, staff attending for day shifts will be encouraged to park in the new car park so that the main campus car park area is available for general public use and essential CHHC vehicles. The new car park will be located closer to Stadium Drive and proposed upgrades to the existing gravel access will make it more accessible for users. It will also obviate the need for many of the staff to drive through the campus to access the new car park. This is especially the case for staff travelling from the south via Hogbin Drive and the Pacific Highway. All of these factors will result in a transfer of some vehicle movements from the main Pacific Highway access to the secondary access off Stadium Drive. All service and delivery vehicles will be required to utilise the existing main access from the Pacific Highway.

It is difficult to predict exactly how the proposed new car park will affect vehicle movements to and from the CHHC. This report has, however, adopted a number of assumptions and best estimates based on:

- the demand drivers, assumptions and estimates contained in the Car Parking Demand Study prepared by PTC (refer Appendix A);
- data on where CHHC staff reside as provided by Health Infrastructure; and
- further assumptions and estimates provided by Health Infrastructure on the likely break up of staff and visitors utilising Stadium Drive instead of Pacific Highway.

A summary of the assumptions is provided in Table 4.1 below:

Table 4.1 Traffic drivers, demands and assumptions

Traffic Generators	Total cars per day	Peak hour numbers for the whole Campus	Peak hour numbers utilising Stadium Drive	Notes/assumptions/best estimates
STAFF				
Day Shift and Administration	570	558	224	Assumption 40% of staff would use Stadium Drive in peak hour
Afternoon Shift	113			Afternoon shift employees would not arrive or leave in peak hour
Afternoon shift present at Peak Time	37			Afternoon shift employees would not arrive or leave in peak hour
Night Shift	59			Night shift employees would not arrive or leave in peak hour
VMO's	30			

Traffic Generators	Total cars per day	Peak hour numbers for the whole Campus	Peak hour numbers utilising Stadium Drive	Notes/assumptions/best estimates
EDUCATION & TRAINING				
Hospital	8	7	3	40% of training staff would use Stadium Drive in peak hour
University of NSW	22	22	9	40% training staff would use Stadium Drive in peak hour
OUTPATIENTS	835	302	61	Assumption 20% of outpatients would use Stadium Drive in peak hour
VISITORS	250	45	14	Assumption 30% of visitors would use Stadium Drive in peak hour
EMERGENCY DEPARTMENT PRESENTATIONS	43	16		No emergencies would use Stadium Drive in peak hour
FLEET VEHICLES	115	38	16	40% of fleet vehicles would use Stadium Drive in peak hour
VOLUNTEERS	21	21	7	40 % of all volunteers would use Stadium Drive in peak hour
OTHERS (CONTRACTORS ETC.)	25	8		All Contractors would use Pacific Highway intersection in peak hour
Totals	2325	1017	334	

It should be noted that the above assumptions have adopted a scenario that involves 60% of staff using the main entrance (Pacific Highway) and 40% of the staff using the Stadium Drive access. These assumptions have been based on best estimates on staff behaviour and data provided by Health Infrastructure on where staff live in comparison to the campus.

4.2 Analysis of Local Roads and Phil Hawthorne Drive and Stadium Drive Intersection

4.2.1 Traffic Generation on Local Road

The proposal will result in increased traffic on Phil Hawthorne Drive and to a lesser extent Stadium Drive. Traffic Counts carried out by GeoLINK show that the current Average Annual Daily Traffic (AADT) for Phil Hawthorne Drive is 680. This is expected to increase to 3340 AADT (peak hour multiplied by 10) with the construction of stage 1 of the proposed car park and to 5000 AADT with the construction of stage 2.

It is considered that the increase in traffic to Stadium Drive as a result of the proposal would not be as significant given that much of the existing CHHC traffic would already be utilising Stadium Drive to access the campus from Hogbin Drive. There would also be minimal change/impact to Hogbin Drive and the Pacific Highway and to the existing roundabouts located at the intersections of these two roads and Stadium Drive.

4.2.2 Analysis of Phil Hawthorne Drive and Stadium Drive Intersection

An aerial view of the intersection of Phil Hawthorne Drive and Stadium Drive is shown in Plate 4.1 below. The intersection includes:

- dedicated through lanes for traffic travelling east and west along Stadium Drive;

- a deceleration lane along Stadium Drive for cars travelling east and turning left into Phil Hawthorne Drive;
- an acceleration lane along Stadium Drive for cars turning left out of Phil Hawthorne Drive heading east;
- a passing lane on Stadium Drive for cars traveling west to manoeuvre around cars turning right into Phil Hawthorne Drive from Stadium Drive; and
- sufficient width at the junction of Phil Hawthorne Drive for cars to turn both right and left into Stadium Drive.

Plate 4.1 Arial view of the Stadium Drive Phil Hawthorne Drive intersection

The intersection of Phil Hawthorne Drive and Stadium Drive has been analysed using the traffic modelling program SIDRA based on the traffic counts undertaken by GeoLINK, the traffic data provided by Council and the assumptions and best estimates outlined in Section 4.1. The SIDRA model has been set up on the assumption that:

- through traffic along Stadium Drive will grow at a rate of 2% per annum;
- 60% of through traffic on Stadium Drive is heading east in the AM peak and west in the PM peak; and
- 50% of CHHC traffic accessing the hospital from Stadium Drive will come from the east and 50% will come from the west.

The AM and PM peak hour traffic numbers for Stadium Drive used in the SIDRA model were taken from traffic data provided by Council.

The intersection has been modelled on three different scenarios:

- Scenario 1 - existing AM and PM peak hour situation;
- Scenario 2 - AM and PM peak hour situation with Stage 1 car park in 2024 with the assumption of a 2% annual increase in traffic growth along Stadium Drive; and
- Scenario 3 – AM and PM peak hour situation with Stage 2 car park in 2030 with the assumption of a 2% annual increase in traffic growth along Stadium Drive and a 50 % increase in traffic movements utilising Phil Hawthorne Drive access.

The modelling results for each scenario are summarised and discussed below. A copy of the results is provided in Appendix D.

4.2.2.2 Scenario 1 results and analysis

Table 4.2 shows the SIDRA modelling results for the existing situation at Stadium Drive and Phil Hawthorne Drive intersection.

Table 4.2 Existing situation

Year	2014		2014	
Time	AM Peak		PM Peak	
Movement	# Vehicles	LOS Results	# Vehicles	LOS Results
West on Stadium Drive	296	A	499	A
Right turn into PH Drive	47	A	7	A
East on Stadium Drive	443	A	332	A
Left turn into PH Drive	11	A	3	A
Left turn out of PH Drive	7	A	47	A
Right turn out of PH Drive	3	B	11	B

The results in Table 4.2 indicate that all traffic movements within the existing intersection have a LoS of A except for the right turn out of Phil Hawthorne Drive which has a LoS of B. This demonstrates that the existing intersection is operating very effectively in the peak hour period and requires no further improvements.

4.2.2.3 Scenario 2 results and analysis

Table 4.3 shows the SIDRA modelling results for the Stadium Drive and Phil Hawthorne Drive intersection for the Stage 1 development of the car park in the year 2024 based on an annual increase in traffic along Stadium Drive of 2% per annum.

Table 4.3 Stage 1 Car park development 10 year projection

Year	2024		2024	
Time	AM Peak		PM Peak	
Movement	# Vehicles	LOS Results	# Vehicles	LOS Results
West on Stadium Drive	360	A	608	A
Right turn into PH Drive	157	A	20	A
East on Stadium Drive	541	A	405	A
Left turn into PH Drive	157	A	20	A
Left turn out of PH Drive	20	A	157	A
Right turn out of PH Drive	20	B	157	B

As can be identified above the modelling for the Stage 1car park shows no change in LoS from what exists at present. The intersection will continue to operate at a high LoS based on the assumptions outlined in Section 4.1.

4.2.2.4 Scenario 2 results and analysis

Table 4.4 shows the SIDRA modelling results for the Stadium Drive and Phil Hawthorne Drive intersection for the Stage 2 development of the car park in the year 2030 based on an annual increase in traffic along Stadium Drive of 2% per annum.

Table 4.4 Stage 2 Car park development 15 year projection

Year	2030		2030	
Time	AM Peak		PM Peak	
Movement	# Vehicles	LOS Results	# Vehicles	LOS Results
West on Stadium Drive	406	A	684	A
Right turn into PH Drive	234	A	30	A
East on Stadium Drive	609	A	456	A
Left turn into PH Drive	234	A	30	A
Left turn out of PH Drive	30	A	234	A
Right turn out of PH Drive	30	C	234	F *

As can be identified above the modelling for the Stage 2 car park shows no change in LoS in all manoeuvres to what exists at present except for the right turn out of Phil Hawthorne Drive onto Stadium Drive. The SIDRA modelling suggests that right turn out of Phil Hawthorne Drive drops to a LoS C in the AM peak hour and to a LoS F. LoS C is considered to be acceptable especially given that it won't be a manoeuvre that will be utilised as much in the AM peak period as most of the traffic will be entering Phil Hawthorne Drive. LoS F is not acceptable and modifications to intersection may need to be undertaken if traffic movements post Stage 2 increases to a point where LoS becomes unacceptable. It is considered that these modifications could involve the installation of signage prohibiting a right hand turn between the hours of 4:30 pm and 6:00 pm. Traffic wanting to make a right hand turn during this period would simply need to turn left and utilise the roundabout on Hogbin Drive to return to travel west along Stadium Drive.

4.2.3 Construction Traffic Impacts

The car park is to be located on vacant land and any related construction activities are unlikely to have a significant traffic impact on adjoining land uses. The reconstruction of the informal access from Phil Hawthorne Drive to CHHC would most likely need to be temporarily closed during construction works with all traffic required to use the main Pacific Highway intersection during the construction period. This would only be for a limited time and would not cause any significant traffic impacts.

Given the limited traffic on Phil Hawthorne Drive and the informal access track, only minimal traffic impacts are expected to occur which will be in the form of temporary delays from traffic control. Appropriate traffic management measures would be implemented to minimise any traffic related impacts. An increase in traffic movements resulting from construction work vehicles is expected to occur during the construction period but is considered to be minor. Any impacts will be mitigated as part of a traffic management plan to be prepared at the detailed design stage of the proposal.

4.2.4 Road Traffic Noise Impacts

Road traffic noise impacts have been assessed within the Review of Environmental Factors for the proposal. The assessment indicates that there is no residential land uses in proximity of the proposed car park or the Phil Hawthorn Drive. The proposed development is therefore unlikely to impact on any adjoining residential noise receivers.

5

Conclusion

5.1 Conclusion

The proposed location of and improvements to access to the proposed new car park will change how some staff and visitors gain access to and from the CHHC. Some staff, mainly because of where they live will, will choose to access and leave the CHHC via Stadium Drive and Phil Hawthorne Drive. This will reduce traffic movements at the main access to the campus (from the Pacific Highway) and increase movements at the Phil Hawthorne Drive/Stadium Drive Intersection.

This assessment has determined, through SIDRA traffic modelling, that the Stadium Drive/Phil Hawthorne Drive Intersection has sufficient capacity, in the short to medium term, to accommodate the likely increase in traffic movements from Stage 1 of the car park without reducing its LoS to an unacceptable level. The modelling does however suggest that, in the longer term (say in 2030 pending hospital clinical activities at that time) one traffic movement (right hand turn from Phil Hawthorne Drive onto Stadium Drive) could drop to a LoS of F in the peak afternoon period. This will need to be monitored and signage may need to be installed prohibiting road users from making a right hand turn in the peak afternoon period if it drops to an unacceptable LoS.

Based on the traffic generating parameters and assumptions made in this report this assessment has determined that that the proposed car park will not adversely impact on the existing surrounding local road network.

Michelle Erwin
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Simon Waterworth
Director / Town Planner
BURP, MBA

References

Roads and Traffic Authority (RTA) 2002, Guide to Traffic Generating Developments Version 2.2 October 2002 Roads and Traffic Authority available online at http://www.rms.nsw.gov.au/roadprojects/community_environment/documents/guide_to_generating_traffic_developments.pdf Accessed 21/04/2014

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Appendix A

Parking Study

PARKING & TRAFFIC
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Client

Health Infrastructure, NSW Government

Project

Coffs Harbour Hospital
Updated Parking Demand Study

For the attention of:

Rebecca Wark
Health Infrastructure

Date

18th March 2013

Contact

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APPENDICES

1. Executive Summary

The Coffs Harbour Base Hospital (CHBH) is operated by Mid North Coast Local Health District ("MNCLHD") and forms part of the Coffs Harbour Health Campus. The 292 bed hospital (source: Development Details & Assumptions - March 5,2013) was completed in December 2001 and provides emergency, critical care medicine, surgery, obstetrics and gynaecology, paediatrics, mental health, aged care, primary and community care, limited rehabilitation and a range of clinical support services.

At the time of our previous work at this hospital (2010) the site incorporated 632 at-grade parking bays. This has now been increased to 671 with additional bays in the North Coast Cancer Institute (NCCI) car park (20) , new car park east (12) and as a result of the reconfiguration of the EMU area (7).

The new private medical centre which was proposed for an adjacent site on the corner of the Pacific Highway and the hospital access road has now been completed. The development includes a three-storey medical building with basement parking. A total of 200 parking bays were planned for this site, including 60 basement spaces. We have been advised that the private medical centre, whilst complete, is not fully occupied (estimated occupancy 20%).

Since the land that is now occupied by the private medical centre was used as overflow parking for the hospital we expected that, following the construction of the centre, there may be a shortage of parking for the hospital. A further issue regarding the hospital car park is that there has been a flood incident from the bordering creek, leading to damage to vehicles.

Since our review in 2010 CHBH staff numbers, bed numbers and reported Outpatient Occasions of Service have increased (the latter relatively significantly (58%)).

Health Infrastructure (HI) has requested PTC to update the demand estimates from our 2010 report by carrying out additional site observations, car park length of stay observations and collection of data from the LHD. No additional reporting or opinion regarding revenue assumptions and opportunities is required.

Occupancy and length of stay surveys of the car parking at the hospital were completed on Tuesday 5th and Wednesday 6th March 2013.

A summary of **peak parking demand** comparing 2010 and 2013 is shown in the following table:

	Tuesday 16th February 2010	Tuesday 5th March 2013	% Increase	Wednesday 17th February 2010	Wednesday 6th March 2013	% Increase
Peak Occupancy Number of Vehicles	839	938	12 %	794	974	23%

The main car park and surveyed Areas A, C and E had peak parking demand in excess of 120% and at peak times an additional 212 vehicles were parked in areas around the hospital where there are no marked bays. (Refer section 4.2 for detailed analysis).

The average length of stay **excluding** long term parkers (e.g. staff) was as follows:

	2010 Length of stay (hours)	2013 Length of stay (hours)	% Increase
Day 1	1.83	2.36	29%
Day 2	1.99	2.09	5%
Average	1.91	2.23	17%

Our analysis shows that the estimated hypothetical peak demand for parking is as follows:

Coffs Harbour Base Hospital	2010 Demand for car spaces	2013 Demand for car spaces	Within next 5 years
Weekday demand (per Section 5.1a)	823	1,064	1,356
Rounded	850	1,100	1,400

CHBH has a total of 362 marked bays available at other locations around the campus in addition to the 309 bays in front of the hospital. It appears that there is a current shortfall of parking of approximately 429 spaces (1,100 – 362 – 309). This shortfall could grow to 729 by 2016 assuming the same rate of growth in staff and patients at the hospital as that seen between 2010 and 2013. The shortfall are currently parking on grassed areas adjacent to the main car park, at the rear of the hospital and near the entrance to the New South Wales University health facility and Shearwater Lodge, in the main car park aisles and in the gravel area at the rear of the NCCI car park.

Therefore, with rounding, the current short fall in parking would appear to be approximately 450 spaces.

It was observed at the time of our surveys and supported by anecdotal evidence that a considerable proportion of the car parking spaces which are easily accessible to the hospital are occupied by staff. Therefore we would recommend when considering the provision of additional car spaces the hospital also considers restricting staff access to public parking spaces, so that these are kept available for outpatients and visitors to inpatients.

Also a number of vehicles were parked illegally in car park aisles and were observed "cruising" the main car park looking for a vacant car spaces. Improved signage could help direct parkers to available spaces and reduce unauthorised parking as the location of car spaces, other than in the main car park, is not evident to drivers unfamiliar with the hospital grounds.
The contents of this report are governed by the statements set out in Section 6 "Limits of this Report" and should therefore be read in conjunction with them.

2. Introduction

This section provides background information relating to Coffs Harbour Base Hospital and the parking situation at the hospital, together with an overview of PTC's brief in regard to parking at the hospital.

Coffs Harbour Base Hospital (CHBH) is located approximately 4kms south of the centre of Coffs Harbour, in northern New South Wales. The hospital comprises 292 overnight beds (source: Development Details & Assumptions - March 5, 2013) together with a bulk-billed clinic adjacent to the Emergency Department. Services provided at the hospital include emergency, critical care medicine, surgery, obstetrics and gynaecology, paediatrics, mental health, aged care, primary and community care, rehabilitation, general medicine, cardiology and interventional procedures, renal dialysis, oncology, radiotherapy and a range of clinical support services. There is also the North Coast Cancer Institute (NCCI) located on the same campus, providing integrated cancer services to the North Coast NSW residents at Port Macquarie, Coffs Harbour and Lismore. These services involve a lot of clinics and ambulatory activity in addition to inpatient presentations.

The campus also houses a New South Wales University health facility and Shearwater Lodge, which provides accommodation for families of patients attending the NCCI for treatment.

A new private medical centre has also recently been completed adjacent to the CHBH campus (shown in the top left hand corner of the plan below).

A plan of the site is shown below:

The hospital has a catchment area including Coffs Harbour, Bellingen and Nambucca LGAs which have a regional catchment population of over 200,000 people (70,000 within Coffs Harbour LGA) (Source: Coffs Harbour City Council).

Population growth in Coffs Harbour is forecast at an average of 1.56% per annum between 2013 – 2031 (source: Coffs Harbour City Council). The hospital informs us that they expect growth of the entire catchment to average approximately 4% per annum. (source: CHBH 2010 Report)

The proportion of people aged over 65 within the catchment area is higher than the NSW average (source: CHBH 2010 Report), and this age group is expected to comprise 20.1% of the Coffs Harbour population by 2021 (source: Coffs Harbour City Council). It would be expected that this age group may require greater access to medical facilities than a younger demographic.

The hospital is 98% self-sufficient i.e. able to provide 98% of required treatment on site without the need for a patient to have to travel to a city hospital for treatment (source: CHBH 2010 Report).

Staff at the hospital are drawn from a radius of approximately 20kms. Limited transport alternatives over such a wide area result in a large proportion of staff driving to the hospital. Parking is also required for medical specialists attending the hospital for brief periods or urgent recall. There are currently four designated spaces for the obstetricians and paediatricians attending emergency caesareans and as these are often filled they have to find a space in the public car park which can lead to delays in attendance.

Parking at the hospital comprises 671 at-grade marked bays in various locations around the campus. We also observed significant numbers of vehicles parked in other areas of the site, such as grassed areas and the fringe of the wooded area to the south of the hospital building and the gravel area at the rear of the NCCI car park, suggesting that the hospital has an inadequate supply of formal parking bays.

Parking in unauthorised areas was also observed e.g. in no parking zones, drop off zones, ambulance zones and in car park aisles.

Parking in Car Park Aisles

Our surveys of the hospital car parking areas also revealed that parking time restrictions are not being observed in the drop off zones and 1 & 2 hour restricted parking areas. There is no by-law to enable the hospital to fine and enforce unauthorised parking.

A major issue for the campus is flooding. The site is bordered to the north by a tidal creek and to the south east by marshy ground. In times of heavy rainfall the site is prone to flooding, and in one incident this caused significant damage to parked vehicles. Also wet weather limits the ability to park in the grass areas surrounding the campus, as observed at the time of our site visit.

A further issue for the hospital is the lack of available space to expand parking on the campus. In addition to the creek to the north and marshy ground to the south east, the site is bordered to the east by the Pacific Highway (the main north-south transport link) and to the south by a wooded area, which we understand is a koala sanctuary. Therefore, there is extremely limited available land on which to construct additional parking which would be convenient for hospital staff, outpatients and visitors. The paddock on which the new Medical Centre adjacent to CHBH is constructed was previously used for parking overflow but is no longer available following completion of the development.

Health Infrastructure (HI) has requested PTC to update the demand estimates from our 2010 report by carrying out additional site observations, car park occupancy and length of stay surveys and collection of data from the LHD. No additional reporting or opinion regarding revenue assumptions and opportunities is required.

The scope of the project is to include CHBH only, excluding the New South Wales University health facility and Shearwater Lodge.

3. Demand Estimates Methodology Overview

3.1 Methodology Overview

PTC's methodology for estimating parking demand at hospital facilities was outlined in our report dated 3rd March 2010 and is familiar to HI following our work at this site, Westmead Health Campus and Campbelltown Hospital.

In order to estimate the demand that would be derived from parking at CHBH, PTC was provided with certain information by the hospital and also carried out occupancy and length of stay surveys of the car parking at the hospital on 5th and 6th March 2013.

This information was reviewed in order to obtain an understanding of the parking demand generators at CHBH, including:

- Overnight bed numbers
- Number of outpatients
- Staff numbers
- Alternative parking close to the site
- External demand drivers (if any) e.g. nearby industrial site

3.2 Transport Environment at CHBH

There has been no material change to the transport environment since our report dated 3rd March 2010. The primary mode of transport to the hospital remains the car.

3.3 Relevant Parking Zone

There has been no material change to the availability of alternative parking options in the hospital's relevant parking zone other than that provided as part of the new Private Medical Centre.

The Centre comprises private medical suites, a pharmacy and a café/gift shop. Facilities provided will include an MRI unit (which CHBH does not have) and radiology and pathology (which CHBH does have but

is not seen as necessarily competing with CHBH). Under the Development Application the centre is required to provide 200 parking spaces (60 basement spaces and 140 at-grade spaces). The Centre, whilst complete, is not fully occupied or operational (advised occupancy at 20% and medical imaging has not commenced). It was observed at the time of our site visit that 123 at-grade parking spaces are available at the front and rear of the building, together with a number of basement spaces (60 per original development application – unable to confirm as access controlled by roller shutter).

Rear Car Park New Medical Centre

The parking at the rear of the centre is controlled by boom gates. Visitors to the Centre are entitled to one hour free parking which is controlled by a system of validation. A ticket is taken upon entry to the car park and 'validated' to a free exit ticket by the Centre at the conclusion of the patient's visit. In this way the Centre control who parks in the car park i.e. only those patients with appointments at the Centre. These details were confirmed by the access control equipment suppliers for the Centre, Wilson Technology Solutions. We are also advised that the car park is patrolled by a security guard to ensure only the Centre's patients park there.

As noted earlier, the basement car spaces at the Centre are accessed via a ramp secured by a roller shutter. We were advised the basement spaces are not available for public parking and are leased in conjunction with the medical suites.

During our site visit it was observed that the car park at the rear of the Centre was not operating at capacity and it was unlikely that visitors to the Centre were using hospital car parking. However we were advised anecdotally that staff at the Centre use hospital parking as no staff parking is provided at the Centre. This was difficult to verify and the impact difficult to assess as the Centre is not operating at full capacity.

By way of clarification in relation to the RPZ we would also comment that whilst there is public parking available at a retail Service Centre located across the Pacific Highway from the hospital, it is not considered a materially viable alternative to parking at the hospital due to:

- The difficulty of pedestrian access. It is necessary to walk to the traffic lights at the very busy intersection adjacent to the hospital in order to cross the highway and access the hospital site. The Pacific Highway at this intersection comprises two lanes in each direction plus turning lanes and carries a high volume of traffic, including heavy road freight vehicles. It is therefore not an attractive crossing option for pedestrians, despite being signalised.
- The distance from the hospital. Because it is necessary to walk from the parking to the signalised intersection noted above, rather than directly to the hospital, the actual walking distance is in the region of 500 metres, and is therefore considered to be an unattractive option for the majority of hospital-related users.

4. CHBH Car Park Surveys

This section sets out the findings of our occupancy and length of stay surveys of the parking at CHBH.

These surveys were carried out over a limited period (2 days) on Tuesday 5th and Wednesday 6th March 2013. These days were chosen after consultation with the hospital, as to which days provided the best representation of activity on the campus.

The main objectives of the surveys were to understand:

- Peak parking demand (which will always occur on weekdays, as there are fewer staff on campus at weekends and no outpatient activity)
- The average length of stay of outpatients and visitors to inpatients parking at the hospital

4.1 Overview

CHBH currently has the following supply of parking for staff, outpatients and visitors to inpatients:

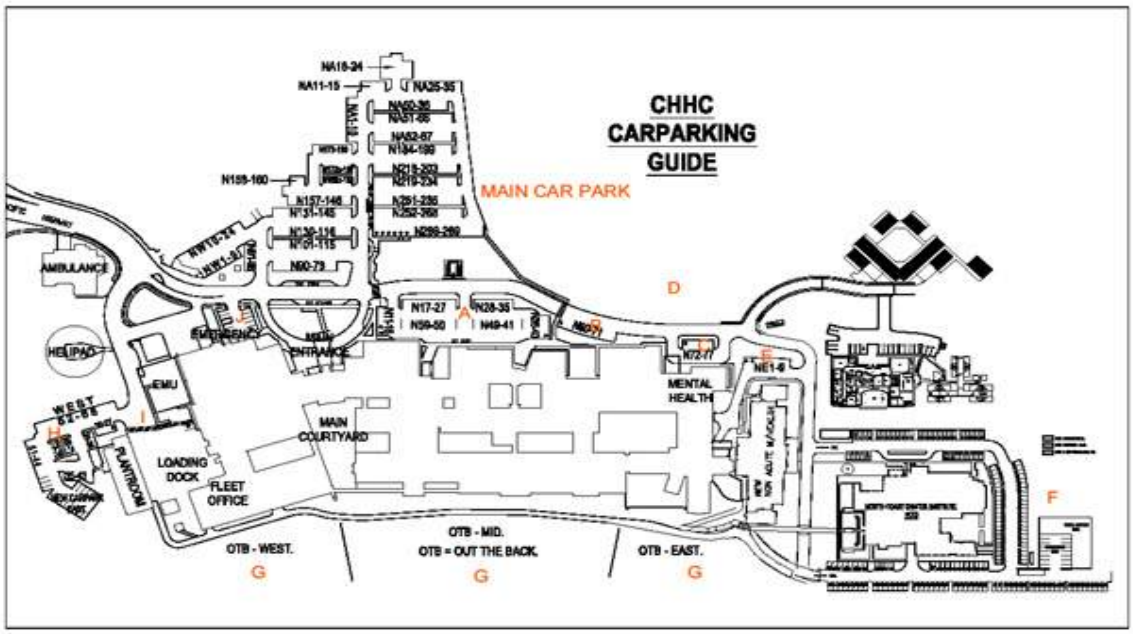
Car Park	Number of Spaces	Used by	Comments
Main Car Park	309[1]	Staff, outpatients and visitors	At-grade parking
Cancer Council Institute	180	Staff, outpatients and visitors	At-grade parking
Other marked parking	182	Staff, VMO's, outpatients and visitors	At-grade parking
Other unmarked parking	Not able to determine	Staff, outpatients and visitors	Unmarked parking on temporary gravel area at rear of NCCI car park, grassed and unauthorised areas
	671[2]		

[1] excludes parking in aisles and on adjacent areas

[2] excludes unmarked parking areas and parking in aisles and in unauthorised locations e.g. no parking areas

There is no available on-street parking within immediate proximity to the hospital.

The surveyed areas were allocated into different sections, to gain a better understanding of the individual areas under pressure and any areas where spare capacity might be identified. The plan below shows the different sections, which cross-refer to the appropriate vehicle counts in the survey results.



CHBH campus plan detailing parking locations surveyed, by section

4.2 Occupancy Surveys

PTC surveyed all the hospital parking on Tuesday 5th March - Wednesday 6th March 2013 and the results are shown in **Appendices A - C** as follows:

Appendix A – Occupancy count of main car park, aisles and adjoining grassed area
Appendix B – Occupancy count of other parking areas (A – I as per plan in previous section)
Appendix C – Summary of occupancy counts across the entire CHBH campus

A summary of the **peak parking demand** results are shown in the following table, together with the comparable result from our 2010 surveys:

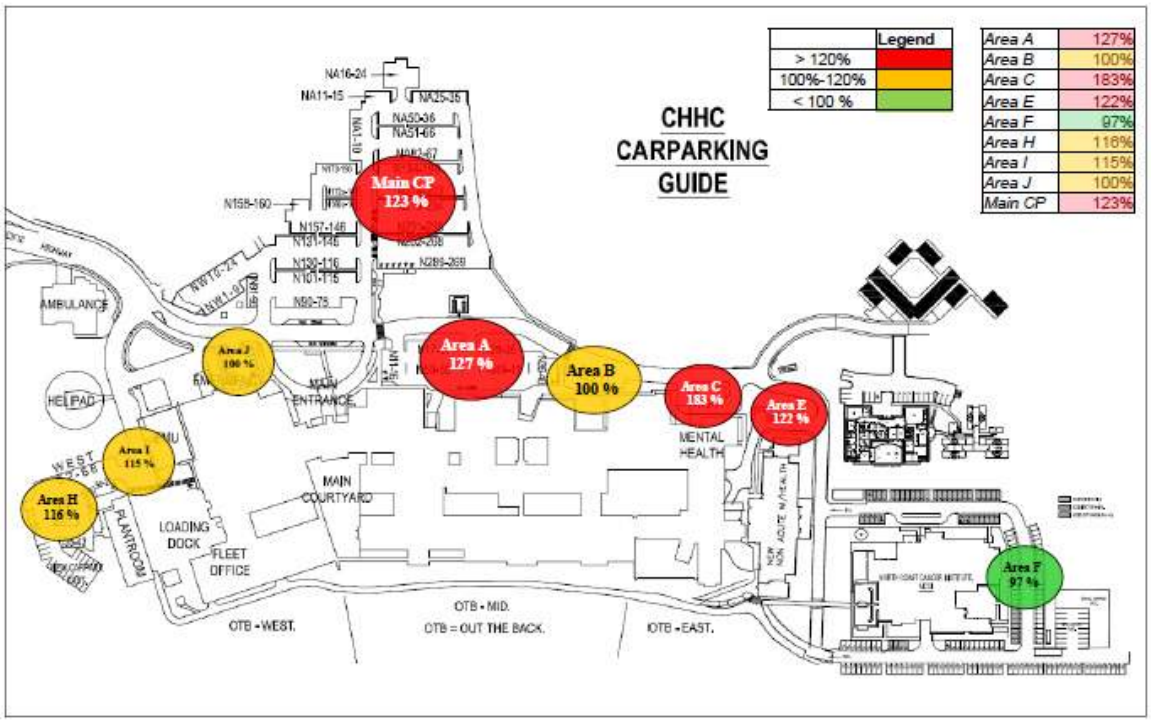
***** Based on marked bay capacity of 671 spaces

	Tuesday 16th February 2010	Tuesday 5th March 2013	% Increase	Wednesday 17th February 2010	Wednesday 6th March 2013	% Increase
Peak Occupancy Number of Vehicles	839	938	12 %	794	974	23%
Peak Occupancy Time	10am	2pm		12pm & 3pm	2pm	
% of Capacity*	133%	140%		126%	145%	

The increased pressure on the current parking supply, as indicated by the percentages above, is evident from our surveys which showed that, unlike 2010, the car spaces at the Cancer Council Institute are now well utilised, despite their distance from the main hospital building. During our limited surveys the peak number of vehicles parking in these spaces was 171 compared to 180 available bays being 95% occupancy, compared to 103 of 160 available bays in 2010, being 64% occupancy. This suggests that hospital users are finding it more difficult to park close to the main entrance (e.g. in the main car park) and are thus forced to use parking which is further away.

Also a number of vehicles were parked illegally in car park aisles and were observed "cruising" the main car park looking for a vacant car spaces. Improved signage could help direct parkers to available spaces and reduce illegal parking as the location of car spaces, other than in the main car park, is not evident to drivers unfamiliar with the hospital grounds.

The 2013 **peak occupancy percentage** by survey area over the two surveyed days is illustrated in the below diagram. The grassed areas B and G and the temporary gravel area at the rear of the NCCI car park have been excluded from the diagram as these areas do not have marked bays, thus it is not possible to determine their capacities. The occupancy percentages have been colour-coded to illustrate the areas under greatest pressure (shown in red):



2013 Peak Parking Occupancy % by Survey Area

All surveyed areas, excluding the NCCI car park, had a peak parking occupancy in excess of 100%, with occupancy exceeding 120% in the main car park and Areas A,C and E.
The **peak parking occupancy** in Areas D, G and the temporary gravel parking area was as follows:

Parking Area	Peak Occupancy Number of vehicles
Area D (grassed area opposite Areas B,C & D)	52
Area G (grassed area on the southern side of the hospital, bordering woodland. Marked "OTB" on the plan above)	98
Temporary Gravel Area at rear of NCCI car park	62
TOTAL	212

As noted earlier, peak occupancy in these areas cannot be expressed as a % as there are no marked bays. However, the results show that there are up to 212 vehicles parked in the hospital grounds in

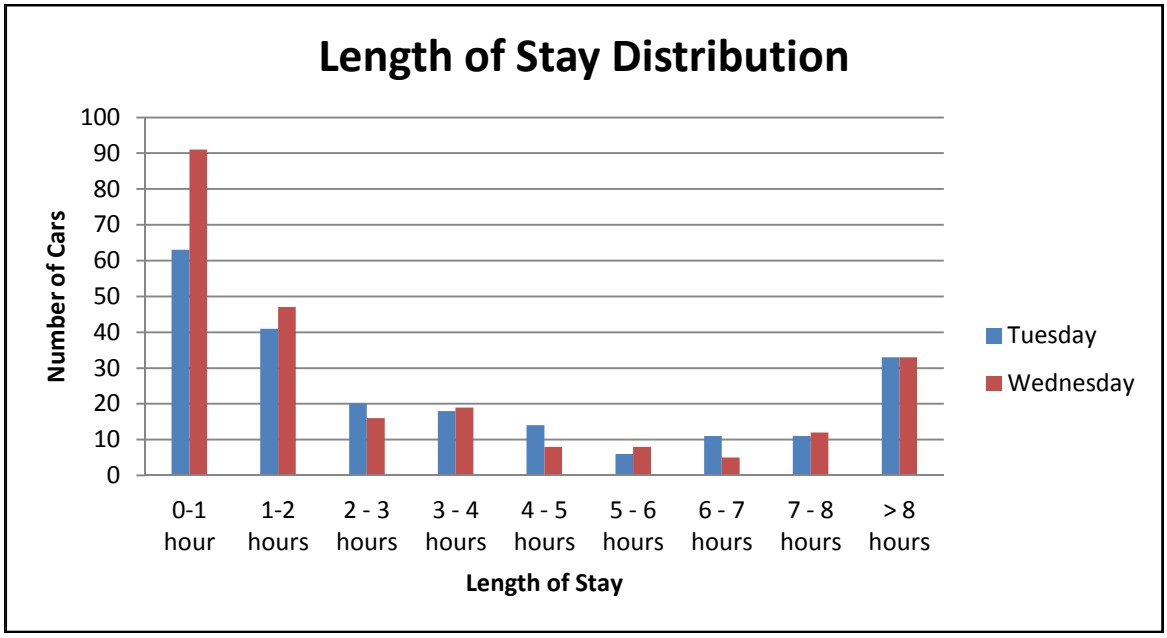
addition to those parked in the designated parking areas. This represents over 30% of the current marked bay capacity.

4.3 Length of Stay Surveys

Surveys were undertaken across two days, Tuesday 5th March – Wednesday 6th March 2013, to establish the average length of stay for outpatients and visitors to the hospital. This data is used in the development of the parking demand estimates.

PTC surveyed an area of the main car park (65 spaces) which is currently designated two hour parking and an area of Area A (21 spaces) which is currently designated one hour parking, as this should be the areas where the majority of outpatients and visitors park.

The survey results are summarised in **Appendix D**. The distribution of the results is shown below:



The length of time an outpatient stays at the hospital will be dependent on how long they are required to be there before the appointment, how quickly they are treated, and whether additional occasions of service are required (e.g. radiography, pathology etc).

The average length of stay of **all vehicles** was as follows (with 2010 data included for comparison purposes):

	2010 Length of stay (hours)	2013 Length of stay (hours)
Day 1	2.50	4.02
Day 2	2.74	3.52

It is apparent from the survey results that some spaces were being occupied by long term parkers (e.g. staff) despite the areas being designated as maximum 1 or 2 hour stay. This was also evidenced by observation and anecdotal evidence whilst undertaking the surveys. The increase in the number of long term parkers could also be attributed to the fact that the grassed parking area where the new Medical Centre is now located is no longer available for parking, so more of these parkers are using the marked bays in the main car park.

We therefore recalculated the average length of stay **excluding** long term parkers, in order to determine the length of stay of outpatients and visitors (which was the main purpose of the survey). The re-calculated results are as follows:

	2010 Length of stay (hours)	2013 Length of stay (hours)
Day 1	1.83	2.36
Day 2	1.99	2.09

These results are greater than that observed at other hospitals, where we would generally expect the average length of stay to be between 1 – 2 hours. We also note that the length of stay has increased since 2010. In one instance, we were advised that a visitor to the hospital had arrived at 6.45am in order to obtain a park close to the main hospital for her 90 year old mother's 10.00am appointment. She was aware of the parking problems at the hospital and her only alternative transport option was a taxi ride which would cost in excess of $100. This may indicate visitors to the hospital are arriving earlier than necessary for appointments and therefore staying longer than in the past which is further contributing to the parking shortage.

4.4 Other Data

In addition to the limited surveys undertaken at CHBH, PTC also applied its experience at other hospitals in order to estimate the elements comprising parking demand e.g. percentage of people driving to the hospital.

4.5 Summary

All of the data mentioned above was used in the construction of our demand estimates

As there has been no material change in the transport environment at CHBH since our 2010 report the demand estimate assumptions adopted are broadly the same, except for:

- % day shift, administration, and afternoon shift staff parking in the car park has been amended from 100% to 98% to make some allowance for 'kiss & drop' activity.
- Similarly, the % of outpatients and visitors parking in the car park has been reduced to 98%
- Parking space turnover has been amended based on our new survey results

5. Parking Demand

This section sets out the parking demand estimates for CHBH.

General assumptions used in the formulation of the demand estimates include:

- 292 overnight beds (2010: 272 beds)
- Estimates are based on Financial Year End, commencing July 2012

5.1 Current Demand

Appendix E summarises the identified demand drivers and assumptions, which we arrived at using a combination of car park occupancy and length of stay surveys over 2 days at CHBH, information supplied by hospital management, and our experience and knowledge of demand factors at other hospitals.

a) Summary of CHBH weekday parking demand

Category	Demand for car spaces
Staff – day shift	558
Staff – afternoon shift changeover	37
VMO's	10
Education & Training - Hospital	7
Education & Training – University of NSW	22
Outpatients	302
Visitors to inpatients (peak)	45
Emergency Department presentations (peak)	16
Fleet vehicles	38
Volunteers	21
Others (contractors etc)	8
Total	**1,064**

The estimated peak requirement of 1,064 spaces compares with the observed peak occupancy as measured by our surveys of 974 vehicles. This provides broad support and verification of the demand

assumptions.

b) Weekend parking demand

Note that there is no requirement to estimate peak parking demand at weekends, as this will always be lower than the weekday peak, due to there being minimal administration staff present at weekends and no (or limited) outpatient activity. This means that if there are sufficient spaces to meet the weekday peak there should always be sufficient to meet the weekend peak.

5.2 Estimated Number of Spaces Required

Peak occupancy of the car park is expected to occur during weekdays, usually around mid-late morning when the majority of outpatients are at the hospital, and again at afternoon shift crossover time, when the hospital has its full complement of nursing staff, administration staff, outpatients and a proportion of visitors to inpatients all vying for the available parking spaces.

Our analysis shows that the estimated peak demand for parking is as follows:

Coffs Harbour Base Hospital	Demand for car spaces
Weekday demand (per Section 5.1a)	1064
Rounded (to allow some headroom)	1100

CHBH has a total of 362 marked bays available at other locations around the campus in addition to the 309 bays in front of the hospital. Therefore it appears that there is a shortfall of parking of approximately 429 spaces (1100 – 362 – 309).

Note that in viewing the above estimated capacities, it should be borne in mind that it may not be realistic to build the exact number of spaces required, due to construction practicalities.

The above demand is based on the information available to us at this time, and may be negatively affected if a greater number of staff, outpatients and visitors to inpatients were to take up public transport options; or there was an increase in 'kiss and drop' activity; or unforeseen alternative parking became available which was more attractive to staff, outpatients and visitors. In addition, they do not allow for any future growth of CHBH activity, which may increase demand for parking.

5.3 Impact of Potential Growth on Parking Demand

PTC was not provided with detailed assumptions in relation to future growth over the next 5 years. We therefore estimated hypothetical future parking demand based on the historical rates of growth during the period 2010 – 2013.

Coffs Harbour Base Hospital	Future (next 3 years) Demand for car spaces
Weekday demand	1,356
Rounded (to allow some headroom)	1,400

This analysis indicates the shortfall in car spaces could (hypothetically) rise to 639 by 2016 (1,400 –

671).

We understand that a Masterplan Report is currently being prepared for CHBH, although it has not yet been formally adopted and is subject to MNCLHD Board approval. This is likely to have significant implications for parking at the campus and we recommend that a further review of estimated parking demand be undertaken once the plan is approved and future demand drivers can be identified.

We also understand that some of the planned hospital expansion would utilise areas currently allocated to parking. Therefore the current supply of parking would decrease at the same time as demand increases. An area (21,000 m^2) has been identified for additional parking supply, to the south-east of the campus, although the timing of this new supply provision is not yet known.

5.4 Potential location of additional spaces

It should be noted that irrespective of the hospital's decision regarding the potential location of additional car spaces it was observed at the time of our surveys and supported by anecdotal evidence that a considerable proportion of the car parking easily accessible to the hospital is occupied by staff.

Therefore we would recommend that, in addition to considering the location of additional car spaces, the hospital also consider restricting staff access to those car spaces closest to the hospital which are allocated for use by outpatients and visitors.

6. Limits of this report

All surveys, forecasts and recommendations have been made in good faith and on the basis of the information available to PTC at the time of writing this report, as provided by Health Infrastructure and the Hospital.

The projected parking demand is hypothetical only and based on assumed patterns of travel mode shares and parking behaviours.

We undertook limited surveys in preparing this report.

Where general data has been applied based on other hospitals, there is the need to recognize the fact that each hospital is to some extent unique, particularly regarding driving habits, sensitivity to parking prices, alternative means of transport, available free parking on street, demographics of the area etc.

The demand estimates should be considered as indicative only because the process of making forward projections involves assumptions about a considerable number of variables and contingencies which are acutely sensitive to changing conditions.
Any reference to future market conditions should be regarded as estimates only.

Mary Seymour & Kelvin Worthington
Parking & Traffic Consultants

APPENDIX A

COFFS HARBOUR BASE HOSPITAL
MAIN CAR PARK OCCUPANCY SURVEYS

FORM 5D.	Project:	Coffs Harbour Base Hospital			Date:	5th March 2013	Surveyor:	Cathy McRae	

Instructions - please insert either number of spaces occupied ("occ.") OR vacant (vac), whichever is easier to count.

		7.00	7.00	8.00	8.00	9.00	9.00	10.00	10.00	11.00	11.00	12.00	12.00	13.00	13.00	
Car Park	**Capacity**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Remarks**
Main Car Park	309	236	73	301	8	307	2	309	0	309	0	308	1	309	0	Vacancy 12.00 Disabled parking
Vehicles parked in aisles and on adjacent grass		0		24		36		61		67		54		70		People who asked me what I was doing, were very keen for a multi-storey car park. They hope it eventuates, that they don't have to pay like in some of the Sydney car parks at hospitals.
TOTALS		236	73	325	8	343	2	370	0	376	0	362	1	379	0	

		14.00	14.00	15.00	15.00	16.00	16.00	17.00	17.00							
Car Park	**Capacity**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**							**Remarks**
Main Car Park	309	309	0	258	51	234	75	135	174							
Vehicles parked in aisles and on adjacent grass		58		52		44		40								One lady parked at 6:45 am in order to get a park for her 90 year old mother to have day surgery at 10:00 am, their only other option was to catch a taxi from up near Emerald Beach which would have cost over $100.
TOTALS		367	0	310	51	278	75	175	174							

APPENDIX A

COFFS HARBOUR BASE HOSPITAL
MAIN CAR PARK OCCUPANCY SURVEYS

FORM 5D.	Project:	Coffs Harbour Base Hospital				Date:	6th March 2013	Surveyor:	Cathy McRae						
Instructions - please insert either number of spaces occupied ("occ.") OR vacant (vac), whichever is easier to count.															
		7.00	**7.00**	**8.00**	**8.00**	**9.00**	**9.00**	**10.00**	**10.00**	**11.00**	**11.00**	**12.00**	**12.00**	**13.00**	**13.00**	
Car Park	**Capacity**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Remarks**
Main Car Park	309	169	140	279	30	309	0	309	0	309	0	308	1	307	2	Vacancy 12.00 and 13.00 disabled parking
Vehicles parked in aisles and on adjacent grass		0		3		41		52		65		66		58		9 spaces disabled parking 1 space for motorcycle parking
TOTALS		169	140	282	30	350	0	361	0	374	0	374	1	365	2	
		14.00	**14.00**	**15.00**	**15.00**	**16.00**	**16.00**	**17.00**	**17.00**							
Car Park	**Capacity**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**	**Occ.**	**Vac.**							**Remarks**
Main Car Park	309	309	0	295	14	218	91	102	207							1 vacancy 15.00 disabled parking
Vehicles parked in aisles and on adjacent grass		59		52		54		38								At 4.30pm a lot of staff start to leave the car park to go home.
TOTALS		368	0	347	14	272	91	140	207							

APPENDIX B

COFFS HARBOUR BASE HOSPITAL
OTHER PARKING OCCUPANCY SURVEYS

FORM 5D.	Project:	Coffs Harbour Base Hospital	Date:	5th March 2013	Surveyor:	Sarah Edwards

Instructions - please insert either number of spaces occupied ("occ.") OR vacant (vac), whichever is easier to count.

