

Proposed Bunnings Development Cnr Castlereagh Highway & Lions Drive, Mudgee

Ref: 19123

Date: July 2022

Issue: G

Table of Contents

1.0	INTRODUCTION	3
2.0	PROPOSED DEVELOPMENT SCHEME.....	4
2.1	Site, Context and Existing Circumstances.....	4
2.2	Proposed Development Scheme.....	4
2.3	Other Proposed Development.....	6
3.0	ROAD NETWORK AND TRAFFIC CONTROLS	7
3.1	Road Network.....	7
3.2	Road Geometry	7
3.3	Traffic Controls	9
3.4	Traffic Conditions	9
4.0	TRAFFIC	11
5.0	PARKING	17
6.0	ACCESS, INTERNAL CIRCULATION & SERVICING.....	18
6.1	Access.....	18
6.2	Internal Circulation	18
6.3	Servicing	18
7.0	CONCLUSION	19

List of Illustrations

Figure 1	Location
Figure 2	Site
Figure 3	Road Network
Figure 4	Existing Peak Traffic Volumes
Figure 5	Projected Future Peak Traffic Volumes

List of Appendices

Appendix A	Plan of Existing Bunnings
Appendix B	Development Plans
Appendix C	Traffic Survey Results
Appendix D	SIDRA Results
Appendix E	Extracts from RMS Study
Appendix F	Turning Path Assessment

1.0 Introduction

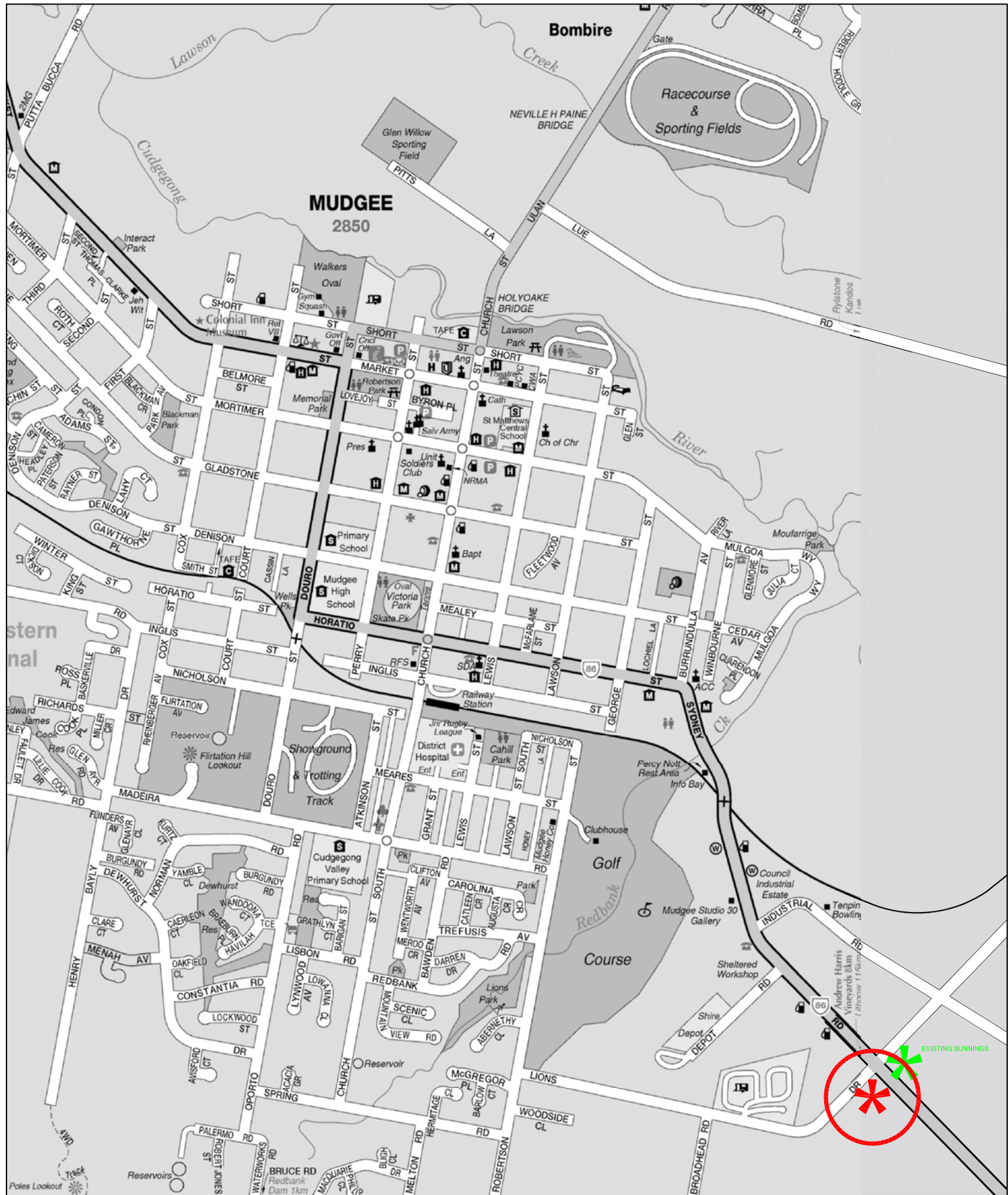
This report has been prepared to accompany a Development Application to Mid-Western Regional Council for a proposed new Bunnings Warehouse on a large site (with residue land available for other development) on the south-west corner of Castlereagh Highway and Lions Drive at Mudgee (Figure 1).