			7.00	7.00	7.00	8.00	8.00	8.00	9.00	9.00	9.00	10.00	10.00	10.00	11.00	11.00	11.00	12.00	12.00	12.00	13.00	13.00	13.00	14.00	14.00	14.00	
Car Park		**Capacity**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Remarks**
Area A	N11-59	49		35	14	5	47	2	7	46	3	3	46	3	10	48	1	9	47	2	7	48	1	10	49	0	* Extras on grass & in drop off zone, side of road
Area B	N60-71	12		8	4		11	1		12	0		12	0		12	0		12	0		12	0	10	12		
Area C	N72-77	6	2	6	0	2	4	2	3	6	0	3	6	0	4	6	0	3	4	2	2	5	1	6	5	1	
Area D	Grass		2			26			38			42			44			42			45			33			
Area E	NE1-9	9		9	0	1	8	1	2	9	0	1	9	0	1	9	0	1	8	1	1	9	0	1	8	1	
Area F	NCCI	180		43	137		134	46		148	32		165	15	1	166	14	1	166	14	2	161	19	2	170	10	
Gravel Area (Temp)	Gravel temp parking next to NCCI											43			41			47			48			62			
Area G	OTB West/Mid /East		38			60			77			71			72			76			80			87			
Area H	West	63		21	42		39	24	2	53	10	2	57	6	1	57	6	7	63	0	7	63	0	10	63	0	
Area I	EMU	33		26	7		31	2	1	32	1	1	32	1		32	1	1	31	2	1	32	1	2	32	1	
Area J	Emergency	10		3	7		7	3		9	1		10	0		10	0		10	0		10	0		9	1	
TOTALS		**362**	**42**	151	211	**94**	281	81	**130**	315	47	**166**	337	25	**174**	340	22	**187**	341	21	**193**	340	22	**223**	348	14	

			15.00	15.00	15.00	16.00	16.00	16.00	17.00	17.00	17.00																
Car Park		**Capacity**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**	**Remarks**
Area A	N11-59	49	12	49	0	8	47	2	2	40	9																
Area B	N60-71	12		12	0		12	0		11	1																
Area C	N72-77	6	5	5	1	3	3	3	2	2	4																
Area D	Grass		37			28			17																		
Area E	NE1-9	9	1	9	0	3	6	3	1	4	5																
Area F	NCCI	180	1	152	28		140	40	1	89	91																
Gravel Area (Temp)	Gravel temp parking next to NCCI		53			42			23																		
Area G	OTB West/Mid /East		83			66			33																		
Area H	West	63	10	59	4	9	51	12	9	43	20																
Area I	EMU	33	2	32	1	6	32	1	4	27	6																
Area J	Emergency	10		8	2		6	4		8	2																
TOTALS		**362**	**204**	326	36	**165**	297	65	**92**	224	138																

APPENDIX B

COFFS HARBOUR BASE HOSPITAL
OTHER PARKING OCCUPANCY SURVEYS

FORM 5D.		Project:				Coffs Harbour Base Hospital				Date:			6th March 2013			Surveyor:			Sarah Edwards						
Instructions - please insert either number of spaces occupied ("occ.") OR vacant (vac), whichever is easier to count.																									
			7.00	**7.00**	**7.00**	**8.00**	**8.00**	**8.00**	**9.00**	**9.00**	**9.00**	**10.00**	**10.00**	**10.00**	**11.00**	**11.00**	**11.00**	**12.00**	**12.00**	**12.00**	**13.00**	**13.00**	**13.00**	**14.00**	**14.00**	**14.00**	
Car Park		**Capacity**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Remarks**
Area A	N11-59	49		27	22		38	11	2	49	0	7	49	0	8	46	3	9	48	1	7	44	5	13	49	0	
Area B	N60-71	12		7	5		11	1		12	0		12	0		12	0		12	0		12	0		12	0	
Area C	N72-77	6	1	5	1	1	4	2	2	6	0	3	6	0	2	3	3	6	5	1	2	5	1	4	5	1	
Area D	Grass		2			19			53			56	0		62	0		57	0		58	0		62	0		
Area E	NE1-9	9	2	7	2	3	7	2	1	7	2	1	9	0	2	8	1	1	7	2	2	8	1	1	8	1	
Area F	NCCI	180		37	143		104	76		147	33	5	162	18	6	167	13	9	164	16	2	168	12	4	171	9	
Gravel Area (Temp)	Gravel temp parking next to NCCI		13			17			42			44	0		46	0		48	0		50	0		61	0		
Area G	OTB West/Mid /East		29			51			74			82	0		76	0		82	0		84	0		98	0		
Area H	West	63	1	28	35		53	10	1	59	4	6	63	0	6	58	5	8	63	0	7	63	0	8	63	0	
Area I	EMU	33	1	31	2		32	1	1	33	0		33	0		31	2	2	33	0	5	33	0	5	32	1	
Area J	Emergency	10		2	8		2	8		9	1		10	0		9	1		9	1		10	0		10	0	
TOTALS		**362**	49	144	218	91	251	111	176	322	40	204	344	18	208	334	28	222	341	21	217	343	19	256	350	12	

			15.00	**15.00**	**15.00**	**16.00**	**16.00**	**16.00**	**17.00**	**17.00**	**17.00**																
Car Park		**Capacity**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**	**Non Des**	**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**	**Remarks**
Area A	N11-59	49	10	49	0	10	49	0	7	40	9																
Area B	N60-71	12		12	0		12	0		11	1																
Area C	N72-77	6	4	6	0	2	5	1	1	2	4																
Area D	Grass		55	0		36	0		20																		
Area E	NE1-9	9	2	8	1	2	5	4		3	6																
Area F	NCCI	180	7	159	21	4	139	41	1	66	114																
Gravel Area (Temp)	Gravel temp parking next to NCCI		58	0		50	0		33	0																	
Area G	OTB West/Mid /East		76	0		65	0		46	0																	
Area H	West	63	8	61	2	9	56	7	8	48	15																
Area I	EMU	33	5	33	0	5	33	0	5	28	5																
Area J	Emergency	10		9	1		9	1		8	2																
TOTALS		**362**	225	337	25	183	308	54	121	206	156																

APPENDIX C

COFFS HARBOUR BASE HOSPITAL
SUMMARY OF PARKING OCCUPANCIES

FORM 5D.		Project:				Coffs Harbour Base Hospital						Date:			5th March 2013			SUMMARY								
Instructions - please insert either number of spaces occupied ("occ.") OR vacant (vac), whichever is easier to count.																										
			7.00	**7.00**	**7.00**	**8.00**	**8.00**	**8.00**	**9.00**	**9.00**	**9.00**	**10.00**	**10.00**	**10.00**	**11.00**	**11.00**	**11.00**	**12.00**	**12.00**	**12.00**	**13.00**	**13.00**	**13.00**	**14.00**	**14.00**	**14.00**
Car Park		**Capacity**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**
Main Car Park		309		236	73		301	8		307	2		309	0		309	0		308	1		309	0		309	0
Vehicles parked in aisles and on adjacent grass						24			36			61			67			54			70			58		
Area A	N11-59	49		35	14	5	47	2	7	46	3	3	46	3	10	48	1	9	47	2	7	48	1	10	49	0
Area B	N60-71	12		8	4		11	1		12	0		12	0		12	0		12	0		12	0	10	12	
Area C	N72-77	6	2	6	0	2	4	2	3	6	0	3	6	0	4	6	0	3	4	2	2	5	1	6	5	1
Area D	Grass		2			26			38			42			44			42			45			33		
Area E	NE1-9	9		9	0	1	8	1	2	9	0	1	9	0	1	9	0	1	8	1	1	9	0	1	8	1
Area F	NCCI	180		43	137		134	46		148	32		165	15	1	166	14	1	166	14	2	161	19	2	170	10
Gravel Area (Temp)	Gravel temp parking next to NCCI											43			41			47			48			62		
Area G	OTB West/Mid /East		38			60			77			71			72			76			80			87		
Area H	West	63		21	42		39	24	2	53	10	2	57	6	1	57	6	7	63	0	7	63	0	10	63	0
Area I	EMU	33		26	7		31	2	1	32	1	1	32	1		32	1	1	31	2	1	32	1	2	32	1
Area J	Emergency	10		3	7		7	3		9	1		10	0		10	0		10	0		10	0		9	1
TOTALS		**671**	42	387	284	118	582	89	166	622	49	227	646	25	241	649	22	241	649	22	263	649	22	281	657	14
	Des & Non Des			**429**			**700**			**788**			**873**			**890**			**890**			**912**			**938**	
			15.00	**15.00**	**15.00**	**16.00**	**16.00**	**16.00**	**17.00**	**17.00**	**17.00**															
Car Park		**Capacity**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**
Main Car Park		309		258	51		234	75		135	174															
Vehicles parked in aisles and on adjacent grass			52			44			40																	
Area A	N11-59	49	12	49	0	8	47	2	2	40	9															
Area B	N60-71	12		12	0		12	0		11	1															
Area C	N72-77	6	5	5	1	3	3	3	2	2	4															
Area D	Grass		37			28			17																	
Area E	NE1-9	9	1	9	0	3	6	3	1	4	5															
Area F	NCCI	180	1	152	28		140	40	1	89	91															
Gravel Area (Temp)	Gravel temp parking next to NCCI		53			42			23																	
Area G	West/Mid /East		83			66			33																	
Area H	West	63	10	59	4	9	51	12	9	43	20															
Area I	EMU	33	2	32	1	6	32	1	4	27	6															
Area J	Emergency	10		8	2		6	4		8	2															
TOTALS		**671**	256	584	87	209	531	140	132	359	312															
	Des & Non Des			**840**			**740**			**491**																

APPENDIX C

COFFS HARBOUR BASE HOSPITAL
SUMMARY OF PARKING OCCUPANCIES

FORM 5D.		Project:	Coffs Harbour Base Hospital			Date:	6th March 2013	SUMMARY																	
Instructions - please insert either number of spaces occupied ("occ.") OR vacant (vac), whichever is easier to count.																									
			7.00	**7.00**	**7.00**	**8.00**	**8.00**	**8.00**	**9.00**	**9.00**	**9.00**	**10.00**	**10.00**	**10.00**	**11.00**	**11.00**	**11.00**	**12.00**	**12.00**	**12.00**	**13.00**	**13.00**	**13.00**	**14.00**	**14.00**	**14.00**
Car Park		**Capacity**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**
Main Car Park		309		169	140		279	30		309	0		309	0		309	0		308	1		307	2		309	0
Vehicles parked in aisles and on adjacent grass			0			3			41			52			65			66			58			59		
Area A	N11-59	49		27	22		38	11	2	49	0	7	49	0	8	46	3	9	48	1	7	44	5	13	49	0
Area B	N60-71	12		7	5		11	1		12	0		12	0		12	0		12	0		12	0		12	0
Area C	N72-77	6	1	5	1	1	4	2	2	6	0	3	6	0	2	3	3	6	5	1	2	5	1	4	5	1
Area D	Grass		2			19			53			56	0		62	0		57	0		58	0		62	0	
Area E	NE1-9	9	2	7	2	3	7	2	1	7	2	1	9	0	2	8	1	1	7	2	2	8	1	1	8	1
Area F	NCCI	180		37	143		104	76		147	33	5	162	18	6	167	13	9	164	16	2	168	12	4	171	9
Gravel Area (Temp)	Gravel temp parking next to NCCI		13			17			42			44	0		46	0		48	0		50	0		61	0	
Area G	OTB West/Mid /East		29			51			74			82	0		76	0		82	0		84	0		98	0	
Area H	West	63	1	28	35		53	10	1	59	4	6	63	0	6	58	5	8	63	0	7	63	0	8	63	0
Area I	EMU	33	1	31	2		32	1	1	33	0		33	0		31	2	2	33	0	5	33	0	5	32	1
Area J	Emergency	10		2	8		2	8		9	1		10	0		9	1		9	1		10	0		10	0
TOTALS		**671**	49	313	358	94	530	141	217	631	40	256	653	18	273	643	28	288	649	22	275	650	21	315	659	12
	Des & Non Des			**362**			**624**			**848**			**909**			**916**			**937**			**925**			**974**	
			15.00	**15.00**	**15.00**	**16.00**	**16.00**	**16.00**	**17.00**	**17.00**	**17.00**															
Car Park		**Capacity**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**	**No Des**	**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**		**Occ.**	**Vac.**
Main Car Park		309		295	14		218	91		102	207															
Vehicles parked in aisles and on adjacent grass			52			54			38																	
Area A	N11-59	49	10	49	0	10	49	0	7	40	9															
Area B	N60-71	12		12	0		12	0		11	1															
Area C	N72-77	6	4	6	0	2	5	1	1	2	4															
Area D	Grass		55	0		36	0		20																	
Area E	NE1-9	9	2	8	1	2	5	4		3	6															
Area F	NCCI	180	7	159	21	4	139	41	1	66	114															
Gravel Area (Temp)	Gravel temp parking next to NCCI		58	0		50	0		33	0																
Area G	West/Mid /East		76	0		65	0		46	0																
Area H	West	63	8	61	2	9	56	7	8	48	15															
Area I	EMU	33	5	33	0	5	33	0	5	28	5															
Area J	Emergency	10		9	1		9	1		8	2															
TOTALS		**671**	277	632	39	237	526	145	159	308	363															
	Des & Non Des			**909**			**763**			**467**																

APPENDIX D

COFFS HARBOUR BASE HOSPITAL CAR PARK
LICENCE PLATE SURVEY RESULTS

All Parkers	Average Length of Stay	No. of Vehicles	Turnover	Spaces
5th March 2013	4.02	217		
6th March 2013	3.52	239		
Averages	**3.77**	**228**		

Excluding Long Stay Parkers				
5th March 2013	**2.36**	**162**	2.45	86
6th March 2013	**2.09**	**190**	2.97	86
Average	**2.23**	**176**	**2.71**	**86**

Spaces Surveyed	**86**

Coffs Harbour Base Hospital Car Park

Registration Plate Survey Results Form - all vehicles

Date: 5th March 2013

Time	*Length of Stay*							
Space	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***
78	10							
79	8	3						
80	4	4	2	1				
81	9	1	1					
82	11							
83	3	1	1	6				
84	1	9	1					
85	11							
86	1	3	1	1	5			
87	10	1						
88	11							
89	1	8	1					
90	5	1	3	2				
101	1	5	2	3				
102	2	1	1	1	6			
103	2	9						
104	5	1	5					
105	7	3						
106	7	4						
107	8	1	2					
108	11							
109	6	5						
110	3	2	6					
111	11							
112	9	1						
113	1	8	2					
114	11							
115	9	2						
252	7	3						
253	2	9						
254	3	8						
255	7	4						
256	7	3						
257	1	1	1	2	5			
258	1	5	3					
259	1	6	3					
260	2	3	1	4				
261	1	9						
262	10							
263	8	1						
264	10							
265	7	4						
266	9							
267	7	3						
268	7	3						
269	3	1	1	5				
270	10	1						
271	10							
272	9							
273	9							
274	4	1	4	1				
275	10							
276	9							
277	9							
278	1	7						
279	5	1	2	1				
280	4	2						
281	1	2	2	1				
282	8							
283	1	4	4					
284	2	1	3					
285	2	2	1	2				
286	4	1	4					
287	2	1	1	3				
288	5	2	2	2				
17	9	2						
18	4	1	6					
19	9	2						
20	5	2	1	2				
21	7	3	1					
22	11							
23	1	8	2					
24	8	2						
25	1	1	2	1	2	2	1	
26	10							
27	8	2						
50	1	1	2	7				
51	1	2	2	5				
52	1	10						
53	8	3						
54	11							
55	2	4	1	4				
56	4	2	1	2	1			
57	1	10						
58	1	10						
59	2	4	5					

Average Length of Stay **4.02**

No. of Vehicles ***217***

Coffs Harbour Base Hospital Car Park

Registration Plate Survey Results Form - all vehicles

Date: 6th March 2013

Time	*Length of Stay*							
Space	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***
78	8	1	1	1				
79	5	2	4					
80	2	1	1	1	1	1	4	
81	11							
82	1	3	7					
83	10	1						
84	10	1						
85	5	6						
86	9	2						
87	2	5	1	2				
88	1	9	1					
89	1	10						
90	10	1						
101	3	1	2	1	1	1	1	1
102	5	1	2	2	1			
103	2	5	4					
104	9	2						
105	10	1						
106	8	1	1	1				
107	8	2	1					
108	10	1						
109	9	1						
110	4	1	1	1	2			
111	2	6	2					
112	5	4	1					
113	11							
114	11							
115	6	1	1	1	1			
252	6	4						
253	1	1	1	2	1	4		
254	8	2						
255	9	1						
256	1	9						
257	2	1	2	1	4			
258	3	2	1	2				
259	1	2	2	5				
260	8							
261	10							
262	10							
263	9	1						
264	10							
265	9							
266	8							
267	9							
268	3	3	3					
269	7							
270	8							
271	8							
272	6	3						
273	9	1						
274	7	2						
275	1	6	1					
276	9							
277	9							
278	10							
279	2	1	2	2	3			
280	9							
281	2	2	2	2				
282	9							
283	4	1	2					
284	1	6	2					
285	1	5	2	1				
286	2	3	2	2				
287	4	2	1					
288	1	1	1	4				
17	7	1	1					
18	10							
19	9							
20	9							
21	1	6	3	1				
22	4	1	2	3				
23	8							
24	8	1	1					
25	4	3	4					
26	1	8						
27	1	2	2	4				
50	1	3	2	3	1	1		
51	4	1	3	1	2			
52	2	2	2	1	4			
53	1	9	1					
54	1	3	1	1	4			
55	1	4	1	1	1	1	1	
56	1	1	9					
57	1	8						
58	9	2						
59	2	7						

Average Length of Stay **3.52**

No. of Vehicles ***239***

Coffs Harbour Hospital
Registration Plate Survey Results Form - short stay only
Date: 5th March 2013

Space	*Vehicles per space Length of Stay* 1	2	3	4	5	6	7	8
78								
79	3							
80	4	4	2	1				
81	1	1						
82								
83	3	1	1	6				
84	1	1						
85								
86	1	3	1	1	5			
87	1							
88								
89	1	1						
90	5	1	3	2				
101	1	5	2	3				
102	2	1	1	1	6			
103	2							
104	5	1	5					
105	3							
106	4							
107	1	2						
108								
109	6	5						
110	3	2	6					
111								
112	1							
113	1	2						
114								
115	2							
252	3							
253	2							
254	3							
255	4							
256	3							
257	1	1	1	2	5			
258	1	5	3					
259	1	6	3					
260	2	3	1	4				
261	1							
262								
263	1							
264								
265	4							
266								
267	3							
268	3							
269	3	1	1	5				
270	1							
271								
272								
273								
274	4	1	4	1				
275								
276								
277								
278	1							
279	5	1	2	1				
280	4	2						
281	1	2	2	1				
282								
283	1	4	4					
284	2	1	3					
285	2	2	1	2				
286	4	1	4					
287	2	1	1	3				
288	5	2	2	2				
17	2							
18	4	1	6					
19	2							
20	5	2	1	2				
21	3	1						
22								
23	1	2						
24	2							
25	1	1	2	1	2	2	1	
26								
27	2							
50	1	1	2					
51	1	2	2	5				
52	1							
53	3							
54								
55	2	4	1	4				
56	4	2	1	2	1			
57	1							
58	1							
59	2	4	5					

Average Length of Stay **2.36**

No. of Vehicles **162**
Spaces used for casuals **66**
T/N **2.45**

Coffs Harbour Hospital
Registration Plate Survey Results Form - short stay only
Date: 6th March 2013

Time	*Vehicles per space*							
	Length of Stay							
Space	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***
78	1	1	1					
79	5	2	4					
80	2	1	1	1	1	1	4	
81								
82	1	3						
83	1							
84	1							
85	5	6						
86	2							
87	2	5	1	2				
88	1	1						
89	1							
90	1		1					
101	3	1	2	1	1	1	1	1
102	5	1	2	2	1			
103	2	5	4					
104	2							
105	1							
106	1	1	1					
107	2	1						
108	1							
109	1							
110	4	1	1	1	2			
111	2	6	2					
112	5	4	1					
113								
114								
115	6	1	1	1	1			
252	6	4						
253	1	1	1	2	1	4		
254	2							
255	1							
256	1							
257	2	1	2	1	4			
258	3	2	1	2				
259	1	2	2	5				
260								
261								
262								
263	1							
264								
265								
266								
267								
268	3	3	3					
269								
270								
271								
272	6	3						
273	1							
274	2							
275	1	6	1					
276								
277								
278								
279	2	1	2	2	3			
280								
281	2	2	2	2				
282								
283	4	1	2					
284	1	6	2					
285	1	5	2	1				
286	2	3	2	2				
287	4	2	1					
288	1	1	1	4				
17	1	1						
18								
19								
20								
21	1	6	3	1				
22	4	1	2	3				
23								
24	1	1						
25	4	3	4					
26	1							
27	1	2	2	4				
50	1	3	2	3	1	1		
51	4	1	3	1	2			
52	2	2	2	1	4			
53	1	1						
54	1	3	1	1	4			
55	1	4	1	1	1	1	1	
56	1	1						
57	1							
58	2							
59	2							

Average Length of Stay **2.09**

No. of Vehicles **190.00**
Spaces used for casuals **64**
Turnover **2.97**

APPENDIX E

COFFS HARBOUR BASE HOSPITAL DEMAND DRIVERS AND ASSUMPTIONS

		HOSPITAL DETAILS			HOSPITAL DETAILS		ASSUMPTIONS								
		Current	Notes	% change current data compared to 2010 data	Future	Notes	% drivers	Notes	People/ car	Notes	% park in hospital	Notes	T/over	Notes
COFFS HARBOUR BASE HOSPITAL														
	FTE - STAFF	1025.1	*1*	3.68%	1062.86	*17*								
	FTE - DOCTORS	98.84	*1*	28.98%	127.49	*17*								
	FTE - TOTAL	**1123.94**		5.50%	1185.80									
STAFF														
ACTUAL STAFF ON SITE	**Weekdays**													
	Day Shift and Admin	670	*1*	9.48%	733	*17*	85%	*3*	1	*4*	98%	*7*	1	*8*
	Afternoon	133	*1*	10.83%	147	*17*	85%	*3*	1	*4*	98%	*7*	1	*8*
	Night	59	*1*	5.36%	62	*17*	100%	*3*	1	*4*	100%	*7*	1	*8*
ACTUAL STAFF ON SITE	**Weekends**													
	Day Shift	152	*1*	5.56%	160	*17*	85%	*3*	1	*4*	98%	*7*	1	*8*
	Afternoon/Night	142	*1*	3.65%	147	*17*	100%	*3*	1	*4*	100%	*7*	1	*8*
VMO's	Weekdays	30	*1*	0.00%	30	*17*	100%	*14*	1	*4*	100%	*7*	3	*8*
	Weekends	6	*1*	0.00%	6	*17*	100%	*14*	1	*4*	100%	*7*	3	*8*
EDUCATION AND TRAINING	Weekdays only (all day)	15	*1*	0.00%	15	*17*	50%	*15*	1	*4*	98%	*7*	1	*8*
	University of NSW Students	28	*16*		28	*16*	80%	*16*	1	*4*	98%	*7*	1	*8*
RETAIL STAFF (catering etc)	Weekdays	1	*1*		2	*17*								
	Weekends	1	*1*		2	*17*								
OUTPATIENTS (AVERAGE PER DAY)	Hospital Outpatient	165	*1*											
	Pre Admission	11	*1*											
	Pregnancy Care Service	30	*1*											
	Renal	18	*1*											
	Community Health	155	*1*											
	Fracture	90	*1*											
	Allied Health	90	*1*											
	Drug & Alcohol	33	*1*											
	Methadone	28	*1*											
	Dental	110	*1*											
	Community Care (CAPAC)	15	*1*											
	Oncology / Radiotherapy	194	*1*											
	Pathology	45	*1*											
	Radiography	48	*1*											
	Breastscreen	30	*1*											
	Mental Health	46	*1*											
	Needle Syringe Prog.	30	*1*											
	Psychogeriatrician	1	*1*											
	Hydrotherpay Pool	10	*1*											
	Outpatients per day	**1149**		57.80%	**1813**	*17*								
	Allowance for multiple presentations	**1.1**		*18*	**1.1**	*18*								
	Adjusted Outpatients per day	**1044**			**1648**		80%	*5*	1	*6*	98%	*7*	2.71	*9*
VISITORS - WEEKDAYS														
	Total overnight beds	292	*1*											
	Bed occupancy	1	*2*											
	Average number of inpatients	292												
	Visitors per patient average	2	*1*											
	Total visitors per day	**584**		7.35%	**627**	*17*	80%	*5*	1.87	*13*	98%	*7*	2.71	*9*
VISITORS - WEEKENDS														
	Total beds	292												
	Bed occupancy	1	*2*											
	Average number of inpatients	292												
	Visitors per patient average	4	*1*											
	Total visitors per day	**1,168**		7.35%	**1,254**	*17*	100%	*10*	3	*13*	98%	*7*	2.71	*9*
EMERGENCY DEPT	Daily presentations	94	*1*	10.00%	103	*19*	76%	*1*	1	*6*	98%	*7*	2.71	*9*
FLEET VEHICLES - WEEKDAYS		115	*1*	0.00%	115	*17*	100%		1		100%	*7*	3	*8*
- WEEKENDS		110	*1*		110	*20*	100%		1		100%	*7*	3	*8*
VOLUNTEERS - WEEKDAYS		25	*1*	25.00%	31	*17*	85%	*11*	1		98%	*7*	1	*8*
- WEEKENDS		4	*1*	0.00%	4	*17*	100%	*11*	1		98%	*7*	1	*8*
OTHERS (CONTRACTORS, AREA HEALTH STAFF ETC)	Average per day (weekdays only)	25	*1*	25.00%	31	*17*	100%		1		100%	*7*	3	*12*

NOTES

1	Figure provided by hospital.
2	For parking purposes use 100% of beds occupied at any one time
3	Day and afternoon shift 15% allowance for public transport users and "kiss and drop". Assume 100% of night shift drive, for security reasons
4	Car Pooling/Sharing encouraged but not common
5	20% allowance for other mode shares (e.g bus, bicycle, motorbike etc)
6	Only one person in car likely to be patient
7	Allowance of 2% for "kiss and drop" excluding VMOs,night shift,fleet vehicles and others.
8	Staff and Volunteers are all day parkers so turnover is 1. VMO's and Fleet vehicles likely to come and go, so assume turnover of 3
9	Based on PTC licence plate surveys at CHBH
10	Weekend visitors more likely to drive than weekday, due to very limited bus services at weekends and availability of spaces in the car park at weekends
11	Volunteers mostly local retired people, so more likely to drive on weekends. Assume 15% allowance for public transport on weekdays.
12	Contractors and area health staff likely to be on site for part of the day only. Assume a space turnover of 3
13	Based on PTC surveys at other hospitals
14	Assume all VMO's drive, as they usually working at different locations during the day
15	Assume 50% of students travel by public transport or "kiss and drop".
16	University of NSW has a shortage of 28 parking spaces for students.Assume 80% drive (information provided by University) Twice monthly training days overflow park in gravel area behind NCCI.
17	Current data supplied by the hospital increased by historical growth rate between 2010 and current.
18	PTC allowance for multiple occasions of service to same outpatient. Hospital advises that above data does not make allowance for this, hence PTC introducing an allowance based on our experience
19	Assume nominal 10% increase (PTC estimate).
20	Assume same as current based on weekday % change.

APPENDIX E **COFFS HARBOUR BASE HOSPITAL DEMAND ESTIMATE- CURRENT**

	TOTAL SPACES		**1100**						
Notes	**Base Estimate**	**People**	**% Cars**	**people per car (a)**	**Total cars per day**	**% cars parking in hospital car park**	**Vehicles parking in hospital car park**	**Turnover**	**Peak spaces required**
	WEEKDAYS								
	COFFS HARBOUR BASE HOSPITAL								
	STAFF								
	Day Shift and Administration	670	85%	1	570	98%	558	1.0	558
	Afternoon Shift	133	85%	1	113	98%	111	1.0	
A	*Afternoon shift present at peak time (33%)*	*44*	*85%*	*1*	*37*	*98%*	*37*	*1.0*	*37*
	Night Shift	59	100%	1	59	100%	59	1.0	
	VMO's	30	100%	1	30	100%	30	3	10
	EDUCATION & TRAINING Hospital	15	50%	1	8	98%	7	1.0	7
D	**EDUCATION & TRAINING** University of NSW	28	80%	1	22	98%	22	1.0	22
	OUTPATIENTS	1044	80%	1	835	98%	819	2.7	302
	VISITORS	584	80%	2	250	98%	245		
B	*Visitors during peak hours (50%)*	*292*	*80%*	*2*	*125*	*98%*	*122*	*2.7*	*45*
	EMERGENCY DEPARTMENT PRESENTATIONS	94	76%	1	71	98%	70		
C	*Emergency Dept presentations during peak hours 8am - 6pm (62%)*	*58*	*76%*	1	*44*	*98%*	*43*	*2.7*	*16*
	FLEET VEHICLES	115	100%	1	115	100%	115	3	38
	VOLUNTEERS	25	85%	1	21	98%	21	1	21
	OTHERS (CONTRACTORS ETC)	25	100%	1	25	100%	25	3.0	8
	TOTAL WEEKDAYS								**1064**
	Theoretical Occupancy % at peak								*97%*

Notes

A Assume that only 33% of afternoon shift present at peak times based on PTC experience and findings at other hospitals..

B Assume that only 50% of visitors present at peak period

C % presentations figure provided by CHBH.

D Education & Training University of NSW data provided by the University of NSW

APPENDIX E **COFFS HARBOUR BASE HOSPITAL DEMAND ESTIMATE - FUTURE**

	TOTAL SPACES		**1400**						
Notes	**Base Estimate**	**People**	**% Cars**	**people per car (a)**	**Total cars per day**	**% cars parking in hospital car park**	**Vehicles parking in hospital car park**	**Turnover**	**Peak spaces required**
	WEEKDAYS								
	COFFS HARBOUR BASE HOSPITAL								
	STAFF								
	Day Shift and Administration	733	85%	1	623	98%	611	1.0	611
	Afternoon Shift	147	85%	1	125	98%	123	1.0	
A	*Afternoon shift present at peak time (33%)*	*49*	*85%*	*1*	*41*	*98%*	*41*	*1.0*	*41*
	Night Shift	62	100%	1	62	100%	62	1.0	
	VMO's	30	100%	1	30	100%	30	3	10
	EDUCATION & TRAINING Hospital	15	50%	1	8	98%	7	1.0	7
D	**EDUCATION & TRAINING** University of NSW	28	80%	1	22	98%	22	1.0	22
	OUTPATIENTS	1813	80%	1	1,450	98%	1,421	2.7	524
	VISITORS	627	80%	2	268	98%	263		
B	*Visitors during peak hours (50%)*	*313*	*80%*	*2*	*134*	*98%*	*131*	*2.7*	*48*
	EMERGENCY DEPARTMENT PRESENTATIONS	103	76%	1	79	98%	77		
C	*Emergency Dept presentations during peak hours 8am - 6pm (62%)*	*64*	*76%*	1	*49*	*98%*	*48*	*2.7*	*18*
	FLEET VEHICLES	115	100%	1	115	100%	115	3	38
	VOLUNTEERS	31	85%	1	27	98%	26	1	26
	OTHERS (CONTRACTORS ETC)	31	100%	1	31	100%	31	3.0	10
	TOTAL WEEKDAYS								**1356**
	Theoretical Occupancy % at peak								*97%*

Notes

A Assume that only 33% of afternoon shift present at peak times based on PTC experience and findings at other hospitals.

B Assume that only 50% of visitors present at peak period

C % presentations figure provided by CHBH.

D Education & Training University of NSW data provided by the University of NSW

Appendix B

Land proposed for Acquisition

A1

PRELIMINARY

EXISTING BOUNDARY

EXISTING BOUNDARY

APPROX 6.0m
SEWER RISING MAIN

APR. 15m

EXISTING BOUNDARY
APPROX. 149m

APPROX. 3.1m
ELEC.

APPROX 4.6m
TELECOM.

APPROX. 6.0m EX. SERVICES ZONE
(ASSUMED NON-BUILDABLE AREA)

APPROX 2.0m
ELEC.

PROPOSED PARKING
APPROX 2.83ha

EXISTING BOUNDARY
APPROX. 156m

APPROX. 155m

APPROX. 8m
SEWER RISING MAIN

APPROX. 43m

APPROX. 154m
PROPOSED ACCESS ROAD
APPROX. 0.35ha

APPROX. 15m

APPROX. 232m
EXISTING BOUNDARY

EXISTING BOUNDARY

EXISTING HOSPITAL PROPERTY

EXISTING CARPARK

EXISTING BOUNDARY

EXISTING BOUNDARY

EXTENT OF ROAD TO
BE AGREED

CAD FILENAME: Q:\C&M\Projects\01001-01100\VPN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\SK\01094_SK001.dwg

REV.	DES.	DATE	VER.	DATE	DESCRIPTION
C	T.T.	31/01/14	A.M.	31/01/14	ISSUE FOR INFORMATION ONLY
B	T.T.	22/01/14	A.M.	22/01/14	ISSUE FOR INFORMATION ONLY
A	T.T.	20/01/14	A.M.	20/01/14	ISSUE FOR INFORMATION ONLY

CLIENT: NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER: APP

S•C•P CONSULTING PTY LTD
CIVIL AND STRUCTURAL ENGINEERS
www.scpconsult.com.au ABN 89 093 874 024
LEVEL 2 - DANCKEN HOUSE, 507 KENT STREET SYDNEY
PO BOX A2002 SYDNEY SOUTH NSW 1235 AUSTRALIA
EMAIL ADDRESS - mail@scpconsult.com.au
TEL (02)9267 9212 FAX (02)9261 5871

DESIGNED	T.TOMIC
DATE	20/01/14
VERIFIED	A.MANCONE
DATE	20/01/14
DRAWN	T.TOMIC
SCALE @ A1	1:500

COFFS HARBOUR HEALTH CAMPUS

SKETCH SHOWING PRELIMINARY
AREAS FOR PARKING AND ACCESS

STATUS	DRAWING No.	REVISION
SKETCH / INFORMATION	01094_SK001	C

Appendix C

Plans

A1

COFFS HARBOUR HEALTH CAMPUS
ON-GRADE CAR PARKING & ACCESS ROAD
CIVIL ENGINEERING WORKS - SCHEME DESIGN

DRAWING INDEX

DRAWING NO.	DRAWING TITLE
01094_C100	COVER SHEET, DRAWING INDEX, LEGEND & LOCALITY SKETCH
01094_C110	GENERAL NOTES
01094_C201	GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 1
01094_C202	GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 2
01094_C203	GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 3
01094_C204	GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 4
01094_C205	GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 5
01094_C206	GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 6
01094_C207	GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 7
01094_C208	GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 8
01094_C209	GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 9
01094_C210	GENERAL ARRANGEMENT PLAN STAGE 2 - SHEET 1
01094_C211	GENERAL ARRANGEMENT PLAN STAGE 2 - SHEET 1
01094_C301	ROAD LONGITUDINAL SECTIONS
01094_C351	TYPICAL SECTIONS
01094_C501	GENERAL DETAILS SHEET 1
01094_C502	GENERAL DETAILS SHEET 2
01094_C701	SEDIMENT & EROSION CONTROL DETAILS
01094_C802	SEDIMENT & EROSION CONTROL PLAN - STAGE 1
01094_C803	SEDIMENT & EROSION CONTROL PLAN - STAGE 2

DRAWING LEGEND

BOUNDARY

CONTROL 10 — ROAD CONTROL LINE

K&G — KERB & GUTTER (K&G)

K.O. — KERB ONLY (K.O.)

D.C. — DISHED CROSSING (D.C.)

C.E.S. — CONCRETE EDGE STRIP (C.E.S.)

BATTER SLOPE

RETAINING WALL

LIMIT OF PAVEMENT WORK

88.4 — FINISHED SURFACE CONTOUR

STORMWATER DRAINAGE LINE

F.P. — STORMWATER SUBSOIL DRAINAGE LINE WITH FLUSHING POINT

GSIP JP GGP GGP (SAG) — STORMWATER DRAINAGE PITS

UP INV. 52.653
Ø300 uPVC 'SB'
12.683m @ 2.4%
DN INV. 52.349

UPSTREAM INVERT LEVEL
PIPE DIAMETER, TYPE & CLASS
PIPE LENGTH & GRADE
DOWNSTREAM INVERT LEVEL

3 / A — STORMWATER STRUCTURE NUMBER / STORMWATER DRAINAGE LINE LETTER

RL91.86 — FINISHED SURFACE LEVEL

TOW84.20 — TOP OF WALL LEVEL
BOW84.00 — BOTTOM OF WALL LEVEL

REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT:

NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER:

APP

S•C•P

C&M CONSULTING ENGINEERS

CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

SUITE 26
11 - 13 BROOKHOLLOW AVE
BAULKHAM HILLS NSW 2153

PHONE: (02) 9680 3100
FAX: (02) 9634 6989

ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: COVER SHEET, DRAWING INDEX, LEGEND & LOCALITY SKETCH

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	NA
STATUS	DA / SD		
DRAWING No.	01094_C100	REVISION	01

CAD FILENAME: G:\C&M\Projects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C100.dwg

A1

GENERAL NOTES:

1. ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION.
2. THE CONSTRUCTOR SHALL PREPARE A DILAPIDATION REPORT FOR THE EXISTING INFRASTRUCTURE WITHIN THE ROAD RESERVE, INCLUDING BUT NOT LIMITED TO KERBS, GUTTERS, FOOTPATHS, VEHICULAR CROSSINGS, STREET SIGNS, SERVICE FITTING COVERS, ETC.
3. THE CONSTRUCTOR SHALL REVIEW, BE AWARE AND AT ALL TIMES COMPLY WITH THE SPECIFIC REQUIREMENTS FOR THIS DEVELOPMENT AS SET OUT IN THE DEVELOPMENT APPROVAL FOR THE PROJECT.
4. ANY CHANGES MADE BY THE CONSTRUCTOR TO ANY LEVEL, DIMENSION, LOCATION, POSITION, ALIGNMENT ETC., OF ANY OF THE WORKS SHOWN ON THE DRAWINGS WITHOUT THE WRITTEN CONSENT OF C&M CONSULTING ENGINEERS PTY. LTD. AND OR THE PRINCIPAL CERTIFYING AUTHORITY IS DONE SO AT THE CONSTRUCTORS OWN RISK.
5. THE CONSTRUCTOR SHALL ALLOW TO LIAISE WITH AND PROVIDE SUFFICIENT NOTICE TO THE PRINCIPAL CERTIFYING AUTHORITY TO ENSURE THAT ALL WORKS ARE INSPECTED TO ENABLE COMPLIANCE CERTIFICATES TO BE ISSUED THROUGHOUT THE CONSTRUCTION PERIOD. THE CONSTRUCTOR SHALL LIAISE WITH THE PRINCIPAL CERTIFYING AUTHORITY PRIOR TO ANY CONSTRUCTION WORKS COMMENCING AND PREPARE AN INSPECTION AND TEST PLAN WITH A MUTUALLY AGREED WITNESS AND HOLD POINTS FOR THE CONSTRUCTION WORKS.
6. IF THE PRINCIPAL CERTIFYING AUTHORITY IS NOT COFFS HARBOUR COUNCIL, THEN THE CONSTRUCTOR MUST CONTACT COFFS HARBOUR COUNCIL'S WORKS DIVISION TO ENABLE THEIR INSPECTION OF ALL WORKS (INCLUDING EROSION AND SEDIMENT CONTROL MEASURES) WITHIN THE ROAD RESERVE AREA.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL ACCESS TO THE SITE. THE ACCESS SHALL BE ALL WEATHER SAFE ACCESS TO THE CONTRACTOR'S SITE FACILITIES AT ALL TIMES FOR THE DURATION OF THE CONTRACT.
8. A TEMPORARY HOARDING OR FENCE OF MINIMUM 1.5m HIGH IS TO BE PROVIDED AROUND THE SITE TO PROTECT THE PUBLIC PRIOR TO COMMENCEMENT OF WORKS. HOARDINGS OR FENCES ARE TO BE STRUCTURALLY ADEQUATE. THE CONTRACTOR SHALL OBTAIN AN APPROVAL FROM COUNCIL PRIOR TO ERECTING THE HOARDING OR FENCE.
9. ALL NEW WORKS SHALL MAKE A SMOOTH CONNECTION WITH ANY FORMATIONS, STRUCTURES, ETC.
10. ALL ALTERATIONS AND/OR ADDITIONS TO EXISTING WORK, THE CONTRACTOR SHALL VERIFY THE DIMENSIONS OF THE EXISTING WORK BEFORE PROCEEDING AND NOTIFY THE SUPERINTENDENT OF DISCREPANCIES.
11. THE CONTRACTOR SHALL USE MANUFACTURED ITEMS IN THE WORK ONLY IN ACCORDANCE WITH THE CURRENT PUBLISHED
12. THE WORKS SHALL BE CONSTRUCTED IN SUCH A MANNER THAT THERE IS MINIMUM DISTURBANCE TO EXISTING TREES AND VEGETATION.
13. THE PUBLIC FOOTWAY AND ROADWAY FRONTING THE SITE SHALL BE MAINTAINED IN A SAFE AND UNOBSTRUCTED MANNER AT ALL TIMES DURING THE CONSTRUCTION WORKS.
14. THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR REPAIRING TO THE SATISFACTION OF THE ASSET OWNER, ANY DAMAGE CAUSED TO ANY EXISTING INFRASTRUCTURE WITHIN THE ROAD RESERVE, INCLUDING BUT NOT LIMITED TO KERBS, GUTTERS, FOOTPATHS, VEHICULAR CROSSINGS, STREET SIGNS, SERVICE FITTING COVERS, ETC.
15. THE SITE SHALL BE KEPT IN A TIDY CONDITION AT ALL TIMES. LITTER RUBBISH AND BUILDING RUBBLE SHALL BE PLACED IN CONTAINERS OR BINS AND REGULARLY REMOVED FROM SITE AS REQUIRED.

LINEMARKING AND SIGN POSTING NOTES:

1. PROVIDE TRAFFIC MANAGEMENT IN ACCORDANCE WITH THE REQUIREMENTS THE RMS TRAFFIC CONTROL AT WORK SITES MANUAL AND AS 1742.3 WHILE UNDERTAKING THE WORK.
2. LINE MARKING AND SIGN POSTING SHALL COMPLY WITH THE REQUIREMENTS OF AS1742.
3. REFLECTIVE RAISED PAVEMENT MARKERS SHALL COMPLY WITH THE REQUIREMENTS OF AS 1906.3. INSTALLATION TO THE REQUIREMENTS OF RMS QA DOCUMENT R142.
4. THE SURFACE AREA TO BE LINE MARKED MUST BE DRY AND FREE OF DIRT, GRAVEL, FLAKING PAVEMENT MARKING MATERIAL AND OTHER LOOSE OR FOREIGN MATERIAL.
5. ALL PAVEMENT MARKINGS SHALL BE THERMO PLASTIC WITH REFLECTIVE GLASS BEADS TO AS2009, UNLESS NOTED OTHERWISE. THICKNESS OF THERMO PLASTIC SHALL BE 1.8mm FOR LINES AND 3mm FOR OTHER MARKINGS.
6. SIGN SUPPORT STRUCTURES SHALL BE MANUFACTURED IN ACCORDANCE WITH AS 4100. ALL STEEL COMPONENTS SHALL BE HOT-DIP GALVANISED TO THE REQUIREMENT OF AS4680.

STORMWATER NOTES:

1. STORMWATER DESIGN CRITERIA:
   MINOR STORM ARI: 10 YEARS
   MAJOR STORM ARI: 100 YEARS
   IFD DATA LOCALITY: COFFS HARBOUR
2. PIPES DN375 AND LARGER TO BE STEEL REINFORCED CONCRETE PIPES CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS U.N.O.
3. PIPES DN300 AND SMALLER SHALL BE GRADE SH (SEWER GRADE) uPVC WITH RUBBER RING JOINTS.
4. EQUIVALENT STRENGTH FIBRE REINFORCED CONCRETE PIPES MAY BE USED UP TO DN450.
5. PIPES FOR SUB-SOIL DRAINS SHALL BE SLOTTED 100MM DIAMETER CLASS 1000 WRAPPED IN GEOFABRIC, U.O.N, COMPLYING WITH THE REQUIREMENTS OF AS 2439.
6. PRECAST PITS, WHERE ALLOWED, AND THE INSITU BASE SHALL COMPLY WITH THE REQUIREMENT OF THE MANUFACTURER.
7. ALL MILD STEEL FIXTURES INCLUDING GRATES, FRAMES, STEP IRONS, LADDERS, ETC., SHALL BE HOT DIP GALVANISED. GALVANISING SHALL COMPLY WITH THE REQUIREMENTS OF AS 1214 OR AS 1650, AS APPROPRIATE.
8. GEOFABRIC FILTER SHALL BE PERMEABLE, NON-WOVEN FABRIC MANUFACTURED FROM A POLYMER SUCH AS POLYPROPYLENE OR POLYESTER OF MASS NOT LESS THAN 135G/M2.
9. THE MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:
   CONCRETE AND FRC PIPES: EXTERNAL PIPE DIAMETER PLUS 400MM.
   uPVC PIPE: EXTERNAL DIAMETER OF PIPE PLUS 200MM.
   SUBSOIL PIPE: 250MM.
10. ALL PIPES SHALL BE PLACED CENTRALLY WITHIN THE TRENCH WITH EQUAL CLEARANCE EACH SIDE.
11. PIPE BEDDING MATERIAL SHALL BE CLEAN COARSE RIVER SAND WITH DEPTH AS FOLLOWS:
    CONCRETE AND FRC PIPES: 100MM (175MM IN ROCK)
    UPVC PIPE: 75MM (100MM IN ROCK)
    SUBSOIL DRAINS: 50MM
12. ALL PIPES SHALL BE BACKFILLED WITH GRANULAR MATERIAL SUCH AS QUARRY FINES OR COARSE RIVER SAND TO A MINIMUM OF 150MM ABOVE THE PIPE. THE GRANULAR MATERIAL SHALL BE PLACED IN 150MM THICK MAXIMUM LAYERS AND COMPACTED TO ACHIEVE A DENSITY INDEX (ID) OF 70%. FREQUENCIES OF COMPACTION TESTS FOR TRENCHES SHALL BE 1 TEST PER 2 LAYERS PER 40 LINEAR METRE.
13. BACKFILL THE REMAINDER OF THE TRENCH ABOVE THE SAND TO SUBGRADE LEVEL WITH TRENCH MATERIAL. PLACE AND COMPACT MATERIALS IN LAYERS NOT EXCEEDING 150MM LOOSE THICKNESS. MATERIAL LOWER THAN 500MM BELOW SUBGRADE LEVEL SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY. THE TOP 500MM BELOW PAVEMENT SUBGRADE LEVELS SHALL BE COMPACTED TO AT LEAST 100% STANDARD MAXIMUM DRY DENSITY.
14. FILTER MATERIAL FOR SUBSOIL SHALL BE COARSE SAND OR CRUSHED STONE COMPLYING WITH ONE OF THE GRADINGS IN THE TABLE BELOW. WHERE NOTED ON THE DRAWINGS THE 7MM CRUSHED ROCK FILTER MATERIAL SHALL BE ENCLOSED WITHIN FILTER FABRIC SHEET AS SPECIFIED. FILTER MATERIAL SHALL BE PLACED IN 250MM LAYERS AND COMPACTED TO DENSITY INDEX (ID) OF 60%.

AS SIEVE SIZE (mm)	SAND	7mm ROCK
9.5	100	100
6.7	-	75-100
4.75	90-100	20-55
2.36	75-100	0-15
1.18	50-90	
0.6	20-60	
0.3	10-30	
0.15	2-10	
0.075	0-3	0-2

15. UNLESS OTHERWISE DETAILED OR PERMITTED, THE MINIMUM GRADE OF ALL PIPE WORKS SHALL BE 1.0%.

BLOCKWORK NOTES:

1. ALL WORKMANSHIP AND MATERIALS IN ACCORDANCE WITH AS 3700 AND AS 2733.
2. BLOCKS SHALL BE BORAL SPLIT FACE CHARCOAL WITH MATCHING CAPPING
3. MORTAR SHALL BE FRESHLY PREPARED, UNIFORMLY MIXED IN THE FOLLOWING RATION: 1:1/10:3 CEMENT, LIME SAND, IN ACCORDANCE WITH ASA 123 AND AS 3700 CLAUSE 2.2.2.
4. BOTTOM COURSE OF BLOCKS TO HAVE INSPECTION OPENINGS TO ALL CORES TO BE GROUTED. THOROUGHLY CLEAN ALL CORES PRIOR TO REINFORCEMENT PLACING.
5. STOP POUR 50 BELOW TOP OF BLOCK. MINIMUM GROUT STRENGTH 20MPA. SLUMP - 230MM. MAX AGGREGATE SIZE = 10MM
6. PROVIDE VERTICAL CONTROL JOINTS IN WALLS AT 8 METRE MAX. CENTRES. U.N.O.
7. TIE ALL VERTICAL REINFORCEMENT TO STARTER BARS AND TOP HORIZONTAL REINFORCEMENT.
8. MAXIMUM POUR HEIGHT TO BE 2400.
9. OPEN ENDED DOUBLE U - BLOCKS TO BE USED FOR ALL REINFORCED BLOCKWORK.

PAVEMENT NOTES:

1. FOR RIGID PAVEMENT COMPONENT, CONCRETE NOTES SHALL ALSO BE REFERRED.
2. BASE MATERIAL, UNLESS NOTED OTHERWISE, SHALL BE UNBOUND DGB20 MATERIAL AS SPECIFIED IN THE RTA 3051.
3. SUBBASE MATERIAL, UNLESS NOTED OTHERWISE, SHALL BE UNBOUND DGS40 MATERIAL AS SPECIFIED IN THE RTA 3051.
4. SELECT MATERIAL, IF SPECIFIED, SHALL BE CRUSHED ROCK, NATURAL GRAVELS OR SUITABLE SOILS, AND THE MATERIALS SHALL BE FREE OF ORGANIC MATTER AND OTHER OBJECTIONABLE OR DELETERIOUS SUBSTANCES. THE MATERIALS SHALL HAVE A MAXIMUM PARTICLE SIZE OF 75MM, AND SHALL HAVE A MINIMUM CBR OF 15% AT 100% STANDARD MAXIMUM DRY DENSITY.
5. FREQUENCIES OF COMPACTION TESTS FOR PAVEMENT CONSTRUCTION SHALL BE AS FOLLOWS (TESTS PER LAYER AND WHICHEVER IS GREATER NUMBER):
   a. 1 TEST PER 50m LENGTH OF ROAD, OR
   b. 1 TEST PER 400m2.
6. COMPACTION REQUIREMENTS FOR PAVEMENT CONSTRUCTION SHALL BE AS FOLLOWS:
   a. BASE AND SUBBASE: 98% OF MMDD TO AS 1289 E2.1
   b. SELECT AND SUBGRADE: 100% OF SMDD
7. THE PRIMER TO BE USED SHALL BE MEDIUM CURING CUTBACK BITUMEN COMPLYING WITH THE REQUIREMENTS OF AS 2157. THE GRADE OF CUTBACK BITUMEN SHOULD BE AMC 0.
8. AGGREGATES FOR THE SEAL SHALL BE ONE-SIZED OF THE NOMINAL SIZE AND CLASS SPECIFIED ON DRAWING. THESE AGGREGATES SHALL BE PRECOATED WITH A BITUMEN BASED PRECOATING MATERIAL.
9. UNLESS OTHERWISE SPECIFIED OR DIRECTED, BITUMINOUS EMULSION FOR TACK COATING SHALL BE DESIGNATION CRS/170 COMPLYING WITH THE REQUIREMENTS OF AS 1160.
10. ASPHALTIC CONCRETE AS SPECIFIED ON THE DRAWING SHALL COMPLY WITH AS 2150 -ASPHALT (HOT-MIXED).
11. UNLESS OTHERWISE NOMINATED IN THE DRAWINGS, BINDER SHALL BE CLASS 320 BITUMEN COMPLYING WITH THE REQUIREMENTS OF AS 2008.
12. ANY OTHER BITUMEN TYPE WHERE CALLED UP IN THE DRAWING SHALL MEET THE REQUIREMENTS AS SET OUT IN THE RMS MATERIALS SPECIFICATIONS 3252 OR 3253.

SETTING OUT NOTES:

1. THE CONSTRUCTOR SHALL USE A SUITABLY QUALIFIED SURVEYOR TO SET OUT ALL WORKS. THE SURVEYOR SHALL ISSUE A CERTIFICATE TO THE PRINCIPAL CERTIFYING AUTHORITY CERTIFYING THAT THE WORKS HAVE BEEN SET OUT IN ACCORDANCE WITH THE APPROVED DRAWINGS PRIOR TO THE WORKS BEING CONSTRUCTED.
2. THE SURVEY WORK ASSOCIATED WITH THE CONTRACT SHALL INCLUDE SETTING OUT THE FOLLOWING COMPONENTS OF THE WORK:
   - ROADS AND KERBS
   - DRAINAGE STRUCTURES
   - PARKING BAYS

CONCRETE NOTES:

1. ALL WORKMANSHIP, MATERIALS AND TESTING FOR CONCRETE WORKS SHALL COMPLY WITH THE REQUIREMENTS OF AS3600.
2. ALL WORKMANSHIP AND MATERIALS FOR FORMWORK SHALL COMPLY WITH THE REQUIREMENTS OF AS3610.
3. THE CONSTRUCTOR SHALL ENSURE THAT ALL REINFORCEMENT IS SECURELY TIED AND SUPPORTED IN IT'S CORRECT POSITION AND WITHIN ACCEPTABLE TOLERANCES SO AS NOT TO BE DISPLACED DURING CONCRETE POURING.
4. PROVIDE CONCRETE WITH A MAXIMUM SLUMP OF 80, TYPE SL CEMENT, MAXIMUM AGGREGATE SIZE 20, APPROVED ADMIXTURES AND STRENGTH GRADE AS FOLLOWS:

ELEMENT	EXPOSURE CLASSIFICATION	STRENGTH (MPA)
PAVEMENT	A2	32MPA
KERB (ALL TYPES)	A2	25MPA
FOOTPATH	A2	25MPA
RETAINING WALL FOOTING	A1/B1	20MPA

   PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 3600.
5. PROVIDE LAPS ONLY AT LOCATIONS SHOWN AND OF DIMENSIONS AS FOLLOWS UNLESS DETAILED OTHERWISE OR APPROVED IN WRITING BY THE ENGINEER.

BAR SIZE	N12	N16	N20
LAP	500	750	1000

6. OVERLAP FIRST AND SECOND CROSS WIRES OF EACH SHEET OF FABRIC BY 25 AT LAPS.
7. DO NOT WELD REINFORCEMENT UNLESS SHOWN OR APPROVED BY THE ENGINEER
8. TIE ALL UNSUPPORTED BARS TO N12.350.B OR N12.450.T CROSSRODS, LAPPED 450 WHERE REQUIRED.
9. PROP, CURE AND STRIP IN ACCORDANCE WITH AS3600, AS3610 AND THE SPECIFICATION.
10. CONCRETE SAWN JOINTS MUST BE DONE WITHIN 8 HOURS OF CONCRETE POUR.
11. JOINT SEALANT MUST BE SILICONE SEALANT FOR CASTING IN-SITU AS SPECIFIED ON DRAWINGS.
12. CONCRETE FINISH SHALL BE AS FOLLOWS:

ELEMENT	EXPOSURE
ROAD (GRADE < 1 IN 10)	BROOM
ROAD (GRADE > 1 IN 10)	GROOVE
FOOTPATH	BROOM

EARTHWORKS NOTES:

1. THE CONTRACTOR SHALL STRIP THE MATERIAL CLASSIFIED AS TOPSOIL OR MATERIAL CONTAINING ORGANIC MATTER TO A LEVEL APPROVED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER AND THE SUPERINTENDENT. THE STRIPPED TOPSOIL SHOULD BE REMOVED AND STOCKPILED PRIOR TO ANY EARTHWORKS OPERATIONS.
2. THE MAXIMUM HEIGHT OF TOPSOIL STOCKPILES SHALL NOT EXCEED 2.5M AND THE MAXIMUM BATTER SLOPE SHALL NOT EXCEED 2H : 1V.
3. ALL EARTHWORKS OPERATIONS SHALL BE CARRIED OUT TO LEVEL 1 SUPERVISION IN ACCORDANCE WITH AS3798 - 2007. THE CONTRACTOR SHALL ISSUE A WRITTEN LETTER FROM THE GEOTECHNICAL CONSULTANT THAT THEY HAVE BEEN ENGAGED ACCORDINGLY AND TAKES FULL RESPONSIBILITY OF THE EARTHWORKS OPERATION.
4. THE CONTRACTOR SHALL OVER-EXCAVATE TO REMOVE ALL UNACCEPTABLE FILL MATERIAL CONTAINING DELETERIOUS MATERIALS SUCH AS ORGANIC MATTER AND CONSTRUCTION MATERIALS. ALL OVER-EXCAVATED AREAS SHALL BE REPLACED WITH SUITABLE MATERIAL WITH A CBR AT LEAST EQUAL TO THE SPECIFIED SUBGRADE CBR, SOURCED FROM ON SITE, IF AVAILABLE, OR IMPORTED.
5. WET MATERIAL WILL NOT BE REGARDED AS UNSUITABLE. SHOULD WET MATERIAL BE ENCOUNTERED, THE CONTRACTOR SHALL DRY THE MATERIAL SUFFICIENTLY BY RE-WORKING, OR SPREADING IT TO ALLOW DRYING. ALL ASSOCIATED COSTS SHALL BE BORNE BY THE CONTRACTOR.
6. ALL EXCESS EARTHWORKS MATERIALS, INCLUDING EXCESS MATERIALS FROM THE STORMWATER AND SERVICE TRENCH EXCAVATIONS SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE BY THE CONTRACTOR AT THE CONTRACTOR'S COST.
7. ALL BATTER SLOPES SHALL BE A MAXIMUM OF 1V:5H (U.N.O.)
8. UNLESS NOTED OTHERWISE OR APPROVED ALL FILL MUST BE CONSTITUTED OF VIRGIN EXCAVATED NATURAL MATERIAL (VENM).
9. THE CONTRACTOR SHALL EXCAVATE AND/OR PLACE AND COMPACT FILL TO CONFORM TO THE LINES, GRADES, CROSS SECTIONS, AND DIMENSIONS SHOWN ON THE DRAWINGS, ALLOWING FOR PAVEMENT/SLAB AND TOPSOIL LAYERS.
10. FREQUENCIES OF COMPACTION TESTS FOR EARTHWORKS SHALL BE AS FOLLOWS (WHICHEVER IS GREATER NUMBER):

    LARGE SCALE OPERATION (> 1500 m2)
    a. 1 TEST PER LAYER PER MATERIAL TYPE PER 2500 m^2, OR
    b. 1 TEST PER 500m^3, OR
    c. 3 TESTS PER LOT (MATERIAL TYPE AND MOISTURE).

12. COMPACTION REQUIREMENTS FOR EARTHWORKS SHALL BE AS FOLLOWS:
    a. GENERAL FILL : 95% OF SMDD
    b. TOP 500MM UNDER PAVEMENT OR STRUCTURE: 100% OF SMDD
    c. BACKFILL WITHIN 2M OF STRUCTURES: 100% OF SMDD
13. MOISTURE CONTENT TO BE IN THE RANGE OF - 2% TO +2% OF THE OPTIMUM MOISTURE CONTENT.
14. ALL COMPACTION TEST RESULTS SHALL BE PROVIDED TO THE SUPERINTENDENT.
15. ALL SITE REGRADED AREAS AFTER FORMATION, SHALL BE COVERED WITH A 150MM SELECT TOPSOIL LAYER. TOPSOIL STOCKPILED PRIOR TO EARTHWORKS OPERATIONS CAN BE REUSED FOR THIS PURPOSE PROVIDED ANY DELETERIOUS MATERIAL IS REMOVED PRIOR TO PLACING.
16. ALL DISTURBED AND DENUDED AREAS SHALL BE REGRASSED WITHIN 7 DAYS AFTER THE COMPLETION OF EARTHWORKS FORMATION. REFER LANDSCAPE PLAN L1003 FOR DETAIL OF REGRASS.

SERVICES NOTES:

1. IT IS THE CONSTRUCTORS RESPONSIBILITY TO NOTIFY THE RELEVANT SERVICES AUTHORITIES OF THE WORKS AND VERIFY THE LOCATION OF ALL EXISTING SERVICES PRIOR TO ANY CONSTRUCTION ACTIVITIES COMMENCING.
2. THE CONSTRUCTOR SHALL LIAISE AND COORDINATE THE TIMING OF THE CONSTRUCTION OF THE WORKS WITH THE RELEVANT SERVICES AUTHORITIES AND/OR OTHER CONSTRUCTORS INSTALLING SERVICES CONCURRENTLY AT THIS SITE.
3. THE LOCATION OF ALL EXISTING SERVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY AND HAVE BEEN TAKEN FROM INFORMATION PROVIDED BY THE RELEVANT SERVICE AUTHORITIES.
4. THE CONSTRUCTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE CAUSED TO EXISTING SERVICES AS A RESULT OF THE CONSTRUCTION WORKS.

KERBING NOTES:

1. ALL KERBS, GUTTERS, EDGE STRIPS, LAYBACKS AND CROSSINGS TO BE BUILT ON A MINIMUM OF 100mm THICK SUBBASE. THE SUBBASE SHALL BE EXTENDED 150mm BEHIND BACK OF KERB.
2. CONCRETE SHALL BE OF 25MPa COMPRESSIVE STRENGTH (F'c) AT 28 DAYS.
3. EXPANSION JOINTS OF APPROVED BITUMEN IMPREGNATED JOINTING MATERIAL OR EQUIVALENT SHALL BE PLACED AT 12m INTERVALS, AT JUNCTIONS WITH EXISTING WORK, KERB TRANSITIONS AND ADJACENT TO GULLY PITS. WEAKENED PLANE JOINTS (DUMMY JOINTS) SHALL BE CUT AT 3m INTERVALS.
4. ALL KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISH.
5. ALL RAMPED CROSSINGS TO BE BROOMED FINISH.

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01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

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CLIENT: NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER: APP

S•C•P CONSULTING PTY LTD CIVIL AND STRUCTURAL ENGINEERS

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL NOTES

DESIGNED	T.T.	DATE	16.04.14
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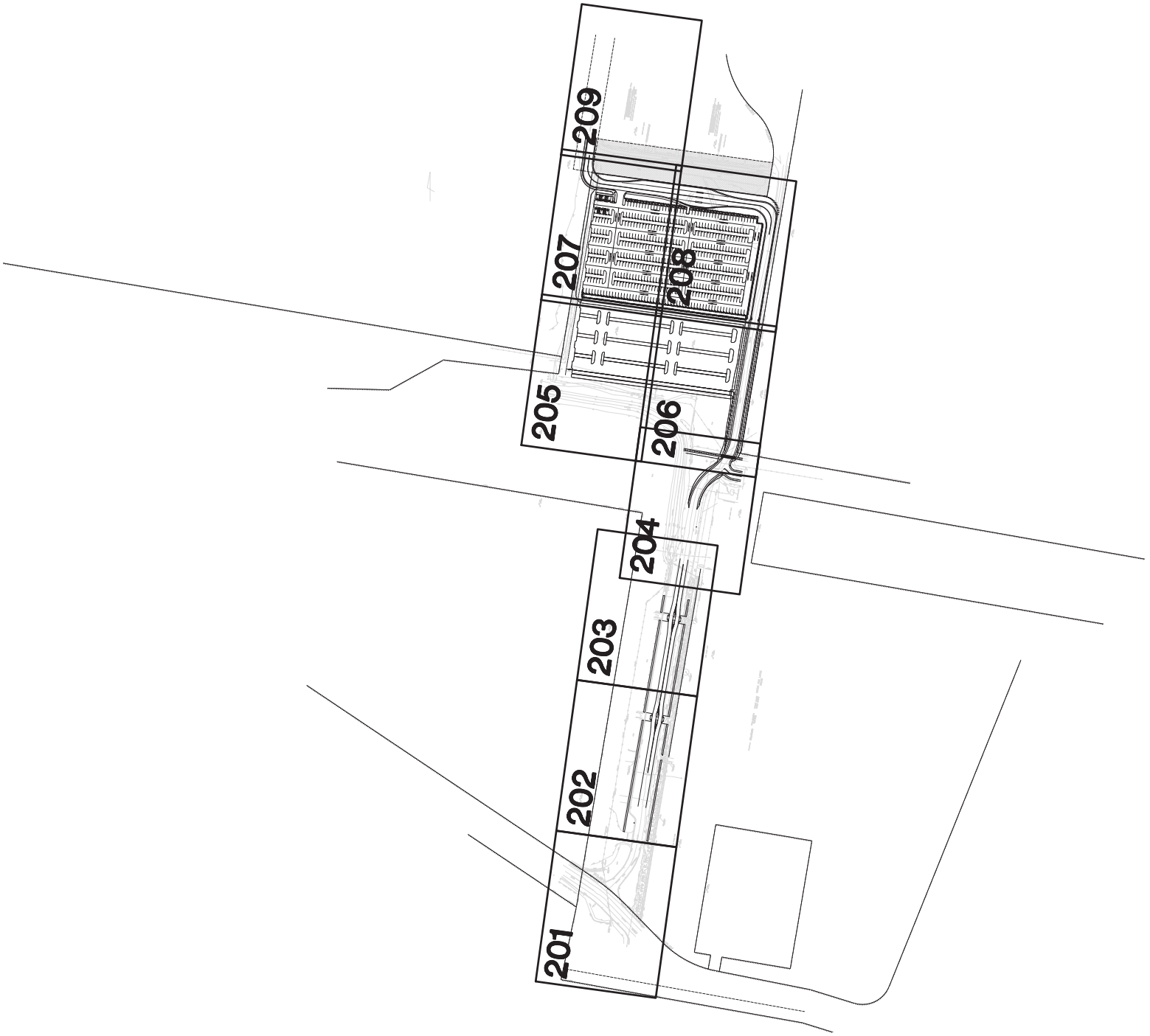

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CLIENT:

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: SITE / LAYOUT PLAN

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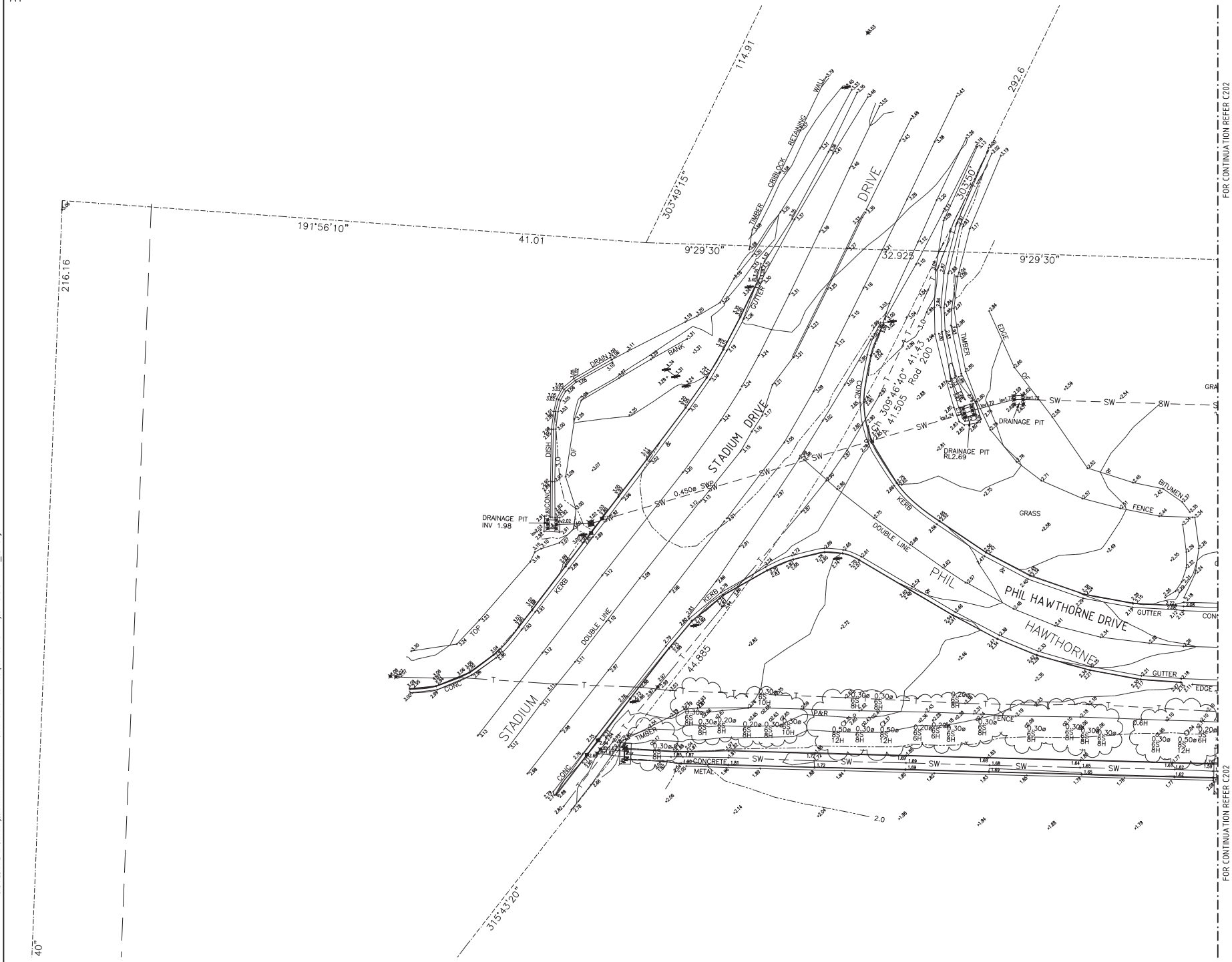

FOR CONTINUATION REFER C202

FOR CONTINUATION REFER C202

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 1

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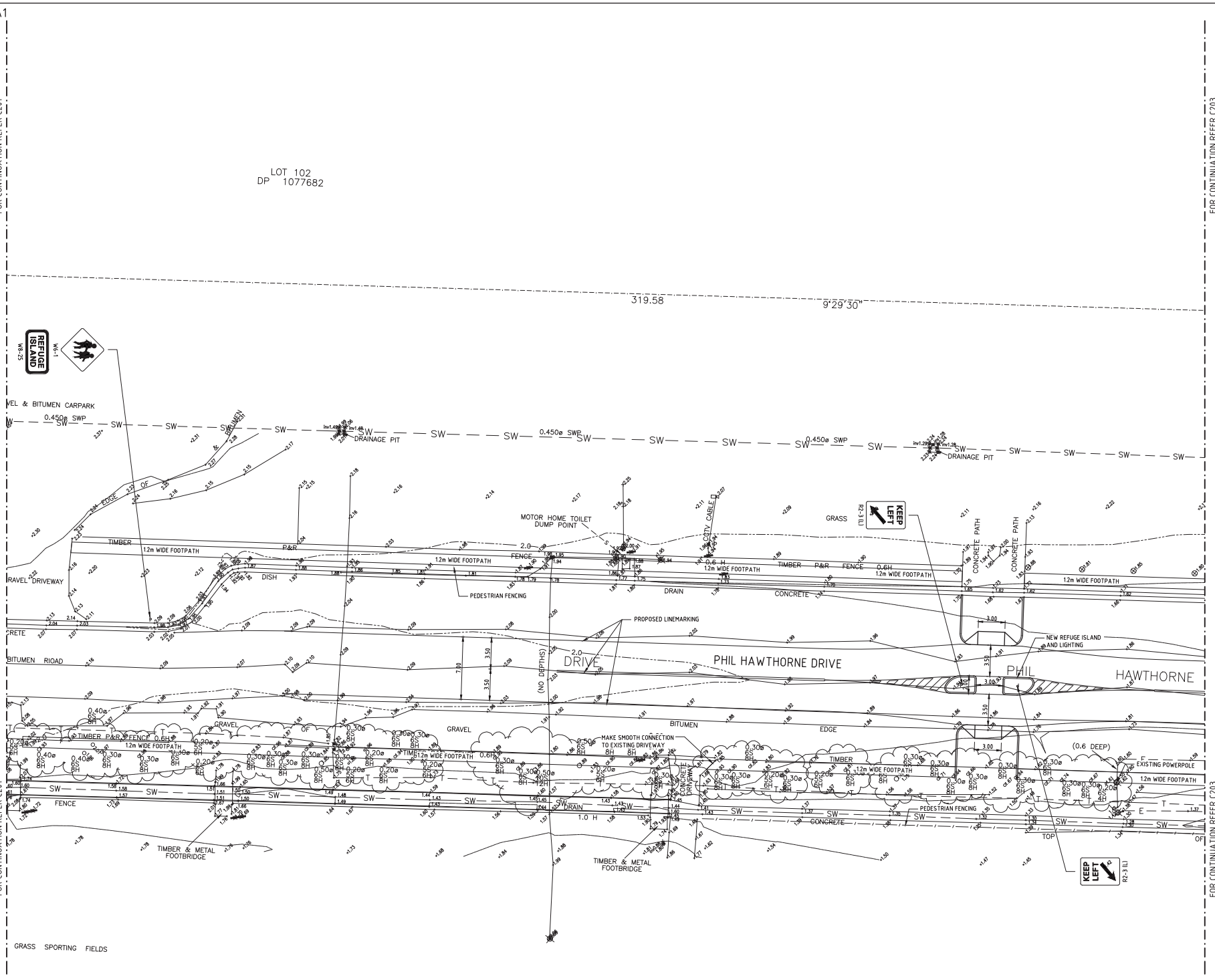

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN
STAGE 1 - SHEET 2

DESIGNED	T.T.	DATE	16.04.14
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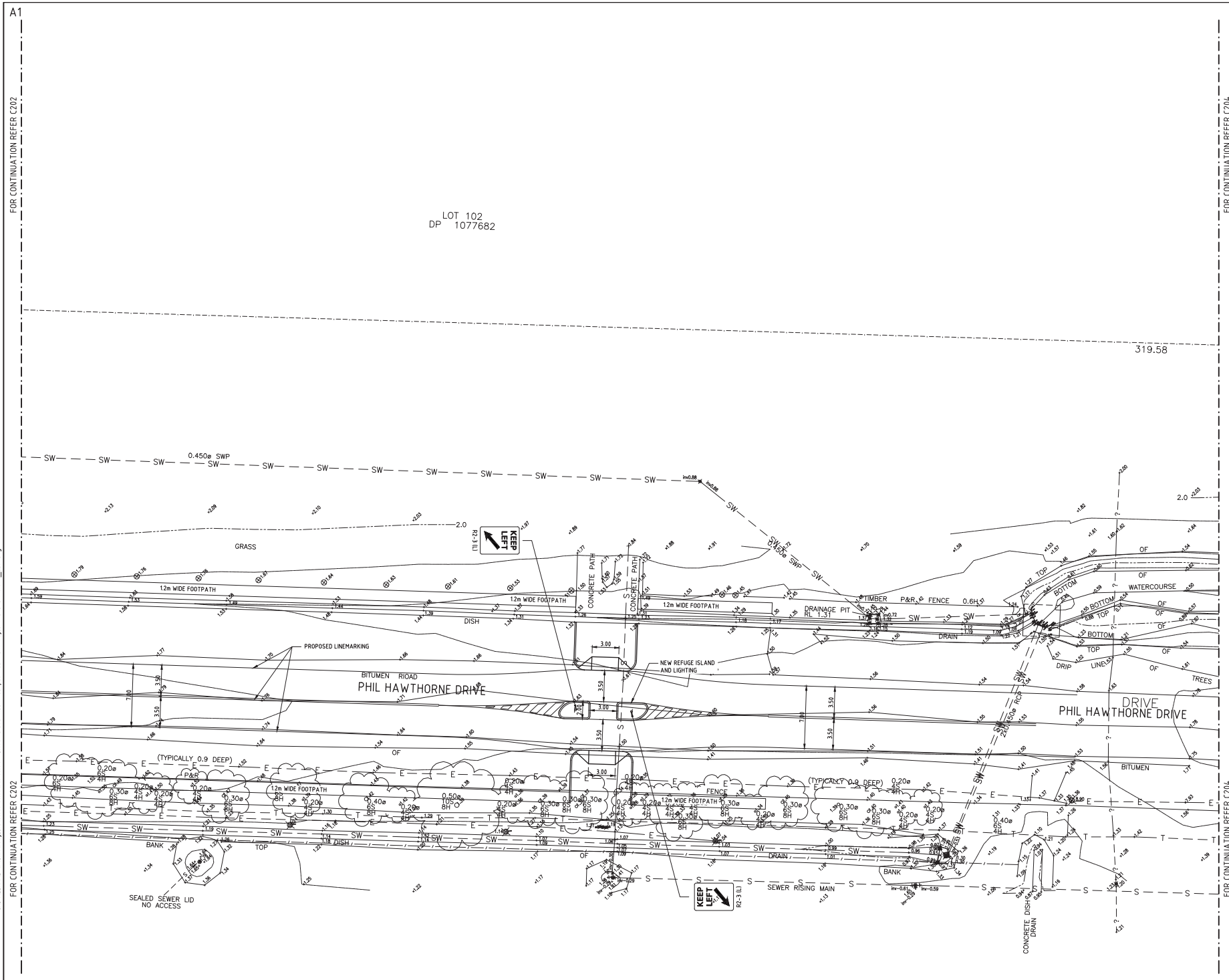

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN
STAGE 1 - SHEET 3

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
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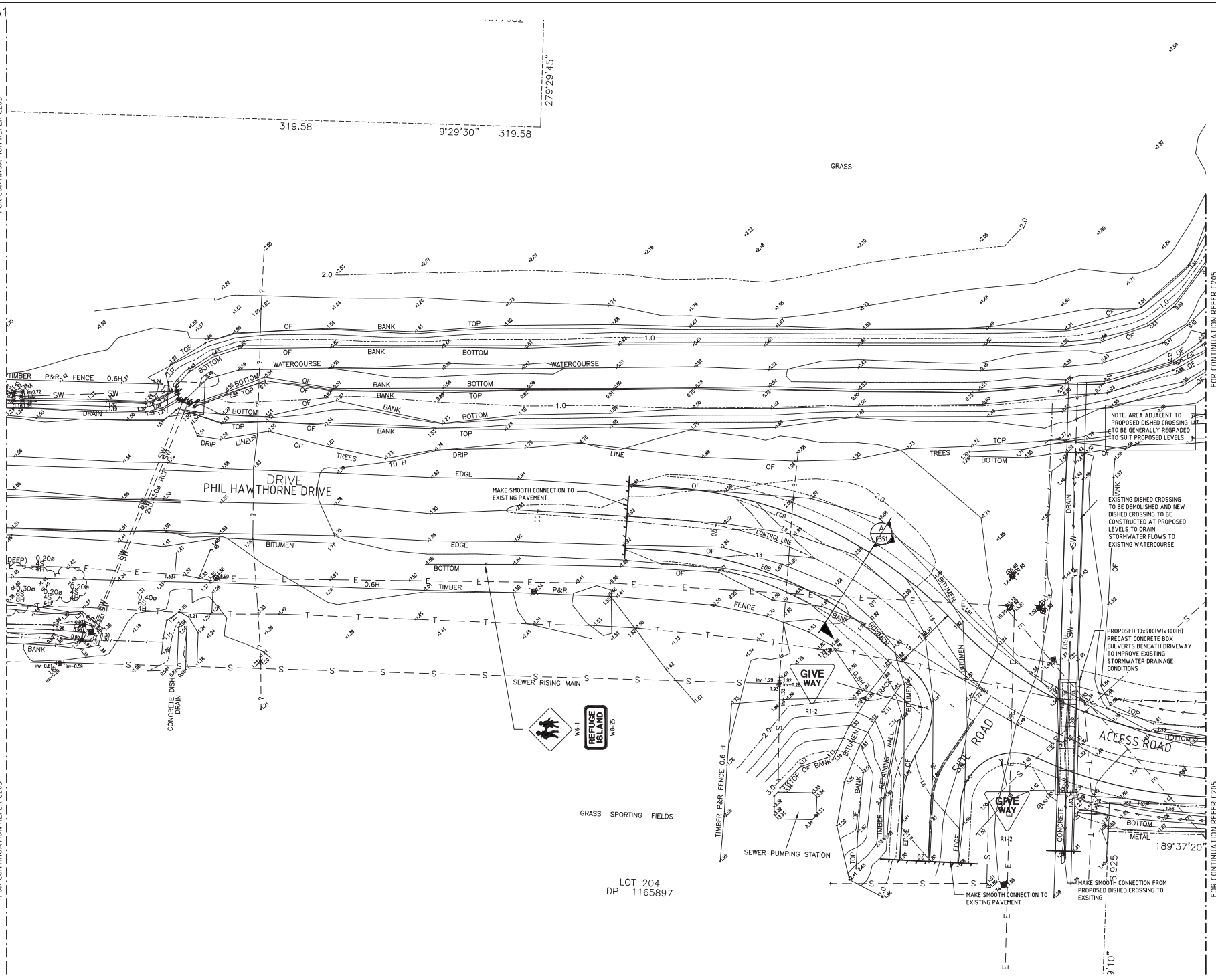

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 4

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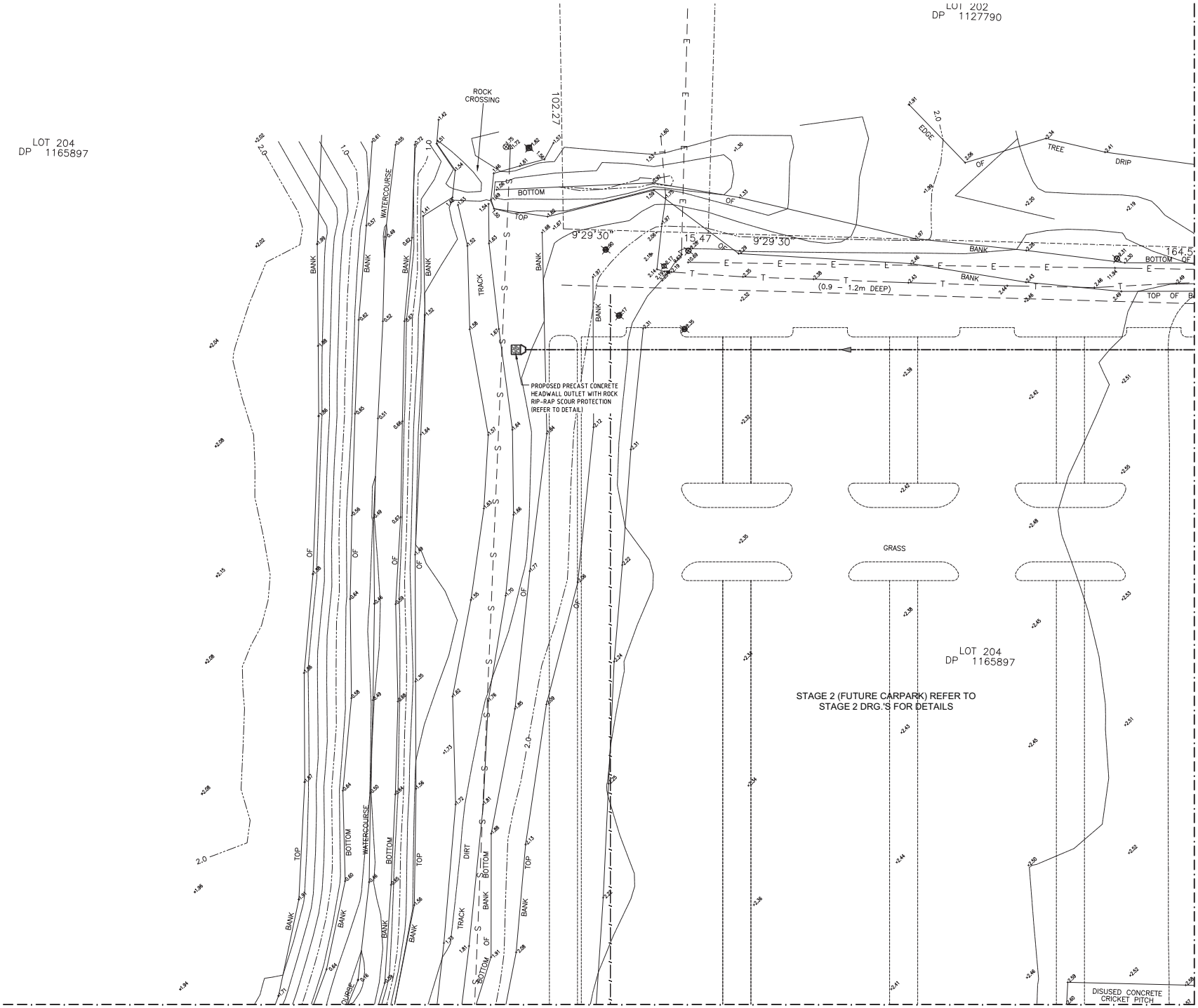

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN
STAGE 1 - SHEET 5

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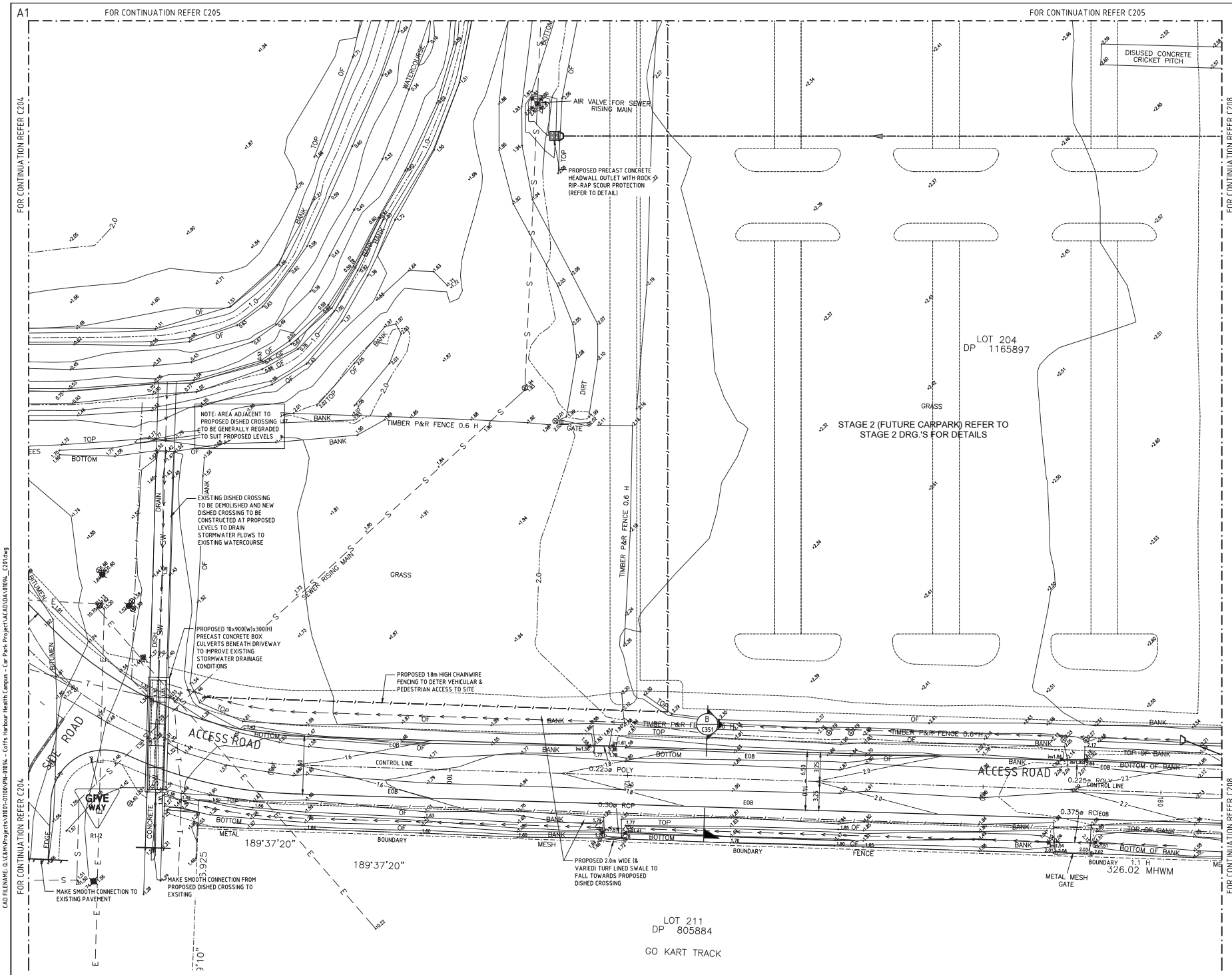

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 6

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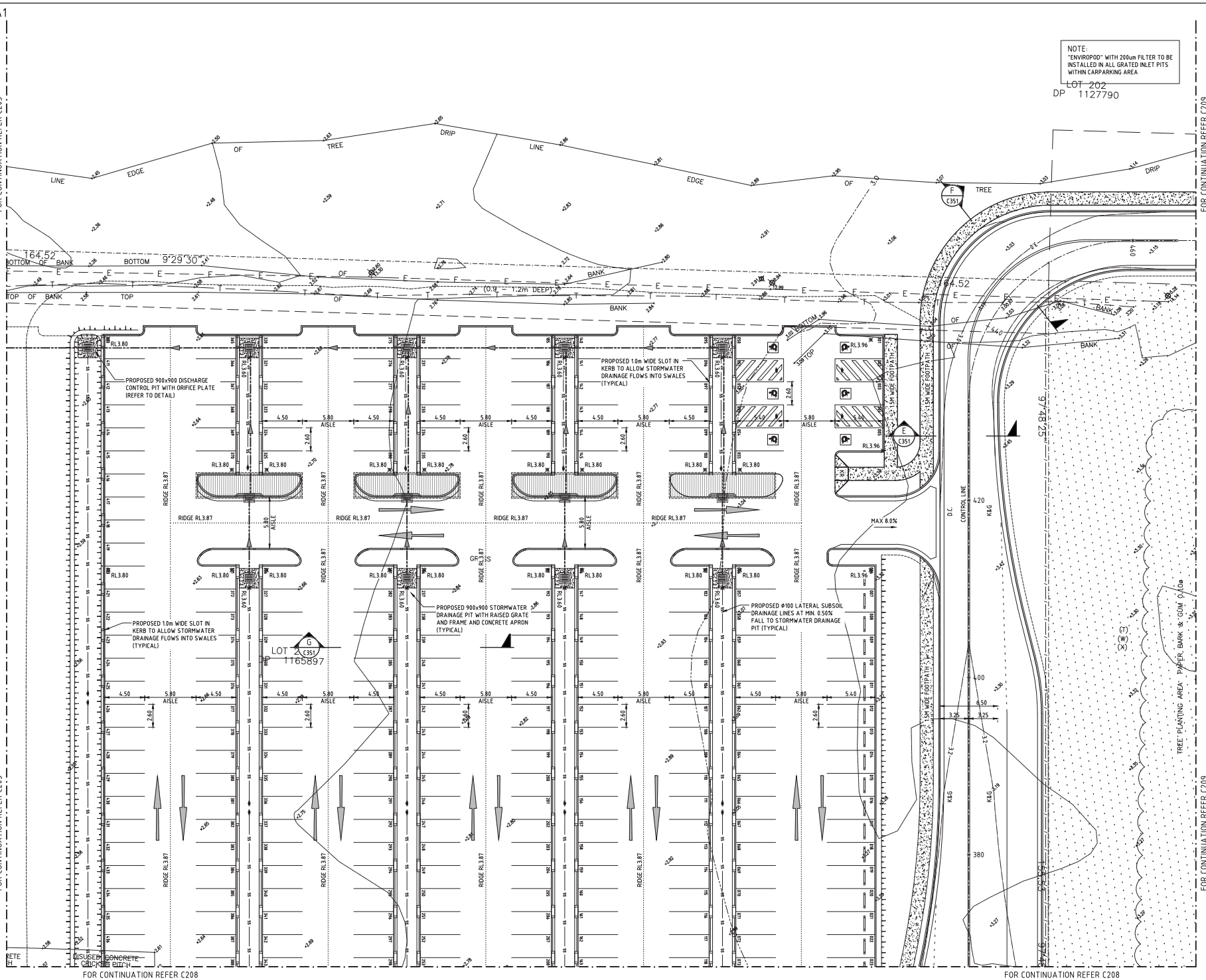

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PROJECT MANAGER: APP

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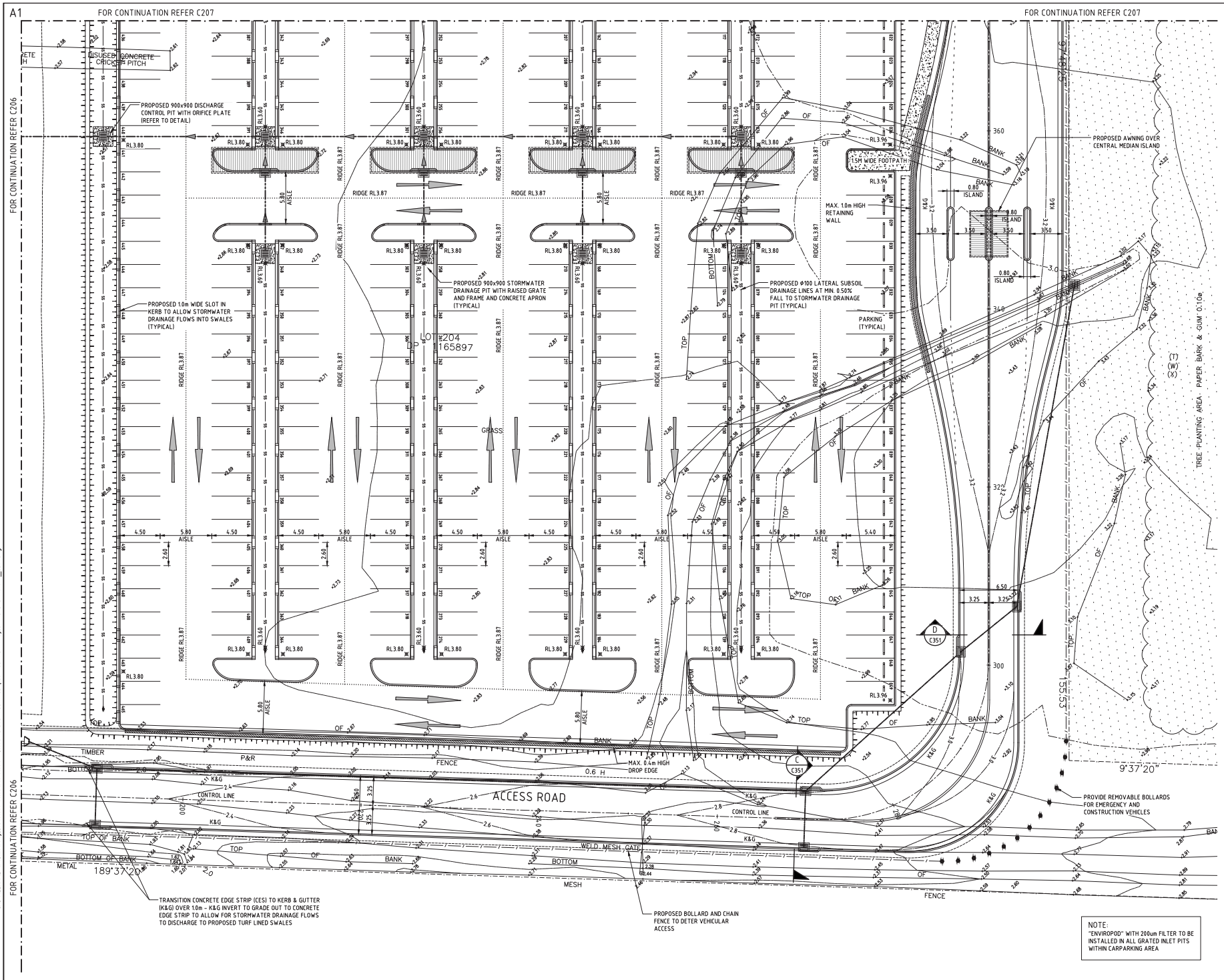
PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 7

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	NA
STATUS	DA / SD		
DRAWING No.	01094_C207	REVISION	02



REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT: NSW Government Health Infrastructure

PROJECT MANAGER: APP

CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT
SUITE 26
11 - 13 BROOKHOLLOW AVE
BAULKHAM HILLS NSW 2153
PHONE: (02) 9680 3100
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ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN STAGE 1 - SHEET 8

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	NA
STATUS	DA / SD		
DRAWING No.	01094_C208	REVISION	01

CAD FILENAME: G:\C&M\Projects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C201.dwg

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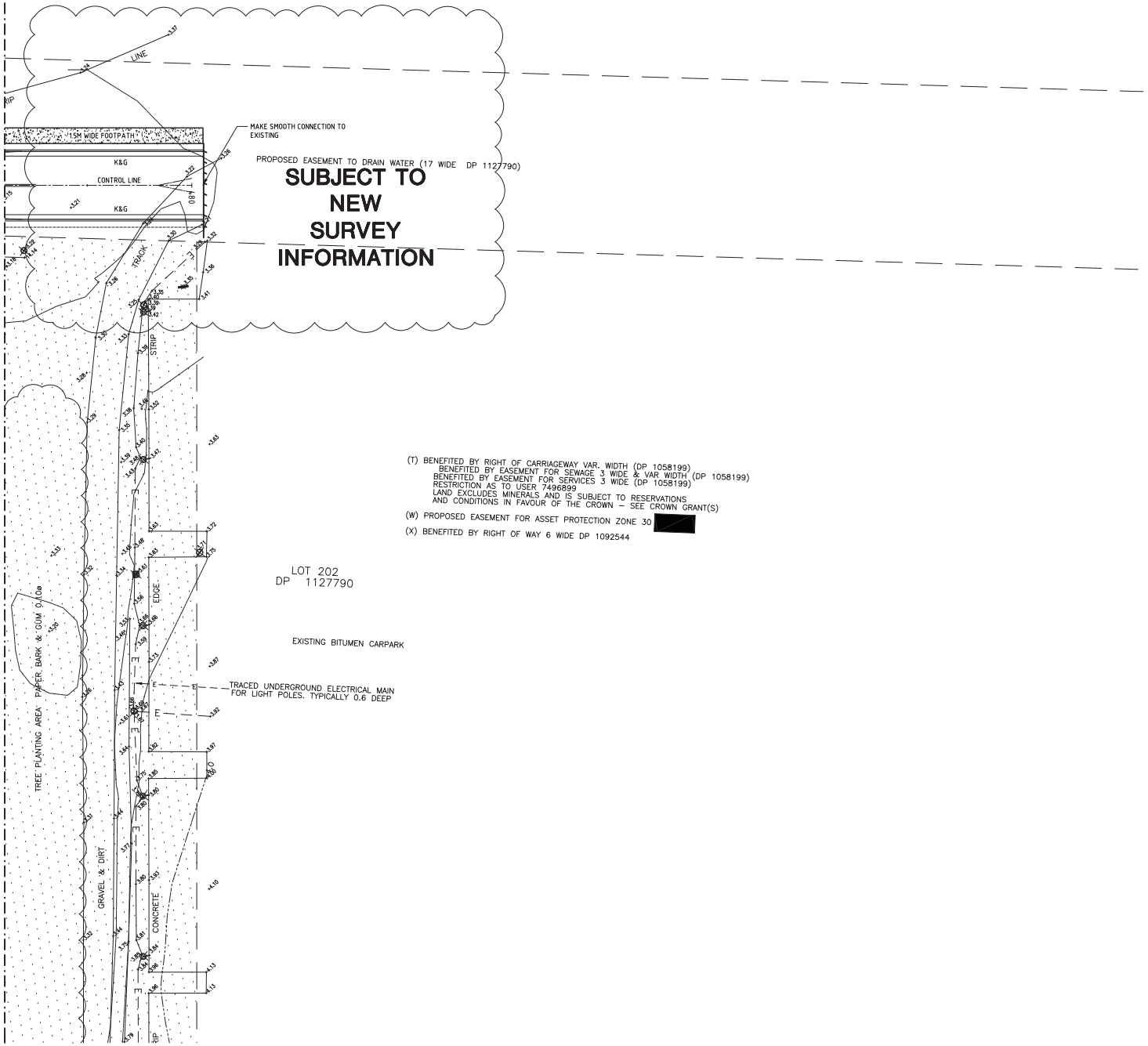

(T) BENEFITED BY RIGHT OF CARRIAGEWAY VAR. WIDTH (DP 1058199)
BENEFITED BY EASEMENT FOR SEWAGE 3 WIDE & VAR WIDTH (DP 1058199)
BENEFITED BY EASEMENT FOR SERVICES 3 WIDE (DP 1058199)
RESTRICTION AS TO USER 7496899
LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN – SEE CROWN GRANT(S)

(W) PROPOSED EASEMENT FOR ASSET PROTECTION ZONE 30 [redacted]

(X) BENEFITED BY RIGHT OF WAY 6 WIDE DP 1092544

CAD FILENAME G:\C&MVProjects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C201.dwg

REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT:

NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER:

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CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

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ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN
STAGE 1 - SHEET 9

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	NA
STATUS	DA / SD		
DRAWING No.	01094_C209	REVISION	01

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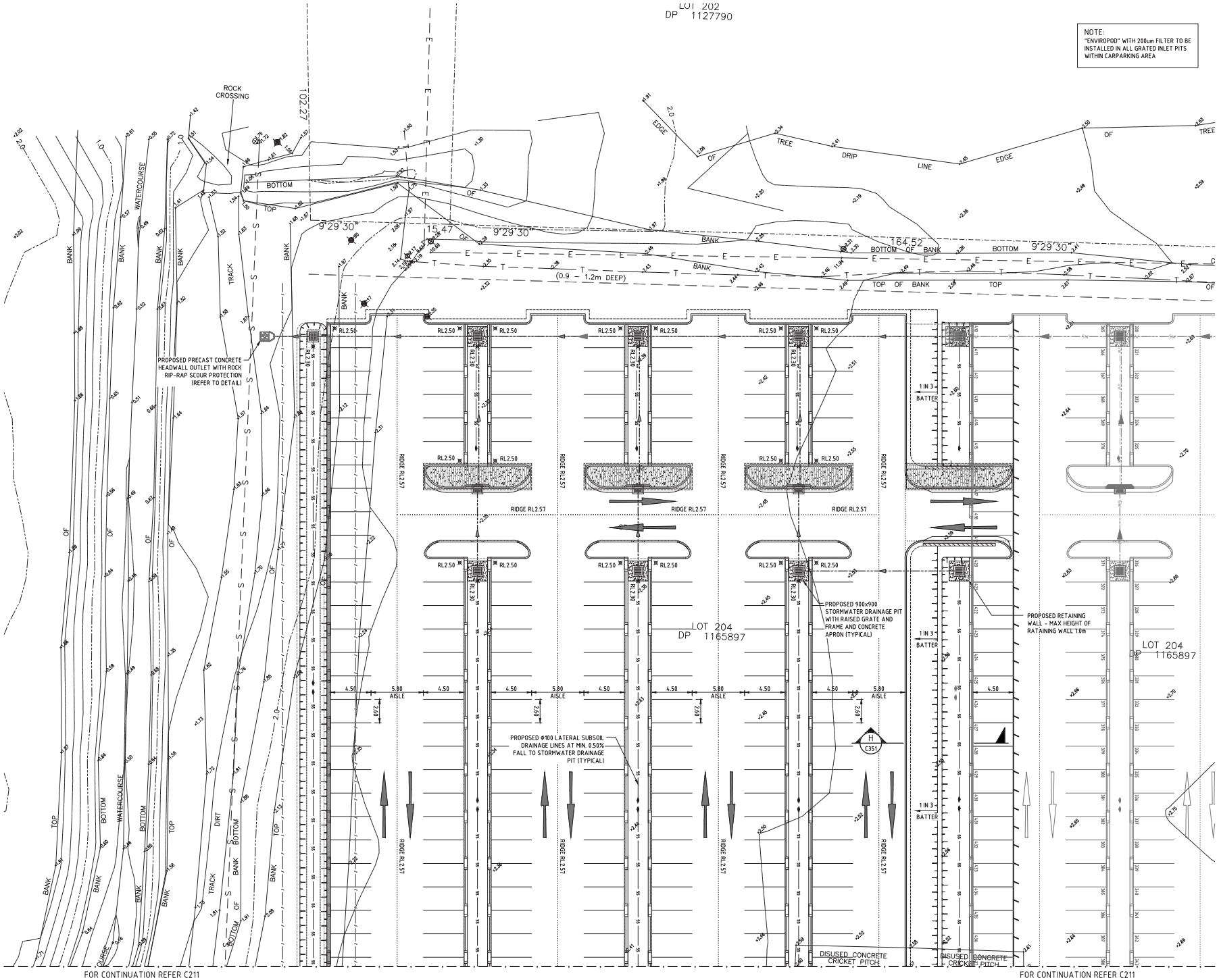

REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT:

NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER:

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C&M CONSULTING ENGINEERS

CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

SUITE 26
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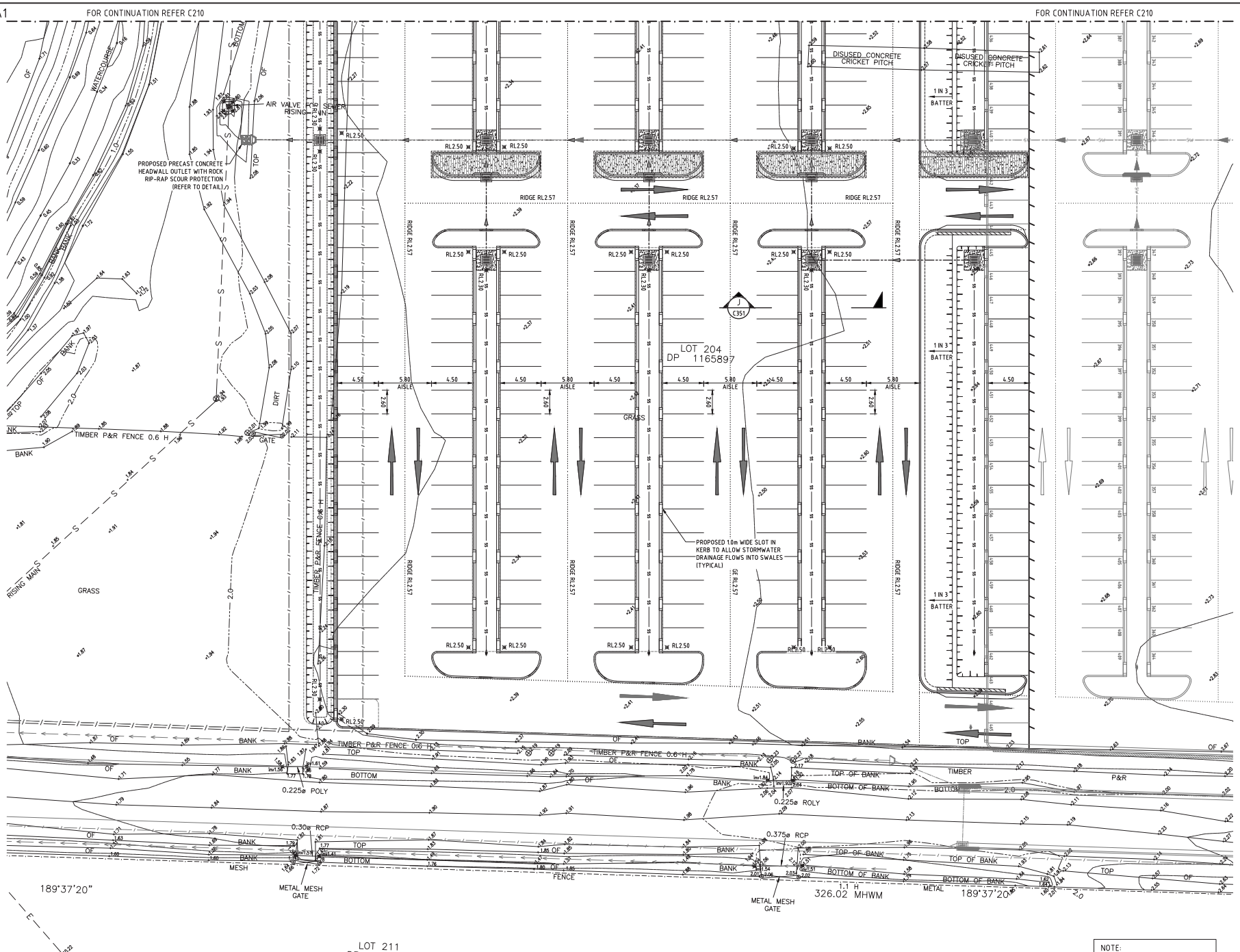
ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN STAGE 2 - SHEET 1

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	1:200
STATUS	DA / SD		
DRAWING No.	01094_C210	REVISION	01

CAD FILENAME: G:\C&M\Projects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C210.dwg



REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT: NSW Health Infrastructure

PROJECT MANAGER: APP

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CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

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ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL ARRANGEMENT PLAN STAGE 2 - SHEET 2

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	1:200
STATUS	DA / SD		
DRAWING No.	01094_C211	REVISION	01

CAD FILENAME: G:\C&M\Projects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C210.dwg

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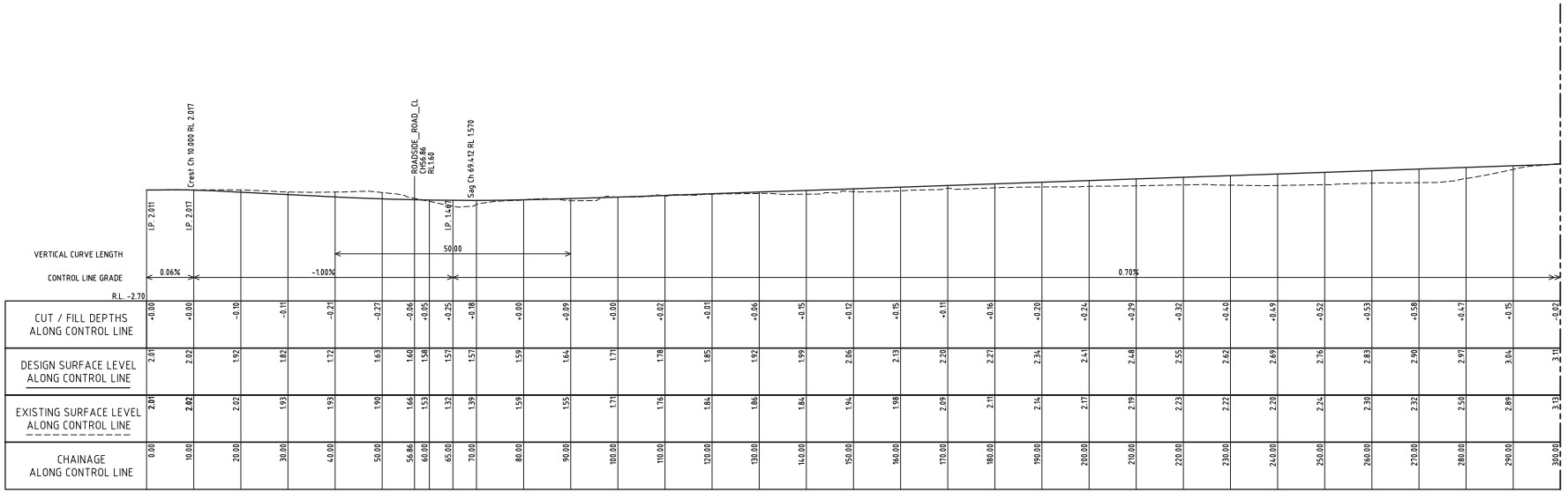
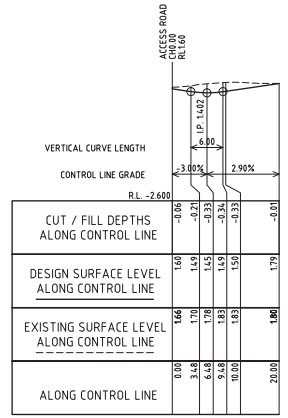


ROAD LONGITUDINAL SECTION ALONG ACCESS ROAD CONTROL

SCALE 1:500 (H) & 1:100 (V)

ROAD LONGITUDINAL SECTION ALONG ACCESS ROAD CONTROL - CONT.