Bunnings have an existing outlet in Mudgee (opposite the subject site), however this is a “small format store” which does not provide a suitable range/quantity of goods although this store has a very high level of trade for its size. A Planning Proposal has been approved by Council for the rezoning of the subject site to enable the proposed development which comprises:

- ❖ a mid size Bunnings warehouse of some 9,203 m² (plus MB & LY)
- ❖ 3 residue lots

The purpose of this report is to:

- ❖ describe the site, the existing circumstances, the proposed development scheme and the other development relevant to the traffic considerations proposed/envisaged
- ❖ describe the road network serving the site and the traffic conditions on that network
- ❖ assess the potential traffic implications
- ❖ assess the adequacy of the proposed parking provision
- ❖ assess the proposed access, internal circulation and servicing arrangements



LOCATION

FIG 1

2.0 Proposed Development Scheme

2.1 Site, Context and Existing Circumstances

The site (Figure 2) is Lot 2 of DP 1079362 which occupies an irregular shaped area of some 5.37ha with frontages to the south-eastern side of Lions Drive and the south-western side of the Castlereagh Highway (Sydney Road).

The site, which is located on the southern edge of the Mudgee township, is currently occupied by a rural residential dwelling with vehicle access on Lions Drive. The site is largely vacant “primary production” land extending between the highway and a right of way for a future road connection between Lions Drive and Spring Flat Road. There are rural properties adjoining to the south and east with residential dwellings outbuildings and dams.