SCALE 1:500 (H) & 1:100 (V)



ROAD LONGITUDINAL SECTION ALONG RIDE ROAD CONTROL

SCALE 1:500 (H) & 1:100 (V)

REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

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CLIENT:

NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER:

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CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

SUITE 26
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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: ROAD LONGITUDINAL SECTIONS

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	1:200
STATUS	DA / SD		
DRAWING No.	01094_C301	REVISION	01

CAD FILENAME: G:\C&M\Projects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C301.dwg

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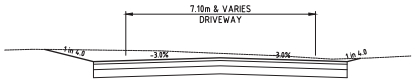

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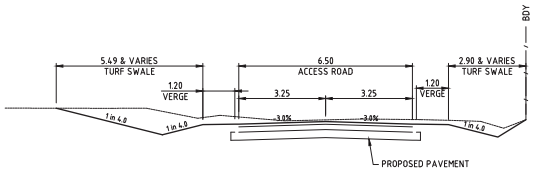

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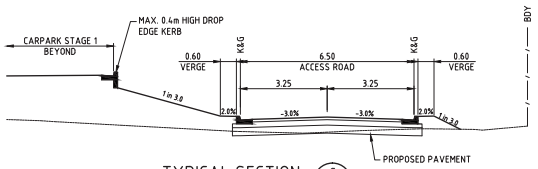

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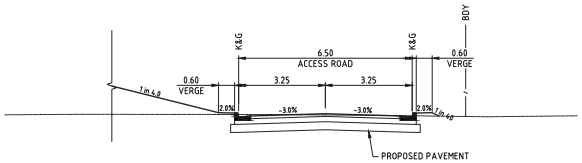

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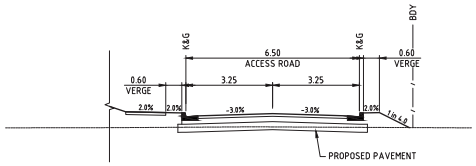

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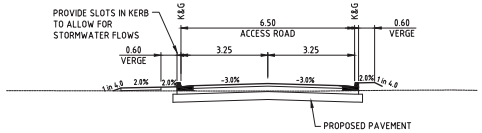
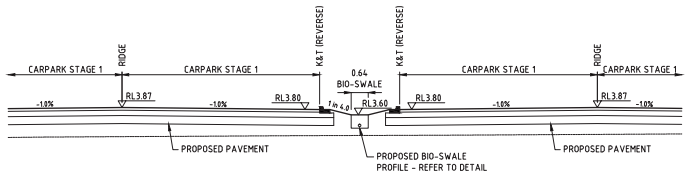


TYPICAL SECTION F 203
SCALE 1:100



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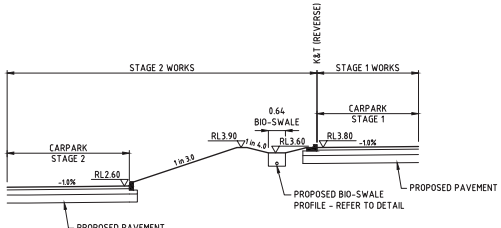

TYPICAL SECTION H 211
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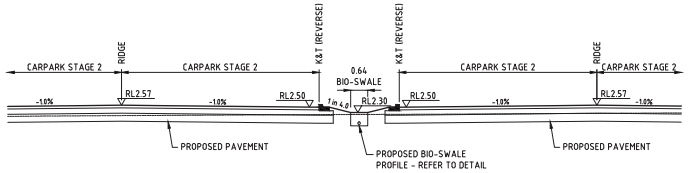

TYPICAL SECTION J 211
SCALE 1:100

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01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

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CLIENT:

NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER:

APP

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C&M CONSULTING ENGINEERS

CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

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ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: TYPICAL SECTIONS

DESIGNED	T.T.	DATE	16.04.14
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DRAWN	T.T.	SCALE @ A0	1:100 (NAT.)
STATUS	DA / SD		
DRAWING No.	01094_C351	REVISION	01

CAD FILENAME: G:\C&M\Projects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C351.dwg

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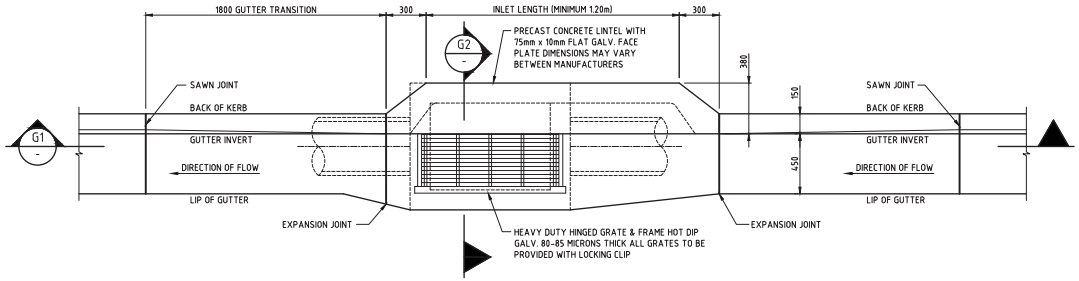
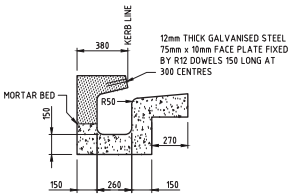


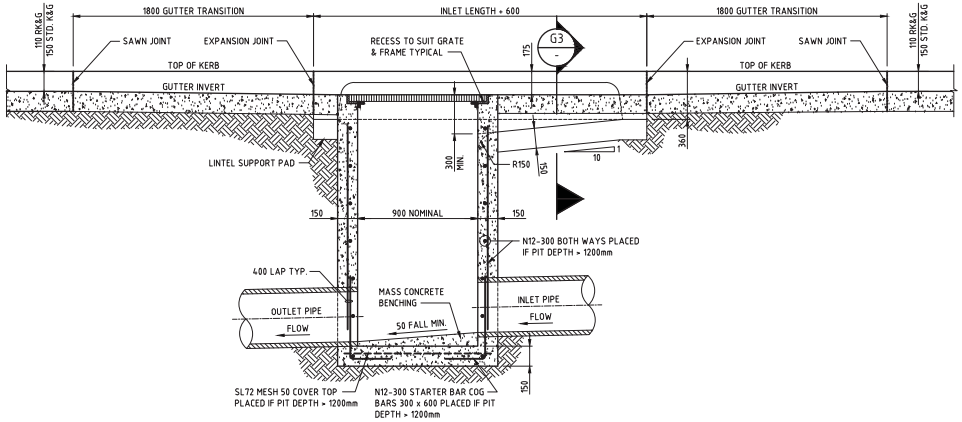
STANDARD GRATED GULLY PIT (ON-GRADE) - PLAN

SCALE 1:20



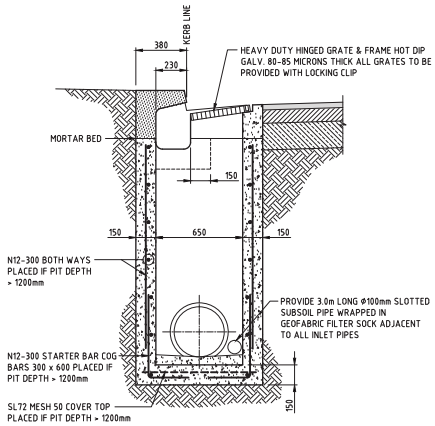
SECTION G3

SCALE 1:20



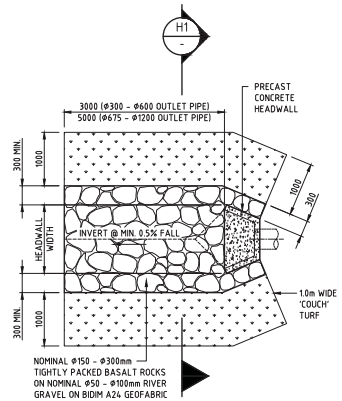
SECTION G1 FOR PIT DEPTHS < 1800mm

SCALE 1:20 REFER STORMWATER PIT NOTES



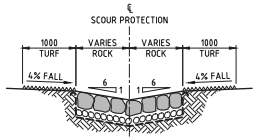
SECTION G2 FOR PIT DEPTHS < 1800mm

SCALE 1:20 REFER STORMWATER PIT NOTES



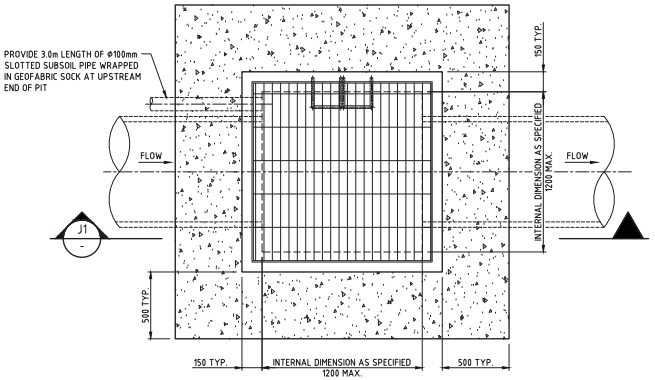
TYPICAL PRECAST CONCRETE HEADWALL WITH SCOUR PROTECTION DETAIL - PLAN

SCALE 1:50



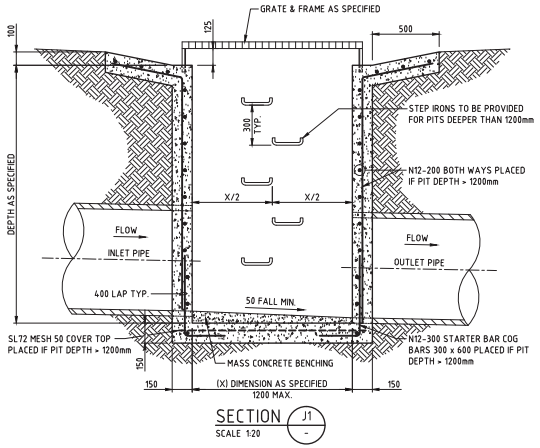
SECTION H1

SCALE 1:50



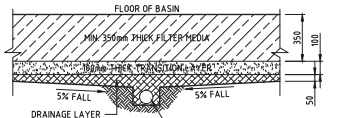
SURCHARGE STORMWATER PIT DETAIL - PLAN

SCALE 1:20



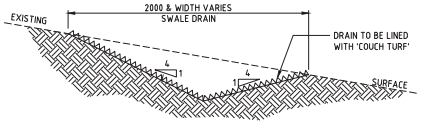
SECTION J1

SCALE 1:20



TYPICAL BIO RETENTION PROFILE

SCALE 1:20



TYPICAL TURF LINED SWALE DRAIN

SCALE 1:20

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL DETAILS SHEET 1

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	AS NOTED
STATUS	DA / SD		
DRAWING No.	01094_C501	REVISION	01

CAD FILENAME: G:\C&M\Projects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C501.dwg

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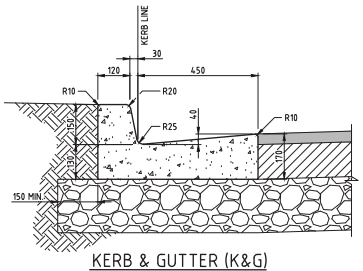
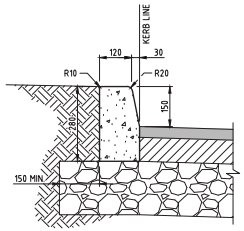


KERB & GUTTER (K&G)
SCALE 1:10



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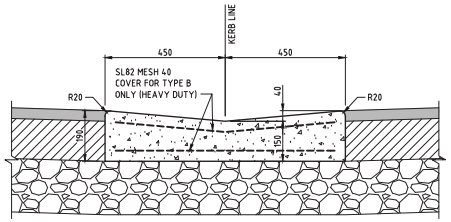
SCALE 1:10



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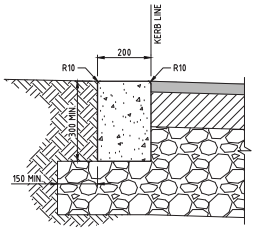

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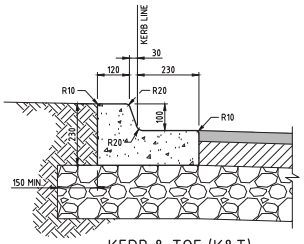
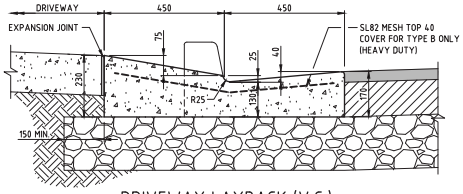
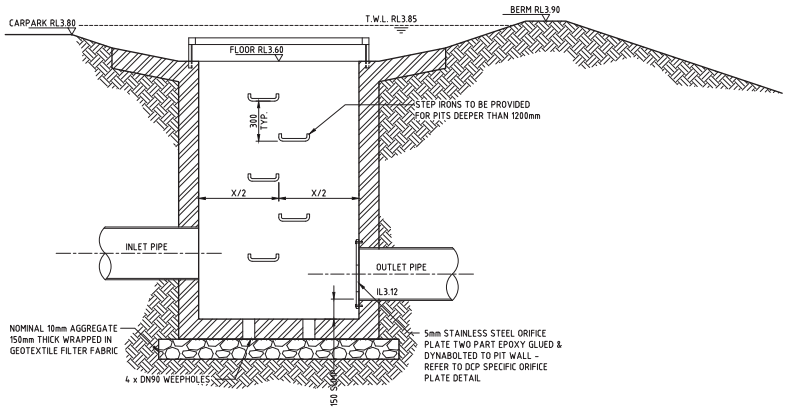


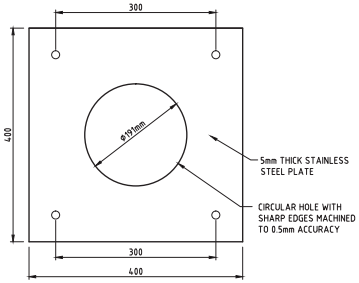
KERB & TOE (K&T)
SCALE 1:10



DRIVEWAY LAYBACK (V.C.)
SCALE 1:10



SECTION - - TYPICAL DISCHARGE CONTROL PIT (DCP)
SCALE 1:20



ORIFICE PLATE DETAIL - DCP No.1 (WESTERN)
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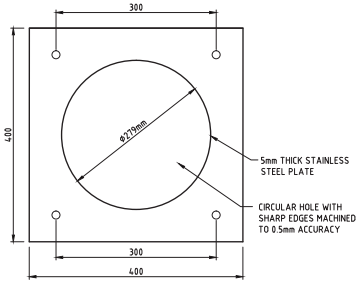

ORIFICE PLATE DETAIL - DCP No.2 (EASTERN)
SCALE 1:5

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ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: GENERAL NOTES SHEET 2

DESIGNED	T.T.	DATE	16.04.14
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DRAWING No.	01094_C502	REVISION	01

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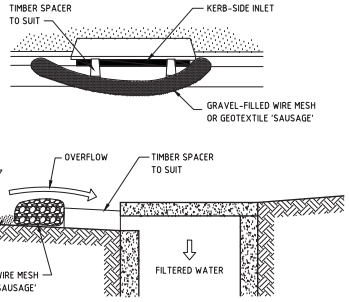
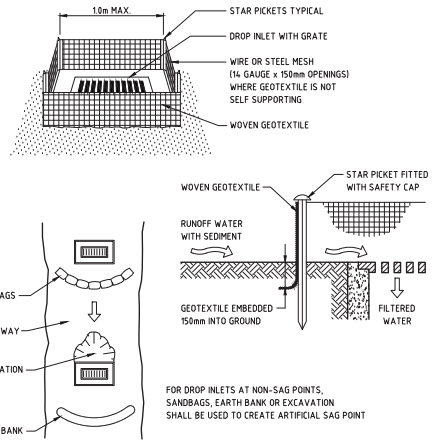


CONSTRUCTION NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL INLET FILTER DETAIL

NOT TO SCALE



FOR DROP INLETS AT NON-SAG POINTS, SANDBAGS, EARTH BANK OR EXCAVATION SHALL BE USED TO CREATE ARTIFICIAL SAG POINT

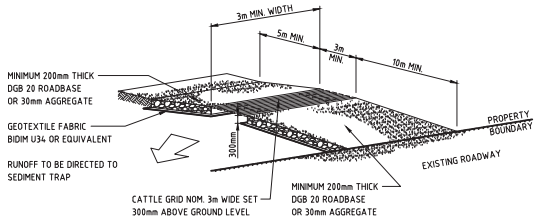
CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
3. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER DETAIL

FOR PITS WITHIN LANDSCAPED AREAS

NOT TO SCALE



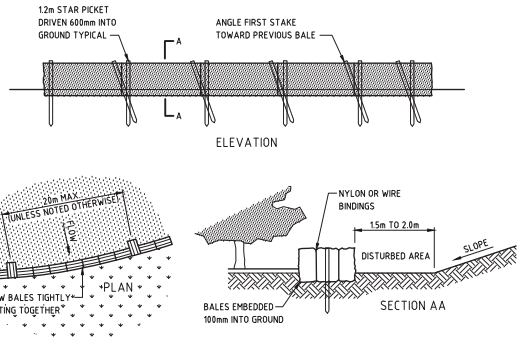
GEOFABRIC MAY BE A WOVEN OR NEEDLE-PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500 N

CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15m LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3m WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS WITH SHAKER GRID DETAIL

NOT TO SCALE

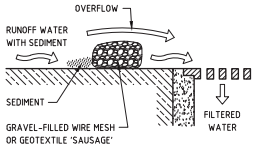


CONSTRUCTION NOTES:

1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE.
2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS ARE TO BE PLACED PARALLEL TO GROUND.
3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
4. EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 1.2m STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.
5. WHERE STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE THE BALES ARE PLACED 1.0m TO 2.0m DOWNSLOPE FROM THE TOE.
6. ESTABLISH A MAINTENANCE PROGRAMME THAT ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.

STRAW BALE FILTER DETAIL

NOT TO SCALE



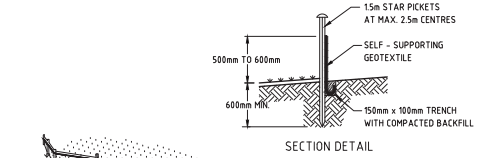
CONSTRUCTION NOTES:

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER DETAIL

FOR PITS WITHIN PAVEMENT AREAS

NOT TO SCALE



CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO THE GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150-mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE DETAIL

NOT TO SCALE

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01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT:

NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER:

APP

S·C·P CONSULTING PTY LTD CIVIL AND STRUCTURAL ENGINEERS

C&M CONSULTING ENGINEERS

CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

SUITE 26
11 - 13 BROOKHOLLOW AVE
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PHONE: (02) 9680 3100
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ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: SEDIMENT & EROSION CONTROL DETAILS

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	NA
STATUS	DA / SD		
DRAWING No.	01094_C701	REVISION	01

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ENVIRONMENTAL CONTROL NOTES:

EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, THE RELEVANT STATE AUTHORITIES AND THE SUPERINTENDENT. TO THIS END, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND SHALL REPRESENT THE MINIMUM REQUIREMENT ONLY.
2. NO CONSTRUCTION WORKS ARE TO COMMENCE ON SITE UNTIL ALL EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE AND HAVE BEEN INSPECTED AND APPROVED BY THE COUNCIL ENGINEER AND/OR SUPERINTENDENT.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REGULARLY INSPECTED, IN PARTICULAR AFTER STORMS, AND REPAIRED OR MAINTAINED AS REQUIRED TO ENSURE THE MEASURES CORRECT AND EFFICIENT FUNCTION THROUGHOUT THE DURATION OF THE WORKS, UNTIL SUCH TIME AS THE COUNCIL ENGINEER AND/ORSUPERINTENDENT AUTHORISES THE REMOVAL OF SUCH MEASURES.
4. ALL STOCKPILES SHALL BE CLEAR OF ALL TREES AND DRAINAGE LINES (INCLUDING OVERLAND FLOW PATHS) AND PROTECTED FROM EROSION.
5. N THE CASE OF THE TEMPORARY CONSTRUCTION EXIT, THE CONTRACTOR SHALL UNDERTAKE WEEKLY SURFACE CLEANING BY DRAG BROOM OR EQUIVALENT, TO REMOVE ALL BUILD UP OF FOREIGN MATERIAL TO THE SATISFACTION OF THE SUPERINTENDENT.

TRAFFIC CONTROLS

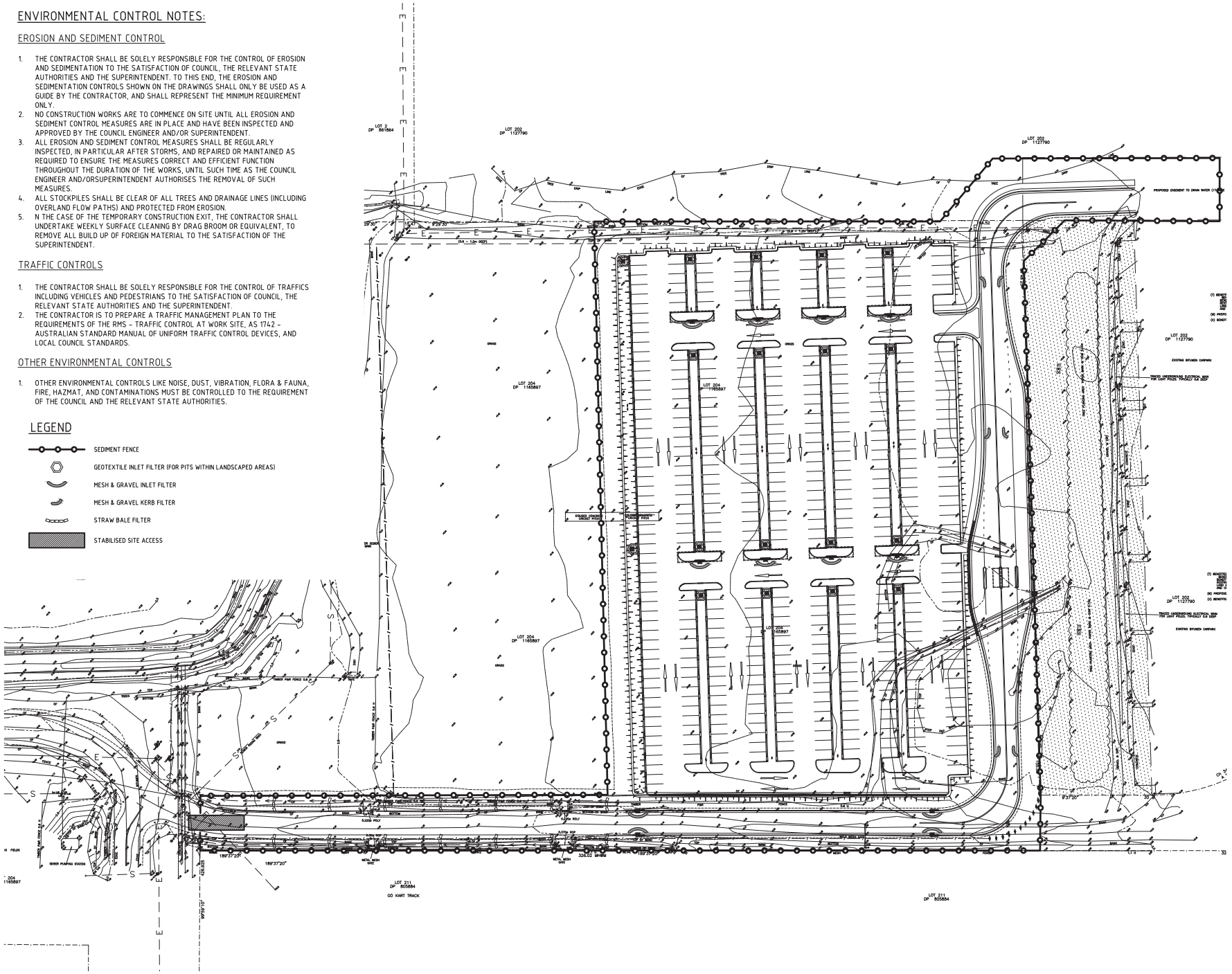
1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF TRAFFICS INCLUDING VEHICLES AND PEDESTRIANS TO THE SATISFACTION OF COUNCIL, THE RELEVANT STATE AUTHORITIES AND THE SUPERINTENDENT.
2. THE CONTRACTOR IS TO PREPARE A TRAFFIC MANAGEMENT PLAN TO THE REQUIREMENTS OF THE RMS – TRAFFIC CONTROL AT WORK SITE, AS 1742 – AUSTRALIAN STANDARD MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AND LOCAL COUNCIL STANDARDS.

OTHER ENVIRONMENTAL CONTROLS

1. OTHER ENVIRONMENTAL CONTROLS LIKE NOISE, DUST, VIBRATION, FLORA & FAUNA, FIRE, HAZMAT, AND CONTAMINATIONS MUST BE CONTROLLED TO THE REQUIREMENT OF THE COUNCIL AND THE RELEVANT STATE AUTHORITIES.

LEGEND

- SEDIMENT FENCE
- GEOTEXTILE INLET FILTER (FOR PITS WITHIN LANDSCAPED AREAS)
- MESH & GRAVEL INLET FILTER
- MESH & GRAVEL KERB FILTER
- STRAW BALE FILTER
- STABILISED SITE ACCESS



REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT:

NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER:

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ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: SEDIMENT & EROSION CONTROL STAGE 1

DESIGNED	T.T.	DATE	16.04.14
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DRAWN	T.T.	SCALE @ A0	NA
STATUS	DA / SD		
DRAWING No.	01094_C702	REVISION	01

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ENVIRONMENTAL CONTROL NOTES:

EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, THE RELEVANT STATE AUTHORITIES AND THE SUPERINTENDENT. TO THIS END, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND SHALL REPRESENT THE MINIMUM REQUIREMENT ONLY.
2. NO CONSTRUCTION WORKS ARE TO COMMENCE ON SITE UNTIL ALL EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE AND HAVE BEEN INSPECTED AND APPROVED BY THE COUNCIL ENGINEER AND/OR SUPERINTENDENT.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REGULARLY INSPECTED, IN PARTICULAR AFTER STORMS, AND REPAIRED OR MAINTAINED AS REQUIRED TO ENSURE THE MEASURES CORRECT AND EFFICIENT FUNCTION THROUGHOUT THE DURATION OF THE WORKS, UNTIL SUCH TIME AS THE COUNCIL ENGINEER AND/ORSUPERINTENDENT AUTHORISES THE REMOVAL OF SUCH MEASURES.
4. ALL STOCKPILES SHALL BE CLEAR OF ALL TREES AND DRAINAGE LINES (INCLUDING OVERLAND FLOW PATHS) AND PROTECTED FROM EROSION.
5. N THE CASE OF THE TEMPORARY CONSTRUCTION EXIT, THE CONTRACTOR SHALL UNDERTAKE WEEKLY SURFACE CLEANING BY DRAG BROOM OR EQUIVALENT, TO REMOVE ALL BUILD UP OF FOREIGN MATERIAL TO THE SATISFACTION OF THE SUPERINTENDENT.

TRAFFIC CONTROLS

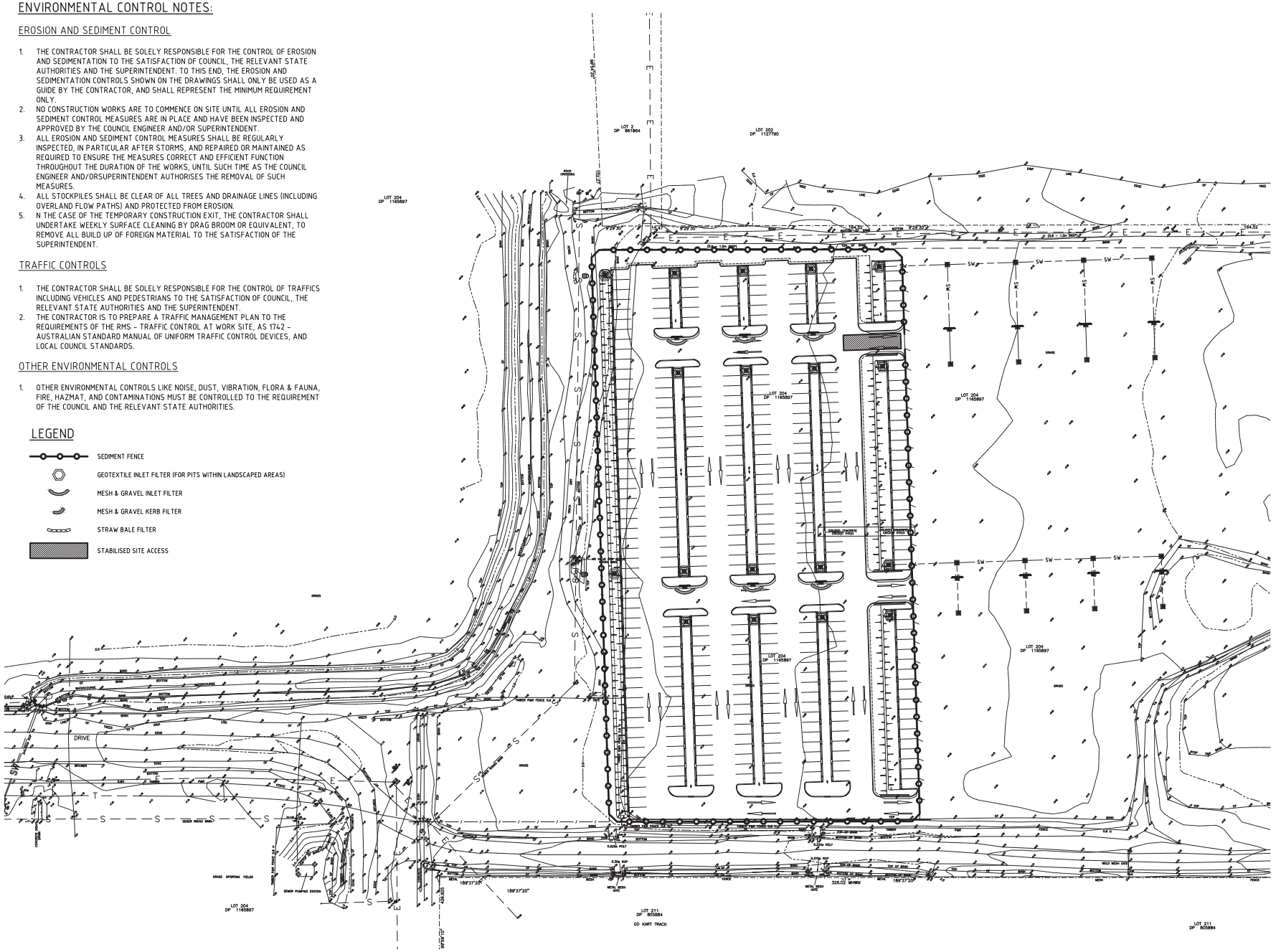
1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF TRAFFICS INCLUDING VEHICLES AND PEDESTRIANS TO THE SATISFACTION OF COUNCIL, THE RELEVANT STATE AUTHORITIES AND THE SUPERINTENDENT.
2. THE CONTRACTOR IS TO PREPARE A TRAFFIC MANAGEMENT PLAN TO THE REQUIREMENTS OF THE RMS – TRAFFIC CONTROL AT WORK SITE, AS 1742 – AUSTRALIAN STANDARD MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AND LOCAL COUNCIL STANDARDS.

OTHER ENVIRONMENTAL CONTROLS

1. OTHER ENVIRONMENTAL CONTROLS LIKE NOISE, DUST, VIBRATION, FLORA & FAUNA, FIRE, HAZMAT, AND CONTAMINATIONS MUST BE CONTROLLED TO THE REQUIREMENT OF THE COUNCIL AND THE RELEVANT STATE AUTHORITIES.

LEGEND

- SEDIMENT FENCE
- GEOTEXTILE INLET FILTER (FOR PITS WITHIN LANDSCAPED AREAS)
- MESH & GRAVEL INLET FILTER
- MESH & GRAVEL KERB FILTER
- STRAW BALE FILTER
- STABILISED SITE ACCESS



REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	25.06.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT: NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER: APP

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: SEDIMENT & EROSION CONTROL STAGE 2

DESIGNED	T.T.	DATE	16.04.14
VERIFIED	A.M.	DATE	16.04.14
DRAWN	T.T.	SCALE @ A0	NA
STATUS	DA / SD		
DRAWING No.	01094_C703	REVISION	01

CAD FILENAME: G:\C&M\Projects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C703.dwg

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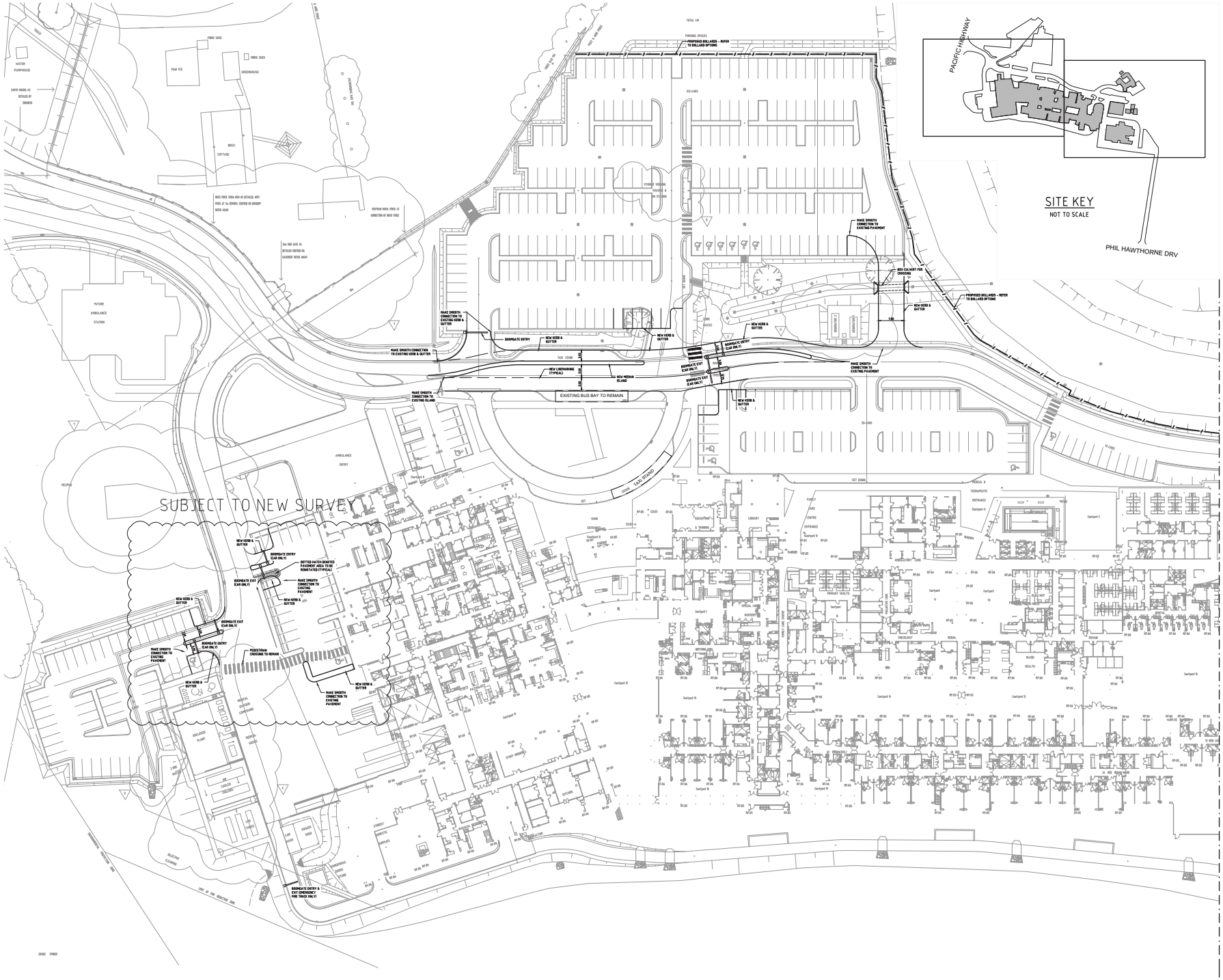

REFER TO DRG. 802 FOR CONTINUATION

REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	01.07.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT:

NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER:

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ABN 21 118 134 240

PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: INTERNAL SITE WORKS - SHEET 1

DESIGNED	T.T.	DATE	01.07.14
VERIFIED	A.M.	DATE	01.07.14
DRAWN	T.T.	SCALE @ A0	NTS
STATUS	SD		
DRAWING No.	01094_C801	REVISION	01

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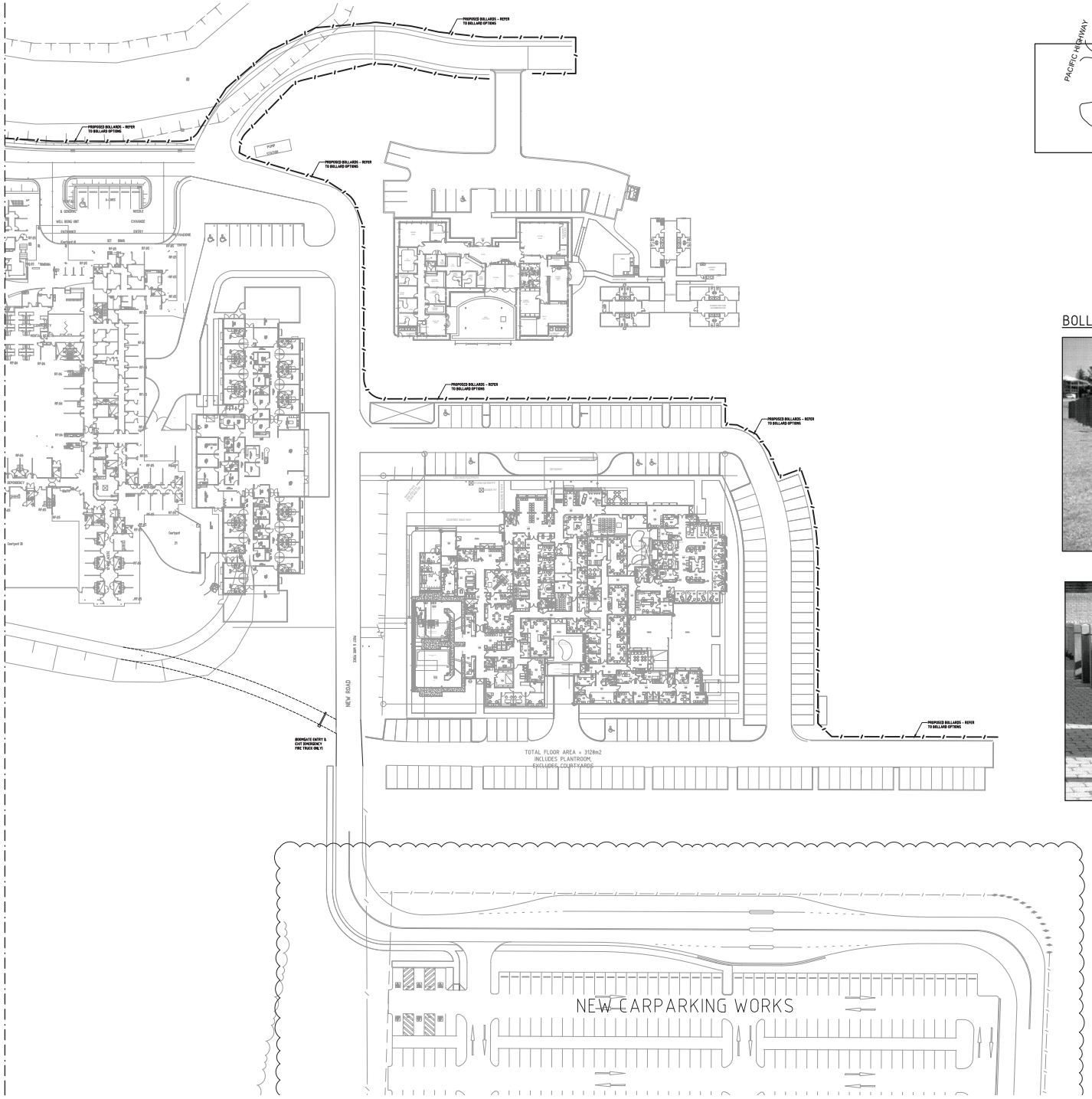
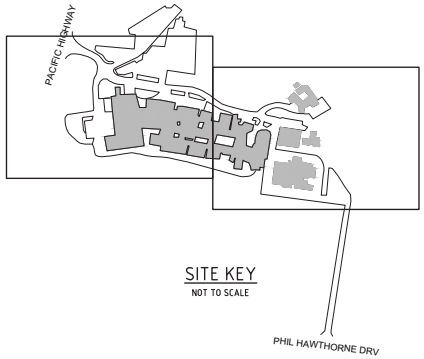
REFER TO DRG. 801 FOR CONTINUATION





SITE KEY
NOT TO SCALE

BOLLARD OPTIONS

OPTION 1

OPTION 2

OPTION 3

REV.	DES.	VER.	DATE	DESCRIPTION
01	T.T.	A.M.	01.07.14	PRELIMINARY ISSUE

PRELIMINARY

CLIENT:
NSW GOVERNMENT Health Infrastructure

PROJECT MANAGER:
APP

CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT

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PROJECT: COFFS HARBOUR HEALTH CAMPUS

TITLE: INTERNAL SITE WORKS - SHEET 2

DESIGNED	T.T.	DATE	01.07.14
VERIFIED	A.M.	DATE	01.07.14
DRAWN	T.T.	SCALE @ A0	NTS
STATUS	SD		
DRAWING No.	01094_C802	REVISION	01

CAD FILENAME: G:\C&M\Projects\01001-01100\PN-01094 - Coffs Harbour Health Campus - Car Park Project\ACAD\DA\01094_C801.dwg

Appendix D

SIDRA Modelling

DETAILED OUTPUT

Site: Hospital - Existing Conditions IN 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

OUTPUT TABLE LINKS

Movements

Intersection Negotiation and Travel Data
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

-------------------------------------------------------------------------------------------------
                          Running  Travel   Travel   Travel  Total Travel Distance  Tot.Trav.
 From      To                Speed   Speed   Distance   Time   Dem Flows   Arv Flows     Time
 Approach  Exit      Turn     km/h    km/h       m        s     veh-km/h    veh-km/h   veh-h/h
-------------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
        NorthWest    T1       59.0    59.0    1014.0#   61.9#      300.1       300.1      5.1
        NorthEast    R2       54.5    54.5    1014.7#   67.1#       47.7        47.7      0.9
-------------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
        SouthEast    L2       52.3    52.3    1015.7#   70.0#        7.1         7.1      0.1
        NorthWest    R2       51.5    48.8    1013.3#   74.7#        3.0         3.0      0.1
-------------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
        NorthEast    L2       58.2    58.2    1013.8#   62.7#       11.2        11.2      0.2
        SouthEast    T1       59.8    59.8    1013.8#   61.0#      449.1       449.1      7.5
-------------------------------------------------------------------------------------------------
 ALL VEHICLES:                59.1    59.0    1014.0#   61.9#      818.3       818.3     13.9
-------------------------------------------------------------------------------------------------
  "Running Speed" is the average speed excluding stopped periods.

  Travel Time values include cruise times and intersection delays including
  acceleration, deceleration and idling delays.

  #  Travel Distance and Travel Time values include travel on the External Exit section based
     on the program-determined Exit Distance or user-specified Downstream Distance as applicable.


INTERSECTION NEGOTIATION DATA

-------------------------------------------------------------------------
                           Negn  Negn    Negn    Appr.  Exit  Downstr.
 From      To              Radius Speed  Dist.   Dist.  Dist.  Dist.
 Approach  Exit      Turn     m    km/h    m       m      m      m
-------------------------------------------------------------------------
```

```
 SouthEast: Stadium Drive
        NorthWest    T1         S   60.0   13.8    500     500     NA
        NorthEast    R2      10.2   20.3   16.0    500     500     NA
-------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
        SouthEast    L2      10.0   20.2   15.7    500     500     NA
        NorthWest    R2       8.5   18.9   13.3    500     500     NA
-------------------------------------------------------------------------
 NorthWest: Stadium Drive
        NorthEast    L2      10.0   20.2   15.7    500     500     NA
        SouthEast    T1         S   60.0   13.8    500     500     NA
-------------------------------------------------------------------------

  NA Downstream Distance does not apply if:
     - Exit is an internal leg of a network
     - "Program" option was specified
     - Distance specified was less than the Exit Negotiation Distance
     - Distance specified was greater than the exit leg length


MOVEMENT SPEEDS AND GEOMETRIC DELAY

-----------------------------------------------------
           App. Speeds    Exit Speeds    Queue
           ------------   -----------   Move-up   Geom
 Mov       Cruise  Negn   Negn Cruise    Speed    Delay
 ID  Turn   km/h   km/h    km/h  km/h     km/h      sec
-----------------------------------------------------
 SouthEast: Stadium Drive
  2  T1     60.0   60.0    60.0  60.0      1.8      0.0
  3  R2     60.0   20.3    20.3  60.0      8.2      5.5
-----------------------------------------------------
 NorthEast: Phil Hawthorne Drive
  4  L2     60.0   20.2    20.2  60.0     19.3      5.5
  6  R2     60.0   18.9    18.9  60.0     13.8      5.5
-----------------------------------------------------
 NorthWest: Stadium Drive
  7  L2     60.0   20.2    20.2  60.0              5.5
  8  T1     60.0   60.0    60.0  60.0              0.0
-----------------------------------------------------
```

Go to Table Links (Top)

Gap Acceptance Parameters
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

-------------------------------------------------------------------------
                       Critical Gap                        Intra
                Opng   ------------   Foll-up   Entry    Bunch   Propn
  Opd    Dest   Flow   Hdwy    Dist   Headway    HV      Hdwy    Bnchd
  Lane          pcu/h   sec      m      sec     Equiv     sec
-------------------------------------------------------------------------
 SouthEast: Stadium Drive
     2      NE    454    4.00    65.6    2.00     1.00    1.80    0.055
-------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
     1      SE    443+   4.00    66.7    2.20     1.00    1.80    0.054
     2      NW    792+   5.30    84.8    3.00     1.00    0.92    0.070
-------------------------------------------------------------------------
 NorthWest: Stadium Drive

  No opposed movements on this approach.
-------------------------------------------------------------------------

  Values in this table are adjusted for heavy vehicles in the entry stream.
  Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements.
  +  Percentage of exiting flow included in opposing vehicle flow
```

Go to Table Links (Top)

Movement Capacity and Performance Parameters
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


MOVEMENT CAPACITY PARAMETERS

-----------------------------------------------------------------
 Mov Turn Mov         Opng Movement  Total  Prac.  Prac.  Deg.
 ID       Cl.  Arv           Adjust.  Cap.  Deg.   Spare  Satn
               Flow   Flow   Flow           Satn   Cap.
               veh/h  veh/h  pcu/h   veh/h   xp      %      x
-----------------------------------------------------------------
SouthEast: Stadium Drive
```

```
  2  T1   #     296      0      0    2011   0.98    566  0.147
  3  R2   #      47    454    454     319   0.98    566  0.147
-------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2   #       7    443    443    1068   0.80   ****  0.007
  6  R2   #       3    792    792     432   0.80   ****  0.007
-------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2   #      11      0      0      38   0.98    236  0.291*
  8  T1   #     443      0      0    1520   0.98    236  0.291*
-------------------------------------------------------------
  *  Maximum degree of saturation
  # Combined Movement Capacity parameters are shown for all Movement Classes.

  The Flow Ratio values given in this table are calculated for signal timing
  purposes. For movements with two green periods they are subject to balancing
  as relevant to determining Required Movement Times given in the Movement
  Timing Information table. Zero values will be given for a slip /bypass lane
  movement if the option "Exclude Slip/Bypass Lane from Signal Analysis" has
  been selected.


MOVEMENT PERFORMANCE

-------------------------------------------------------------------------------
 Mov Turn Total    Total   Aver.  Eff.  Total  Perf. Tot.Trav. Tot.Trav. Aver.
 ID       Delay    Delay   Delay  Stop  Stops  Index Distance    Time    Speed
       (veh-h/h)(pers-h/h)(sec)  Rate               (veh-km/h)(veh-h/h) (km/h)
-------------------------------------------------------------------------------
SouthEast: Stadium Drive
  2  T1    0.04    0.04     0.4   0.07    19.3  5.15    300.1     5.1     59.0
  3  R2    0.10    0.12     7.5   0.29    13.7  0.97     47.7     0.9     54.5
-------------------------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2    0.01    0.02     7.1   0.59     4.1  0.16      7.1     0.1     52.3
  6  R2    0.01    0.01    11.9   0.72     2.2  0.08      3.0     0.1     48.8
-------------------------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2    0.02    0.02     5.6   0.01     0.2  0.20     11.2     0.2     58.2
  8  T1    0.01    0.01     0.0   0.01     6.4  7.53    449.1     7.5     59.8
-------------------------------------------------------------------------------
```

Go to Table Links (Top)

Fuel Consumption, Emissions and Cost
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

-------------------------------------------------------------
 Mov Turn        Cost    Fuel     CO2     CO      HC      NOX
 ID              Total   Total   Total   Total   Total   Total
                 $/h       L/h   kg/h    kg/h    kg/h    kg/h
-------------------------------------------------------------
SouthEast: Stadium Drive
  2  T1          104.97   18.2    42.7    0.25   0.014   0.025
  3  R2           21.23    3.6     8.4    0.05   0.003   0.006
               ---------------------------------------------
               126.20   21.8    51.1    0.30   0.017   0.032
-------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2           3.52    0.6     1.4    0.01   0.001   0.001
  6  R2           1.63    0.3     0.6    0.00   0.000   0.000
               ---------------------------------------------
                  5.16    0.8     2.0    0.01   0.001   0.002
-------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2           3.64    0.6     1.5    0.01   0.000   0.001
  8  T1         146.42   25.6    60.3    0.37   0.020   0.032
               ---------------------------------------------
               150.05   26.3    61.7    0.38   0.020   0.033
-------------------------------------------------------------
 INTERSECTION:  281.41   48.9   114.8    0.69   0.038   0.067
-------------------------------------------------------------


FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

-------------------------------------------------------------
 Mov Turn        Cost    Fuel     CO2     CO      HC      NOX
 ID              Rate    Rate    Rate    Rate    Rate    Rate
                 $/km  L/100km  g/km    g/km    g/km    g/km
-------------------------------------------------------------
SouthEast: Stadium Drive
  2  T1           0.35    6.1   142.4    0.85   0.048   0.085
  3  R2           0.45    7.5   175.5    0.97   0.064   0.134
```

```
                ------------------------------------------------
                    0.36    6.3   147.0    0.86   0.050   0.091
-------------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2             0.50    8.2   192.0    1.03   0.072   0.158
  6  R2             0.54    8.4   197.2    1.05   0.075   0.161
                ------------------------------------------------
                    0.51    8.2   193.6    1.03   0.073   0.159
-------------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2             0.33    5.7   134.2    0.82   0.044   0.072
  8  T1             0.33    5.7   134.2    0.82   0.044   0.072
                ------------------------------------------------
                    0.33    5.7   134.2    0.82   0.044   0.072
-------------------------------------------------------------------
 INTERSECTION:      0.34    6.0   140.3    0.84   0.047   0.081
-------------------------------------------------------------------
```

Go to Table Links (Top)

Lanes

Lane Performance and Capacity Information
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE PERFORMANCE

-------------------------------------------------------------------
                                          Q u e u e
          Flow   Cap  Deg.  Aver.  Eff.    95% Back      Lane
 Lane                 Satn  Delay  Stop  ------------   Length
 No.      veh/h veh/h   x     sec   Rate    veh     m       m
-------------------------------------------------------------------
 SouthEast: Stadium Drive
 1         230  1560 0.147    0.0  0.00                    55.0T
 2         113   771 0.147    4.2  0.29    0.5    3.2     250.0
-------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1           7  1068 0.007    7.1  0.59    0.0    0.2       6.0T
 2           3   432 0.007   11.9  0.72    0.0    0.2     380.0
-------------------------------------------------------------------
 NorthWest: Stadium Drive
 1         454  1558 0.291    0.2  0.01                    500.0
-------------------------------------------------------------------
  T  Short lane due to specification of Turn Bay


LANE FLOW AND CAPACITY INFORMATION

-----------------------------------------
 Lane   Total     Min   Tot   Deg.  Lane
 No.    Arv Flow  Cap   Cap   Satn  Util
        (veh/h)  veh/h veh/h   x     %
-----------------------------------------
 SouthEast: Stadium Drive
 1        230     230  1560   0.147  100
 2        113      14   771   0.147  100
-----------------------------------------
 NorthEast: Phil Hawthorne Drive
 1          7       6  1068   0.007  100
 2          3       3   432   0.007  100
-----------------------------------------
 NorthWest: Stadium Drive
 1        454     454  1558   0.291  100
-----------------------------------------

  The capacity value for priority and continuous movements is obtained by
  adjusting the basic saturation flow for heavy vehicle and turning vehicle
  effects.  Saturation flow scale applies if specified.
```

Go to Table Links (Top)

Lane, Approach and Intersection Performance
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

-------------------------------------------------------------
 Lane   Arrival        Adj.    Deg   Aver.   Longest   Shrt
 No.    Flow     %HV   Basic   Sat   Delay   Queue     Lane
        (veh/h)       Satf.    x     sec       m       m
-------------------------------------------------------------
```

```
 SouthEast: Stadium Drive
 1        230      0    1559  0.147    0.0              55
 2        113      0          0.147    4.2       3     250
         ----------------------------------------------------
          343      0          0.147    1.4       3
------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1          7      0          0.007    7.1       0       6
 2          3      0          0.007   11.9       0     380
         ----------------------------------------------------
           10      0          0.007    8.5       0
------------------------------------------------------------
 NorthWest: Stadium Drive
 1        454      0    1559  0.291    0.2             500
         ----------------------------------------------------
          454      0          0.291    0.2
============================================================
 ALL VEHICLES
         Total      %           Max   Aver.    Max
         Flow      HV            X    Delay   Queue
          807      0          0.291    0.8       3
============================================================
Peak flow period = 60 minutes.

Queue values in this table are 95% queue (metres)
Note: Basic Saturation Flows are not adjusted at roundabouts or sign-
      controlled intersections and apply only to continuous lanes.
```

Go to Table Links (Top)

Driver Characteristics
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

------------------------------------------------------
                                      Average  Driver
 Lane    Satn    Satn    Satn    Satn    Queue  Response
 No.     Speed   Flow    Hdwy  Spacing   Space    Time
         km/h    veh/h   sec     m         m      sec
------------------------------------------------------
 SouthEast: Stadium Drive
 1       NA - Continuous Movement
 2       NA - Major Road Movement
------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1       NA - Short Lane
 2        18.9   1200    3.00    15.78     7.00    1.67
------------------------------------------------------
 NorthWest: Stadium Drive
 1       NA - Continuous Movement
------------------------------------------------------

  Saturation Flow and Saturation Headway are derived from follow-up headway.
```

Go to Table Links (Top)

Lane Delays
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE DELAYS

------------------------------------------------------------------------------------------
                              ----------------  Delay (seconds/veh)  ----------------
         Deg.  % Arv   Prog.    Stop-line Delay  Acc.   Queuing   Stopd
 Lane    Satn  During  Factor   1st   2nd Total  Dec.  Total MvUp (Idle) Geom Control
 No.       x   Green             d1    d2   dSL   dn    dq   dqm    di    dig   dic
------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
 1       0.147                              0.0                            0.0    0.0
 2       0.147    NA      NA     1.9   0.0   1.9   2.2   0.0   0.0   0.0   2.3    4.2
------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1       0.007    NA      NA     1.5   0.0   1.5   1.8   0.0   0.0   0.0   5.5    7.1
 2       0.007    NA      NA     6.4   0.0   6.4   2.5   3.9   0.0   3.9   5.5   11.9
------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
 1       0.291                              0.0                            0.1    0.2
------------------------------------------------------------------------------------------
  SIDRA Standard Delay Model is used.  Control Delay is the sum of Stop-line Delay
  and Geometric Delay.
  dSL: Stop-line delay (=d1+d2)
  dn: Average stop-start delay for all vehicles queued and unqueued
  dq: Queuing delay (the part of the stop-line delay that includes
```

```
     stopped delay and queue move-up delay)
  dqm: Queue move-up delay
  di: Stopped delay (stopped (idling) time at near-zero speed)
  dig: Geometric delay
  dic: Control delay
```

Go to Table Links (Top)

Lane Queues
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE QUEUES (VEHICLES)
```

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (veh) Nb1	Nb2	Nb	95%	Queue Stor. Ratio	Prob. Block %	P'ile Block %	Cyc-Av. Queue Nc	95%
SouthEast: Stadium Drive													
2	0.147	NA	NA	0.0	0.2	0.0	0.2	0.5	0.01	0.0	100.0	0.1	0.1
NorthEast: Phil Hawthorne Drive													
1	0.007	NA	NA	0.0	0.0	0.0	0.0	0.0	0.03	0.0	100.0	0.0	0.0
2	0.007	NA	NA	0.0	0.0	0.0	0.0	0.0	0.00	0.0	100.0	0.0	0.0
NorthWest: Stadium Drive													

```
LANE QUEUES (DISTANCE)
```

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (m) Nb1	Nb2	Nb	95%	Queue Stor. Ratio	Prob. Block %	P'ile Block %	Cyc-Av. Queue Nc	95%
SouthEast: Stadium Drive													
2	0.147	NA	NA	0.0	1.3	0.0	1.3	3.2	0.01	0.0	100.0	0.4	0.8
NorthEast: Phil Hawthorne Drive													
1	0.007	NA	NA	0.0	0.1	0.0	0.1	0.2	0.03	0.0	100.0	0.0	0.0
2	0.007	NA	NA	0.0	0.1	0.0	0.1	0.2	0.00	0.0	100.0	0.0	0.1
NorthWest: Stadium Drive													

Go to Table Links (Top)

Lane Queue Percentiles
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE QUEUE PERCENTILES (VEHICLES)
```

Lane No.	Deg. Satn x	Percentile Back of Queue (veh) 50%	70%	85%	90%	95%	98%	100%
SouthEast: Stadium Drive								
2	0.147	0.2	0.2	0.3	0.4	0.5	0.5	0.5
NorthEast: Phil Hawthorne Drive								
1	0.007	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.007	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NorthWest: Stadium Drive								

```
LANE QUEUE PERCENTILES (DISTANCE)
```

Lane No.	Deg. Satn x	Percentile Back of Queue (metres) 50%	70%	85%	90%	95%	98%	100%
SouthEast: Stadium Drive								
2	0.147	1.3	1.6	2.3	2.7	3.2	3.5	3.8

```
-------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.007    0.1    0.1    0.1    0.1    0.2    0.2    0.2
 2     0.007    0.1    0.1    0.1    0.1    0.2    0.2    0.2
-------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------
```

Go to Table Links (Top)

Lane Stops
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

-------------------------------------------------------------------------------------------
                                                          Queue   Total
        Deg.  % Arv   Prog.   -- Effective Stop Rate --  Total  Move-up  Queue    Prop.
 Lane   Satn  During  Factor             Geom. Overall  Stops   Rate  Move-ups Queued
 No.      x   Green            he1   he2   hig     h       H      hqm     Hqm     pq
-------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
 1     0.147    NA      NA                0.00   0.00      0.0
 2     0.147    NA      NA    0.17  0.00  0.12   0.29     32.9    0.00     0.0    0.52
-------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.007    NA      NA    0.26  0.00  0.33   0.59      4.1    0.00     0.0    0.43
 2     0.007    NA      NA    0.51  0.00  0.21   0.72      2.2    0.00     0.0    0.64
-------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
 1     0.291    NA      NA                0.01   0.01      6.6
-------------------------------------------------------------------------------------------
  hig is the average value for all movements in a shared lane
  hqm is average queue move-up rate for all vehicles queued and unqueued
```

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total)
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


TOTAL FLOW RATES (ALL MOVEMENT CLASSES)

-----------------------------------------------------
 From SOUTHEAST To:              NW      NE
 Turn:                           T1      R2     TOT
 Flow Rate                    296.0    47.0   343.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
 From NORTHEAST To:              SE      NW
 Turn:                           L2      R2     TOT
 Flow Rate                     7.0     3.0    10.0
 %HV (all designations)        0.0     0.0     0.0
-----------------------------------------------------
 From NORTHWEST To:              NE      SE
 Turn:                           L2      T1     TOT
 Flow Rate                    11.0   443.0   454.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


FLOW RATES FOR Light Vehicles

-------------------------------------------
 From SOUTHEAST To:      NW      NE
 Turn:                   T1      R2     TOT
-------------------------------------------
 Flow Rate - Veh      296.0    47.0   343.0
```

Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Flow Rate - Veh	7.0	3.0	10.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Flow Rate - Veh	11.0	443.0	454.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

Go to Table Links (Top)

Lane Flow Rates
Site:Hospital - Existing Conditions IN 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE

From SOUTHEAST To:	NW	NE	
Turn:	T1	R2	TOT
Lane 1			
LV	229.6	*	229.6
Total	229.6	*	229.6
Lane 2			
LV	66.4	47.0	113.4
Total	66.4	47.0	113.4
Approach	296.0	47.0	343.0

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Lane 1			
LV	7.0	*	7.0
Total	7.0	*	7.0
Lane 2			
LV	*	3.0	3.0
Total	*	3.0	3.0
Approach	7.0	3.0	10.0

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Lane 1			
LV	11.0	443.0	454.0
Total	11.0	443.0	454.0
Approach	11.0	443.0	454.0

* Movement not allocated to the lane

EXIT LANE FLOW RATES

Movement Class:	LV	HV	TOT
Exit: SOUTHEAST			
Lane: 1	450.0	*	450.0
Lane: 2	*	*	0.0
Total	450.0	*	450.0
Exit: NORTHEAST			
Lane: 1	58.0	*	58.0
Total	58.0	*	58.0
Exit: NORTHWEST			
Lane: 1	262.8	*	262.8
Lane: 2	36.2	*	36.2
Total	299.0	*	299.0

```
----------------------------------------
  *  Movement not allocated to the lane


DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

----------------------------------------
Movement Class:       LV      HV     TOT
----------------------------------------
 Exit: SOUTHEAST
Lane:  2           450.0       *   450.0
Total              450.0       *   450.0
----------------------------------------
 Exit: NORTHEAST
Lane:  1            58.0       *    58.0
Total               58.0       *    58.0
----------------------------------------
 Exit: NORTHWEST
Lane:  2           299.0       *   299.0
Total              299.0       *   299.0
----------------------------------------
  *  Movement not allocated to the lane

Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

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Sensitivity Analysis

Sensitivity Analysis Results
Site:Hospital - Existing Conditions IN 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

Scaled sensitivity parameter: Basic Saturation Flow
  Degree of saturation = 0.291 was achieved at parameter scale =  80.0 %
  All scaled parameter values gave degree of saturation less than 1.0.
  Try adjusting the scale factor range to give higher degrees of saturation.


Results in the table below are given for Intersection - Vehicles

-------------------------------------------------------------------------
 Param        Eff.  Degree   Prac.  Aver.  Stop  95% Back  Perf.  Cost
 Scale        Cap.    of     Spare  Delay  Rate  of Queue  Index  Total
  (%)              Satn     Cap.  (sec)         (veh)           $/h
-------------------------------------------------------------------------
  80.0        2770   0.291    236    0.8  0.06     0.5     14.1   281.4
  85.0        2943   0.274    257    0.8  0.06     0.4     14.1   281.2
  90.0        3116   0.259    278    0.8  0.06     0.4     14.1   281.1
  95.0        3289   0.245    299    0.8  0.06     0.4     14.1   280.9
 100.0        3462   0.233    320    0.8  0.06     0.4     14.1   280.8
 105.0        3635   0.222    341    0.8  0.06     0.4     14.1   280.7
 110.0        3808   0.212    362    0.8  0.06     0.4     14.1   280.5
 115.0        3981   0.203    383    0.8  0.06     0.4     14.1   280.4
 120.0        4154   0.194    404    0.8  0.06     0.4     14.1   280.3
-------------------------------------------------------------------------
```

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Other

Model Settings Summary
Site:Hospital - Existing Conditions IN 2014

```
Parameter sensitivity run for "Calibration": Basic Saturation Flow =  80.0 %
  This value was chosen to achieve intersection degree of saturation close
  to 1.0.  Short lanes with degree of saturation = 1.0 are ignored in this process.
  See the Sensitivity Analysis group of tables for further information.

* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Model Defaults: New South Wales
  Peak Flow Period (for performance): 60 minutes
  Unit time (for volumes): 60 minutes.
  SIDRA Standard Delay model used
  SIDRA Standard Queue model used
  Level of Service based on: Delay (RTA NSW)
```

```
  Queue percentile: 95%
```

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Diagnostics
Site:Hospital - Existing Conditions IN 2014

```
Flow-Capacity Iterations:

  Largest change in degree of saturation for any lane =  0.3 %
  Largest change in capacity for any lane =    6 veh/h


Other Diagnostic Messages (if any):
```

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Project: P:\GEO02292 Coffs Harbour Health Campus Carpark Planning Advice\Analysis & Design\SIDRA\2292-1015.sip6
8001258, GEOLINK, PLUS / 1PC

INTERSECTION SUMMARY

Site: Hospital - Existing Conditions IN 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	59.0	km/h	59.0	km/h
Travel Distance (Total)	818.3	veh-km/h	981.9	pers-km/h
Travel Time (Total)	13.9	veh-h/h	16.6	pers-h/h
Demand Flows (Total)	807	veh/h	968	pers/h
Percent Heavy Vehicles (Demand)	0.0	%		
Degree of Saturation	0.291			
Practical Spare Capacity	236.3	%		
Effective Intersection Capacity	2770	veh/h		
Control Delay (Total)	0.18	veh-h/h	0.22	pers-h/h
Control Delay (Average)	0.8	sec	0.8	sec
Control Delay (Worst Lane)	11.9	sec		
Control Delay (Worst Movement)	11.9	sec	11.9	sec
Geometric Delay (Average)	0.5	sec		
Stop-Line Delay (Average)	0.3	sec		
Idling Time (Average)	0.0	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.5	veh		
95% Back of Queue - Distance (Worst Lane)	3.2	m		
Queue Storage Ratio (Worst Lane)	0.01			
Total Effective Stops	46	veh/h	55	pers/h
Effective Stop Rate	0.06	per veh	0.06	per pers
Proportion Queued	0.08		0.08	
Performance Index	14.1		14.1	
Cost (Total)	281.41	$/h	281.41	$/h
Fuel Consumption (Total)	48.9	L/h		
Carbon Dioxide (Total)	114.8	kg/h		
Hydrocarbons (Total)	0.038	kg/h		
Carbon Monoxide (Total)	0.687	kg/h		
NOx (Total)	0.067	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	387,360	veh/y	464,832	pers/y
Delay	86	veh-h/y	103	pers-h/y
Effective Stops	21,980	veh/y	26,376	pers/y
Travel Distance	392,772	veh-km/y	471,326	pers-km/y
Travel Time	6,655	veh-h/y	7,986	pers-h/y
Cost	135,076	$/y	135,076	$/y
Fuel Consumption	23,454	L/y		
Carbon Dioxide	55,117	kg/y		
Hydrocarbons	18	kg/y		
Carbon Monoxide	330	kg/y		
NOx	32	kg/y		

MOVEMENT SUMMARY

Site: Hospital - Existing Conditions IN 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

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
SouthEast: Stadium Drive											
2	T1	296	0.0	0.147	0.4	LOS A	0.5	3.2	0.12	0.07	59.0
3	R2	47	0.0	0.147	7.5	LOS A	0.5	3.2	0.52	0.29	54.5
Approach		343	0.0	0.147	1.4	NA	0.5	3.2	0.17	0.10	58.3
NorthEast: Phil Hawthorne Drive											
4	L2	7	0.0	0.007	7.1	LOS A	0.0	0.2	0.43	0.59	52.3
6	R2	3	0.0	0.007	11.9	LOS A	0.0	0.2	0.64	0.72	48.8
Approach		10	0.0	0.007	8.5	LOS A	0.0	0.2	0.50	0.63	51.2
NorthWest: Stadium Drive											
7	L2	11	0.0	0.291	5.6	LOS A	0.0	0.0	0.00	0.01	58.2
8	T1	443	0.0	0.291	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		454	0.0	0.291	0.2	NA	0.0	0.0	0.00	0.01	59.7
All Vehicles		807	0.0	0.291	0.8	NA	0.5	3.2	0.08	0.06	59.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

LANE SUMMARY

Site: Hospital - Existing Conditions IN 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Stadium Drive													
Lane 1	230	0.0	1560	0.147	100	0.0	LOS A	0.0	0.0	Short	55	0.0	0.0
Lane 2	113	0.0	771	0.147	100	4.2	LOS A	0.5	3.2	Full	250	0.0	0.0
Approach	343	0.0		0.147		1.4	NA	0.5	3.2				
NorthEast: Phil Hawthorne Drive													
Lane 1	7	0.0	1068	0.007	100	7.1	LOS A	0.0	0.2	Short	6	0.0	0.0
Lane 2	3	0.0	432	0.007	100	11.9	LOS A	0.0	0.2	Full	380	0.0	0.0
Approach	10	0.0		0.007		8.5	LOS A	0.0	0.2				
NorthWest: Stadium Drive													
Lane 1	454	0.0	1558	0.291	100	0.2	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	454	0.0		0.291		0.2	NA	0.0	0.0				
Intersection	807	0.0		0.291		0.8	NA	0.5	3.2				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
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.

LANE FLOWS

Site: Hospital - Existing Conditions IN 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Approach Lane Flows (veh/h)							
SouthEast: Stadium Drive							
Mov. From SE To Exit:	T1 NW	R2 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	230	-	230	0.0	1560	0.147	100
Lane 2	66	47	113	0.0	771	0.147	100
Approach	296	47	343	0.0		0.147	
NorthEast: Phil Hawthorne Drive							
Mov. From NE To Exit:	L2 SE	R2 NW	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	7	-	7	0.0	1068	0.007	100
Lane 2	-	3	3	0.0	432	0.007	100
Approach	7	3	10	0.0		0.007	
NorthWest: Stadium Drive							
Mov. From NW To Exit:	L2 NE	T1 SE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	11	443	454	0.0	1558	0.291	100
Approach	11	443	454	0.0		0.291	
	Total	%HV	Deg.Satn (v/c)				
Intersection	807	0.0		0.291			

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

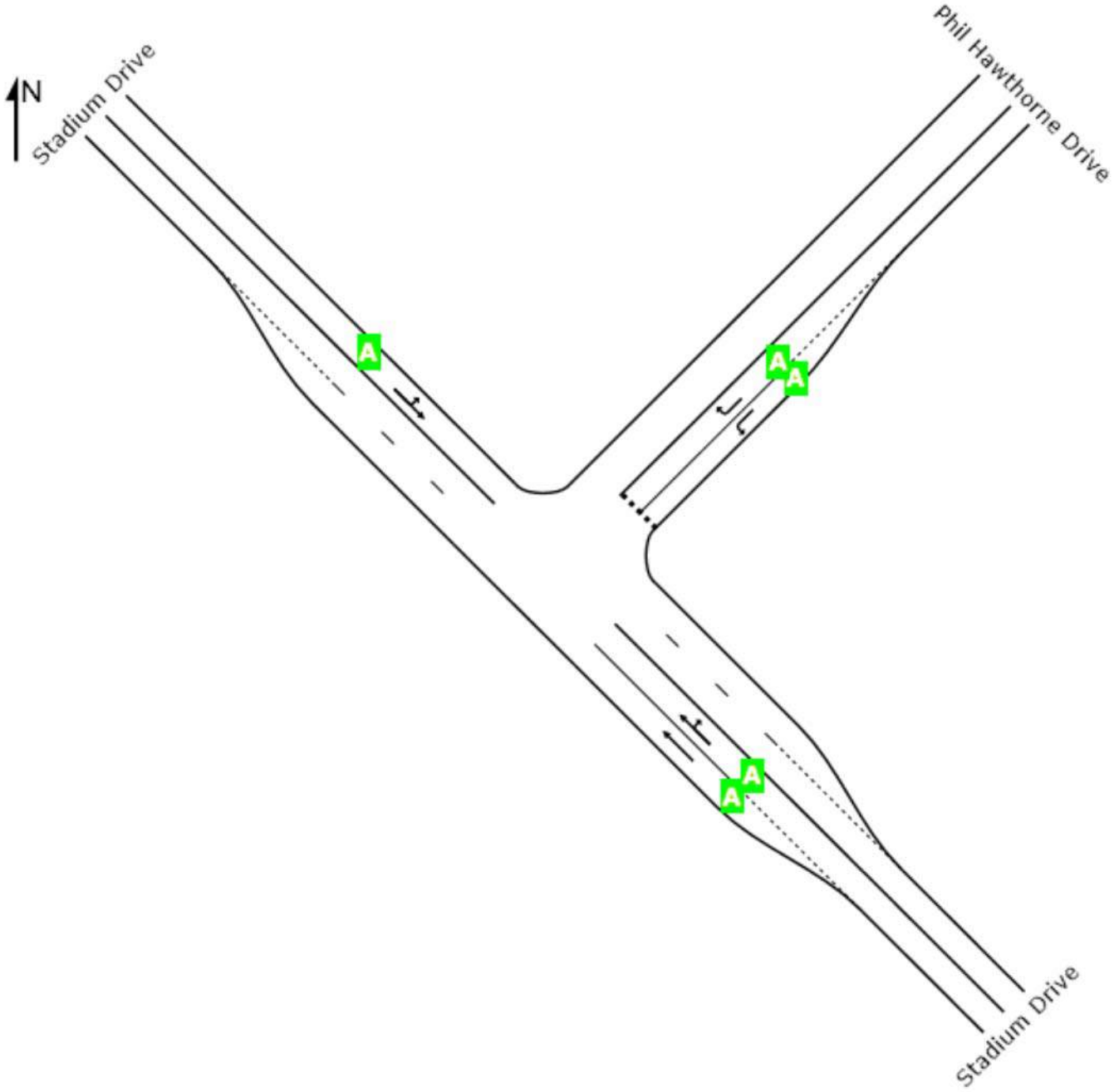
LEVEL OF SERVICE

Site: Hospital - Existing Conditions IN 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

All Movement Classes

	Southeast	Northeast	Northwest	Intersection
LOS	NA	A	NA	NA



Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

DETAILED OUTPUT

Site: Hospital - Existing Conditions OUT 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

OUTPUT TABLE LINKS

Movements

Intersection Negotiation and Travel Data
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

-------------------------------------------------------------------------------------------------
                          Running  Travel   Travel   Travel  Total Travel Distance  Tot.Trav.
 From      To                Speed   Speed   Distance  Time   Dem Flows   Arv Flows     Time
 Approach  Exit      Turn     km/h    km/h       m       s     veh-km/h    veh-km/h   veh-h/h
-------------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
        NorthWest    T1       59.3    59.3    1013.8#   61.6#     505.9       505.9       8.5
        NorthEast    R2       56.1    56.1    1013.9#   65.0#       7.1         7.1       0.1
-------------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
        SouthEast    L2       52.4    52.4    1015.7#   69.7#      47.7        47.7       0.9
        NorthWest    R2       51.5    48.4    1013.3#   75.3#      11.1        11.1       0.2
-------------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
        NorthEast    L2       58.3    58.3    1013.8#   62.6#       3.0         3.0       0.1
        SouthEast    T1       59.9    59.9    1013.8#   60.9#     336.6       336.6       5.6
-------------------------------------------------------------------------------------------------
 ALL VEHICLES:                59.0    58.9    1013.9#   62.0#     911.5       911.5      15.5
-------------------------------------------------------------------------------------------------
  "Running Speed" is the average speed excluding stopped periods.

  Travel Time values include cruise times and intersection delays including
  acceleration, deceleration and idling delays.

  #  Travel Distance and Travel Time values include travel on the External Exit section based
     on the program-determined Exit Distance or user-specified Downstream Distance as applicable.


INTERSECTION NEGOTIATION DATA

-------------------------------------------------------------------------
                          Negn  Negn    Negn    Appr.  Exit  Downstr.
 From      To              Radius Speed  Dist.   Dist.  Dist.  Dist.
 Approach  Exit      Turn     m    km/h    m       m      m      m
-------------------------------------------------------------------------
```

```
 SouthEast: Stadium Drive
        NorthWest    T1         S   60.0   13.8    500     500     NA
        NorthEast    R2      10.2   20.3   16.0    500     500     NA
-------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
        SouthEast    L2      10.0   20.2   15.7    500     500     NA
        NorthWest    R2       8.5   18.9   13.3    500     500     NA
-------------------------------------------------------------------------
 NorthWest: Stadium Drive
        NorthEast    L2      10.0   20.2   15.7    500     500     NA
        SouthEast    T1         S   60.0   13.8    500     500     NA
-------------------------------------------------------------------------

  NA Downstream Distance does not apply if:
     - Exit is an internal leg of a network
     - "Program" option was specified
     - Distance specified was less than the Exit Negotiation Distance
     - Distance specified was greater than the exit leg length


MOVEMENT SPEEDS AND GEOMETRIC DELAY

-----------------------------------------------------
           App. Speeds    Exit Speeds    Queue
           ------------   -----------   Move-up   Geom
 Mov       Cruise  Negn   Negn Cruise    Speed    Delay
 ID  Turn   km/h   km/h   km/h  km/h     km/h      sec
-----------------------------------------------------
 SouthEast: Stadium Drive
  2  T1     60.0   60.0   60.0  60.0      0.3      0.0
  3  R2     60.0   20.3   20.3  60.0      1.1      5.5
-----------------------------------------------------
 NorthEast: Phil Hawthorne Drive
  4  L2     60.0   20.2   20.2  60.0     20.2      5.5
  6  R2     60.0   18.9   18.9  60.0     13.6      5.5
-----------------------------------------------------
 NorthWest: Stadium Drive
  7  L2     60.0   20.2   20.2  60.0              5.5
  8  T1     60.0   60.0   60.0  60.0              0.0
-----------------------------------------------------
```

Go to Table Links (Top)

Gap Acceptance Parameters
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

-------------------------------------------------------------------------
                       Critical Gap                        Intra
                Opng   ------------   Foll-up   Entry     Bunch   Propn
  Opd    Dest   Flow   Hdwy    Dist   Headway    HV       Hdwy    Bnchd
  Lane          pcu/h   sec      m      sec     Equiv     sec
-------------------------------------------------------------------------
 SouthEast: Stadium Drive
     2      NE    335    4.00    66.3    2.00     1.00    1.80    0.039
-------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
     1      SE    332+   4.00    66.7    2.20     1.00    1.80    0.038
     2      NW    840+   5.30    87.8    3.00     1.00    0.75    0.060
-------------------------------------------------------------------------
 NorthWest: Stadium Drive

  No opposed movements on this approach.
-------------------------------------------------------------------------

  Values in this table are adjusted for heavy vehicles in the entry stream.
  Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements.
  +  Percentage of exiting flow included in opposing vehicle flow
```

Go to Table Links (Top)

Movement Capacity and Performance Parameters
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


MOVEMENT CAPACITY PARAMETERS

-----------------------------------------------------------------
 Mov Turn Mov         Opng Movement  Total  Prac.  Prac.  Deg.
 ID       Cl.  Arv          Adjust.  Cap.  Deg.   Spare  Satn
               Flow   Flow   Flow           Satn   Cap.
               veh/h  veh/h  pcu/h   veh/h   xp      %      x
-----------------------------------------------------------------
SouthEast: Stadium Drive
```

```
  2  T1   #     499      0      0    2183   0.98    329  0.229*
  3  R2   #       7    335    335      31   0.98    329  0.229*
-------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2   #      47    332    332    1206   0.80   1953  0.039
  6  R2   #      11    840    840     414   0.80   2909  0.027
-------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2   #       3      0      0      14   0.98    356  0.215
  8  T1   #     332      0      0    1545   0.98    356  0.215
-------------------------------------------------------------
  *  Maximum degree of saturation
  # Combined Movement Capacity parameters are shown for all Movement Classes.

  The Flow Ratio values given in this table are calculated for signal timing
  purposes. For movements with two green periods they are subject to balancing
  as relevant to determining Required Movement Times given in the Movement
  Timing Information table. Zero values will be given for a slip /bypass lane
  movement if the option "Exclude Slip/Bypass Lane from Signal Analysis" has
  been selected.


MOVEMENT PERFORMANCE

-------------------------------------------------------------------------------
 Mov Turn Total    Total   Aver.  Eff.  Total  Perf. Tot.Trav. Tot.Trav. Aver.
 ID       Delay    Delay   Delay  Stop  Stops  Index Distance    Time    Speed
       (veh-h/h)(pers-h/h)(sec)  Rate               (veh-km/h)(veh-h/h) (km/h)
-------------------------------------------------------------------------------
SouthEast: Stadium Drive
  2  T1    0.06    0.07     0.4   0.01    4.5  8.52    505.9     8.5     59.3
  3  R2    0.01    0.02     7.0   0.03    0.2  0.13      7.1     0.1     56.1
-------------------------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2    0.09    0.10     6.6   0.60   28.2  1.10     47.7     0.9     52.4
  6  R2    0.04    0.05    12.5   0.80    8.9  0.31     11.1     0.2     48.4
-------------------------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2    0.00    0.01     5.6   0.01    0.0  0.06      3.0     0.1     58.3
  8  T1    0.00    0.00     0.0   0.01    1.8  5.62    336.6     5.6     59.9
-------------------------------------------------------------------------------
```

Go to Table Links (Top)

Fuel Consumption, Emissions and Cost
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

-------------------------------------------------------------
 Mov Turn        Cost    Fuel     CO2     CO      HC      NOX
 ID              Total   Total   Total   Total   Total   Total
                 $/h       L/h   kg/h    kg/h    kg/h    kg/h
-------------------------------------------------------------
SouthEast: Stadium Drive
  2  T1          175.86   30.5    71.8    0.43   0.024   0.042
  3  R2            2.92    0.5     1.2    0.01   0.000   0.001
               ---------------------------------------------
                178.78   31.0    72.9    0.43   0.024   0.043
-------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2           23.53    3.9     9.1    0.05   0.003   0.007
  6  R2            6.04    0.9     2.2    0.01   0.001   0.002
               ---------------------------------------------
                 29.58    4.8    11.3    0.06   0.004   0.009
-------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2            0.98    0.2     0.4    0.00   0.000   0.000
  8  T1          108.91   19.1    44.9    0.27   0.015   0.024
               ---------------------------------------------
                109.89   19.3    45.3    0.28   0.015   0.024
-------------------------------------------------------------
 INTERSECTION:  318.24   55.1   129.6    0.77   0.044   0.077
-------------------------------------------------------------


FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

-------------------------------------------------------------
 Mov Turn        Cost    Fuel     CO2     CO      HC      NOX
 ID              Rate    Rate    Rate    Rate    Rate    Rate
                 $/km  L/100km  g/km    g/km    g/km    g/km
-------------------------------------------------------------
SouthEast: Stadium Drive
  2  T1            0.35    6.0   141.9    0.85   0.048   0.084
  3  R2            0.41    7.0   164.5    0.93   0.058   0.118
```

```
                ------------------------------------------------
                    0.35    6.1   142.2    0.85   0.048   0.084
-------------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2             0.49    8.1   191.5    1.03   0.071   0.157
  6  R2             0.54    8.4   197.8    1.05   0.076   0.161
                ------------------------------------------------
                    0.50    8.2   192.7    1.03   0.072   0.158
-------------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2             0.32    5.7   133.3    0.81   0.044   0.071
  8  T1             0.32    5.7   133.3    0.81   0.044   0.071
                ------------------------------------------------
                    0.32    5.7   133.3    0.81   0.044   0.071
-------------------------------------------------------------------
 INTERSECTION:      0.35    6.0   142.1    0.85   0.048   0.084
-------------------------------------------------------------------
```

Go to Table Links (Top)

Lanes

Lane Performance and Capacity Information
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE PERFORMANCE

-------------------------------------------------------------------
                                          Q u e u e
          Flow   Cap  Deg.  Aver.  Eff.    95% Back      Lane
 Lane                 Satn  Delay  Stop  ------------   Length
 No.      veh/h veh/h   x     sec   Rate    veh     m       m
-------------------------------------------------------------------
 SouthEast: Stadium Drive
 1         357  1560 0.229    0.0  0.00                    55.0T
 2         149   654 0.229    1.7  0.03    0.6    4.2     250.0
-------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1          47  1206 0.039    6.6  0.60    0.1    1.0       6.0T
 2          11   414 0.027   12.5  0.80    0.1    0.6     380.0
-------------------------------------------------------------------
 NorthWest: Stadium Drive
 1         335  1559 0.215    0.1  0.01                    500.0
-------------------------------------------------------------------
  T  Short lane due to specification of Turn Bay


LANE FLOW AND CAPACITY INFORMATION

-----------------------------------------
 Lane   Total     Min   Tot   Deg.  Lane
 No.    Arv Flow  Cap   Cap   Satn  Util
        (veh/h)  veh/h veh/h   x     %
-----------------------------------------
 SouthEast: Stadium Drive
 1        357     357  1560   0.229  100
 2        149     108   654   0.229  100
-----------------------------------------
 NorthEast: Phil Hawthorne Drive
 1         47       6  1206   0.039  100
 2         11       6   414   0.027  100
-----------------------------------------
 NorthWest: Stadium Drive
 1        335     335  1559   0.215  100
-----------------------------------------

  The capacity value for priority and continuous movements is obtained by
  adjusting the basic saturation flow for heavy vehicle and turning vehicle
  effects.  Saturation flow scale applies if specified.
```

Go to Table Links (Top)

Lane, Approach and Intersection Performance
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

-------------------------------------------------------------
 Lane   Arrival        Adj.    Deg   Aver.   Longest   Shrt
 No.    Flow     %HV   Basic   Sat   Delay   Queue     Lane
        (veh/h)       Satf.    x     sec       m       m
-------------------------------------------------------------
```

SouthEast: Stadium Drive							
1	357	0	1559	0.229	0.0		55
2	149	0		0.229	1.7	4	250
	506	0		0.229	0.5	4	
NorthEast: Phil Hawthorne Drive							
1	47	0		0.039	6.6	1	6
2	11	0		0.027	12.5	1	380
	58	0		0.039	7.8	1	
NorthWest: Stadium Drive							
1	335	0	1559	0.215	0.1		500
	335	0		0.215	0.1		

ALL VEHICLES				
Total Flow	% HV	Max X	Aver. Delay	Max Queue
899	0	0.229	0.8	4

Peak flow period = 60 minutes.

Queue values in this table are 95% queue (metres)
Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Go to Table Links (Top)

Driver Characteristics
Site:Hospital - Existing Conditions OUT 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Lane No.	Satn Speed km/h	Satn Flow veh/h	Satn Hdwy sec	Satn Spacing m	Average Queue Space m	Driver Response Time sec
SouthEast: Stadium Drive						
1	NA - Continuous Movement					
2	NA - Major Road Movement					
NorthEast: Phil Hawthorne Drive						
1	NA - Short Lane					
2	18.9	1200	3.00	15.78	7.00	1.67
NorthWest: Stadium Drive						
1	NA - Continuous Movement					

Saturation Flow and Saturation Headway are derived from follow-up headway.

Go to Table Links (Top)

Lane Delays
Site:Hospital - Existing Conditions OUT 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE DELAYS

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Stop-line Delay 1st d1	Stop-line Delay 2nd d2	Total dSL	Delay (seconds/veh) Acc. Dec. dn	Queuing Total dq	Queuing MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
SouthEast: Stadium Drive												
1	0.229					0.0					0.0	0.0
2	0.229	NA	NA	1.5	0.0	1.5	2.3	0.0	0.0	0.0	0.3	1.7
NorthEast: Phil Hawthorne Drive												
1	0.039	NA	NA	1.1	0.0	1.1	1.5	0.0	0.0	0.0	5.5	6.6
2	0.027	NA	NA	7.0	0.0	7.0	2.6	4.5	0.0	4.5	5.5	12.5
NorthWest: Stadium Drive												
1	0.215					0.0					0.0	0.1

SIDRA Standard Delay Model is used. Control Delay is the sum of Stop-line Delay and Geometric Delay.
dSL: Stop-line delay (=d1+d2)
dn: Average stop-start delay for all vehicles queued and unqueued
dq: Queuing delay (the part of the stop-line delay that includes

```
     stopped delay and queue move-up delay)
  dqm: Queue move-up delay
  di: Stopped delay (stopped (idling) time at near-zero speed)
  dig: Geometric delay
  dic: Control delay
```

Go to Table Links (Top)

Lane Queues
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE QUEUES (VEHICLES)
```

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (veh) Nb1	Nb2	Nb	95%	Queue Stor. Ratio	Prob. Block %	P'ile Block %	Cyc-Av. Queue Nc	95%
SouthEast: Stadium Drive													
2	0.229	NA	NA	0.0	0.2	0.0	0.2	0.6	0.02	0.0	100.0	0.1	0.1
NorthEast: Phil Hawthorne Drive													
1	0.039	NA	NA	0.0	0.1	0.0	0.1	0.1	0.17	0.0	100.0	0.0	0.0
2	0.027	NA	NA	0.0	0.0	0.0	0.0	0.1	0.00	0.0	100.0	0.0	0.0
NorthWest: Stadium Drive													

```
LANE QUEUES (DISTANCE)
```

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (m) Nb1	Nb2	Nb	95%	Queue Stor. Ratio	Prob. Block %	P'ile Block %	Cyc-Av. Queue Nc	95%
SouthEast: Stadium Drive													
2	0.229	NA	NA	0.0	1.7	0.0	1.7	4.2	0.02	0.0	100.0	0.4	0.8
NorthEast: Phil Hawthorne Drive													
1	0.039	NA	NA	0.0	0.4	0.0	0.4	1.0	0.17	0.0	100.0	0.1	0.2
2	0.027	NA	NA	0.0	0.3	0.0	0.3	0.6	0.00	0.0	100.0	0.2	0.3
NorthWest: Stadium Drive													

Go to Table Links (Top)

Lane Queue Percentiles
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE QUEUE PERCENTILES (VEHICLES)
```

Lane No.	Deg. Satn x	Percentile Back of Queue (veh) 50%	70%	85%	90%	95%	98%	100%
SouthEast: Stadium Drive								
2	0.229	0.2	0.3	0.4	0.5	0.6	0.7	0.7
NorthEast: Phil Hawthorne Drive								
1	0.039	0.1	0.1	0.1	0.1	0.1	0.2	0.2
2	0.027	0.0	0.0	0.1	0.1	0.1	0.1	0.1
NorthWest: Stadium Drive								

```
LANE QUEUE PERCENTILES (DISTANCE)
```

Lane No.	Deg. Satn x	Percentile Back of Queue (metres) 50%	70%	85%	90%	95%	98%	100%
SouthEast: Stadium Drive								
2	0.229	1.7	2.2	3.1	3.6	4.2	4.7	5.1

```
-------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.039    0.4    0.5    0.8    0.9    1.0    1.2    1.2
 2     0.027    0.3    0.3    0.5    0.5    0.6    0.7    0.8
-------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------
```

Go to Table Links (Top)

Lane Stops
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

-------------------------------------------------------------------------------------------
                                                          Queue   Total
        Deg.  % Arv   Prog.   -- Effective Stop Rate --  Total  Move-up  Queue    Prop.
 Lane   Satn  During  Factor             Geom. Overall  Stops   Rate  Move-ups Queued
 No.      x   Green            he1   he2   hig     h       H      hqm     Hqm     pq
-------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
 1     0.229    NA      NA                0.00   0.00      0.0
 2     0.229    NA      NA    0.02  0.00  0.01   0.03      4.7    0.00     0.0   0.50
-------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.039    NA      NA    0.24  0.00  0.36   0.60     28.2    0.00     0.0   0.38
 2     0.027    NA      NA    0.61  0.00  0.20   0.80      8.9    0.00     0.0   0.66
-------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
 1     0.215    NA      NA                0.01   0.01      1.8
-------------------------------------------------------------------------------------------
  hig is the average value for all movements in a shared lane
  hqm is average queue move-up rate for all vehicles queued and unqueued
```

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total)
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


TOTAL FLOW RATES (ALL MOVEMENT CLASSES)

-----------------------------------------------------
 From SOUTHEAST To:              NW      NE
 Turn:                           T1      R2     TOT
 Flow Rate                    499.0     7.0   506.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
 From NORTHEAST To:              SE      NW
 Turn:                           L2      R2     TOT
 Flow Rate                    47.0    11.0    58.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
 From NORTHWEST To:              NE      SE
 Turn:                           L2      T1     TOT
 Flow Rate                    3.0   332.0   335.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


FLOW RATES FOR Light Vehicles

-------------------------------------------
 From SOUTHEAST To:     NW      NE
 Turn:                  T1      R2     TOT
-------------------------------------------
 Flow Rate - Veh     499.0     7.0   506.0
```

Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Flow Rate - Veh	47.0	11.0	58.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Flow Rate - Veh	3.0	332.0	335.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

Go to Table Links (Top)

Lane Flow Rates
Site:Hospital - Existing Conditions OUT 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE

From SOUTHEAST To:	NW	NE	
Turn:	T1	R2	TOT
Lane 1			
LV	356.5	*	356.5
Total	356.5	*	356.5
Lane 2			
LV	142.5	7.0	149.5
Total	142.5	7.0	149.5
Approach	499.0	7.0	506.0

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Lane 1			
LV	47.0	*	47.0
Total	47.0	*	47.0
Lane 2			
LV	*	11.0	11.0
Total	*	11.0	11.0
Approach	47.0	11.0	58.0

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Lane 1			
LV	3.0	332.0	335.0
Total	3.0	332.0	335.0
Approach	3.0	332.0	335.0

* Movement not allocated to the lane

EXIT LANE FLOW RATES

Movement Class:	LV	HV	TOT
Exit: SOUTHEAST			
Lane: 1	379.0	*	379.0
Lane: 2	*	*	0.0
Total	379.0	*	379.0
Exit: NORTHEAST			
Lane: 1	10.0	*	10.0
Total	10.0	*	10.0
Exit: NORTHWEST			
Lane: 1	427.8	*	427.8
Lane: 2	82.2	*	82.2
Total	510.0	*	510.0

```
----------------------------------------
  *  Movement not allocated to the lane


DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

----------------------------------------
Movement Class:       LV      HV     TOT
----------------------------------------
 Exit: SOUTHEAST
Lane:  2           379.0       *   379.0
Total              379.0       *   379.0
----------------------------------------
 Exit: NORTHEAST
Lane:  1            10.0       *    10.0
Total               10.0       *    10.0
----------------------------------------
 Exit: NORTHWEST
Lane:  2           510.0       *   510.0
Total              510.0       *   510.0
----------------------------------------
  *  Movement not allocated to the lane

Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

Go to Table Links (Top)

Sensitivity Analysis

Sensitivity Analysis Results
Site:Hospital - Existing Conditions OUT 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

Scaled sensitivity parameter: Basic Saturation Flow
  Degree of saturation = 0.229 was achieved at parameter scale =  80.0 %
  All scaled parameter values gave degree of saturation less than 1.0.
  Try adjusting the scale factor range to give higher degrees of saturation.


Results in the table below are given for Intersection - Vehicles

-------------------------------------------------------------------------
 Param        Eff.  Degree   Prac.  Aver.  Stop  95% Back  Perf.  Cost
 Scale        Cap.    of     Spare  Delay  Rate  of Queue  Index  Total
  (%)              Satn     Cap.  (sec)         (veh)           $/h
-------------------------------------------------------------------------
  80.0        3934   0.229    329    0.8  0.05     0.6     15.7   318.2
  85.0        4178   0.215    355    0.8  0.05     0.6     15.7   318.0
  90.0        4422   0.203    382    0.8  0.05     0.6     15.7   317.8
  95.0        4665   0.193    409    0.8  0.05     0.6     15.7   317.6
 100.0        4909   0.183    435    0.8  0.05     0.6     15.7   317.5
 105.0        5152   0.174    462    0.8  0.05     0.6     15.7   317.3
 110.0        5395   0.167    488    0.8  0.05     0.6     15.7   317.2
 115.0        5638   0.159    515    0.8  0.05     0.6     15.7   317.1
 120.0        5881   0.153    541    0.8  0.05     0.5     15.7   317.0
-------------------------------------------------------------------------
```

Go to Table Links (Top)

Other

Model Settings Summary
Site:Hospital - Existing Conditions OUT 2014

```
Parameter sensitivity run for "Calibration": Basic Saturation Flow =  80.0 %
  This value was chosen to achieve intersection degree of saturation close
  to 1.0.  Short lanes with degree of saturation = 1.0 are ignored in this process.
  See the Sensitivity Analysis group of tables for further information.

* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Model Defaults: New South Wales
  Peak Flow Period (for performance): 60 minutes
  Unit time (for volumes): 60 minutes.
  SIDRA Standard Delay model used
  SIDRA Standard Queue model used
  Level of Service based on: Delay (RTA NSW)
```

```
  Queue percentile: 95%
```

Go to Table Links (Top)

Diagnostics
Site:Hospital - Existing Conditions OUT 2014

```
Flow-Capacity Iterations:

  Largest change in degree of saturation for any lane =  0.6 %
  Largest change in capacity for any lane =   14 veh/h


Other Diagnostic Messages (if any):
```

Go to Table Links (Top)

Project: P:\GEO02292 Coffs Harbour Health Campus Carpark Planning Advice\Analysis & Design\SIDRA\2292-1015.sip6
8001258, GEOLINK, PLUS / 1PC

INTERSECTION SUMMARY

Site: Hospital - Existing Conditions OUT 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	58.9	km/h	58.9	km/h
Travel Distance (Total)	911.5	veh-km/h	1093.8	pers-km/h
Travel Time (Total)	15.5	veh-h/h	18.6	pers-h/h
Demand Flows (Total)	899	veh/h	1079	pers/h
Percent Heavy Vehicles (Demand)	0.0	%		
Degree of Saturation	0.229			
Practical Spare Capacity	328.8	%		
Effective Intersection Capacity	3934	veh/h		
Control Delay (Total)	0.21	veh-h/h	0.25	pers-h/h
Control Delay (Average)	0.8	sec	0.8	sec
Control Delay (Worst Lane)	12.5	sec		
Control Delay (Worst Movement)	12.5	sec	12.5	sec
Geometric Delay (Average)	0.4	sec		
Stop-Line Delay (Average)	0.4	sec		
Idling Time (Average)	0.1	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.6	veh		
95% Back of Queue - Distance (Worst Lane)	4.2	m		
Queue Storage Ratio (Worst Lane)	0.01			
Total Effective Stops	43	veh/h	52	pers/h
Effective Stop Rate	0.05	per veh	0.05	per pers
Proportion Queued	0.11		0.11	
Performance Index	15.7		15.7	
Cost (Total)	318.24	$/h	318.24	$/h
Fuel Consumption (Total)	55.1	L/h		
Carbon Dioxide (Total)	129.6	kg/h		
Hydrocarbons (Total)	0.044	kg/h		
Carbon Monoxide (Total)	0.772	kg/h		
NOx (Total)	0.077	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	431,520	veh/y	517,824	pers/y
Delay	100	veh-h/y	120	pers-h/y
Effective Stops	20,877	veh/y	25,053	pers/y
Travel Distance	437,526	veh-km/y	525,031	pers-km/y
Travel Time	7,428	veh-h/y	8,913	pers-h/y
Cost	152,757	$/y	152,757	$/y
Fuel Consumption	26,463	L/y		
Carbon Dioxide	62,188	kg/y		
Hydrocarbons	21	kg/y		
Carbon Monoxide	370	kg/y		
NOx	37	kg/y		

MOVEMENT SUMMARY

Site: Hospital - Existing Conditions OUT 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

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
SouthEast: Stadium Drive											
2	T1	499	0.0	0.229	0.4	LOS A	0.6	4.2	0.14	0.01	59.3
3	R2	7	0.0	0.229	7.0	LOS A	0.6	4.2	0.50	0.03	56.1
Approach		506	0.0	0.229	0.5	NA	0.6	4.2	0.15	0.01	59.2
NorthEast: Phil Hawthorne Drive											
4	L2	47	0.0	0.039	6.6	LOS A	0.1	1.0	0.38	0.60	52.4
6	R2	11	0.0	0.027	12.5	LOS A	0.1	0.6	0.66	0.80	48.4
Approach		58	0.0	0.039	7.8	LOS A	0.1	1.0	0.43	0.64	51.6
NorthWest: Stadium Drive											
7	L2	3	0.0	0.215	5.6	LOS A	0.0	0.0	0.00	0.01	58.3
8	T1	332	0.0	0.215	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		335	0.0	0.215	0.1	NA	0.0	0.0	0.00	0.01	59.9
All Vehicles		899	0.0	0.229	0.8	NA	0.6	4.2	0.11	0.05	58.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

LANE SUMMARY

Site: Hospital - Existing Conditions OUT 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Stadium Drive													
Lane 1	357	0.0	1560	0.229	100	0.0	LOS A	0.0	0.0	Short	55	0.0	0.0
Lane 2	149	0.0	654	0.229	100	1.7	LOS A	0.6	4.2	Full	250	0.0	0.0
Approach	506	0.0		0.229		0.5	NA	0.6	4.2				
NorthEast: Phil Hawthorne Drive													
Lane 1	47	0.0	1206	0.039	100	6.6	LOS A	0.1	1.0	Short	6	0.0	0.0
Lane 2	11	0.0	414	0.027	100	12.5	LOS A	0.1	0.6	Full	380	0.0	0.0
Approach	58	0.0		0.039		7.8	LOS A	0.1	1.0				
NorthWest: Stadium Drive													
Lane 1	335	0.0	1559	0.215	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	335	0.0		0.215		0.1	NA	0.0	0.0				
Intersection	899	0.0		0.229		0.8	NA	0.6	4.2				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
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.