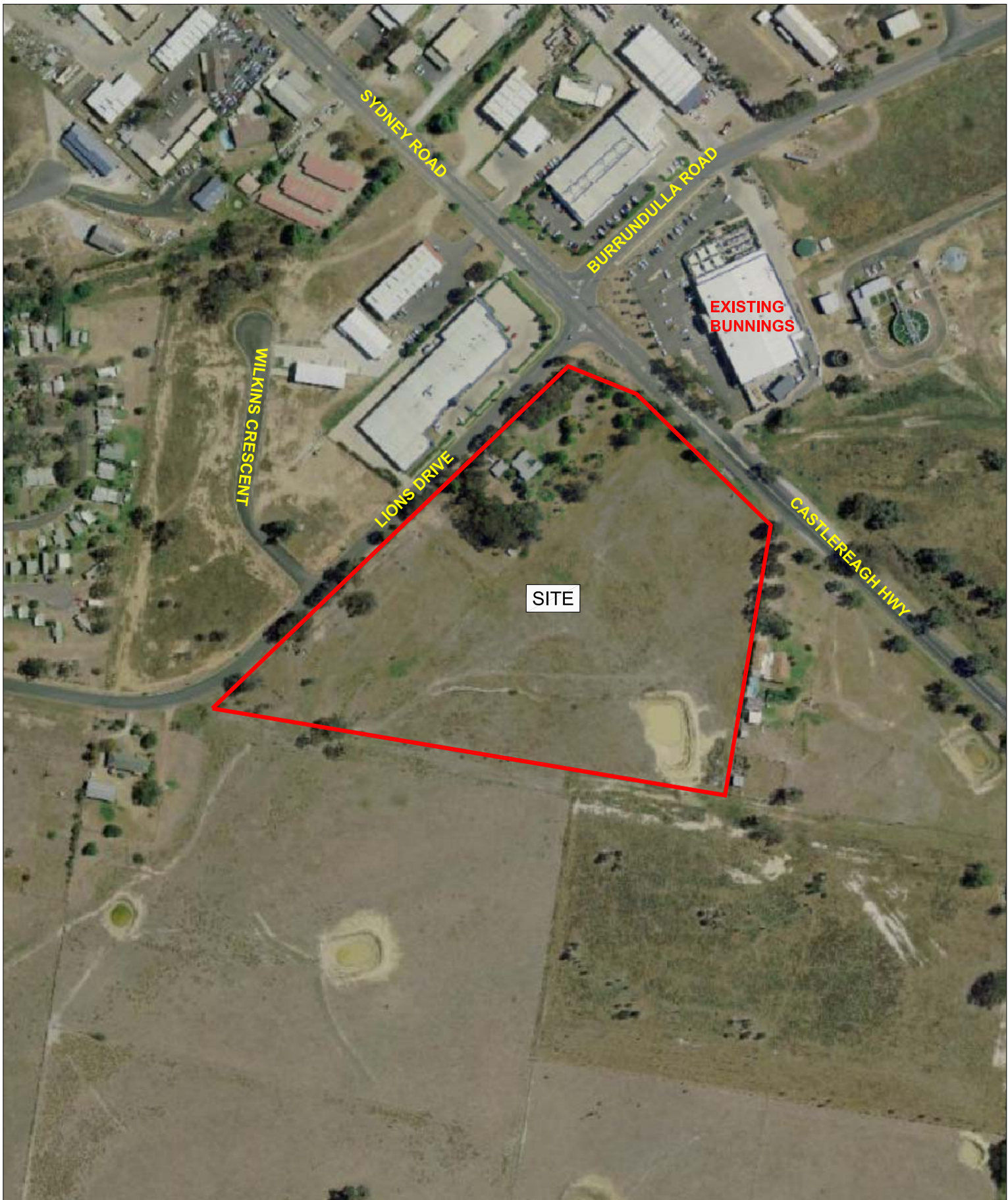
The existing Bunnings, with some 4,833m² GFA and 107 parking spaces, is located directly opposite on the north-eastern side of Castlereagh Highway while there are a number of bulky goods retail units along the north-western side of Lions Drive.

2.2 Proposed Development Scheme

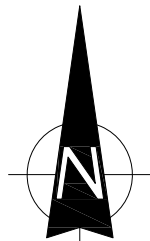
The proposed development comprises:

Bunnings

A new single level building running along the central part of the site with an open at-grade carpark on the northern part while goods delivery would occur along the southern side of the building which would comprise:



LEGEND



SITE

FIG 2

Transport and Traffic Planning Associates

Warehouse	5,342m ²
TTS	2,000m ²
Nursery & BG's	1,861m ²
Total Retail	9,203m²
BM & LY	786m ² *

* Does not represent retail floorspace

It is proposed to provide a total of 185 parking spaces with vehicle accesses comprising:

- a combined ingress/egress driveway for the carpark on the Lions Drive frontage
- a combined ingress/egress driveway for trucks on the Lions Drive frontage.