LANE FLOWS

Site: Hospital - Existing Conditions OUT 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Approach Lane Flows (veh/h)							
SouthEast: Stadium Drive							
Mov. From SE To Exit:	T1 NW	R2 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	357	-	357	0.0	1560	0.229	100
Lane 2	142	7	149	0.0	654	0.229	100
Approach	499	7	506	0.0		0.229	
NorthEast: Phil Hawthorne Drive							
Mov. From NE To Exit:	L2 SE	R2 NW	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	47	-	47	0.0	1206	0.039	100
Lane 2	-	11	11	0.0	414	0.027	100
Approach	47	11	58	0.0		0.039	
NorthWest: Stadium Drive							
Mov. From NW To Exit:	L2 NE	T1 SE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	3	332	335	0.0	1559	0.215	100
Approach	3	332	335	0.0		0.215	
	Total	%HV	Deg.Satn (v/c)				
Intersection	899	0.0		0.229			

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

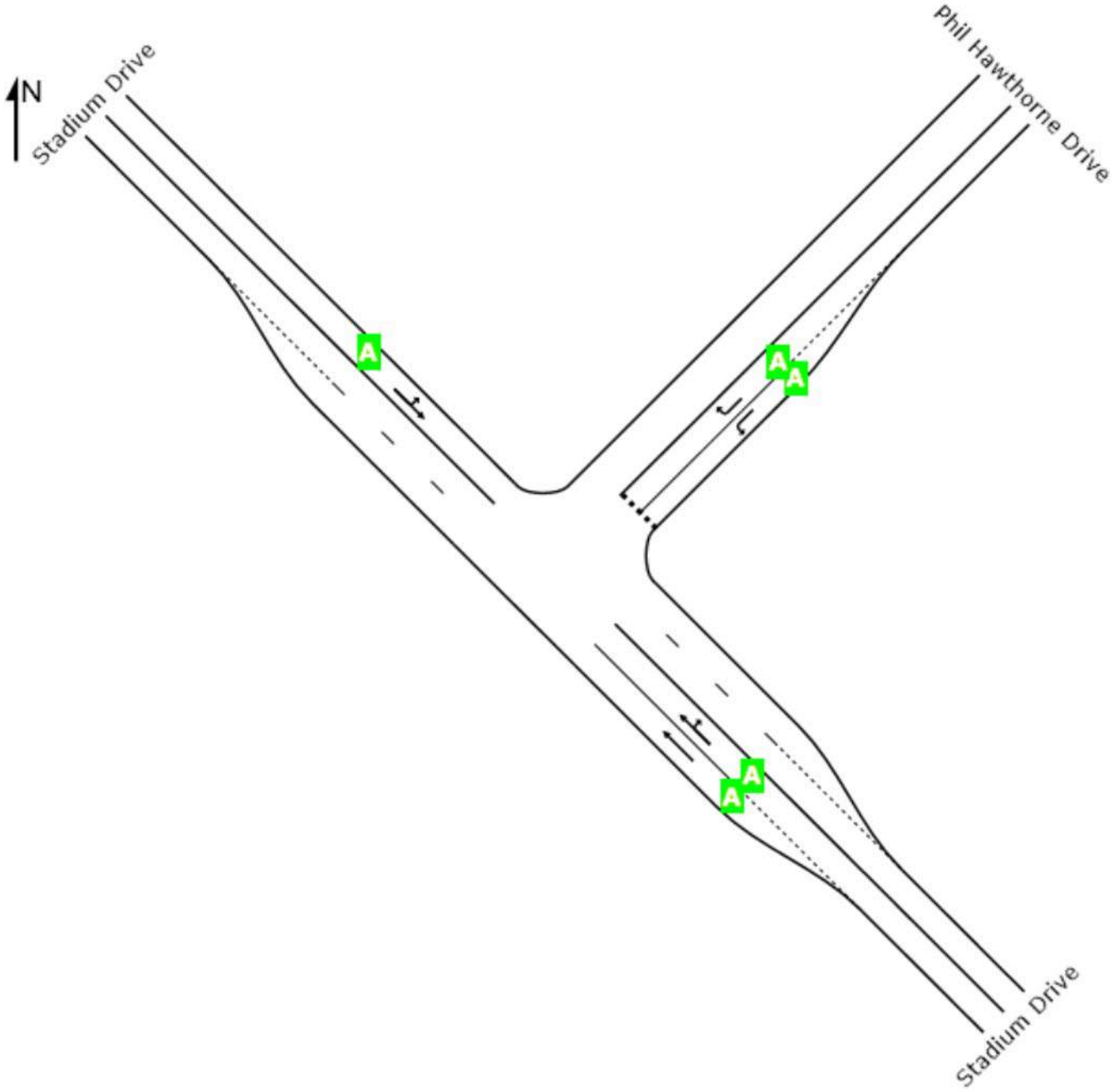
LEVEL OF SERVICE

Site: Hospital - Existing Conditions OUT 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

All Movement Classes

	Southeast	Northeast	Northwest	Intersection
LOS	NA	A	NA	NA



Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

DETAILED OUTPUT

Site: Hospital - Future Conditions IN 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

OUTPUT TABLE LINKS

Movements

Intersection Negotiation and Travel Data
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Distance m	Travel Time s	Total Travel Distance Dem Flows veh-km/h	Arv Flows veh-km/h	Tot.Trav. Time veh-h/h
SouthEast: Stadium Drive									
	NorthWest	T1	59.6	59.6	1013.9#	61.3#	365.0	365.0	6.1
	NorthEast	R2	52.1	51.3	1015.8#	71.3#	159.5	159.5	3.1
NorthEast: Phil Hawthorne Drive									
	SouthEast	L2	52.1	52.0	1015.7#	70.3#	20.3	20.3	0.4
	NorthWest	R2	51.1	44.3	1013.3#	82.4#	20.3	20.3	0.5
NorthWest: Stadium Drive									
	NorthEast	L2	57.1	57.1	1014.2#	64.0#	159.2	159.2	2.8
	SouthEast	T1	58.6	58.6	1014.2#	62.3#	548.7	548.7	9.4
ALL VEHICLES:			57.7	57.3	1014.3#	63.8#	1273.0	1273.0	22.2

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the program-determined Exit Distance or user-specified Downstream Distance as applicable.

INTERSECTION NEGOTIATION DATA

From	To	Negn Radius	Negn Speed	Negn Dist.	Appr. Dist.	Exit Dist.	Downstr. Dist.

Approach	Exit	Turn	m	km/h	m	m	m	m
SouthEast: Stadium Drive								
	NorthWest	T1	S	60.0	13.8	500	500	NA
	NorthEast	R2	10.2	20.3	16.0	500	500	NA
NorthEast: Phil Hawthorne Drive								
	SouthEast	L2	10.0	20.2	15.7	500	500	NA
	NorthWest	R2	8.5	18.9	13.3	500	500	NA
NorthWest: Stadium Drive								
	NorthEast	L2	10.0	20.2	15.7	500	500	NA
	SouthEast	T1	S	60.0	13.8	500	500	NA

NA Downstream Distance does not apply if:
- Exit is an internal leg of a network
- "Program" option was specified
- Distance specified was less than the Exit Negotiation Distance
- Distance specified was greater than the exit leg length

MOVEMENT SPEEDS AND GEOMETRIC DELAY

Mov ID	Turn	App. Speeds Cruise km/h	App. Speeds Negn km/h	Exit Speeds Negn km/h	Exit Speeds Cruise km/h	Queue Move-up Speed km/h	Geom Delay sec
SouthEast: Stadium Drive							
2	T1	60.0	60.0	60.0	60.0	0.7	0.0
3	R2	60.0	20.3	20.3	60.0	14.2	5.5
NorthEast: Phil Hawthorne Drive							
4	L2	60.0	20.2	20.2	60.0	17.4	5.5
6	R2	60.0	18.9	18.9	60.0	11.9	5.5
NorthWest: Stadium Drive							
7	L2	60.0	20.2	20.2	60.0		5.5
8	T1	60.0	60.0	60.0	60.0		0.0

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Gap Acceptance Parameters
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Opd Lane	Dest	Opng Flow pcu/h	Critical Gap Hdwy sec	Critical Gap Dist m	Foll-up Headway sec	Entry HV Equiv	Intra Bunch Hdwy sec	Propn Bnchd
SouthEast: Stadium Drive								
2	NE	698	4.00	56.7	2.00	1.00	1.80	0.097
NorthEast: Phil Hawthorne Drive								
1	SE	541+	4.00	66.7	2.20	1.00	1.80	0.069
2	NW	1137+	5.30	79.7	3.00	1.00	0.89	0.105
NorthWest: Stadium Drive								

No opposed movements on this approach.

Values in this table are adjusted for heavy vehicles in the entry stream.
Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements.
+ Percentage of exiting flow included in opposing vehicle flow

Go to Table Links (Top)

Movement Capacity and Performance Parameters
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h	Opng Flow veh/h	Movement Adjust. Flow pcu/h	Total Cap. veh/h	Prac. Deg. Satn xp	Prac. Spare Cap. %	Deg. Satn x

SouthEast: Stadium Drive									
2	T1	#	360	0	0	1641	0.98	347	0.219
3	R2	#	157	698	698	716	0.98	347	0.219
NorthEast: Phil Hawthorne Drive									
4	L2	#	20	541	541	948	0.80	3692	0.021
6	R2	#	20	1137	1137	243	0.80	870	0.082
NorthWest: Stadium Drive									
7	L2	#	157	0	0	347	0.98	117	0.452*
8	T1	#	541	0	0	1196	0.98	117	0.452*

* Maximum degree of saturation
\# Combined Movement Capacity parameters are shown for all Movement Classes.

The Flow Ratio values given in this table are calculated for signal timing purposes. For movements with two green periods they are subject to balancing as relevant to determining Required Movement Times given in the Movement Timing Information table. Zero values will be given for a slip /bypass lane movement if the option "Exclude Slip/Bypass Lane from Signal Analysis" has been selected.

MOVEMENT PERFORMANCE

Mov ID	Turn	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Distance (veh-km/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
SouthEast: Stadium Drive										
2	T1	0.02	0.03	0.2	0.04	13.5	6.18	365.0	6.1	59.6
3	R2	0.40	0.49	9.3	0.76	119.3	3.73	159.5	3.1	51.3
NorthEast: Phil Hawthorne Drive										
4	L2	0.04	0.05	7.6	0.65	13.1	0.48	20.3	0.4	52.0
6	R2	0.11	0.13	19.6	0.92	18.4	0.66	20.3	0.5	44.3
NorthWest: Stadium Drive										
7	L2	0.24	0.29	5.6	0.13	21.0	3.02	159.2	2.8	57.1
8	T1	0.01	0.02	0.1	0.13	72.4	9.56	548.7	9.4	58.6

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Fuel Consumption, Emissions and Cost
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Mov ID	Turn	Cost Total $/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
SouthEast: Stadium Drive							
2	T1	120.82	21.1	49.5	0.30	0.016	0.027
3	R2	79.98	13.0	30.5	0.16	0.011	0.025
		200.80	34.1	80.0	0.46	0.028	0.052
NorthEast: Phil Hawthorne Drive							
4	L2	10.14	1.7	3.9	0.02	0.001	0.003
6	R2	12.20	1.8	4.1	0.02	0.002	0.003
		22.34	3.4	8.1	0.04	0.003	0.007
NorthWest: Stadium Drive							
7	L2	56.82	9.8	23.1	0.14	0.008	0.014
8	T1	195.78	33.9	79.6	0.47	0.027	0.049
		252.60	43.7	102.7	0.61	0.035	0.063
INTERSECTION:		475.74	81.2	190.8	1.11	0.066	0.121

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

Mov ID	Turn	Cost Rate $/km	Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
SouthEast: Stadium Drive							

```
  2  T1            0.33    5.8   135.7    0.82   0.045   0.075
  3  R2            0.50    8.1   191.2    1.02   0.072   0.155
               ------------------------------------------------
                0.38    6.5   152.6    0.88   0.053   0.099
------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2            0.50    8.2   192.6    1.03   0.072   0.158
  6  R2            0.60    8.7   204.1    1.07   0.081   0.163
               ------------------------------------------------
                0.55    8.4   198.4    1.05   0.077   0.161
------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2            0.36    6.2   145.1    0.86   0.049   0.088
  8  T1            0.36    6.2   145.1    0.86   0.049   0.088
               ------------------------------------------------
                0.36    6.2   145.1    0.86   0.049   0.088
------------------------------------------------------------
 INTERSECTION:  0.37    6.4   149.9    0.87   0.052   0.095
------------------------------------------------------------
```

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Lanes

Lane Performance and Capacity Information
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE PERFORMANCE

------------------------------------------------------------
                                        Q u e u e
          Flow   Cap  Deg.  Aver.  Eff.    95% Back      Lane
 Lane                Satn  Delay  Stop  ------------   Length
 No.      veh/h veh/h   x    sec   Rate    veh     m       m
------------------------------------------------------------
 SouthEast: Stadium Drive
 1         342  1560 0.219    0.0  0.00                  55.0T
 2         175   796 0.219    8.7  0.76    0.9    6.3    250.0
------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1          20   948 0.021    7.6  0.65    0.1    0.5      6.0T
 2          20   243 0.082   19.6  0.92    0.3    1.9    380.0
------------------------------------------------------------
 NorthWest: Stadium Drive
 1         698  1543 0.452    1.3  0.13                  500.0
------------------------------------------------------------
  T  Short lane due to specification of Turn Bay


LANE FLOW AND CAPACITY INFORMATION

-----------------------------------------
 Lane   Total     Min   Tot   Deg.  Lane
 No.    Arv Flow  Cap   Cap   Satn  Util
        (veh/h)  veh/h veh/h    x     %
-----------------------------------------
 SouthEast: Stadium Drive
 1        342     342  1560   0.219  100
 2        175       7   796   0.219  100
-----------------------------------------
 NorthEast: Phil Hawthorne Drive
 1         20       6   948   0.021  100
 2         20       6   243   0.082  100
-----------------------------------------
 NorthWest: Stadium Drive
 1        698     698  1543   0.452  100
-----------------------------------------

  The capacity value for priority and continuous movements is obtained by
  adjusting the basic saturation flow for heavy vehicle and turning vehicle
  effects.  Saturation flow scale applies if specified.
```

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Lane, Approach and Intersection Performance
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

------------------------------------------------------------
 Lane   Arrival        Adj.    Deg   Aver.   Longest   Shrt
 No.    Flow     %HV   Basic   Sat   Delay   Queue     Lane
```

	(veh/h)	Satf.	x	sec	m	m
SouthEast: Stadium Drive						
1	342	0	1559	0.219	0.0	55
2	175	0		0.219	8.7	6 250
	517	0		0.219	3.0	6
NorthEast: Phil Hawthorne Drive						
1	20	0		0.021	7.6	1 6
2	20	0		0.082	19.6	2 380
	40	0		0.082	13.6	2
NorthWest: Stadium Drive						
1	698	0	1559	0.452	1.3	500
	698	0		0.452	1.3	

ALL VEHICLES

Total Flow	% HV	Max X	Aver. Delay	Max Queue
1255	0	0.452	2.4	6

Peak flow period = 60 minutes.

Queue values in this table are 95% queue (metres)
Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

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Driver Characteristics
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Lane No.	Satn Speed km/h	Satn Flow veh/h	Satn Hdwy sec	Satn Spacing m	Average Queue Space m	Driver Response Time sec
SouthEast: Stadium Drive						
1	NA - Continuous Movement					
2	NA - Major Road Movement					
NorthEast: Phil Hawthorne Drive						
1	NA - Short Lane					
2	18.9	1200	3.00	15.78	7.00	1.67
NorthWest: Stadium Drive						
1	NA - Continuous Movement					

Saturation Flow and Saturation Headway are derived from follow-up headway.

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Lane Delays
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE DELAYS

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Stop-line Delay 1st d1	Stop-line Delay 2nd d2	Stop-line Delay Total dSL	Delay (seconds/veh) Acc. Dec. dn	Queuing Total dq	Queuing MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
SouthEast: Stadium Drive												
1	0.219					0.0					0.0	0.0
2	0.219	NA	NA	3.7	0.0	3.7	2.6	1.1	0.0	1.1	5.0	8.7
NorthEast: Phil Hawthorne Drive												
1	0.021	NA	NA	2.1	0.0	2.1	2.0	0.1	0.0	0.1	5.5	7.6
2	0.082	NA	NA	14.1	0.0	14.1	3.2	10.9	0.0	10.9	5.5	19.6
NorthWest: Stadium Drive												
1	0.452					0.1					1.2	1.3

SIDRA Standard Delay Model is used. Control Delay is the sum of Stop-line Delay and Geometric Delay.
dSL: Stop-line delay (=d1+d2)

```
  dn: Average stop-start delay for all vehicles queued and unqueued
  dq: Queuing delay (the part of the stop-line delay that includes
      stopped delay and queue move-up delay)
  dqm: Queue move-up delay
  di: Stopped delay (stopped (idling) time at near-zero speed)
  dig: Geometric delay
  dic: Control delay
```

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Lane Queues
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE QUEUES (VEHICLES)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (veh) Nb1	Nb2	Nb	95%	Queue Stor. Ratio	Prob. Block %	P'ile Block %	Cyc-Av. Queue Nc	95%
SouthEast: Stadium Drive													
2	0.219	NA	NA	0.0	0.4	0.0	0.4	0.9	0.03	0.0	100.0	0.2	0.3
NorthEast: Phil Hawthorne Drive													
1	0.021	NA	NA	0.0	0.0	0.0	0.0	0.1	0.09	0.0	100.0	0.0	0.0
2	0.082	NA	NA	0.0	0.1	0.0	0.1	0.3	0.00	0.0	100.0	0.1	0.1
NorthWest: Stadium Drive													

LANE QUEUES (DISTANCE)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (m) Nb1	Nb2	Nb	95%	Queue Stor. Ratio	Prob. Block %	P'ile Block %	Cyc-Av. Queue Nc	95%
SouthEast: Stadium Drive													
2	0.219	NA	NA	0.0	2.5	0.0	2.5	6.3	0.03	0.0	100.0	1.3	2.3
NorthEast: Phil Hawthorne Drive													
1	0.021	NA	NA	0.0	0.2	0.0	0.2	0.5	0.09	0.0	100.0	0.1	0.1
2	0.082	NA	NA	0.0	0.8	0.0	0.8	1.9	0.00	0.0	100.0	0.5	1.0
NorthWest: Stadium Drive													

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Lane Queue Percentiles
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE QUEUE PERCENTILES (VEHICLES)

Lane No.	Deg. Satn x	Percentile Back of Queue (veh) 50%	70%	85%	90%	95%	98%	100%
SouthEast: Stadium Drive								
2	0.219	0.4	0.5	0.7	0.8	0.9	1.0	1.1
NorthEast: Phil Hawthorne Drive								
1	0.021	0.0	0.0	0.1	0.1	0.1	0.1	0.1
2	0.082	0.1	0.1	0.2	0.2	0.3	0.3	0.3
NorthWest: Stadium Drive								

LANE QUEUE PERCENTILES (DISTANCE)

Lane No.	Deg. Satn x	Percentile Back of Queue (metres) 50%	70%	85%	90%	95%	98%	100%

```
 SouthEast: Stadium Drive
 2     0.219    2.5    3.3    4.6    5.3    6.3    7.0    7.5
-------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.021    0.2    0.3    0.4    0.5    0.5    0.6    0.6
 2     0.082    0.8    1.0    1.4    1.6    1.9    2.1    2.2
-------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------
```

Go to Table Links (Top)

Lane Stops
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

-------------------------------------------------------------------------------------------
                                                          Queue   Total
        Deg.  % Arv   Prog.   -- Effective Stop Rate --  Total  Move-up  Queue   Prop.
 Lane   Satn  During  Factor              Geom. Overall  Stops   Rate  Move-ups Queued
 No.      x   Green            he1   he2   hig     h       H      hqm     Hqm     pq
-------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
 1     0.219    NA       NA                0.00   0.00      0.0
 2     0.219    NA       NA    0.57  0.00  0.19   0.76    132.7    0.00     0.0   0.63
-------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.021    NA       NA    0.36  0.00  0.30   0.65     13.1    0.00     0.0   0.49
 2     0.082    NA       NA    0.81  0.00  0.11   0.92     18.4    0.00     0.0   0.81
-------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
 1     0.452    NA       NA                0.13   0.13     93.4
-------------------------------------------------------------------------------------------
  hig is the average value for all movements in a shared lane
  hqm is average queue move-up rate for all vehicles queued and unqueued
```

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Flow Rates

Origin-Destination Flow Rates (Total)
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


TOTAL FLOW RATES (ALL MOVEMENT CLASSES)

-----------------------------------------------------
 From SOUTHEAST To:              NW      NE
 Turn:                           T1      R2     TOT
 Flow Rate                    360.0   157.0   517.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
 From NORTHEAST To:              SE      NW
 Turn:                           L2      R2     TOT
 Flow Rate                    20.0    20.0    40.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
 From NORTHWEST To:              NE      SE
 Turn:                           L2      T1     TOT
 Flow Rate                    157.0   541.0   698.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

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Origin-Destination Flow Rates by Movement Class
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


FLOW RATES FOR Light Vehicles

-------------------------------------------
 From SOUTHEAST To:      NW      NE
 Turn:                   T1      R2     TOT
```

Flow Rate - Veh	360.0	157.0	517.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Flow Rate - Veh	20.0	20.0	40.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Flow Rate - Veh	157.0	541.0	698.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

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Lane Flow Rates
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE

From SOUTHEAST To:	NW	NE	
Turn:	T1	R2	TOT
Lane 1			
LV	342.3	*	342.3
Total	342.3	*	342.3
Lane 2			
LV	17.7	157.0	174.7
Total	17.7	157.0	174.7
Approach	360.0	157.0	517.0

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Lane 1			
LV	20.0	*	20.0
Total	20.0	*	20.0
Lane 2			
LV	*	20.0	20.0
Total	*	20.0	20.0
Approach	20.0	20.0	40.0

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Lane 1			
LV	157.0	541.0	698.0
Total	157.0	541.0	698.0
Approach	157.0	541.0	698.0

* Movement not allocated to the lane

EXIT LANE FLOW RATES

Movement Class:	LV	HV	TOT
Exit: SOUTHEAST			
Lane: 1	561.0	*	561.0
Lane: 2	*	*	0.0
Total	561.0	*	561.0
Exit: NORTHEAST			
Lane: 1	314.0	*	314.0
Total	314.0	*	314.0
Exit: NORTHWEST			
Lane: 1	351.1	*	351.1

```
Lane:  2            28.9       *    28.9
Total              380.0       *   380.0
-----------------------------------------
  *  Movement not allocated to the lane


DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

-----------------------------------------
Movement Class:       LV      HV     TOT
-----------------------------------------
 Exit: SOUTHEAST
Lane:  2           561.0       *   561.0
Total              561.0       *   561.0
-----------------------------------------
 Exit: NORTHEAST
Lane:  1           314.0       *   314.0
Total              314.0       *   314.0
-----------------------------------------
 Exit: NORTHWEST
Lane:  2           380.0       *   380.0
Total              380.0       *   380.0
-----------------------------------------
  *  Movement not allocated to the lane

Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

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Sensitivity Analysis

Sensitivity Analysis Results
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

Scaled sensitivity parameter: Basic Saturation Flow
  Degree of saturation = 0.452 was achieved at parameter scale =  80.0 %
  All scaled parameter values gave degree of saturation less than 1.0.
  Try adjusting the scale factor range to give higher degrees of saturation.


Results in the table below are given for Intersection - Vehicles

-------------------------------------------------------------------------
 Param        Eff.  Degree   Prac.  Aver.  Stop  95% Back  Perf.  Cost
 Scale        Cap.    of     Spare  Delay  Rate  of Queue  Index  Total
  (%)              Satn      Cap.  (sec)         (veh)           $/h
-------------------------------------------------------------------------
  80.0        2774   0.452    117    2.4  0.21     0.9     23.6   475.7
  85.0        2947   0.426    130    2.4  0.21     0.9     23.6   475.2
  90.0        3120   0.402    144    2.3  0.20     0.8     23.6   474.8
  95.0        3294   0.381    157    2.3  0.20     0.8     23.6   474.5
 100.0        3467   0.362    171    2.3  0.20     0.8     23.6   474.3
 105.0        3640   0.345    184    2.3  0.20     0.8     23.6   474.3
 110.0        3814   0.329    198    2.3  0.20     0.8     23.6   474.2
 115.0        3987   0.315    211    2.3  0.20     0.8     23.6   474.2
 120.0        4161   0.302    225    2.3  0.20     0.8     23.6   474.2
-------------------------------------------------------------------------
```

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Other

Model Settings Summary
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

```
Parameter sensitivity run for "Calibration": Basic Saturation Flow =  80.0 %
  This value was chosen to achieve intersection degree of saturation close
  to 1.0.  Short lanes with degree of saturation = 1.0 are ignored in this process.
  See the Sensitivity Analysis group of tables for further information.

* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Model Defaults: New South Wales
  Peak Flow Period (for performance): 60 minutes
  Unit time (for volumes): 60 minutes.
  SIDRA Standard Delay model used
```

```
  SIDRA Standard Queue model used
  Level of Service based on: Delay (RTA NSW)
  Queue percentile: 95%
```

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Diagnostics
Site:Hospital - Future Conditions IN 2024 - 24 March 2014

```
Flow-Capacity Iterations:

  Largest change in degree of saturation for any lane =  0.2 %
  Largest change in capacity for any lane =    6 veh/h


Other Diagnostic Messages (if any):
```

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INTERSECTION SUMMARY

Site: Hospital - Future Conditions IN 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	57.3	km/h	57.3	km/h
Travel Distance (Total)	1273.0	veh-km/h	1527.6	pers-km/h
Travel Time (Total)	22.2	veh-h/h	26.7	pers-h/h
Demand Flows (Total)	1255	veh/h	1506	pers/h
Percent Heavy Vehicles (Demand)	0.0	%		
Degree of Saturation	0.452			
Practical Spare Capacity	116.6	%		
Effective Intersection Capacity	2774	veh/h		
Control Delay (Total)	0.84	veh-h/h	1.00	pers-h/h
Control Delay (Average)	2.4	sec	2.4	sec
Control Delay (Worst Lane)	19.6	sec		
Control Delay (Worst Movement)	19.6	sec	19.6	sec
Geometric Delay (Average)	1.6	sec		
Stop-Line Delay (Average)	0.8	sec		
Idling Time (Average)	0.3	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.9	veh		
95% Back of Queue - Distance (Worst Lane)	6.3	m		
Queue Storage Ratio (Worst Lane)	0.01			
Total Effective Stops	258	veh/h	309	pers/h
Effective Stop Rate	0.21	per veh	0.21	per pers
Proportion Queued	0.11		0.11	
Performance Index	23.6		23.6	
Cost (Total)	475.74	$/h	475.74	$/h
Fuel Consumption (Total)	81.2	L/h		
Carbon Dioxide (Total)	190.8	kg/h		
Hydrocarbons (Total)	0.066	kg/h		
Carbon Monoxide (Total)	1.112	kg/h		
NOx (Total)	0.121	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	602,400	veh/y	722,880	pers/y
Delay	401	veh-h/y	481	pers-h/y
Effective Stops	123,672	veh/y	148,407	pers/y
Travel Distance	611,039	veh-km/y	733,246	pers-km/y
Travel Time	10,673	veh-h/y	12,807	pers-h/y
Cost	228,356	$/y	228,356	$/y
Fuel Consumption	38,970	L/y		
Carbon Dioxide	91,580	kg/y		
Hydrocarbons	31	kg/y		
Carbon Monoxide	534	kg/y		
NOx	58	kg/y		

MOVEMENT SUMMARY

Site: Hospital - Future Conditions IN 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

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
SouthEast: Stadium Drive											
2	T1	360	0.0	0.219	0.2	LOS A	0.9	6.3	0.03	0.04	59.6
3	R2	157	0.0	0.219	9.3	LOS A	0.9	6.3	0.63	0.76	51.3
Approach		517	0.0	0.219	3.0	NA	0.9	6.3	0.21	0.26	56.8
NorthEast: Phil Hawthorne Drive											
4	L2	20	0.0	0.021	7.6	LOS A	0.1	0.5	0.49	0.65	52.0
6	R2	20	0.0	0.082	19.6	LOS B	0.3	1.9	0.81	0.92	44.3
Approach		40	0.0	0.082	13.6	LOS A	0.3	1.9	0.65	0.79	47.9
NorthWest: Stadium Drive											
7	L2	157	0.0	0.452	5.6	LOS A	0.0	0.0	0.00	0.13	57.1
8	T1	541	0.0	0.452	0.1	LOS A	0.0	0.0	0.00	0.13	58.6
Approach		698	0.0	0.452	1.3	NA	0.0	0.0	0.00	0.13	58.3
All Vehicles		1255	0.0	0.452	2.4	NA	0.9	6.3	0.11	0.21	57.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

LANE SUMMARY

Site: Hospital - Future Conditions IN 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Stadium Drive													
Lane 1	342	0.0	1560	0.219	100	0.0	LOS A	0.0	0.0	Short	55	0.0	0.0
Lane 2	175	0.0	796	0.219	100	8.7	LOS A	0.9	6.3	Full	250	0.0	0.0
Approach	517	0.0		0.219		3.0	NA	0.9	6.3				
NorthEast: Phil Hawthorne Drive													
Lane 1	20	0.0	948	0.021	100	7.6	LOS A	0.1	0.5	Short	6	0.0	0.0
Lane 2	20	0.0	243	0.082	100	19.6	LOS B	0.3	1.9	Full	380	0.0	0.0
Approach	40	0.0		0.082		13.6	LOS A	0.3	1.9				
NorthWest: Stadium Drive													
Lane 1	698	0.0	1543	0.452	100	1.3	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	698	0.0		0.452		1.3	NA	0.0	0.0				
Intersection	1255	0.0		0.452		2.4	NA	0.9	6.3				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
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.

LANE FLOWS

Site: Hospital - Future Conditions IN 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Approach Lane Flows (veh/h)

SouthEast: Stadium Drive

Mov. From SE To Exit:	T1 NW	R2 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	342	-	342	0.0	1560	0.219	100
Lane 2	18	157	175	0.0	796	0.219	100
Approach	360	157	517	0.0		0.219	

NorthEast: Phil Hawthorne Drive

Mov. From NE To Exit:	L2 SE	R2 NW	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	20	-	20	0.0	948	0.021	100
Lane 2	-	20	20	0.0	243	0.082	100
Approach	20	20	40	0.0		0.082	

NorthWest: Stadium Drive

Mov. From NW To Exit:	L2 NE	T1 SE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	157	541	698	0.0	1543	0.452	100
Approach	157	541	698	0.0		0.452	

	Total	%HV	Deg.Satn (v/c)
Intersection	1255	0.0	0.452

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

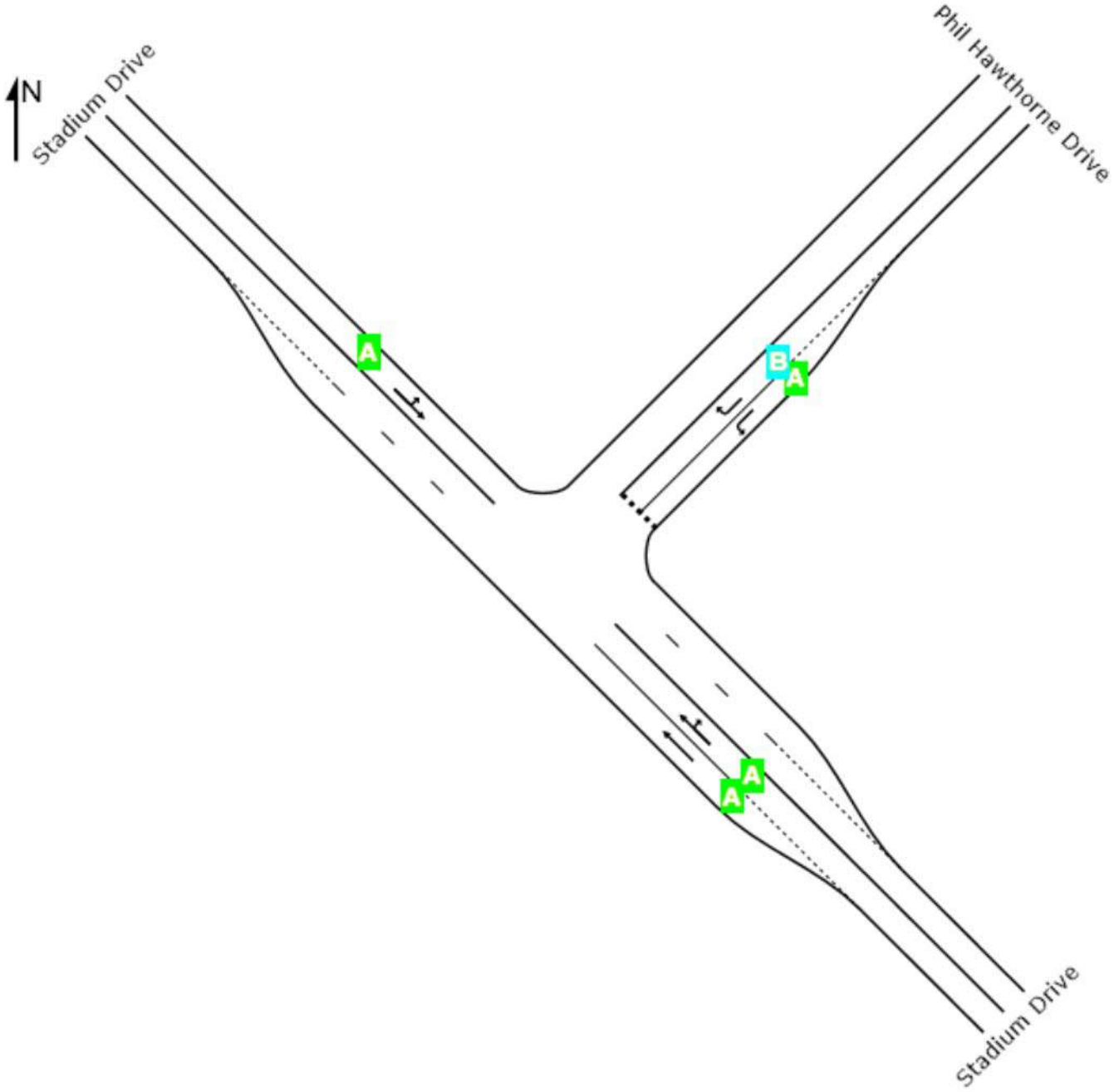
LEVEL OF SERVICE

Site: Hospital - Future Conditions IN 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

All Movement Classes

	Southeast	Northeast	Northwest	Intersection
LOS	NA	A	NA	NA



Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

DETAILED OUTPUT

Site: Hospital - Future Conditions OUT 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 120.0 %

OUTPUT TABLE LINKS

Movements

Intersection Negotiation and Travel Data
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Distance m	Travel Time s	Total Travel Distance Dem Flows veh-km/h	Arv Flows veh-km/h	Tot.Trav. Time veh-h/h
SouthEast: Stadium Drive									
	NorthWest	T1	59.2	59.2	1013.9#	61.7#	616.4	616.4	10.4
	NorthEast	R2	55.7	55.7	1014.0#	65.5#	20.3	20.3	0.4
NorthEast: Phil Hawthorne Drive									
	SouthEast	L2	52.2	52.2	1015.7#	70.0#	159.5	159.5	3.1
	NorthWest	R2	49.4	42.5	1013.3#	85.9#	159.1	159.1	3.7
NorthWest: Stadium Drive									
	NorthEast	L2	58.1	58.1	1013.9#	62.8#	20.3	20.3	0.3
	SouthEast	T1	59.7	59.7	1013.9#	61.1#	410.6	410.6	6.9
ALL VEHICLES:			57.4	55.9	1014.0#	65.3#	1386.2	1386.2	24.8

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the program-determined Exit Distance or user-specified Downstream Distance as applicable.

INTERSECTION NEGOTIATION DATA

From	To	Negn Radius	Negn Speed	Negn Dist.	Appr. Dist.	Exit Dist.	Downstr. Dist.

Approach	Exit	Turn	m	km/h	m	m	m	m
SouthEast: Stadium Drive								
	NorthWest	T1	S	60.0	13.8	500	500	NA
	NorthEast	R2	10.2	20.3	16.0	500	500	NA
NorthEast: Phil Hawthorne Drive								
	SouthEast	L2	10.0	20.2	15.7	500	500	NA
	NorthWest	R2	8.5	18.9	13.3	500	500	NA
NorthWest: Stadium Drive								
	NorthEast	L2	10.0	20.2	15.7	500	500	NA
	SouthEast	T1	S	60.0	13.8	500	500	NA

NA Downstream Distance does not apply if:
- Exit is an internal leg of a network
- "Program" option was specified
- Distance specified was less than the Exit Negotiation Distance
- Distance specified was greater than the exit leg length

MOVEMENT SPEEDS AND GEOMETRIC DELAY

Mov ID	Turn	App. Speeds Cruise km/h	App. Speeds Negn km/h	Exit Speeds Negn km/h	Exit Speeds Cruise km/h	Queue Move-up Speed km/h	Geom Delay sec
SouthEast: Stadium Drive							
2	T1	60.0	60.0	60.0	60.0	0.6	0.0
3	R2	60.0	20.3	20.3	60.0	2.2	5.5
NorthEast: Phil Hawthorne Drive							
4	L2	60.0	20.2	20.2	60.0	20.2	5.5
6	R2	60.0	18.9	18.9	60.0	12.5	5.5
NorthWest: Stadium Drive							
7	L2	60.0	20.2	20.2	60.0		5.5
8	T1	60.0	60.0	60.0	60.0		0.0

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Gap Acceptance Parameters
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Opd Lane	Dest	Opng Flow pcu/h	Critical Gap Hdwy sec	Critical Gap Dist m	Foll-up Headway sec	Entry HV Equiv	Intra Bunch Hdwy sec	Propn Bnchd
SouthEast: Stadium Drive								
2	NE	425	4.00	64.6	2.00	1.00	1.80	0.051
NorthEast: Phil Hawthorne Drive								
1	SE	405+	4.00	66.7	2.20	1.00	1.80	0.048
2	NW	1043+	5.30	87.2	3.00	1.00	0.75	0.077
NorthWest: Stadium Drive								

No opposed movements on this approach.

Values in this table are adjusted for heavy vehicles in the entry stream.
Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements.
+ Percentage of exiting flow included in opposing vehicle flow

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Movement Capacity and Performance Parameters
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h	Opng Flow veh/h	Movement Adjust. Flow pcu/h	Total Cap. veh/h	Prac. Deg. Satn xp	Prac. Spare Cap. %	Deg. Satn x

SouthEast: Stadium Drive									
2	T1	#	608	0	0	3210	0.98	417	0.189
3	R2	#	20	425	425	106	0.98	417	0.189
NorthEast: Phil Hawthorne Drive									
4	L2	#	157	405	405	1115	0.80	468	0.141
6	R2	#	157	1043	1043	300	0.80	53	0.523*
NorthWest: Stadium Drive									
7	L2	#	20	0	0	110	0.98	438	0.182
8	T1	#	405	0	0	2225	0.98	438	0.182

* Maximum degree of saturation
\# Combined Movement Capacity parameters are shown for all Movement Classes.

The Flow Ratio values given in this table are calculated for signal timing purposes. For movements with two green periods they are subject to balancing as relevant to determining Required Movement Times given in the Movement Timing Information table. Zero values will be given for a slip /bypass lane movement if the option "Exclude Slip/Bypass Lane from Signal Analysis" has been selected.

MOVEMENT PERFORMANCE

Mov ID	Turn	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Distance (veh-km/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
SouthEast: Stadium Drive										
2	T1	0.09	0.11	0.5	0.02	12.6	10.43	616.4	10.4	59.2
3	R2	0.04	0.05	7.5	0.08	1.5	0.39	20.3	0.4	55.7
NorthEast: Phil Hawthorne Drive										
4	L2	0.31	0.37	7.1	0.67	105.3	3.78	159.5	3.1	52.2
6	R2	1.01	1.21	23.1	1.06	167.1	5.60	159.1	3.7	42.5
NorthWest: Stadium Drive										
7	L2	0.03	0.04	5.6	0.03	0.6	0.37	20.3	0.3	58.1
8	T1	0.00	0.00	0.0	0.03	11.4	6.91	410.6	6.9	59.7

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Fuel Consumption, Emissions and Cost
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Mov ID	Turn	Cost Total $/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
SouthEast: Stadium Drive							
2	T1	215.32	37.4	87.8	0.52	0.029	0.052
3	R2	8.57	1.5	3.4	0.02	0.001	0.002
		223.89	38.8	91.2	0.54	0.031	0.055
NorthEast: Phil Hawthorne Drive							
4	L2	79.16	13.0	30.6	0.16	0.011	0.025
6	R2	100.76	14.1	33.1	0.17	0.013	0.026
		179.92	27.1	63.7	0.34	0.025	0.052
NorthWest: Stadium Drive							
7	L2	6.68	1.2	2.7	0.02	0.001	0.002
8	T1	135.20	23.7	55.6	0.34	0.018	0.030
		141.88	24.8	58.3	0.35	0.019	0.032
INTERSECTION:		545.69	90.8	213.3	1.23	0.075	0.138

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

Mov ID	Turn	Cost Rate $/km	Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
SouthEast: Stadium Drive							

```
  2  T1            0.35    6.1   142.4    0.85   0.048   0.085
  3  R2            0.42    7.2   168.3    0.94   0.060   0.123
               ------------------------------------------------
                0.35    6.1   143.3    0.85   0.048   0.086
-------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2            0.50    8.2   192.2    1.03   0.072   0.158
  6  R2            0.63    8.9   208.0    1.08   0.084   0.166
               ------------------------------------------------
                0.56    8.5   200.1    1.06   0.078   0.162
-------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2            0.33    5.8   135.4    0.82   0.045   0.074
  8  T1            0.33    5.8   135.4    0.82   0.045   0.074
               ------------------------------------------------
                0.33    5.8   135.4    0.82   0.045   0.074
-------------------------------------------------------------
 INTERSECTION:  0.39    6.5   153.9    0.89   0.054   0.100
-------------------------------------------------------------
```

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Lanes

Lane Performance and Capacity Information
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE PERFORMANCE

-------------------------------------------------------------
                                        Q u e u e
          Flow   Cap  Deg.  Aver.  Eff.    95% Back      Lane
 Lane                Satn  Delay  Stop  ------------   Length
 No.      veh/h veh/h   x    sec   Rate    veh     m       m
-------------------------------------------------------------
 SouthEast: Stadium Drive
 1         443  2340 0.189    0.0  0.00                  55.0T
 2         185   975 0.189    2.5  0.08    0.8    5.4    250.0
-------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1         157  1115 0.141    7.1  0.67    0.6    4.0      6.0T
 2         157   300 0.523   23.1  1.06    2.5   17.5    380.0
-------------------------------------------------------------
 NorthWest: Stadium Drive
 1         425  2335 0.182    0.3  0.03                  500.0
-------------------------------------------------------------
  T  Short lane due to specification of Turn Bay


LANE FLOW AND CAPACITY INFORMATION

-----------------------------------------
 Lane   Total     Min   Tot   Deg.  Lane
 No.    Arv Flow  Cap   Cap   Satn  Util
        (veh/h)  veh/h veh/h    x     %
-----------------------------------------
 SouthEast: Stadium Drive
 1        443     443  2340   0.189  100
 2        185      53   975   0.189  100
-----------------------------------------
 NorthEast: Phil Hawthorne Drive
 1        157       6  1115   0.141  100
 2        157       6   300   0.523  100
-----------------------------------------
 NorthWest: Stadium Drive
 1        425     425  2335   0.182  100
-----------------------------------------

  The capacity value for priority and continuous movements is obtained by
  adjusting the basic saturation flow for heavy vehicle and turning vehicle
  effects.  Saturation flow scale applies if specified.
```

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Lane, Approach and Intersection Performance
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

------------------------------------------------------------
 Lane   Arrival        Adj.    Deg   Aver.   Longest   Shrt
 No.    Flow     %HV   Basic   Sat   Delay   Queue     Lane
```

	(veh/h)	Satf.	x	sec	m	m
SouthEast: Stadium Drive						
1	443	0	2339	0.189	0.0	55
2	185	0		0.189	2.5	5 250
	628	0		0.189	0.8	5
NorthEast: Phil Hawthorne Drive						
1	157	0		0.141	7.1	4 6
2	157	0		0.523	23.1	18 380
	314	0		0.523	15.1	18
NorthWest: Stadium Drive						
1	425	0	2339	0.182	0.3	500
	425	0		0.182	0.3	

ALL VEHICLES

Total Flow	% HV	Max X	Aver. Delay	Max Queue
1367	0	0.523	3.9	18

Peak flow period = 60 minutes.

Queue values in this table are 95% queue (metres)
Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

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Driver Characteristics
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Lane No.	Satn Speed km/h	Satn Flow veh/h	Satn Hdwy sec	Satn Spacing m	Average Queue Space m	Driver Response Time sec
SouthEast: Stadium Drive						
1	NA - Continuous Movement					
2	NA - Major Road Movement					
NorthEast: Phil Hawthorne Drive						
1	NA - Short Lane					
2	18.9	1200	3.00	15.78	7.00	1.67
NorthWest: Stadium Drive						
1	NA - Continuous Movement					

Saturation Flow and Saturation Headway are derived from follow-up headway.

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Lane Delays
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE DELAYS

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Stop-line Delay 1st d1	Stop-line Delay 2nd d2	Stop-line Delay Total dSL	Delay (seconds/veh) Acc. Dec. dn	Queuing Total dq	Queuing MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
SouthEast: Stadium Drive												
1	0.189					0.0					0.0	0.0
2	0.189	NA	NA	1.9	0.0	1.9	2.4	0.0	0.0	0.0	0.6	2.5
NorthEast: Phil Hawthorne Drive												
1	0.141	NA	NA	1.6	0.0	1.6	1.8	0.0	0.0	0.0	5.5	7.1
2	0.523	NA	NA	13.1	4.5	17.6	3.4	14.3	2.2	12.1	5.5	23.1
NorthWest: Stadium Drive												
1	0.182					0.0					0.3	0.3

SIDRA Standard Delay Model is used. Control Delay is the sum of Stop-line Delay and Geometric Delay.
dSL: Stop-line delay (=d1+d2)

```
  dn: Average stop-start delay for all vehicles queued and unqueued
  dq: Queuing delay (the part of the stop-line delay that includes
      stopped delay and queue move-up delay)
  dqm: Queue move-up delay
  di: Stopped delay (stopped (idling) time at near-zero speed)
  dig: Geometric delay
  dic: Control delay
```

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Lane Queues
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE QUEUES (VEHICLES)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (veh) Nb1	Nb2	Nb	95%	Queue Stor. Ratio	Prob. Block %	P'ile Block %	Cyc-Av. Queue Nc	95%
SouthEast: Stadium Drive													
2	0.189	NA	NA	0.0	0.3	0.0	0.3	0.8	0.02	0.0	100.0	0.1	0.2
NorthEast: Phil Hawthorne Drive													
1	0.141	NA	NA	0.0	0.2	0.0	0.2	0.6	0.66	0.0	100.0	0.1	0.1
2	0.523	NA	NA	0.3	0.8	0.2	1.0	2.5	0.05	0.0	100.0	0.8	1.4
NorthWest: Stadium Drive													

LANE QUEUES (DISTANCE)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (m) Nb1	Nb2	Nb	95%	Queue Stor. Ratio	Prob. Block %	P'ile Block %	Cyc-Av. Queue Nc	95%
SouthEast: Stadium Drive													
2	0.189	NA	NA	0.0	2.2	0.0	2.2	5.4	0.02	0.0	100.0	0.7	1.2
NorthEast: Phil Hawthorne Drive													
1	0.141	NA	NA	0.0	1.6	0.0	1.6	4.0	0.66	0.0	100.0	0.5	0.9
2	0.523	NA	NA	1.8	5.5	1.5	7.1	17.5	0.05	0.0	100.0	5.4	9.8
NorthWest: Stadium Drive													

Go to Table Links (Top)

Lane Queue Percentiles
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE QUEUE PERCENTILES (VEHICLES)

Lane No.	Deg. Satn x	Percentile Back of Queue (veh) 50%	70%	85%	90%	95%	98%	100%
SouthEast: Stadium Drive								
2	0.189	0.3	0.4	0.6	0.7	0.8	0.9	0.9
NorthEast: Phil Hawthorne Drive								
1	0.141	0.2	0.3	0.4	0.5	0.6	0.6	0.7
2	0.523	1.0	1.3	1.8	2.1	2.5	2.8	3.0
NorthWest: Stadium Drive								

LANE QUEUE PERCENTILES (DISTANCE)

Lane No.	Deg. Satn x	Percentile Back of Queue (metres) 50%	70%	85%	90%	95%	98%	100%

```
 SouthEast: Stadium Drive
 2     0.189    2.2    2.8    3.9    4.6    5.4    6.0    6.4
-------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.141    1.6    2.1    2.9    3.4    4.0    4.4    4.7
 2     0.523    7.1    9.1   12.9   14.9   17.5   19.5   20.9
-------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------
```

Go to Table Links (Top)

Lane Stops
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

-------------------------------------------------------------------------------------------
                                                          Queue   Total
        Deg.  % Arv   Prog.   -- Effective Stop Rate --  Total  Move-up  Queue   Prop.
 Lane   Satn  During  Factor              Geom. Overall  Stops   Rate  Move-ups Queued
 No.      x   Green            he1   he2   hig     h       H      hqm     Hqm     pq
-------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
 1     0.189    NA       NA                0.00   0.00      0.0
 2     0.189    NA       NA    0.05  0.00  0.03   0.08     14.1    0.00     0.0   0.53
-------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.141    NA       NA    0.35  0.00  0.32   0.67    105.3    0.00     0.0   0.45
 2     0.523    NA       NA    0.86  0.12  0.08   1.06    167.1    0.45    70.5   0.86
-------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
 1     0.182    NA       NA                0.03   0.03     12.0
-------------------------------------------------------------------------------------------
  hig is the average value for all movements in a shared lane
  hqm is average queue move-up rate for all vehicles queued and unqueued
```

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Flow Rates

Origin-Destination Flow Rates (Total)
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


TOTAL FLOW RATES (ALL MOVEMENT CLASSES)

-----------------------------------------------------
 From SOUTHEAST To:              NW      NE
 Turn:                           T1      R2     TOT
 Flow Rate                    608.0    20.0   628.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
 From NORTHEAST To:              SE      NW
 Turn:                           L2      R2     TOT
 Flow Rate                    157.0   157.0   314.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
 From NORTHWEST To:              NE      SE
 Turn:                           L2      T1     TOT
 Flow Rate                    20.0   405.0   425.0
 %HV (all designations)         0.0     0.0     0.0
-----------------------------------------------------
Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


FLOW RATES FOR Light Vehicles

-------------------------------------------
 From SOUTHEAST To:      NW      NE
 Turn:                   T1      R2     TOT
```

Flow Rate - Veh	608.0	20.0	628.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Flow Rate - Veh	157.0	157.0	314.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Flow Rate - Veh	20.0	405.0	425.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

Go to Table Links (Top)

Lane Flow Rates
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE

From SOUTHEAST To:	NW	NE	
Turn:	T1	R2	TOT
Lane 1			
LV	443.3	*	443.3
Total	443.3	*	443.3
Lane 2			
LV	164.7	20.0	184.7
Total	164.7	20.0	184.7
Approach	608.0	20.0	628.0

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Lane 1			
LV	157.0	*	157.0
Total	157.0	*	157.0
Lane 2			
LV	*	157.0	157.0
Total	*	157.0	157.0
Approach	157.0	157.0	314.0

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Lane 1			
LV	20.0	405.0	425.0
Total	20.0	405.0	425.0
Approach	20.0	405.0	425.0

* Movement not allocated to the lane

EXIT LANE FLOW RATES

Movement Class:	LV	HV	TOT
Exit: SOUTHEAST			
Lane: 1	562.0	*	562.0
Lane: 2	*	*	0.0
Total	562.0	*	562.0
Exit: NORTHEAST			
Lane: 1	40.0	*	40.0
Total	40.0	*	40.0
Exit: NORTHWEST			
Lane: 1	525.6	*	525.6

```
Lane:  2           239.4       *   239.4
Total              765.0       *   765.0
-----------------------------------------
  *  Movement not allocated to the lane


DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

-----------------------------------------
Movement Class:       LV      HV     TOT
-----------------------------------------
 Exit: SOUTHEAST
Lane:  2           562.0       *   562.0
Total              562.0       *   562.0
-----------------------------------------
 Exit: NORTHEAST
Lane:  1            40.0       *    40.0
Total               40.0       *    40.0
-----------------------------------------
 Exit: NORTHWEST
Lane:  2           765.0       *   765.0
Total              765.0       *   765.0
-----------------------------------------
  *  Movement not allocated to the lane

Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

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Sensitivity Analysis

Sensitivity Analysis Results
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

Scaled sensitivity parameter: Basic Saturation Flow
  Degree of saturation = 0.523 was achieved at parameter scale = 120.0 %
  All scaled parameter values gave degree of saturation less than 1.0.
  Try adjusting the scale factor range to give higher degrees of saturation.


Results in the table below are given for Intersection - Vehicles

-------------------------------------------------------------------------
 Param        Eff.  Degree   Prac.  Aver.  Stop  95% Back  Perf.  Cost
 Scale        Cap.    of     Spare  Delay  Rate  of Queue  Index  Total
  (%)              Satn      Cap.  (sec)         (veh)           $/h
-------------------------------------------------------------------------
  80.0        2619  0.522     53     4.0  0.22     2.5     27.5   547.9
  85.0        2618  0.522     53     3.9  0.22     2.5     27.5   547.5
  90.0        2618  0.522     53     3.9  0.22     2.5     27.5   547.2
  95.0        2617  0.522     53     3.9  0.22     2.5     27.5   546.8
 100.0        2616  0.522     53     3.9  0.22     2.5     27.5   546.6
 105.0        2616  0.523     53     3.9  0.22     2.5     27.5   546.3
 110.0        2615  0.523     53     3.9  0.22     2.5     27.5   546.1
 115.0        2615  0.523     53     3.9  0.22     2.5     27.5   545.9
 120.0        2615  0.523     53     3.9  0.22     2.5     27.5   545.7
-------------------------------------------------------------------------
```

Go to Table Links (Top)

Other

Model Settings Summary
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

```
Parameter sensitivity run for "Calibration": Basic Saturation Flow = 120.0 %
  This value was chosen to achieve intersection degree of saturation close
  to 1.0.  Short lanes with degree of saturation = 1.0 are ignored in this process.
  See the Sensitivity Analysis group of tables for further information.

* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Model Defaults: New South Wales
  Peak Flow Period (for performance): 60 minutes
  Unit time (for volumes): 60 minutes.
  SIDRA Standard Delay model used
```

```
  SIDRA Standard Queue model used
  Level of Service based on: Delay (RTA NSW)
  Queue percentile: 95%
```

Go to Table Links (Top)

Diagnostics
Site:Hospital - Future Conditions OUT 2024 - 24 March 2014

```
Flow-Capacity Iterations:

  Largest change in degree of saturation for any lane =  0.5 %
  Largest change in capacity for any lane =    1 veh/h


Other Diagnostic Messages (if any):
```

Go to Table Links (Top)

INTERSECTION SUMMARY

Site: Hospital - Future Conditions OUT 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 120.0 %

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	55.9	km/h	55.9	km/h
Travel Distance (Total)	1386.2	veh-km/h	1663.4	pers-km/h
Travel Time (Total)	24.8	veh-h/h	29.8	pers-h/h
Demand Flows (Total)	1367	veh/h	1640	pers/h
Percent Heavy Vehicles (Demand)	0.0	%		
Degree of Saturation	0.523			
Practical Spare Capacity	53.0	%		
Effective Intersection Capacity	2615	veh/h		
Control Delay (Total)	1.48	veh-h/h	1.78	pers-h/h
Control Delay (Average)	3.9	sec	3.9	sec
Control Delay (Worst Lane)	23.1	sec		
Control Delay (Worst Movement)	23.1	sec	23.1	sec
Geometric Delay (Average)	1.4	sec		
Stop-Line Delay (Average)	2.5	sec		
Idling Time (Average)	1.4	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.5	veh		
95% Back of Queue - Distance (Worst Lane)	17.5	m		
Queue Storage Ratio (Worst Lane)	0.02			
Total Effective Stops	298	veh/h	358	pers/h
Effective Stop Rate	0.22	per veh	0.22	per pers
Proportion Queued	0.22		0.22	
Performance Index	27.5		27.5	
Cost (Total)	545.69	$/h	545.69	$/h
Fuel Consumption (Total)	90.8	L/h		
Carbon Dioxide (Total)	213.3	kg/h		
Hydrocarbons (Total)	0.075	kg/h		
Carbon Monoxide (Total)	1.233	kg/h		
NOx (Total)	0.138	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	656,160	veh/y	787,392	pers/y
Delay	712	veh-h/y	854	pers-h/y
Effective Stops	143,268	veh/y	171,922	pers/y
Travel Distance	665,361	veh-km/y	798,434	pers-km/y
Travel Time	11,906	veh-h/y	14,287	pers-h/y
Cost	261,931	$/y	261,931	$/y
Fuel Consumption	43,567	L/y		
Carbon Dioxide	102,383	kg/y		
Hydrocarbons	36	kg/y		
Carbon Monoxide	592	kg/y		
NOx	66	kg/y		

MOVEMENT SUMMARY

Site: Hospital - Future Conditions OUT 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 120.0 %

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
SouthEast: Stadium Drive											
2	T1	608	0.0	0.189	0.5	LOS A	0.8	5.4	0.14	0.02	59.2
3	R2	20	0.0	0.189	7.5	LOS A	0.8	5.4	0.53	0.08	55.7
Approach		628	0.0	0.189	0.8	NA	0.8	5.4	0.16	0.02	59.1
NorthEast: Phil Hawthorne Drive											
4	L2	157	0.0	0.141	7.1	LOS A	0.6	4.0	0.45	0.67	52.2
6	R2	157	0.0	0.523	23.1	LOS B	2.5	17.5	0.86	1.06	42.5
Approach		314	0.0	0.523	15.1	LOS B	2.5	17.5	0.66	0.87	46.8
NorthWest: Stadium Drive											
7	L2	20	0.0	0.182	5.6	LOS A	0.0	0.0	0.00	0.03	58.1
8	T1	405	0.0	0.182	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		425	0.0	0.182	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		1367	0.0	0.523	3.9	NA	2.5	17.5	0.22	0.22	55.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

LANE SUMMARY

Site: Hospital - Future Conditions OUT 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 120.0 %

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Stadium Drive													
Lane 1	443	0.0	2340	0.189	100	0.0	LOS A	0.0	0.0	Short	55	0.0	0.0
Lane 2	185	0.0	975	0.189	100	2.5	LOS A	0.8	5.4	Full	250	0.0	0.0
Approach	628	0.0		0.189		0.8	NA	0.8	5.4				
NorthEast: Phil Hawthorne Drive													
Lane 1	157	0.0	1115	0.141	100	7.1	LOS A	0.6	4.0	Short	6	0.0	0.0
Lane 2	157	0.0	300	0.523	100	23.1	LOS B	2.5	17.5	Full	380	0.0	0.0
Approach	314	0.0		0.523		15.1	LOS B	2.5	17.5				
NorthWest: Stadium Drive													
Lane 1	425	0.0	2335	0.182	100	0.3	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	425	0.0		0.182		0.3	NA	0.0	0.0				
Intersection	1367	0.0		0.523		3.9	NA	2.5	17.5				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
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.

LANE FLOWS

Site: Hospital - Future Conditions OUT 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 120.0 %

Approach Lane Flows (veh/h)

SouthEast: Stadium Drive

Mov. From SE To Exit:	T1 NW	R2 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	443	-	443	0.0	2340	0.189	100
Lane 2	165	20	185	0.0	975	0.189	100
Approach	608	20	628	0.0		0.189	

NorthEast: Phil Hawthorne Drive

Mov. From NE To Exit:	L2 SE	R2 NW	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	157	-	157	0.0	1115	0.141	100
Lane 2	-	157	157	0.0	300	0.523	100
Approach	157	157	314	0.0		0.523	

NorthWest: Stadium Drive

Mov. From NW To Exit:	L2 NE	T1 SE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	20	405	425	0.0	2335	0.182	100
Approach	20	405	425	0.0		0.182	

	Total	%HV	Deg.Satn (v/c)
Intersection	1367	0.0	0.523

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

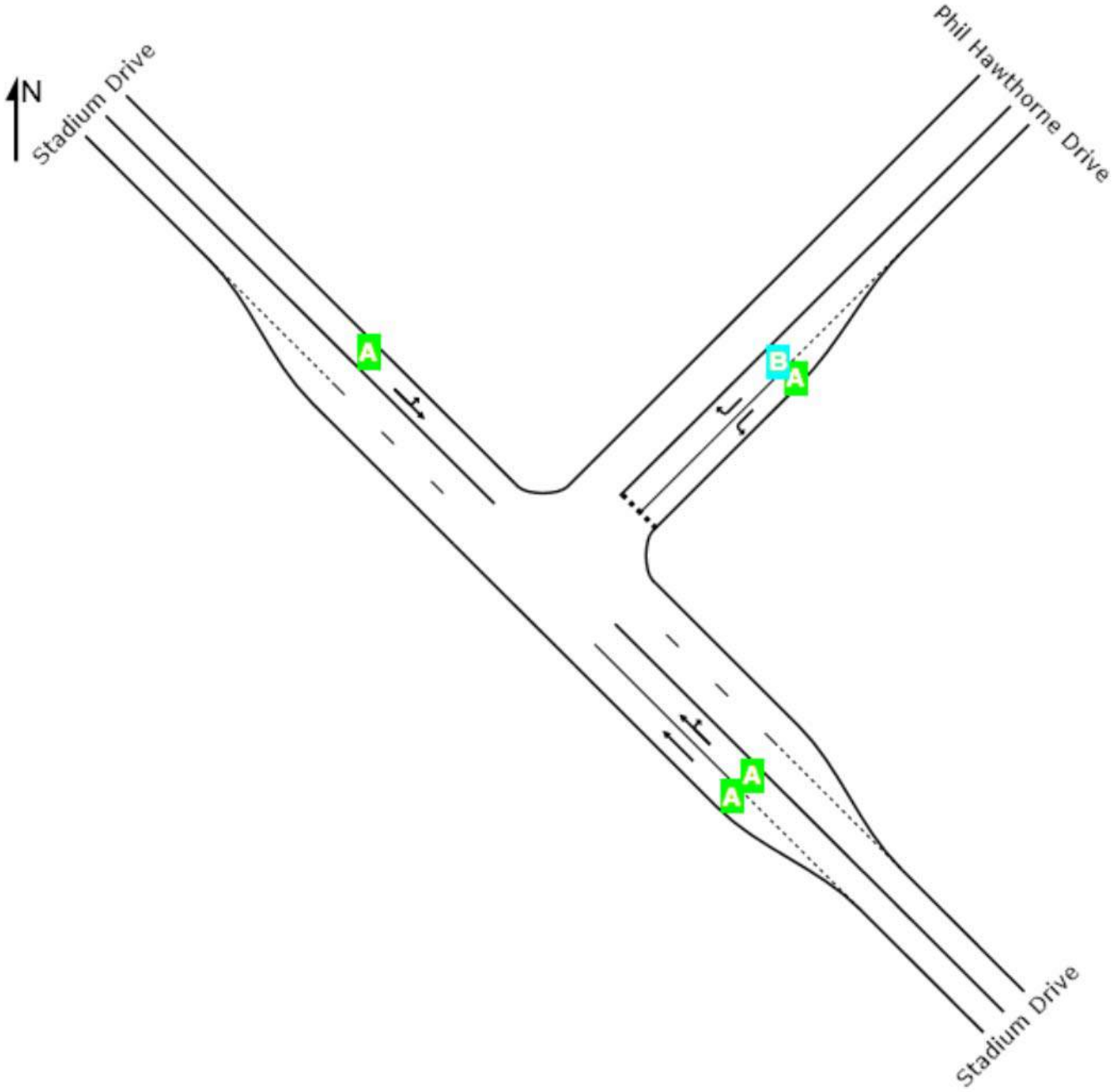
LEVEL OF SERVICE

Site: Hospital - Future Conditions OUT 2024 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 120.0 %

All Movement Classes

	Southeast	Northeast	Northwest	Intersection
LOS	NA	B	NA	NA



Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

DETAILED OUTPUT

Site: Hospital - Future Conditions IN 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

OUTPUT TABLE LINKS

Movements

Intersection Negotiation and Travel Data
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Distance m	Travel Time s	Total Travel Distance Dem Flows veh-km/h	Arv Flows veh-km/h	Tot.Trav. Time veh-h/h
SouthEast: Stadium Drive									
	NorthWest	T1	59.9	59.9	1013.8#	60.9#	411.6	411.6	6.9
	NorthEast	R2	50.6	49.0	1016.0#	74.7#	237.8	237.8	4.9
NorthEast: Phil Hawthorne Drive									
	SouthEast	L2	52.0	51.7	1015.7#	70.7#	30.5	30.5	0.6
	NorthWest	R2	50.7	39.6	1013.3#	92.1#	30.4	30.4	0.8
NorthWest: Stadium Drive									
	NorthEast	L2	56.8	56.8	1014.3#	64.3#	237.4	237.4	4.2
	SouthEast	T1	58.3	58.3	1014.3#	62.6#	617.7	617.7	10.6
ALL VEHICLES:			57.1	56.2	1014.5#	65.0#	1565.3	1565.3	27.9

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the program-determined Exit Distance or user-specified Downstream Distance as applicable.

INTERSECTION NEGOTIATION DATA

From	To	Negn Radius	Negn Speed	Negn Dist.	Appr. Dist.	Exit Dist.	Downstr. Dist.

Approach	Exit	Turn	m	km/h	m	m	m	m
SouthEast: Stadium Drive								
	NorthWest	T1	S	60.0	13.8	500	500	NA
	NorthEast	R2	10.2	20.3	16.0	500	500	NA
NorthEast: Phil Hawthorne Drive								
	SouthEast	L2	10.0	20.2	15.7	500	500	NA
	NorthWest	R2	8.5	18.9	13.3	500	500	NA
NorthWest: Stadium Drive								
	NorthEast	L2	10.0	20.2	15.7	500	500	NA
	SouthEast	T1	S	60.0	13.8	500	500	NA

NA Downstream Distance does not apply if:
- Exit is an internal leg of a network
- "Program" option was specified
- Distance specified was less than the Exit Negotiation Distance
- Distance specified was greater than the exit leg length

MOVEMENT SPEEDS AND GEOMETRIC DELAY

Mov ID	Turn	App. Speeds Cruise km/h	App. Speeds Negn km/h	Exit Speeds Negn km/h	Exit Speeds Cruise km/h	Queue Move-up Speed km/h	Geom Delay sec
SouthEast: Stadium Drive							
2	T1	60.0	60.0	60.0	60.0		0.0
3	R2	60.0	20.3	20.3	60.0	14.2	5.5
NorthEast: Phil Hawthorne Drive							
4	L2	60.0	20.2	20.2	60.0	16.3	5.5
6	R2	60.0	18.9	18.9	60.0	11.1	5.5
NorthWest: Stadium Drive							
7	L2	60.0	20.2	20.2	60.0		5.5
8	T1	60.0	60.0	60.0	60.0		0.0

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Gap Acceptance Parameters
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Opd Lane	Dest	Opng Flow pcu/h	Critical Gap Hdwy sec	Critical Gap Dist m	Foll-up Headway sec	Entry HV Equiv	Intra Bunch Hdwy sec	Propn Bnchd
SouthEast: Stadium Drive								
2	NE	843	4.00	54.4	2.00	1.00	1.80	0.127
NorthEast: Phil Hawthorne Drive								
1	SE	609+	4.00	66.7	2.20	1.00	1.80	0.081
2	NW	1366+	5.30	77.4	3.00	1.00	0.87	0.128
NorthWest: Stadium Drive								
No opposed movements on this approach.								

Values in this table are adjusted for heavy vehicles in the entry stream.
Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements.
+ Percentage of exiting flow included in opposing vehicle flow

Go to Table Links (Top)

Movement Capacity and Performance Parameters
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h	Opng Flow veh/h	Movement Adjust. Flow pcu/h	Total Cap. veh/h	Prac. Deg. Satn xp	Prac. Spare Cap. %	Deg. Satn x

SouthEast: Stadium Drive									
2	T1	#	406	0	0	1560	0.98	277	0.260
3	R2	#	234	843	843	648	0.98	171	0.361
NorthEast: Phil Hawthorne Drive									
4	L2	#	30	609	609	867	0.80	2212	0.035
6	R2	#	30	1366	1366	158	0.80	320	0.190
NorthWest: Stadium Drive									
7	L2	#	234	0	0	427	0.98	79	0.548*
8	T1	#	609	0	0	1112	0.98	79	0.548*

* Maximum degree of saturation
\# Combined Movement Capacity parameters are shown for all Movement Classes.

The Flow Ratio values given in this table are calculated for signal timing purposes. For movements with two green periods they are subject to balancing as relevant to determining Required Movement Times given in the Movement Timing Information table. Zero values will be given for a slip /bypass lane movement if the option "Exclude Slip/Bypass Lane from Signal Analysis" has been selected.

MOVEMENT PERFORMANCE

Mov ID	Turn	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Distance (veh-km/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
SouthEast: Stadium Drive										
2	T1	0.00	0.00	0.0	0.00	0.0	6.86	411.6	6.9	59.9
3	R2	0.78	0.94	12.1	0.95	222.5	5.98	237.8	4.9	49.0
NorthEast: Phil Hawthorne Drive										
4	L2	0.07	0.08	8.1	0.70	21.0	0.74	30.5	0.6	51.7
6	R2	0.24	0.29	29.3	0.96	28.9	1.16	30.4	0.8	39.6
NorthWest: Stadium Drive										
7	L2	0.37	0.44	5.6	0.16	38.6	4.54	237.4	4.2	56.8
8	T1	0.02	0.03	0.1	0.16	100.4	10.87	617.7	10.6	58.3

Go to Table Links (Top)

Fuel Consumption, Emissions and Cost
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Mov ID	Turn	Cost Total $/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
SouthEast: Stadium Drive							
2	T1	132.64	23.3	54.7	0.33	0.018	0.029
3	R2	128.54	20.1	47.2	0.25	0.018	0.039
		261.18	43.3	101.8	0.58	0.036	0.068
NorthEast: Phil Hawthorne Drive							
4	L2	15.34	2.5	5.9	0.03	0.002	0.005
6	R2	20.77	2.7	6.5	0.03	0.003	0.005
		36.12	5.3	12.3	0.06	0.005	0.010
NorthWest: Stadium Drive							
7	L2	86.65	14.9	35.1	0.21	0.012	0.022
8	T1	225.50	38.9	91.4	0.53	0.031	0.057
		312.15	53.8	126.5	0.74	0.043	0.079
INTERSECTION:		609.45	102.4	240.6	1.39	0.084	0.157

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

Mov ID	Turn	Cost Rate $/km	Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
SouthEast: Stadium Drive							

```
  2  T1            0.32    5.7   132.8    0.81   0.043   0.070
  3  R2            0.54    8.4   198.3    1.05   0.076   0.163
               ----------------------------------------------
                0.40    6.7   156.8    0.90   0.055   0.104
-------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2            0.50    8.2   193.2    1.03   0.072   0.159
  6  R2            0.68    9.0   212.2    1.10   0.088   0.165
               ----------------------------------------------
                0.59    8.6   202.7    1.07   0.080   0.162
-------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2            0.37    6.3   147.9    0.87   0.050   0.093
  8  T1            0.37    6.3   147.9    0.87   0.050   0.093
               ----------------------------------------------
                0.37    6.3   147.9    0.87   0.050   0.093
-------------------------------------------------------------
 INTERSECTION:  0.39    6.5   153.7    0.89   0.054   0.100
-------------------------------------------------------------
```

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Lanes

Lane Performance and Capacity Information
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE PERFORMANCE

-------------------------------------------------------------
                                        Q u e u e
          Flow   Cap  Deg.  Aver.  Eff.    95% Back      Lane
 Lane                Satn  Delay  Stop  ------------   Length
 No.      veh/h veh/h   x    sec   Rate    veh     m       m
-------------------------------------------------------------
 SouthEast: Stadium Drive
 1         406  1560 0.260    0.0  0.00                  55.0T
 2         234   648 0.361   12.1  0.95    1.8   12.3    250.0
-------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1          30   867 0.035    8.1  0.70    0.1    0.9      6.0T
 2          30   158 0.190   29.3  0.96    0.6    4.2    380.0
-------------------------------------------------------------
 NorthWest: Stadium Drive
 1         843  1539 0.548    1.7  0.16                  500.0
-------------------------------------------------------------
  T  Short lane due to specification of Turn Bay


LANE FLOW AND CAPACITY INFORMATION

-----------------------------------------
 Lane   Total     Min   Tot   Deg.  Lane
 No.    Arv Flow  Cap   Cap   Satn  Util
        (veh/h)  veh/h veh/h    x     %
-----------------------------------------
 SouthEast: Stadium Drive
 1        406     406  1560   0.260   72P
 2        234       6   648   0.361  100
-----------------------------------------
 NorthEast: Phil Hawthorne Drive
 1         30       6   867   0.035  100
 2         30       6   158   0.190  100
-----------------------------------------
 NorthWest: Stadium Drive
 1        843     843  1539   0.548  100
-----------------------------------------
  P  Lane under-utilisation found by the "Program".  This includes cases where
     the value of lane under-utilisation due to downstream effects has been
     modified by the program during lane flow calculations (e.g. a de facto
     exclusive lane has been found).

  The capacity value for priority and continuous movements is obtained by
  adjusting the basic saturation flow for heavy vehicle and turning vehicle
  effects.  Saturation flow scale applies if specified.
```

Go to Table Links (Top)

Lane, Approach and Intersection Performance
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection
```

Lane No.	Arrival Flow (veh/h)	%HV	Adj. Basic Satf.	Deg Sat x	Aver. Delay sec	Longest Queue m	Shrt Lane m
SouthEast: Stadium Drive							
1	406	0	1559	0.260	0.0		55
2	234	0		0.361	12.1	12	250
	640	0		0.361	4.4	12	
NorthEast: Phil Hawthorne Drive							
1	30	0		0.035	8.1	1	6
2	30	0		0.190	29.3	4	380
	60	0		0.190	18.7	4	
NorthWest: Stadium Drive							
1	843	0	1559	0.548	1.7		500
	843	0		0.548	1.7		

ALL VEHICLES Total Flow	% HV	Max X	Aver. Delay	Max Queue
1543	0	0.548	3.5	12

Peak flow period = 60 minutes.

Queue values in this table are 95% queue (metres)
Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

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Driver Characteristics
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Lane No.	Satn Speed km/h	Satn Flow veh/h	Satn Hdwy sec	Satn Spacing m	Average Queue Space m	Driver Response Time sec
SouthEast: Stadium Drive						
1	NA - Continuous Movement					
2	NA - Major Road Movement					
NorthEast: Phil Hawthorne Drive						
1	NA - Short Lane					
2	18.9	1200	3.00	15.78	7.00	1.67
NorthWest: Stadium Drive						
1	NA - Continuous Movement					

Saturation Flow and Saturation Headway are derived from follow-up headway.

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Lane Delays
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE DELAYS

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Stop-line Delay 1st d1	2nd d2	Total dSL	Delay (seconds/veh) Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
SouthEast: Stadium Drive												
1	0.260					0.0					0.0	0.0
2	0.361	NA	NA	5.6	0.9	6.5	3.0	3.5	1.1	2.4	5.5	12.1
NorthEast: Phil Hawthorne Drive												
1	0.035	NA	NA	2.6	0.0	2.6	2.1	0.4	0.0	0.4	5.5	8.1
2	0.190	NA	NA	23.0	0.8	23.8	3.5	20.4	0.2	20.2	5.5	29.3
NorthWest: Stadium Drive												
1	0.548					0.1					1.5	1.7

```
--------------------------------------------------------------------------------
  SIDRA Standard Delay Model is used.  Control Delay is the sum of Stop-line Delay
  and Geometric Delay.
  dSL: Stop-line delay (=d1+d2)
  dn: Average stop-start delay for all vehicles queued and unqueued
  dq: Queuing delay (the part of the stop-line delay that includes
      stopped delay and queue move-up delay)
  dqm: Queue move-up delay
  di: Stopped delay (stopped (idling) time at near-zero speed)
  dig: Geometric delay
  dic: Control delay
```

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Lane Queues
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE QUEUES (VEHICLES)

-------------------------------------------------------------------------------------------------------
        Deg.  % Arv   Prog.   Ovrfl.     Back of Queue (veh)      Queue  Prob.  P'ile  Cyc-Av. Queue
 Lane   Satn  During  Factor  Queue   -------------------------  Stor.  Block  Block  -------------
 No.      x   Green            No      Nb1    Nb2    Nb     95%  Ratio     %      %     Nc      95%
-------------------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
 2     0.361    NA       NA      0.1     0.6    0.1    0.7    1.8   0.05    0.0  100.0    0.4     0.8
-------------------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.035    NA       NA      0.0     0.1    0.0    0.1    0.1   0.15    0.0  100.0    0.0     0.0
 2     0.190    NA       NA      0.0     0.2    0.0    0.2    0.6   0.01    0.0  100.0    0.2     0.4
-------------------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------------------------------------------------



LANE QUEUES (DISTANCE)

-------------------------------------------------------------------------------------------------------
        Deg.  % Arv   Prog.   Ovrfl.     Back of Queue (m)        Queue  Prob.  P'ile  Cyc-Av. Queue
 Lane   Satn  During  Factor  Queue   -------------------------  Stor.  Block  Block  -------------
 No.      x   Green            No      Nb1    Nb2    Nb     95%  Ratio     %      %     Nc      95%
-------------------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
 2     0.361    NA       NA      0.8     4.2    0.8    4.9   12.3   0.05    0.0  100.0    3.0     5.4
-------------------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.035    NA       NA      0.0     0.4    0.0    0.4    0.9   0.15    0.0  100.0    0.1     0.3
 2     0.190    NA       NA      0.1     1.7    0.0    1.7    4.2   0.01    0.0  100.0    1.4     2.5
-------------------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------------------------------------------------
```

Go to Table Links (Top)

Lane Queue Percentiles
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE QUEUE PERCENTILES (VEHICLES)

-------------------------------------------------------------
        Deg.          Percentile Back of Queue (veh)
 Lane   Satn  ------------------------------------------------
 No.      x     50%    70%    85%    90%    95%    98%   100%
-------------------------------------------------------------
 SouthEast: Stadium Drive
 2     0.361    0.7    0.9    1.3    1.5    1.8    1.9    2.1
-------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.035    0.1    0.1    0.1    0.1    0.1    0.1    0.1
 2     0.190    0.2    0.3    0.4    0.5    0.6    0.7    0.7
-------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------



LANE QUEUE PERCENTILES (DISTANCE)

-------------------------------------------------------------
```

Lane No.	Deg. Satn x	Percentile Back of Queue (metres) 50%	70%	85%	90%	95%	98%	100%
SouthEast: Stadium Drive								
2	0.361	4.9	6.4	9.0	10.4	12.3	13.6	14.6
NorthEast: Phil Hawthorne Drive								
1	0.035	0.4	0.5	0.6	0.7	0.9	1.0	1.0
2	0.190	1.7	2.2	3.1	3.6	4.2	4.7	5.1
NorthWest: Stadium Drive								

Go to Table Links (Top)

Lane Stops
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Queue Total Stops H	Total Move-up Rate hqm	Queue Move-ups Hqm	Prop. Queued pq
SouthEast: Stadium Drive											
1	0.260	NA	NA			0.00	0.00	0.0			
2	0.361	NA	NA	0.74	0.06	0.15	0.95	222.5	0.21	48.9	0.74
NorthEast: Phil Hawthorne Drive											
1	0.035	NA	NA	0.42	0.00	0.28	0.70	21.0	0.00	0.0	0.52
2	0.190	NA	NA	0.89	0.01	0.06	0.96	28.9	0.04	1.1	0.89
NorthWest: Stadium Drive											
1	0.548	NA	NA			0.16	0.16	139.0			

hig is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

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Flow Rates

Origin-Destination Flow Rates (Total)
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

TOTAL FLOW RATES (ALL MOVEMENT CLASSES)

From SOUTHEAST To:	NW	NE	
Turn:	T1	R2	TOT
Flow Rate	406.0	234.0	640.0
%HV (all designations)	0.0	0.0	0.0
From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Flow Rate	30.0	30.0	60.0
%HV (all designations)	0.0	0.0	0.0
From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Flow Rate	234.0	609.0	843.0
%HV (all designations)	0.0	0.0	0.0

Peak Flow factor value of 100% has been used for all movements since equal values of Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.

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Origin-Destination Flow Rates by Movement Class
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

FLOW RATES FOR Light Vehicles

From SOUTHEAST To:	NW	NE	
Turn:	T1	R2	TOT
Flow Rate - Veh	406.0	234.0	640.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Flow Rate - Veh	30.0	30.0	60.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Flow Rate - Veh	234.0	609.0	843.0
Mov Class %	100.0	100.0	100.0
Flow Scale - Fixed	1.00	1.00	
Flow Scale - Var	1.00	1.00	
Peak Flow Factor	0.95	0.95	

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Lane Flow Rates
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE

From SOUTHEAST To:	NW	NE	
Turn:	T1	R2	TOT
Lane 1			
LV	406.0	*	406.0
Total	406.0	*	406.0
Lane 2			
LV	*	234.0	234.0
Total	*	234.0	234.0
Approach	406.0	234.0	640.0

From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Lane 1			
LV	30.0	*	30.0
Total	30.0	*	30.0
Lane 2			
LV	*	30.0	30.0
Total	*	30.0	30.0
Approach	30.0	30.0	60.0

From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Lane 1			
LV	234.0	609.0	843.0
Total	234.0	609.0	843.0
Approach	234.0	609.0	843.0

* Movement not allocated to the lane

EXIT LANE FLOW RATES

Movement Class:	LV	HV	TOT
Exit: SOUTHEAST			
Lane: 1	639.0	*	639.0
Lane: 2	*	*	0.0
Total	639.0	*	639.0
Exit: NORTHEAST			
Lane: 1	468.0	*	468.0

```
Total              468.0       *   468.0
----------------------------------------
 Exit: NORTHWEST
Lane:  1           406.0       *   406.0
Lane:  2            30.0       *    30.0
Total              436.0       *   436.0
----------------------------------------
  *  Movement not allocated to the lane


DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

----------------------------------------
Movement Class:       LV      HV     TOT
----------------------------------------
 Exit: SOUTHEAST
Lane:  2           639.0       *   639.0
Total              639.0       *   639.0
----------------------------------------
 Exit: NORTHEAST
Lane:  1           468.0       *   468.0
Total              468.0       *   468.0
----------------------------------------
 Exit: NORTHWEST
Lane:  2           436.0       *   436.0
Total              436.0       *   436.0
----------------------------------------
  *  Movement not allocated to the lane

Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

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Sensitivity Analysis

Sensitivity Analysis Results
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

Scaled sensitivity parameter: Basic Saturation Flow
  Degree of saturation = 0.548 was achieved at parameter scale =  80.0 %
  All scaled parameter values gave degree of saturation less than 1.0.
  Try adjusting the scale factor range to give higher degrees of saturation.


Results in the table below are given for Intersection - Vehicles

-------------------------------------------------------------------------
 Param        Eff.  Degree   Prac.  Aver.  Stop  95% Back  Perf.  Cost
 Scale        Cap.    of     Spare  Delay  Rate  of Queue  Index  Total
  (%)              Satn     Cap.  (sec)         (veh)           $/h
-------------------------------------------------------------------------
  80.0        2816  0.548     79    3.5  0.27     1.8     30.2   609.4
  85.0        2992  0.516     90    3.5  0.27     1.8     30.2   609.3
  90.0        3168  0.487    101    3.5  0.27     1.8     30.1   609.2
  95.0        3344  0.461    112    3.4  0.27     1.8     30.1   609.1
 100.0        3520  0.438    124    3.4  0.27     1.8     30.1   609.1
 105.0        3696  0.417    135    3.4  0.27     1.8     30.1   609.0
 110.0        3872  0.398    146    3.4  0.27     1.8     30.1   609.0
 115.0        4048  0.381    157    3.4  0.27     1.8     30.1   608.9
 120.0        4224  0.365    168    3.4  0.27     1.8     30.1   608.9
-------------------------------------------------------------------------
```

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Other

Model Settings Summary
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

```
Parameter sensitivity run for "Calibration": Basic Saturation Flow =  80.0 %
  This value was chosen to achieve intersection degree of saturation close
  to 1.0.  Short lanes with degree of saturation = 1.0 are ignored in this process.
  See the Sensitivity Analysis group of tables for further information.

* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
```

```
  Model Defaults: New South Wales
  Peak Flow Period (for performance): 60 minutes
  Unit time (for volumes): 60 minutes.
  SIDRA Standard Delay model used
  SIDRA Standard Queue model used
  Level of Service based on: Delay (RTA NSW)
  Queue percentile: 95%
```

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Diagnostics
Site:Hospital - Future Conditions IN 2030 - 24 March 2014

```
Flow-Capacity Iterations:

  Largest change in degree of saturation for any lane =  0.0 %
  Largest change in capacity for any lane =    0 veh/h


Other Diagnostic Messages (if any):
```

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INTERSECTION SUMMARY

Site: Hospital - Future Conditions IN 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	56.2	km/h	56.2	km/h
Travel Distance (Total)	1565.3	veh-km/h	1878.4	pers-km/h
Travel Time (Total)	27.9	veh-h/h	33.4	pers-h/h
Demand Flows (Total)	1543	veh/h	1852	pers/h
Percent Heavy Vehicles (Demand)	0.0	%		
Degree of Saturation	0.548			
Practical Spare Capacity	78.9	%		
Effective Intersection Capacity	2816	veh/h		
Control Delay (Total)	1.49	veh-h/h	1.79	pers-h/h
Control Delay (Average)	3.5	sec	3.5	sec
Control Delay (Worst Lane)	29.3	sec		
Control Delay (Worst Movement)	29.3	sec	29.3	sec
Geometric Delay (Average)	1.9	sec		
Stop-Line Delay (Average)	1.6	sec		
Idling Time (Average)	0.8	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.8	veh		
95% Back of Queue - Distance (Worst Lane)	12.3	m		
Queue Storage Ratio (Worst Lane)	0.02			
Total Effective Stops	411	veh/h	494	pers/h
Effective Stop Rate	0.27	per veh	0.27	per pers
Proportion Queued	0.14		0.14	
Performance Index	30.2		30.2	
Cost (Total)	609.45	$/h	609.45	$/h
Fuel Consumption (Total)	102.4	L/h		
Carbon Dioxide (Total)	240.6	kg/h		
Hydrocarbons (Total)	0.084	kg/h		
Carbon Monoxide (Total)	1.389	kg/h		
NOx (Total)	0.157	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	740,640	veh/y	888,768	pers/y
Delay	715	veh-h/y	858	pers-h/y
Effective Stops	197,452	veh/y	236,942	pers/y
Travel Distance	751,346	veh-km/y	901,615	pers-km/y
Travel Time	13,372	veh-h/y	16,046	pers-h/y
Cost	292,535	$/y	292,535	$/y
Fuel Consumption	49,152	L/y		
Carbon Dioxide	115,508	kg/y		
Hydrocarbons	40	kg/y		
Carbon Monoxide	667	kg/y		
NOx	75	kg/y		

MOVEMENT SUMMARY

Site: Hospital - Future Conditions IN 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

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
SouthEast: Stadium Drive											
2	T1	406	0.0	0.260	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
3	R2	234	0.0	0.361	12.1	LOS A	1.8	12.3	0.74	0.95	49.0
Approach		640	0.0	0.361	4.4	NA	1.8	12.3	0.27	0.35	55.4
NorthEast: Phil Hawthorne Drive											
4	L2	30	0.0	0.035	8.1	LOS A	0.1	0.9	0.52	0.70	51.7
6	R2	30	0.0	0.190	29.3	LOS C	0.6	4.2	0.89	0.96	39.6
Approach		60	0.0	0.190	18.7	LOS B	0.6	4.2	0.71	0.83	44.8
NorthWest: Stadium Drive											
7	L2	234	0.0	0.548	5.6	LOS A	0.0	0.0	0.00	0.16	56.8
8	T1	609	0.0	0.548	0.1	LOS A	0.0	0.0	0.00	0.16	58.3
Approach		843	0.0	0.548	1.7	NA	0.0	0.0	0.00	0.16	57.9
All Vehicles		1543	0.0	0.548	3.5	NA	1.8	12.3	0.14	0.27	56.2

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

LANE SUMMARY

Site: Hospital - Future Conditions IN 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Stadium Drive													
Lane 1	406	0.0	1560	0.260	72[5]	0.0	LOS A	0.0	0.0	Short	55	0.0	0.0
Lane 2	234	0.0	648	0.361	100	12.1	LOS A	1.8	12.3	Full	250	0.0	0.0
Approach	640	0.0		0.361		4.4	NA	1.8	12.3				
NorthEast: Phil Hawthorne Drive													
Lane 1	30	0.0	867	0.035	100	8.1	LOS A	0.1	0.9	Short	6	0.0	0.0
Lane 2	30	0.0	158	0.190	100	29.3	LOS C	0.6	4.2	Full	380	0.0	0.0
Approach	60	0.0		0.190		18.7	LOS B	0.6	4.2				
NorthWest: Stadium Drive													
Lane 1	843	0.0	1539	0.548	100	1.7	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	843	0.0		0.548		1.7	NA	0.0	0.0				
Intersection	1543	0.0		0.548		3.5	NA	1.8	12.3				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
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.

5 Lane underutilisation determined by program

LANE FLOWS

Site: Hospital - Future Conditions IN 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Approach Lane Flows (veh/h)

SouthEast: Stadium Drive

Mov. From SE To Exit:	T1 NW	R2 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	406	-	406	0.0	1560	0.260	72[5]
Lane 2	-	234	234	0.0	648	0.361	100
Approach	406	234	640	0.0		0.361	

NorthEast: Phil Hawthorne Drive

Mov. From NE To Exit:	L2 SE	R2 NW	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	30	-	30	0.0	867	0.035	100
Lane 2	-	30	30	0.0	158	0.190	100
Approach	30	30	60	0.0		0.190	

NorthWest: Stadium Drive

Mov. From NW To Exit:	L2 NE	T1 SE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	234	609	843	0.0	1539	0.548	100
Approach	234	609	843	0.0		0.548	

	Total	%HV	Deg.Satn (v/c)
Intersection	1543	0.0	0.548

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

5 Lane underutilisation determined by program

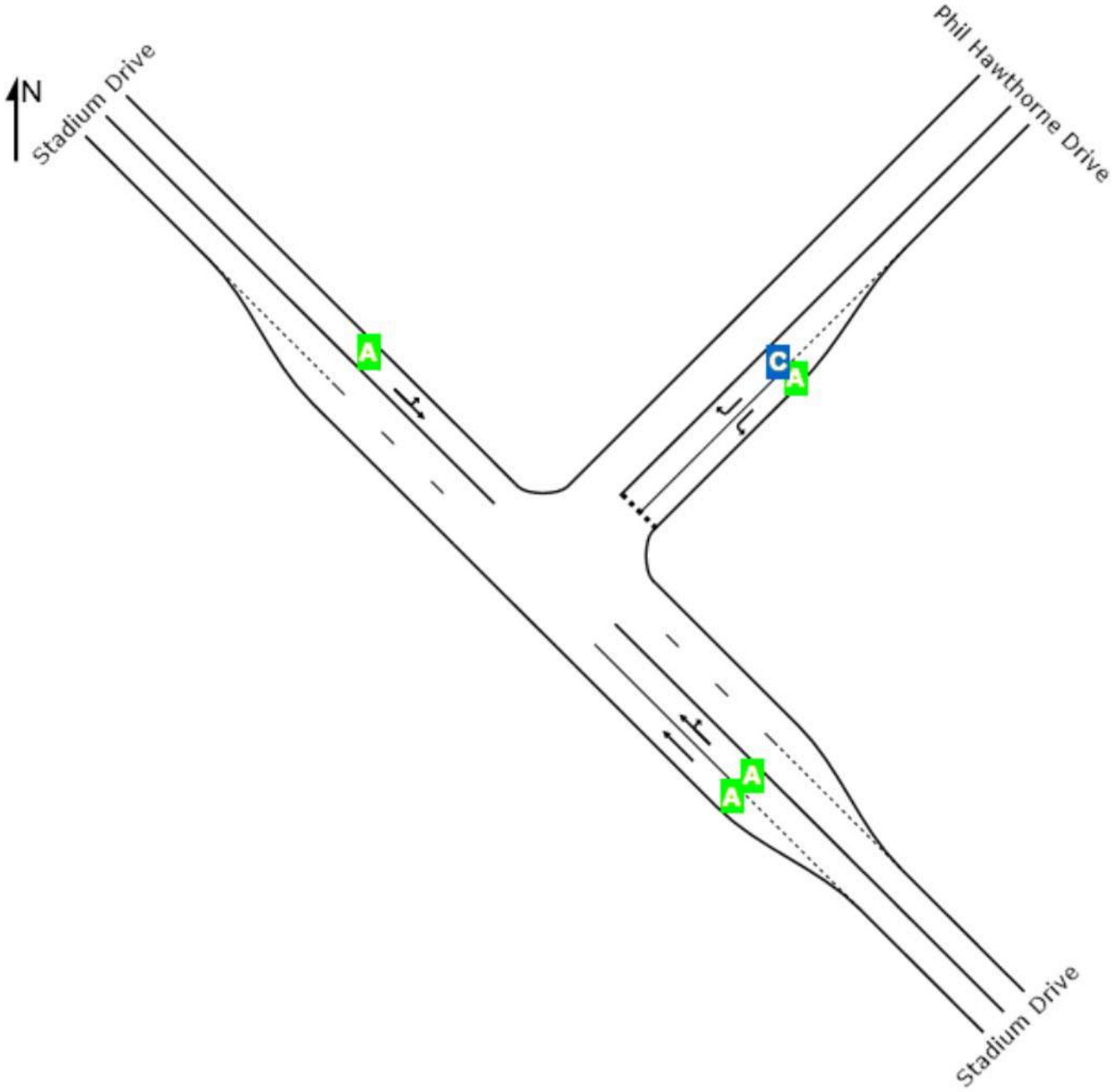
LEVEL OF SERVICE

Site: Hospital - Future Conditions IN 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

All Movement Classes

	Southeast	Northeast	Northwest	Intersection
LOS	NA	B	NA	NA



Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

DETAILED OUTPUT

Site: Hospital - Future Conditions OUT 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

OUTPUT TABLE LINKS

Movements

Intersection Negotiation and Travel Data
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Distance m	Travel Time s	Total Travel Distance Dem Flows veh-km/h	Arv Flows veh-km/h	Tot.Trav. Time veh-h/h
SouthEast: Stadium Drive									
	NorthWest	T1	59.0	59.0	1013.9#	61.9#	657.0	657.0	11.1
	NorthEast	R2	55.1	55.1	1014.1#	66.3#	30.4	30.4	0.6
NorthEast: Phil Hawthorne Drive									
	SouthEast	L2	52.1	52.1	1015.7#	70.2#	237.7	237.7	4.6
	NorthWest	R2	29.4	11.6	1013.3#	313.8#	237.1	237.1	20.4
NorthWest: Stadium Drive									
	NorthEast	L2	58.0	58.0	1013.9#	63.0#	30.4	30.4	0.5
	SouthEast	T1	59.6	59.6	1013.9#	61.3#	462.3	462.3	7.8
ALL VEHICLES:			53.8	36.8	1014.1#	99.1#	1655.0	1655.0	44.9

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the program-determined Exit Distance or user-specified Downstream Distance as applicable.

INTERSECTION NEGOTIATION DATA

From	To	Negn Radius	Negn Speed	Negn Dist.	Appr. Dist.	Exit Dist.	Downstr. Dist.

Approach	Exit	Turn	m	km/h	m	m	m	m
SouthEast: Stadium Drive								
	NorthWest	T1	S	60.0	13.8	500	500	NA
	NorthEast	R2	10.2	20.3	16.0	500	500	NA
NorthEast: Phil Hawthorne Drive								
	SouthEast	L2	10.0	20.2	15.7	500	500	NA
	NorthWest	R2	8.5	18.9	13.3	500	500	NA
NorthWest: Stadium Drive								
	NorthEast	L2	10.0	20.2	15.7	500	500	NA
	SouthEast	T1	S	60.0	13.8	500	500	NA

NA Downstream Distance does not apply if:
- Exit is an internal leg of a network
- "Program" option was specified
- Distance specified was less than the Exit Negotiation Distance
- Distance specified was greater than the exit leg length

MOVEMENT SPEEDS AND GEOMETRIC DELAY

Mov ID	Turn	App. Speeds Cruise km/h	App. Speeds Negn km/h	Exit Speeds Negn km/h	Exit Speeds Cruise km/h	Queue Move-up Speed km/h	Geom Delay sec
SouthEast: Stadium Drive							
2	T1	60.0	60.0	60.0	60.0	0.8	0.0
3	R2	60.0	20.3	20.3	60.0	2.8	5.5
NorthEast: Phil Hawthorne Drive							
4	L2	60.0	20.2	20.2	60.0	19.0	5.5
6	R2	60.0	18.9	18.9	60.0	12.0	5.5
NorthWest: Stadium Drive							
7	L2	60.0	20.2	20.2	60.0		5.5
8	T1	60.0	60.0	60.0	60.0		0.0

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Gap Acceptance Parameters
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Opd Lane	Dest	Opng Flow pcu/h	Critical Gap Hdwy sec	Critical Gap Dist m	Foll-up Headway sec	Entry HV Equiv	Intra Bunch Hdwy sec	Propn Bnchd
SouthEast: Stadium Drive								
2	NE	486	4.00	63.9	2.00	1.00	1.80	0.060
NorthEast: Phil Hawthorne Drive								
1	SE	456+	4.00	66.7	2.20	1.00	1.80	0.056
2	NW	1149+	5.30	86.8	3.00	1.00	0.73	0.084
NorthWest: Stadium Drive								
No opposed movements on this approach.								

Values in this table are adjusted for heavy vehicles in the entry stream.
Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements.
+ Percentage of exiting flow included in opposing vehicle flow

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Movement Capacity and Performance Parameters
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h	Opng Flow veh/h	Movement Adjust. Flow pcu/h	Total Cap. veh/h	Prac. Deg. Satn xp	Prac. Spare Cap. %	Deg. Satn x

```
------------------------------------------------------------
SouthEast: Stadium Drive
  2  T1   #     648      0      0    2138   0.98    223  0.303
  3  R2   #      30    486    486      99   0.98    223  0.303
------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2   #     234    456    456    1052   0.80    259  0.223
  6  R2   #     234   1149   1149     213   0.80    -27  1.100*
------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2   #      30      0      0      96   0.98    214  0.312
  8  T1   #     456      0      0    1459   0.98    214  0.312
------------------------------------------------------------
  *  Maximum degree of saturation
  # Combined Movement Capacity parameters are shown for all Movement Classes.

  The Flow Ratio values given in this table are calculated for signal timing
  purposes. For movements with two green periods they are subject to balancing
  as relevant to determining Required Movement Times given in the Movement
  Timing Information table. Zero values will be given for a slip /bypass lane
  movement if the option "Exclude Slip/Bypass Lane from Signal Analysis" has
  been selected.


MOVEMENT PERFORMANCE

------------------------------------------------------------------------------
 Mov Turn Total    Total   Aver.  Eff.  Total  Perf. Tot.Trav. Tot.Trav. Aver.
 ID       Delay    Delay   Delay  Stop  Stops  Index Distance    Time    Speed
        (veh-h/h)(pers-h/h)(sec)  Rate               (veh-km/h)(veh-h/h) (km/h)
------------------------------------------------------------------------------
SouthEast: Stadium Drive
  2  T1    0.14    0.17     0.8   0.03    20.5 11.20    657.0    11.1     59.0
  3  R2    0.07    0.08     8.3   0.12     3.5  0.60     30.4     0.6     55.1
------------------------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2    0.49    0.59     7.5   0.72   168.7  5.76    237.7     4.6     52.1
  6  R2   16.31   19.58   251.0   3.87   905.1 39.56    237.1    20.4     11.6
------------------------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2    0.05    0.06     5.6   0.04     1.1  0.56     30.4     0.5     58.0
  8  T1    0.01    0.01     0.0   0.04    16.8  7.81    462.3     7.8     59.6
------------------------------------------------------------------------------
```

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Fuel Consumption, Emissions and Cost
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

------------------------------------------------------------
 Mov Turn        Cost    Fuel     CO2     CO      HC      NOX
 ID              Total   Total   Total   Total   Total   Total
                 $/h       L/h   kg/h    kg/h    kg/h    kg/h
------------------------------------------------------------
SouthEast: Stadium Drive
  2  T1          233.25   40.4    94.8    0.56   0.032   0.057
  3  R2           13.49    2.3     5.3    0.03   0.002   0.004
               ----------------------------------------------
                246.73   42.6   100.2    0.59   0.034   0.061
------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2          118.59   19.5    45.8    0.24   0.017   0.038
  6  R2          602.73   40.6    95.5    0.42   0.058   0.054
               ----------------------------------------------
                721.33   60.1   141.3    0.66   0.075   0.091
------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2           10.09    1.8     4.1    0.03   0.001   0.002
  8  T1          153.38   26.8    63.0    0.38   0.021   0.035
               ----------------------------------------------
                163.47   28.6    67.1    0.41   0.022   0.037
------------------------------------------------------------
 INTERSECTION:  1131.53  131.3   308.6    1.66   0.131   0.190
------------------------------------------------------------


FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

------------------------------------------------------------
 Mov Turn        Cost    Fuel     CO2     CO      HC      NOX
 ID              Rate    Rate    Rate    Rate    Rate    Rate
                 $/km  L/100km  g/km    g/km    g/km    g/km
------------------------------------------------------------
SouthEast: Stadium Drive
```

```
  2  T1            0.36    6.1   144.3    0.85   0.049   0.087
  3  R2            0.44    7.5   175.3    0.97   0.064   0.133
               ----------------------------------------------
                0.36    6.2   145.7    0.86   0.049   0.089
-------------------------------------------------------------
NorthEast: Phil Hawthorne Drive
  4  L2            0.50    8.2   192.7    1.03   0.072   0.158
  6  R2            2.54   17.1   402.8    1.75   0.243   0.226
               ----------------------------------------------
                1.52   12.7   297.6    1.39   0.157   0.192
-------------------------------------------------------------
NorthWest: Stadium Drive
  7  L2            0.33    5.8   136.2    0.82   0.045   0.075
  8  T1            0.33    5.8   136.2    0.82   0.045   0.075
               ----------------------------------------------
                0.33    5.8   136.2    0.82   0.045   0.075
-------------------------------------------------------------
 INTERSECTION:  0.68    7.9   186.5    1.00   0.079   0.115
-------------------------------------------------------------
```

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Lanes

Lane Performance and Capacity Information
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE PERFORMANCE

-------------------------------------------------------------
                                        Q u e u e
          Flow   Cap  Deg.  Aver.  Eff.    95% Back      Lane
 Lane                Satn  Delay  Stop  ------------   Length
 No.      veh/h veh/h   x    sec   Rate    veh     m       m
-------------------------------------------------------------
 SouthEast: Stadium Drive
 1         473  1560 0.303    0.0  0.00                  55.0T
 2         205   677 0.303    3.6  0.12    1.1    7.5    250.0
-------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1         234  1052 0.223    7.5  0.72    0.9*   6.5      6.0T
 2         234   213 1.100  251.0  3.87   35.5  248.2    380.0
-------------------------------------------------------------
 NorthWest: Stadium Drive
 1         486  1555 0.312    0.4  0.04                  500.0
-------------------------------------------------------------
  *  Short lane queue distance includes vehicles queued into the adjacent lane.
  T  Short lane due to specification of Turn Bay


LANE FLOW AND CAPACITY INFORMATION

----------------------------------------
 Lane   Total     Min   Tot   Deg.  Lane
 No.    Arv Flow  Cap   Cap   Satn  Util
        (veh/h)  veh/h veh/h    x     %
----------------------------------------
 SouthEast: Stadium Drive
 1        473     473  1560   0.303  100
 2        205      39   677   0.303  100
----------------------------------------
 NorthEast: Phil Hawthorne Drive
 1        234       6  1052   0.223  100
 2        234       6   213   1.100  100
----------------------------------------
 NorthWest: Stadium Drive
 1        486     486  1555   0.312  100
----------------------------------------
  <  Reduced capacity flow due to a short lane effect

  The capacity value for priority and continuous movements is obtained by
  adjusting the basic saturation flow for heavy vehicle and turning vehicle
  effects.  Saturation flow scale applies if specified.
```

Go to Table Links (Top)

Lane, Approach and Intersection Performance
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

-------------------------------------------------------------
```

Lane No.	Arrival Flow (veh/h)	%HV	Adj. Basic Satf.	Deg Sat x	Aver. Delay sec	Longest Queue m	Shrt Lane m
SouthEast: Stadium Drive							
1	473	0	1559	0.303	0.0		55
2	205	0		0.303	3.6	8	250
	678	0		0.303	1.1	8	
NorthEast: Phil Hawthorne Drive							
1	234	0		0.223	7.5	7	6
2	234	0		1.100	251.0	248	380
	468	0		1.100	129.3	248	
NorthWest: Stadium Drive							
1	486	0	1559	0.312	0.4		500
	486	0		0.312	0.4		
ALL VEHICLES							
	Total Flow	% HV		Max X	Aver. Delay	Max Queue	
	1632	0		1.100	37.6	248	

Peak flow period = 60 minutes.

Queue values in this table are 95% queue (metres)
Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

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Driver Characteristics
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Lane No.	Satn Speed km/h	Satn Flow veh/h	Satn Hdwy sec	Satn Spacing m	Average Queue Space m	Driver Response Time sec
SouthEast: Stadium Drive						
1	NA - Continuous Movement					
2	NA - Major Road Movement					
NorthEast: Phil Hawthorne Drive						
1	NA - Short Lane					
2	18.9	1200	3.00	15.78	7.00	1.67
NorthWest: Stadium Drive						
1	NA - Continuous Movement					

Saturation Flow and Saturation Headway are derived from follow-up headway.

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Lane Delays
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

LANE DELAYS

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Stop-line Delay 1st d1	2nd d2	Total dSL	Delay (seconds/veh) Acc. dn	Queuing Total dq	Stopd MvUp dqm	(Idle) di	Geom dig	Control dic
SouthEast: Stadium Drive												
1	0.303					0.0					0.0	0.0
2	0.303	NA	NA	2.7	0.1	2.7	2.9	0.0	0.0	0.0	0.8	3.6
NorthEast: Phil Hawthorne Drive												
1	0.223	NA	NA	2.0	0.0	2.0	2.0	0.0	0.0	0.0	5.5	7.5
2	1.100	NA	NA	21.3	224.2	245.5	3.9	241.6	51.8	189.8	5.5	251.0
NorthWest: Stadium Drive												
1	0.312					0.0					0.3	0.4

SIDRA Standard Delay Model is used. Control Delay is the sum of Stop-line Delay

```
  and Geometric Delay.
  dSL: Stop-line delay (=d1+d2)
  dn: Average stop-start delay for all vehicles queued and unqueued
  dq: Queuing delay (the part of the stop-line delay that includes
      stopped delay and queue move-up delay)
  dqm: Queue move-up delay
  di: Stopped delay (stopped (idling) time at near-zero speed)
  dig: Geometric delay
  dic: Control delay
```

Go to Table Links (Top)

Lane Queues
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE QUEUES (VEHICLES)

-------------------------------------------------------------------------------------------------------------
        Deg.  % Arv   Prog.   Ovrfl.     Back of Queue (veh)      Queue  Prob.  P'ile  Cyc-Av. Queue
 Lane   Satn  During  Factor  Queue   -------------------------  Stor.  Block  Block  -------------
 No.      x   Green            No      Nb1    Nb2    Nb     95%  Ratio     %      %      Nc      95%
-------------------------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
 2     0.303    NA      NA      0.0     0.4    0.0    0.4    1.1   0.03    0.0  100.0    0.2     0.3
-------------------------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.223    NA      NA      0.0     0.4    0.0    0.4    0.9*  1.09    7.5   92.5    0.1     0.2
 2     1.100    NA      NA     12.9     1.5   12.8   14.3   35.5   0.65    0.0  100.0   16.0    28.9
-------------------------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------------------------------------------------------

  *  Short lane queue distance includes vehicles queued into the adjacent lane.


LANE QUEUES (DISTANCE)

-------------------------------------------------------------------------------------------------------------
        Deg.  % Arv   Prog.   Ovrfl.     Back of Queue (m)        Queue  Prob.  P'ile  Cyc-Av. Queue
 Lane   Satn  During  Factor  Queue   -------------------------  Stor.  Block  Block  -------------
 No.      x   Green            No      Nb1    Nb2    Nb     95%  Ratio     %      %      Nc      95%
-------------------------------------------------------------------------------------------------------------
 SouthEast: Stadium Drive
 2     0.303    NA      NA      0.1     2.9    0.2    3.0    7.5   0.03    0.0  100.0    1.1     2.0
-------------------------------------------------------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.223    NA      NA      0.0     2.6    0.0    2.6    6.5*  1.09    7.5   92.5    0.9     1.7
 2     1.100    NA      NA     90.1    10.5   89.4   99.9  248.2   0.65    0.0  100.0  111.7   202.6
-------------------------------------------------------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------------------------------------------------------

  *  Short lane queue distance includes vehicles queued into the adjacent lane.
```

Go to Table Links (Top)

Lane Queue Percentiles
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE QUEUE PERCENTILES (VEHICLES)

-------------------------------------------------------------
        Deg.          Percentile Back of Queue (veh)
 Lane   Satn  ------------------------------------------------
 No.      x     50%    70%    85%    90%    95%    98%   100%
-------------------------------------------------------------
 SouthEast: Stadium Drive
 2     0.303    0.4    0.6    0.8    0.9    1.1    1.2    1.3
-------------------------------------------------------------
 NorthEast: Phil Hawthorne Drive
 1     0.223    0.4    0.5    0.7    0.8    0.9*   1.0*   1.1*
 2     1.100   14.3   18.5   26.0   30.1   35.5   39.4   42.3
-------------------------------------------------------------
 NorthWest: Stadium Drive
-------------------------------------------------------------

  *  Short lane queue distance includes vehicles queued into the adjacent lane.


LANE QUEUE PERCENTILES (DISTANCE)
```

Lane No.	Deg. Satn x	Percentile Back of Queue (metres) 50%	70%	85%	90%	95%	98%	100%
SouthEast: Stadium Drive								
2	0.303	3.0	3.9	5.5	6.4	7.5	8.4	9.0
NorthEast: Phil Hawthorne Drive								
1	0.223	2.6	3.4	4.8	5.5	6.5*	7.2*	7.8*
2	1.100	99.8	129.3	182.3	211.0	248.2	275.5	296.1
NorthWest: Stadium Drive								

* Short lane queue distance includes vehicles queued into the adjacent lane.

Go to Table Links (Top)

Lane Stops
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Queue Total Stops H	Total Move-up Rate hqm	Queue Move-ups Hqm	Prop. Queued pq
SouthEast: Stadium Drive											
1	0.303	NA	NA			0.00	0.00	0.0			
2	0.303	NA	NA	0.08	0.00	0.03	0.12	24.0	0.04	7.4	0.65
NorthEast: Phil Hawthorne Drive											
1	0.223	NA	NA	0.43	0.00	0.29	0.72	168.7	0.00	0.0	0.50
2	1.100	NA	NA	1.00	2.87	0.00	3.87	905.1	10.99	2571.3	1.00
NorthWest: Stadium Drive											
1	0.312	NA	NA			0.04	0.04	17.9			

hig is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

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Flow Rates

Origin-Destination Flow Rates (Total)
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

TOTAL FLOW RATES (ALL MOVEMENT CLASSES)

From SOUTHEAST To:	NW	NE	
Turn:	T1	R2	TOT
Flow Rate	648.0	30.0	678.0
%HV (all designations)	0.0	0.0	0.0
From NORTHEAST To:	SE	NW	
Turn:	L2	R2	TOT
Flow Rate	234.0	234.0	468.0
%HV (all designations)	0.0	0.0	0.0
From NORTHWEST To:	NE	SE	
Turn:	L2	T1	TOT
Flow Rate	30.0	456.0	486.0
%HV (all designations)	0.0	0.0	0.0

Peak Flow factor value of 100% has been used for all movements since equal values of Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.

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Origin-Destination Flow Rates by Movement Class
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

Intersection ID: 1
Give-Way Sign Controlled Intersection

```
FLOW RATES FOR Light Vehicles

-------------------------------------------
 From SOUTHEAST To:     NW      NE
 Turn:                  T1      R2     TOT
-------------------------------------------
 Flow Rate - Veh     648.0    30.0   678.0
 Mov Class %         100.0   100.0   100.0
 Flow Scale - Fixed   1.00    1.00
 Flow Scale - Var     1.00    1.00
 Peak Flow Factor     0.95    0.95
-------------------------------------------
 From NORTHEAST To:     SE      NW
 Turn:                  L2      R2     TOT
-------------------------------------------
 Flow Rate - Veh     234.0   234.0   468.0
 Mov Class %         100.0   100.0   100.0
 Flow Scale - Fixed   1.00    1.00
 Flow Scale - Var     1.00    1.00
 Peak Flow Factor     0.95    0.95
-------------------------------------------
 From NORTHWEST To:     NE      SE
 Turn:                  L2      T1     TOT
-------------------------------------------
 Flow Rate - Veh      30.0   456.0   486.0
 Mov Class %         100.0   100.0   100.0
 Flow Scale - Fixed   1.00    1.00
 Flow Scale - Var     1.00    1.00
 Peak Flow Factor     0.95    0.95
-------------------------------------------
```

Go to Table Links (Top)

Lane Flow Rates
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection


LANE FLOW RATES AT STOP LINE

-----------------------------------------
 From SOUTHEAST To:   NW      NE
 Turn:                T1      R2     TOT
-----------------------------------------
 Lane  1
   LV              472.8       *   472.8
   Total           472.8       *   472.8
 Lane  2
   LV              175.2    30.0   205.2
   Total           175.2    30.0   205.2
-----------------------------------------
 Approach          648.0    30.0   678.0
-----------------------------------------
 From NORTHEAST To:   SE      NW
 Turn:                L2      R2     TOT
-----------------------------------------
 Lane  1
   LV              234.0       *   234.0
   Total           234.0       *   234.0
 Lane  2
   LV                  *   234.0   234.0
   Total               *   234.0   234.0
-----------------------------------------
 Approach          234.0   234.0   468.0
-----------------------------------------
 From NORTHWEST To:   NE      SE
 Turn:                L2      T1     TOT
-----------------------------------------
 Lane  1
   LV               30.0   456.0   486.0
   Total            30.0   456.0   486.0
-----------------------------------------
 Approach           30.0   456.0   486.0
-----------------------------------------
  *  Movement not allocated to the lane


EXIT LANE FLOW RATES

-----------------------------------------
Movement Class:       LV      HV     TOT
-----------------------------------------
 Exit: SOUTHEAST
Lane:  1           690.0       *   690.0
Lane:  2               *       *     0.0
Total              690.0       *   690.0
-----------------------------------------
```

```
 Exit: NORTHEAST
Lane:  1            60.0       *    60.0
Total               60.0       *    60.0
----------------------------------------
 Exit: NORTHWEST
Lane:  1           560.4       *   560.4
Lane:  2           321.6       *   321.6
Total              882.0       *   882.0
----------------------------------------
  *  Movement not allocated to the lane


DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

----------------------------------------
Movement Class:       LV      HV     TOT
----------------------------------------
 Exit: SOUTHEAST
Lane:  2           690.0       *   690.0
Total              690.0       *   690.0
----------------------------------------
 Exit: NORTHEAST
Lane:  1            60.0       *    60.0
Total               60.0       *    60.0
----------------------------------------
 Exit: NORTHWEST
Lane:  2           882.0       *   882.0
Total              882.0       *   882.0
----------------------------------------
  *  Movement not allocated to the lane

Unit Time for Volumes =  60 minutes
Peak Flow Period =  60 minutes
Flow Rates include effects of Flow Scale and Peak Flow Factor

Peak Flow factor value of 100% has been used for all movements since equal values of
Unit Time for Volumes and Peak Flow Period were specified in the Volumes dialog.
```

Go to Table Links (Top)

Sensitivity Analysis

Sensitivity Analysis Results
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

```
Intersection ID: 1
Give-Way Sign Controlled Intersection

Scaled sensitivity parameter: Basic Saturation Flow
  Degree of saturation = 1.100 was achieved at parameter scale =  80.0 %
  All scaled parameter values gave degree of saturation greater than 1.0.
  Try adjusting the scale factor range to give lower degrees of saturation.


Results in the table below are given for Intersection - Vehicles

-------------------------------------------------------------------------
 Param        Eff.  Degree   Prac.  Aver.  Stop  95% Back  Perf.  Cost
 Scale        Cap.    of     Spare  Delay  Rate  of Queue  Index  Total
  (%)              Satn     Cap.  (sec)         (veh)           $/h
-------------------------------------------------------------------------
  80.0        1483  1.100    -27    37.6  0.68    35.5     65.5  1131.5
  85.0        1483  1.101    -27    37.7  0.68    35.5     65.5  1132.0
  90.0        1482  1.101    -27    37.8  0.68    35.6     65.6  1132.6
  95.0        1482  1.101    -27    37.8  0.68    35.7     65.7  1133.2
 100.0        1481  1.102    -27    37.9  0.69    35.7     65.7  1133.8
 105.0        1481  1.102    -27    38.0  0.69    35.8     65.8  1134.5
 110.0        1480  1.102    -27    38.0  0.69    35.9     65.9  1135.2
 115.0        1480  1.103    -27    38.1  0.69    35.9     65.9  1136.0
 120.0        1480  1.103    -27    38.2  0.69    36.0     66.0  1136.7
-------------------------------------------------------------------------
```

Go to Table Links (Top)

Other

Model Settings Summary
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

```
Parameter sensitivity run for "Calibration": Basic Saturation Flow =  80.0 %
  This value was chosen to achieve intersection degree of saturation close
  to 1.0.  Short lanes with degree of saturation = 1.0 are ignored in this process.
  See the Sensitivity Analysis group of tables for further information.

* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
```

```
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Model Defaults: New South Wales
  Peak Flow Period (for performance): 60 minutes
  Unit time (for volumes): 60 minutes.
  SIDRA Standard Delay model used
  SIDRA Standard Queue model used
  Level of Service based on: Delay (RTA NSW)
  Queue percentile: 95%
```

Go to Table Links (Top)

Diagnostics
Site:Hospital - Future Conditions OUT 2030 - 24 March 2014

```
Flow-Capacity Iterations:

  Largest change in degree of saturation for any lane =  0.2 %
  Largest change in capacity for any lane =    3 veh/h


Other Diagnostic Messages (if any):
```

Go to Table Links (Top)

INTERSECTION SUMMARY

Site: Hospital - Future Conditions OUT 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	36.8	km/h	36.8	km/h
Travel Distance (Total)	1655.0	veh-km/h	1986.0	pers-km/h
Travel Time (Total)	44.9	veh-h/h	53.9	pers-h/h
Demand Flows (Total)	1632	veh/h	1958	pers/h
Percent Heavy Vehicles (Demand)	0.0	%		
Degree of Saturation	1.100			
Practical Spare Capacity	-27.3	%		
Effective Intersection Capacity	1483	veh/h		
Control Delay (Total)	17.06	veh-h/h	20.48	pers-h/h
Control Delay (Average)	37.6	sec	37.6	sec
Control Delay (Worst Lane)	251.0	sec		
Control Delay (Worst Movement)	251.0	sec	251.0	sec
Geometric Delay (Average)	1.8	sec		
Stop-Line Delay (Average)	35.9	sec		
Idling Time (Average)	27.2	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	35.5	veh		
95% Back of Queue - Distance (Worst Lane)	248.2	m		
Queue Storage Ratio (Worst Lane)	0.26			
Total Effective Stops	1116	veh/h	1339	pers/h
Effective Stop Rate	0.68	per veh	0.68	per pers
Proportion Queued	0.30		0.30	
Performance Index	65.5		65.5	
Cost (Total)	1131.53	$/h	1131.53	$/h
Fuel Consumption (Total)	131.3	L/h		
Carbon Dioxide (Total)	308.6	kg/h		
Hydrocarbons (Total)	0.131	kg/h		
Carbon Monoxide (Total)	1.658	kg/h		
NOx (Total)	0.190	kg/h		

Level of Service (LOS) Method: Delay (RTA NSW).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	783,360	veh/y	940,032	pers/y
Delay	8,191	veh-h/y	9,829	pers-h/y
Effective Stops	535,539	veh/y	642,647	pers/y
Travel Distance	794,389	veh-km/y	953,267	pers-km/y
Travel Time	21,570	veh-h/y	25,884	pers-h/y
Cost	543,135	$/y	543,135	$/y
Fuel Consumption	63,030	L/y		
Carbon Dioxide	148,122	kg/y		
Hydrocarbons	63	kg/y		
Carbon Monoxide	796	kg/y		
NOx	91	kg/y		

MOVEMENT SUMMARY

Site: Hospital - Future Conditions OUT 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

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
SouthEast: Stadium Drive											
2	T1	648	0.0	0.303	0.8	LOS A	1.1	7.5	0.18	0.03	59.0
3	R2	30	0.0	0.303	8.3	LOS A	1.1	7.5	0.65	0.12	55.1
Approach		678	0.0	0.303	1.1	NA	1.1	7.5	0.20	0.04	58.8
NorthEast: Phil Hawthorne Drive											
4	L2	234	0.0	0.223	7.5	LOS A	0.9	6.5	0.50	0.72	52.1
6	R2	234	0.0	1.100	251.0	LOS F	35.5	248.2	1.00	3.87	11.6
Approach		468	0.0	1.100	129.3	LOS F	35.5	248.2	0.75	2.29	19.0
NorthWest: Stadium Drive											
7	L2	30	0.0	0.313	5.6	LOS A	0.0	0.0	0.00	0.04	58.0
8	T1	456	0.0	0.313	0.0	LOS A	0.0	0.0	0.00	0.04	59.6
Approach		486	0.0	0.313	0.4	NA	0.0	0.0	0.00	0.04	59.5
All Vehicles		1632	0.0	1.100	37.6	NA	35.5	248.2	0.30	0.68	36.8

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

LANE SUMMARY

Site: Hospital - Future Conditions OUT 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthEast: Stadium Drive													
Lane 1	473	0.0	1560	0.303	100	0.0	LOS A	0.0	0.0	Short	55	0.0	0.0
Lane 2	205	0.0	677	0.303	100	3.6	LOS A	1.1	7.5	Full	250	0.0	0.0
Approach	678	0.0		0.303		1.1	NA	1.1	7.5				
NorthEast: Phil Hawthorne Drive													
Lane 1	234	0.0	1052	0.223	100	7.5	LOS A	0.9	6.5	Short	6	0.0	7.5
Lane 2	234	0.0	213[1]	1.100	100	251.0	LOS F	35.5	248.2	Full	380	0.0	0.0
Approach	468	0.0		1.100		129.3	LOS F	35.5	248.2				
NorthWest: Stadium Drive													
Lane 1	486	0.0	1555	0.313	100	0.4	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	486	0.0		0.313		0.4	NA	0.0	0.0				
Intersection	1632	0.0		1.100		37.6	NA	35.5	248.2				

Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
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.

1 Reduced capacity due to a short lane effect

LANE FLOWS

Site: Hospital - Future Conditions OUT 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

Approach Lane Flows (veh/h)

SouthEast: Stadium Drive

Mov. From SE To Exit:	T1 NW	R2 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	473	-	473	0.0	1560	0.303	100
Lane 2	175	30	205	0.0	677	0.303	100
Approach	648	30	678	0.0		0.303	

NorthEast: Phil Hawthorne Drive

Mov. From NE To Exit:	L2 SE	R2 NW	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	234	-	234	0.0	1052	0.223	100
Lane 2	-	234	234	0.0	213[1]	1.100	100
Approach	234	234	468	0.0		1.100	

NorthWest: Stadium Drive

Mov. From NW To Exit:	L2 NE	T1 SE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %
Lane 1	30	456	486	0.0	1555	0.313	100
Approach	30	456	486	0.0		0.313	

	Total	%HV	Deg.Satn (v/c)
Intersection	1632	0.0	1.100

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

1 Reduced capacity due to a short lane effect

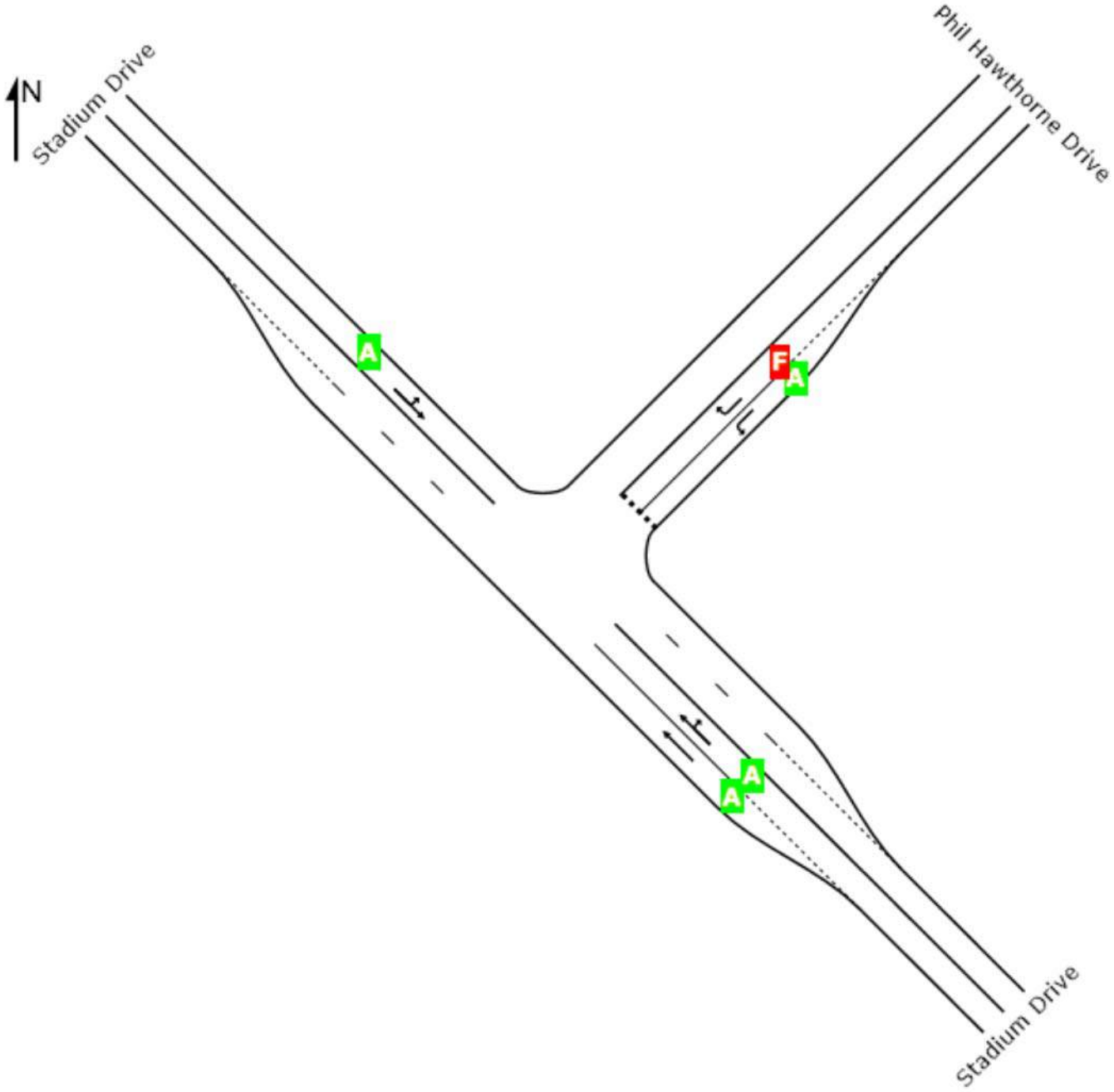
LEVEL OF SERVICE

Site: Hospital - Future Conditions OUT 2030 - 24 March 2014

New Site
Giveway / Yield (Two-Way)
Sensitivity Analysis (Basic Saturation Flow): Results for Parameter Scale = 80.0 %

All Movement Classes

	Southeast	Northeast	Northwest	Intersection
LOS	NA	F	NA	NA



Level of Service (LOS) Method: Delay (RTA NSW).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

RoadNet

Road Safety Audit Report

Feasibility Stage, Road Safety Audit

Coffs Harbour Health Campus, Secondary Access via Phil Hawthorne Drive

Coffs Harbour, NSW

for

NSW Health Infrastructure

19 May 2014

Document Control Sheet

Issue No	1			
Version Description	Version 1			
Document Status	Final			
Prepared By	Brett Franklin Lead Road Safety Auditor #412 			
Reviewed By	 Pat Vandermaal Senior Road Safety Auditor #387			
Date	19 May 2014			
Issued To	Simon Waterworth GeoLINK			

Prepared by:

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CONTENTS

1. INTRODUCTION

RoadNet has been commissioned by GeoLINK on behalf of NSW Health Infrastructure to conduct an independent Road Safety Audit of the proposed secondary access to the Coffs Harbour Health Campus.

In the absence of detailed plans, or a design, the audit has been conducted as a feasibility stage audit.

2. PROJECT DESCRIPTION

The project is proposing a secondary access to the Coffs Harbour Health Campus. The project will provide a new car park facility adjacent to the Coffs Harbour Health Campus containing approximately 816 on-grade car parks. The construction will be staged to provide capacity as needed.

Stage 1

- construction of approximately 462 car parks;
- reconstruction and extension of existing internal access road to a to a 6.5 metre sealed pavement;
- earthworks including the introduction of fill to construct the proposed car park;
- stormwater infrastructure;
- lighting infrastructure;
- erection of security fencing around the car park; and
- creation of appropriate rights of carriageway to provide legal access from Stadium Drive to the car park and to the CHHC and any required legal access for Coffs Harbour City Council to its land to the north.

Stage 2

- construction of a further approximately 352 car parks and associated infrastructure when demand dictates and funding becomes available.

Coffs Harbour City Council has raised concerns with Phil Hawthorne Drive (off Stadium Drive) in that it is within a high pedestrian usage area (Coffs Coast Sport and Leisure Park) and are concerned with pedestrian safety if traffic numbers are increased (potentially from about 680 AADT to about 3350 – 5000 AADT.

3. SCOPE OF AUDIT

The Road Safety Audit (RSA) has been conducted as a Feasibility Stage Audit as per the *Austroads Guide to Road Safety - Part 6: Road Safety Audit, Jan 2009*. The audit examines the safety of traffic arrangements prior to design or construction.

The Road Safety Audit will address Council's concerns with vehicle/pedestrian conflicts, as well as the impacts of the increase in traffic to and from the Health Campus.

Figure 1 – Audit Location

4. METHODOLOGY

4.1 Audit Process

The road safety audit was undertaken in accordance with the requirements of the Austroads Guide to Road Safety: Part 6: Road Safety Audit, and RMS Guidelines for Road Safety Audit practices and included the following tasks.

- Site inspection and startup meeting with Client
- Desktop review of aerial photos;
- review of existing relevant information;
- identification of safety issues and assignment of priorities;
- formulation of suggested measures to address the issues identified; and
- preparation of an audit report and submission to client.

4.2 Audit Team

The audit team comprised of the following members:

- Brett Franklin (Lead Auditor - Senior Road Safety Auditor – Level 3, #412)
- Pat Vandermaal (Senior Road Safety Auditor – Level 3, #387

Brett and Pat are Level 3 auditors registered with the NSW Centre for Road Safety and are accredited Senior Auditors with Queensland DTMR and experienced in traffic engineering, road design, and design of temporary traffic management schemes.

4.3 Meetings and Site Inspection

A site inspection was conducted on 15 May 2014 by the auditors. Photos and videos were captured for later review.

4.4 Information used in the Audit:

The following information supplied by the client was used in this audit:

Emailed scope of work as described in parts 2 and 3 of this report.

4.5 Recommendations

The list of recommendations contained in Table 5.1 of the report contains rankings of safety issues which are based on Table 4.4 of the *Austroads Guide to Road Safety Part 6* as indicated below:

Risk	Suggested Action
Intolerable	Must be corrected
High	Should be corrected or the risk significantly reduced, even if the treatment cost is high.
Medium	Should be corrected or the risk significantly reduced, even if the treatment cost is moderate, but not high.
Low	Should be corrected or the risk reduced, if the treatment cost is low.

It should be noted that while every effort has been made to identify potential safety hazards, no guarantee can be made that every issue has been identified. This will be the case with any road safety audit.

4.6 Reference Material

The design standards/manuals used to assess the proposal are as follows:

- Austroads 'Guide to Road Safety Part 6: Road Safety Audit Manual (Jan 2009)';
- Austroads 'Guide to Road Design';
- RMS Road Design Guide
- RMS Supplements to Austroads Guides
- RMS Traffic Control at Work Sites manual
- Australian Standards

4.7 Previous Audits

No previous audits were known to the auditors.

5. AUDIT FINDINGS

A summary of the audit findings and recommendations is tabulated in Table 5.1.

5.1 Responding to the Audit Report

As set out in the road safety audit guidelines, responsibility for the road design always rests with the designer/project manager, and not with the auditor. A project manager is under no obligation to accept all the audit recommendations / suggestions. Also, it is not the role of the auditor to agree to or approve of the project manager's response to the audit. Rather, the audit provides the opportunity to highlight potential problems and have them formally considered by the project manager, in conjunction with all other project considerations.

This formal road safety audit report should be responded to in writing. This response should indicate acceptance or rejection of the suggested remedial measures. Reasons are usually provided where a road safety deficiency or suggested remedial measure is rejected.

The following table contains a list of road safety issues and suggested actions in table format. Columns are provided for the project manager to provide a response.

Table 5.1 Audit Findings and Recommendations

Road Safety Audit Issues						
Item No.	Location	Issue	Recommendation / Suggestion	Priority	Agree (Y/N)	Action & Comments
1	Stadium Drive and Phil Hawthorne Drive intersection	Westbound traffic on Stadium Drive approaching Phil Hawthorne Drive is a single lane, however at the intersection, a second lane is developed for a short length. A Bus Stop is located directly opposite Phil Hawthorne Drive. An increasing number of right turning vehicles into Phil Hawthorne Drive are likely to slow or stop to wait for a suitable gap. This will increase the likelihood of rear end type crashes. 	Consider re-painting the line marking to provide a channelised right turn bay. Consider relocating the bus stop.	Medium		
2	Stadium Drive and Phil Hawthorne Drive intersection	There is evidence (and observation) of drivers short cutting the corner on the right turn into Phil Hawthorne Drive. This is likely due to the alignment and geometry of the throat of Phil Hawthorne Drive.	Consider extending the double barrier line on Stadium Drive to close the gap. And Consider painting a GIVE WAY line offset to the continuity line in Phil Hawthorne Drive to illustrate the location of the location of the yield point in the side road.	Low		

Road Safety Audit Issues						
Item No.	Location	Issue	Recommendation / Suggestion	Priority	Agree (Y/N)	Action & Comments
3	Stadium Drive and Phil Hawthorne Drive intersection	The throat of Phil Hawthorne Drive is narrow. Some southbound drivers approaching Stadium Drive are short cutting the corner leaving a narrower northbound lane. If a queue forms, these vehicles will restrict the width of the northbound lane. 	Consider extending the double barrier line around the curve and onto the straight.	Low		

Road Safety Audit Issues						
Item No.	Location	Issue	Recommendation / Suggestion	Priority	Agree (Y/N)	Action & Comments
4	Phil Hawthorne Drive	There is unmarked parking on both sides of Phil Hawthorne Drive. There are pedestrian desire lines from both sides of the road to both near and far sides of the road. These pedestrian desire lines will be in a straight line between the gates of the stadium (west side) and each pedestrians' vehicle which could be parked anywhere along either side of Phil Hawthorne Drive, and similarly for the playing fields (east side). A high number of pedestrians are expected during events, however these will likely have some formal controls. A moderate number of pedestrians are expected during normal sports days on weekends and weekday training. A high risk exists for vehicle/pedestrian crashes when drivers and/or pedestrians are not expecting a conflict i.e. their reaction times are higher. Phil Hawthorne Drive is straight and flat. Vehicle speeds were observed as higher than desirable. 	Consider providing one or two pedestrian refuges of adequate size to cater for storage of the expected number of pedestrians. The desirable locations would be aligned with the gates to the stadium (west side). If a refuge is not considered adequate or appropriate, consider providing only blister islands to narrow and formalise the crossing location, desirably with raised threshold. Consider formalising the pedestrian desire lines to force pedestrians into the crossing point(s), by providing fencing with access points only at the formalised crossings. To reduce crossing widths and improve sight lines from parked vehicles, consider constructing raised blister islands for the crossing. Also, consider providing suitable lighting to illuminate both the raised islands and the pedestrians. To discourage pedestrians from walking within the roadway, consider providing suitable walking paths on the outside of the roadway/parking area.	High		

Road Safety Audit Issues						
Item No.	Location	Issue	Recommendation / Suggestion	Priority	Agree (Y/N)	Action & Comments
4 cont.	Phil Hawthorne Drive		To manage vehicle speeds, consider raised thresholds at the pedestrian refuges. Consider formalising the parking bays to provide guidance on how and where to park, including the limits on the width of the remaining available through carriageway. Consider providing an edge line for through traffic to delineate the edge of the traffic lane. Ensure parking manoeuvres do not create hazards e.g. reversing over a pedestrian crossing. Consider providing a dividing line along the full length of Phil Hawthorne Drive.			

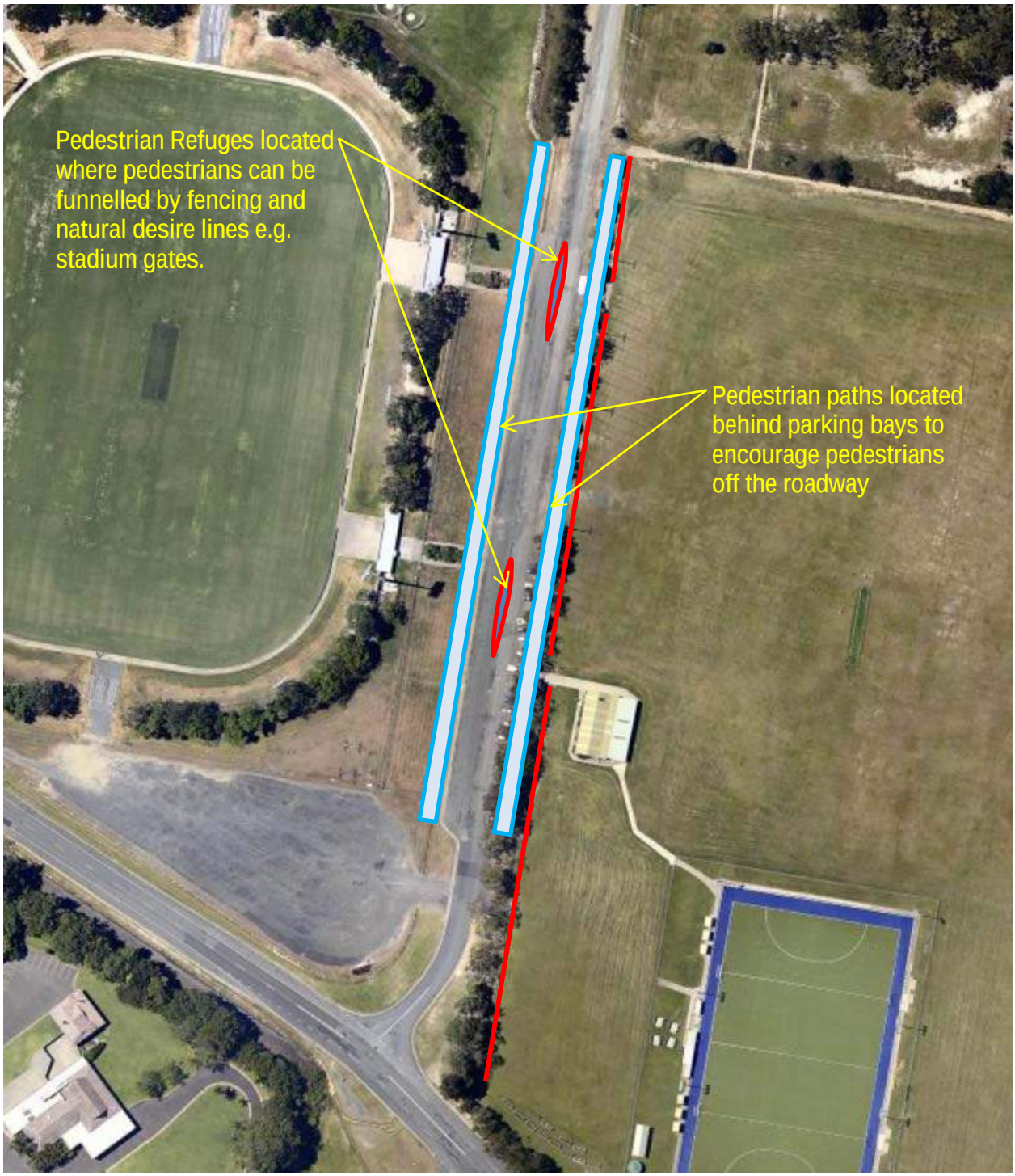
Road Safety Audit Issues						
Item No.	Location	Issue	Recommendation / Suggestion	Priority	Agree (Y/N)	Action & Comments
5	Phil Hawthorne Drive	The major movement at the intersection with the Go Kart access will be north-south. The priority at the intersection may be unclear once a higher number of motorists begin to use the access. After a while of use, Southbound drivers will not be expecting a right turn into the Go Kart track or a vehicle leaving the Go Kart track. 	Consider changing the alignment and priority of the intersection to provide a straight north-south movement for the major flow.	High		

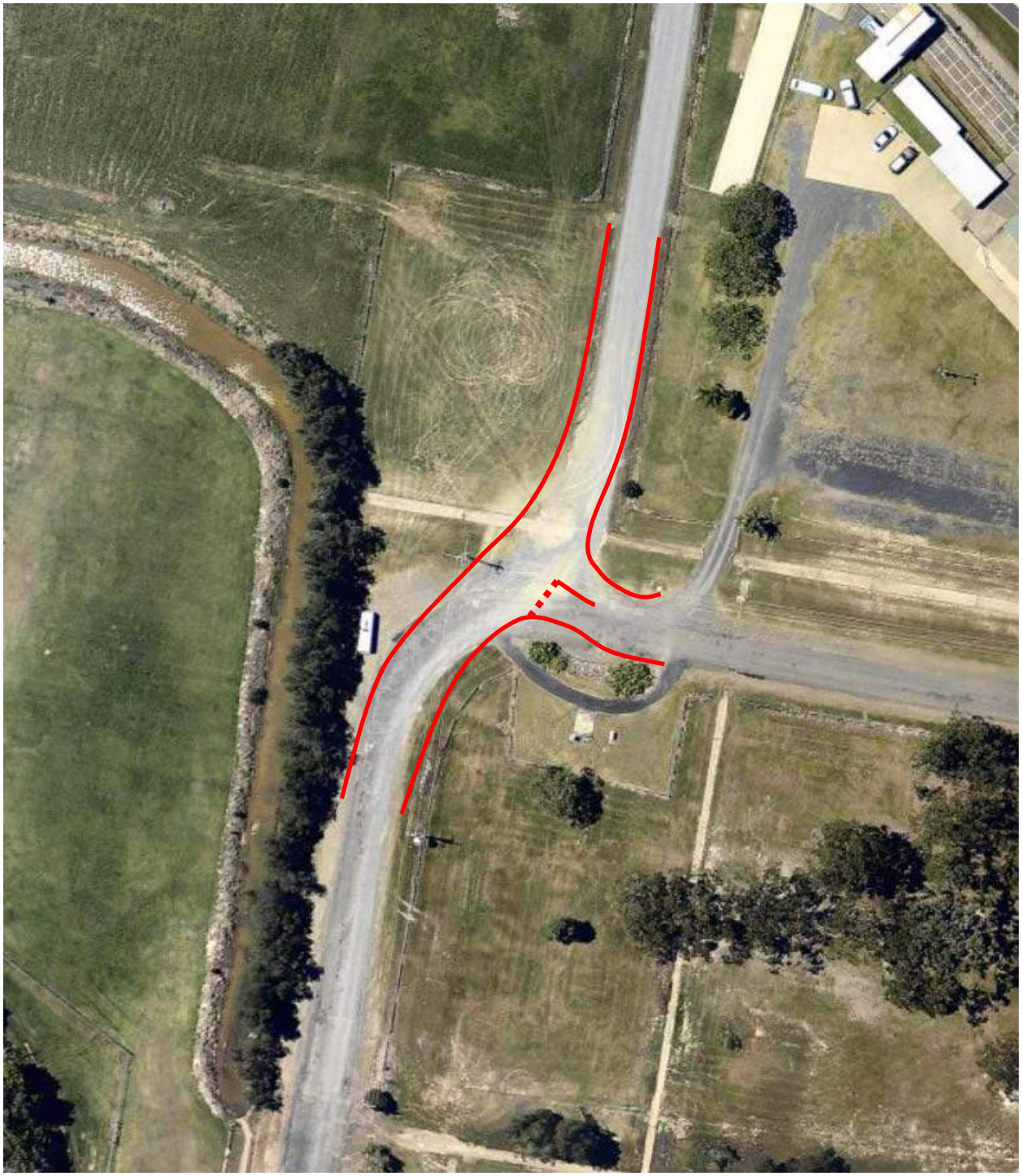
Road Safety Audit Issues						
Item No.	Location	Issue	Recommendation / Suggestion	Priority	Agree (Y/N)	Action & Comments
6	Stadium Drive	The bus zone on Stadium Drive will prevent left turning traffic from leaving the through lane before decelerating. This could increase the potential for low speed rear end type crashes when a bus is parked close to the intersection. 	Consider reducing the length of the bus zone. Desirably provide a marked left turn lane.	Low		
7	Phil Hawthorne Drive	The end of the kerb is exposed without delineation. Drivers could hit the kerb. 	Consider extending the kerb around to the parking area. Else, consider painting an edge line leading into the kerb.	Low		

Road Safety Audit Issues						
Item No.	Location	Issue	Recommendation / Suggestion	Priority	Agree (Y/N)	Action & Comments
8	Stadium Drive Eastbound, just east of Phil Hawthorne Drive	The left lane drops without warning, just around a horizontal left curve. Drivers will not have any warning of the merge. This is exacerbated at night. 	Consider extending the lane to meet the roundabout approach at Hogbin Drive if funding permits. Else, consider providing a channelised right turn treatment here to remove the left lane drop.	Medium		

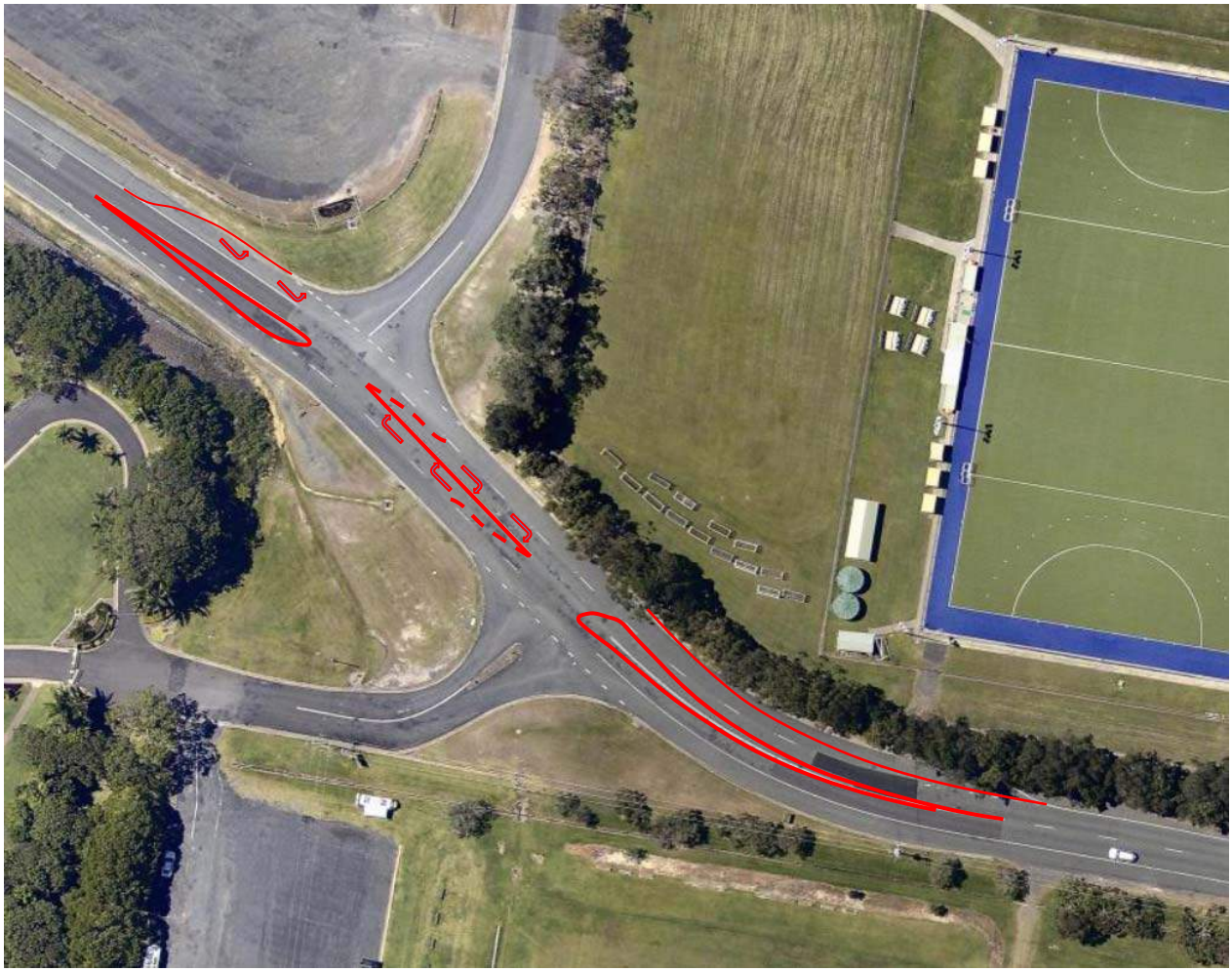
Item 4 above will be heavily impacted by the additional traffic growth from the secondary access to the health campus.

All other items are currently an issue that should be addressed with or without the additional traffic load.


Pedestrian Refuges located where pedestrians can be funnelled by fencing and natural desire lines e.g. stadium gates.
Pedestrian paths located behind parking bays to encourage pedestrians off the roadway



Recommended intersection treatment – realignment and changing of priority.



Recommended intersection treatment – re-linemarking

6. CONCLUDING STATEMENT

We have examined the site. The audit has been carried out for the sole purpose of identifying any features that could be altered or removed prior to construction to improve the safety of the scheme. The identified issues have been noted in this report. The accompanying findings and recommendations are put forward for the Client's consideration.

Brett Franklin, RoadNet Pty Ltd, Lead Road Safety Auditor (Level 3) #412

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