Other Lots

The residue southern part of the site with frontage to Lions Drive will be divided into 3 lots and the envisaged development yield for these lots is as follows:

Lot 2	5,394m ²	– 3,508m ² GFA
Lot 3	5,589m ²	– 3,630m ² GFA
Lot 4	5,264m ²	– 3,420m ² GFA
Total:	16,247m²	– 10,558m² GFA

It is envisaged that the use outcome on these lots will involve warehouse and light industrial uses. Vehicle access will involve a combined ingress/egress driveway on the Lions Drive frontage towards the southern site boundary.

2.3 Other Proposed Development

St Matthew's Catholic School

It is understood that a Development Application has been approved for the proposed relocation of the existing St Matthews Catholic School in Mudgee to a new site at the intersection of Bruce Street and Broadhead Road. This new school will be in the near vicinity of the proposed Bunnings development and therefore presents a traffic issue for consideration in relation to the Bunnings traffic assessment.

Mudgee Urban Development

Council commissioned a traffic study¹ to provide a Traffic Management Plan for Mudgee township and this study involved the following tasks:

- ❖ assessment of the current existing traffic movements (at that time) on the roads and intersections in the study area
- ❖ assessment of the future increased traffic movements resulting from the projected residential and industrial development
- ❖ identification of the road infrastructure upgrades necessary to accommodate the projected future traffic circumstances
- ❖ prioritisation of the identified upgrades so that implementation is commensurate with development and for satisfactory levels of service to be maintained
- ❖ provide input for the Section 94 Developer Contributions Plan

¹ *Mudgee Township
Traffic Management Study 2014
Gennaoui Consulting Pty Ltd*

3.0 Road Network and Traffic Controls

3.1 Road Network

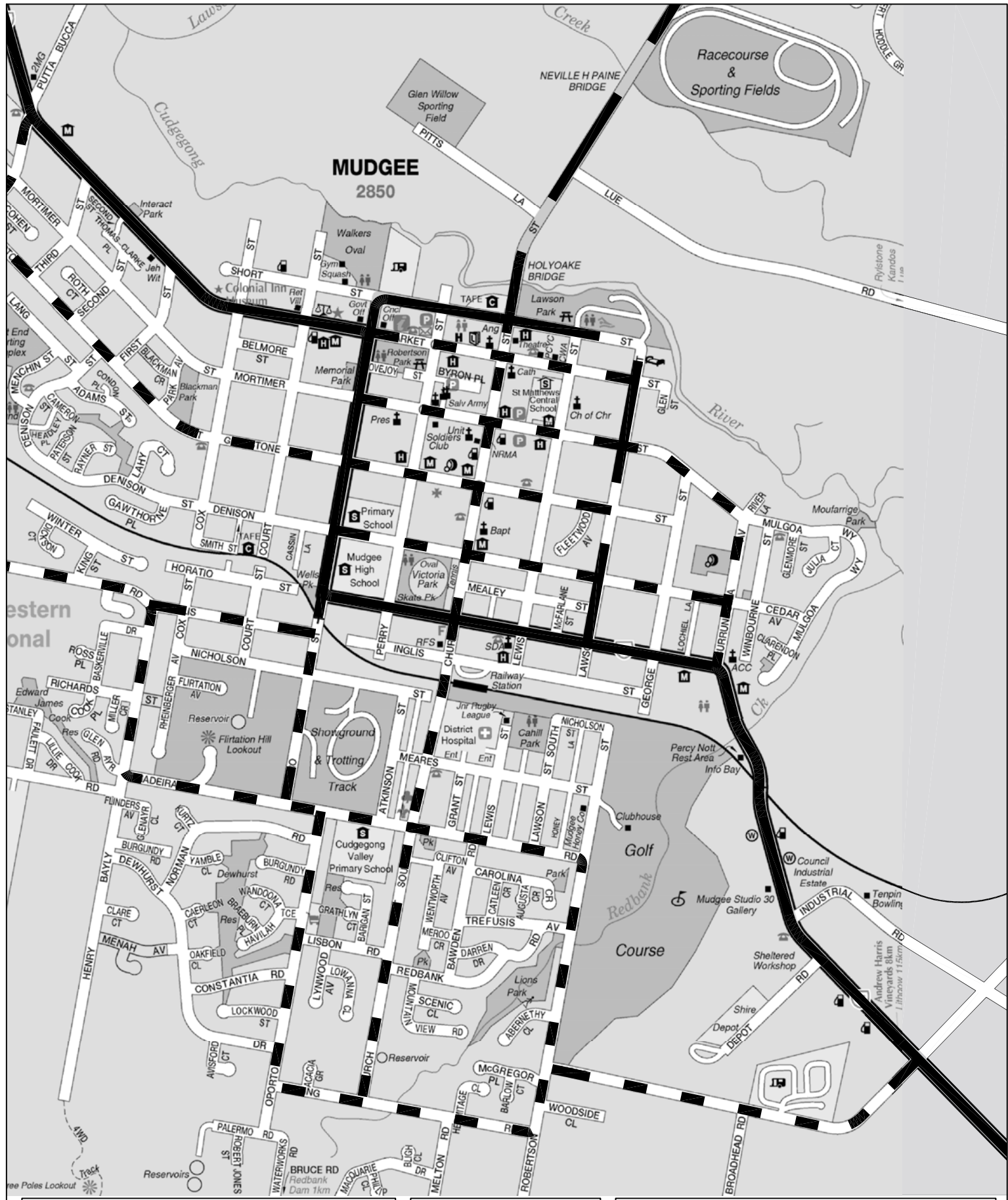
The road network servicing the site (Figure 3) comprises:

- ❖ *Castlereagh Highway (Sydney Road)* – a State Road and arterial route which connects between the Great Western Highway at Marrangaroo and the Queensland border
- ❖ *Lions Drive* – a collector road connecting between Castlereagh Highway and Robertson Street
- ❖ *Robertson Road/Madera Street* – a collector road route connecting between Lions Drive and Henry Bayly Drive
- ❖ *Spring Road, Church Street and Oporto Road* – collector roads serving the South Mudgee area
- ❖ *Burrundulla Road* – a local access road connecting to Castlereagh Highway at the Lions Drive intersection.

3.2 Road Geometry




Castlereagh Highway and Lions Drive are relatively straight and level in the vicinity of the site with one travel lane in each direction with some supplementary turning lanes at the intersection (see details overleaf). There is a central “barrier” line along the Castlereagh Highway with section of a central median island across the existing Bunnings access driveway.

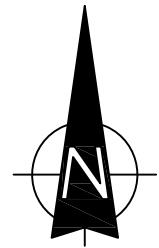
Burrundulla Road which is offset somewhat from Lions Drive at the Castlereagh Highway intersection also has one travel lane in each direction.



MUDGEE
2850

LEGEND

-  ARTERIAL
-  SUB-ARTERIAL
-  COLLECTOR



ROAD NETWORK

FIG 3

Intersection of Sydney Road-Castlereagh Highway/Lions Drive/Burrundulla Road



Left-turn bay from Castlereagh Highway into Lions Drive



Right-turn bay from Sydney Road into Lions Drive



3.3 Traffic Controls

The traffic controls which have been applied to the road system in the vicinity of the site comprise:

- ❖ the 50 kmph speed restriction on the Castlereagh Highway and Lions Drive
- ❖ the GIVE WAY signs on Lions Drive and Burrundulla Road at the Castlereagh Highway intersection
- ❖ B Double/Road Train route along the Castlereagh Highway as shown on the NHVR diagram overleaf

3.4 Traffic Conditions

An indication of traffic conditions on the road network in the vicinity of the site is provided by TfNSW data and traffic surveys undertaken as part of this study. The TfNSW Data is expressed in terms of Annual Average Daily Traffic and the most recent available data is as follows:

	AADT
Castlereagh Highway, south of rail crossing	6,577

NHVR Portal

Route planner tool

PLAN ROADS **LAYERS** SUMMARY

- HML A-Double Road Train (NSW)
- Restricted Structures Restricted Intersections
- Restricted Intersections with Conditional Access Approved Routes
- Approved Routes with Conditions Approved Areas
- HML Road Train 32m Network (SA)
- HML Road Train 36.5m Network (SA)
- HML Road Train 53.5m Network (SA)
- HML AB-Triple Road Train (NSW)
- HML B-Triple Network (NSW)
- HML (VIC)
- HML B-Double 23m (SA)
- HML B-Double 23m Vehicle Carrier (SA)
- HML B-Double 25/26m (NSW)
- Restricted Structures Restricted Intersections
- Restricted Intersections with Conditional Access Approved Routes

The map displays a route starting from the top left, passing through Denison St, Church St, and Inglis St, then following a path through the center of the town, crossing Redbank Creek, and ending near the bottom right. The route is highlighted in blue. Various landmarks and streets are labeled, including Mudgee Health Service, Mudgee Showground, Cudjergo Valley Public School, Norm King Park, Mudgee Baptist Church, and BIG4 Mudgee Holiday Park. The map also shows other roads like Denison St, Church St, Inglis St, Lyons Ln, George St, Meares St, Mearns St, Lawrence St, Robertson St, Money Ln, Barrundulla Ave, Wimbourne St, Cedar Ave, Mulgoa Way, Oakey Creek, Madeira Rd, Alison St, Grant St, Murray Ln, Lewis St, Gilham Ln, Bawden Rd, Trefusis Ave, Darren Dr, Redbank Rd, Lisson Rd, Church St, Oporto Rd, Constantia Rd, Spring Rd, McGregory, Woodside Ct, Versa Ct, Barrundulla Rd, Sawpit Gully, Broadhead Rd, Bruce Rd, and Spring Flat Rd.

Traffic surveys have been undertaken at the Castlereagh Highway, Lions Drive and Burrundulla Road intersection and at the existing Bunnings during the AM, PM and Sat MD peak periods in late November 2019 (pre-COVID). The results of these surveys are provided in Appendix C and the data summarised on Figure 5.

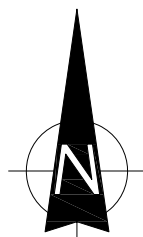
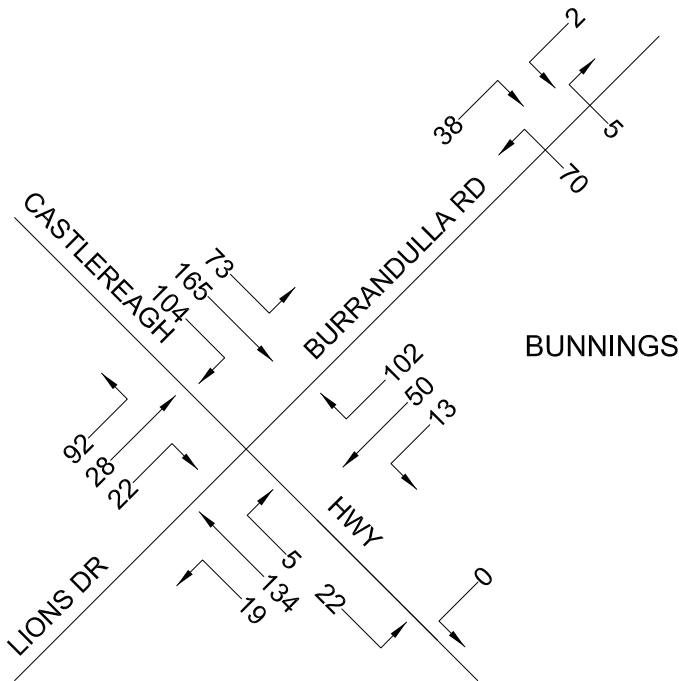
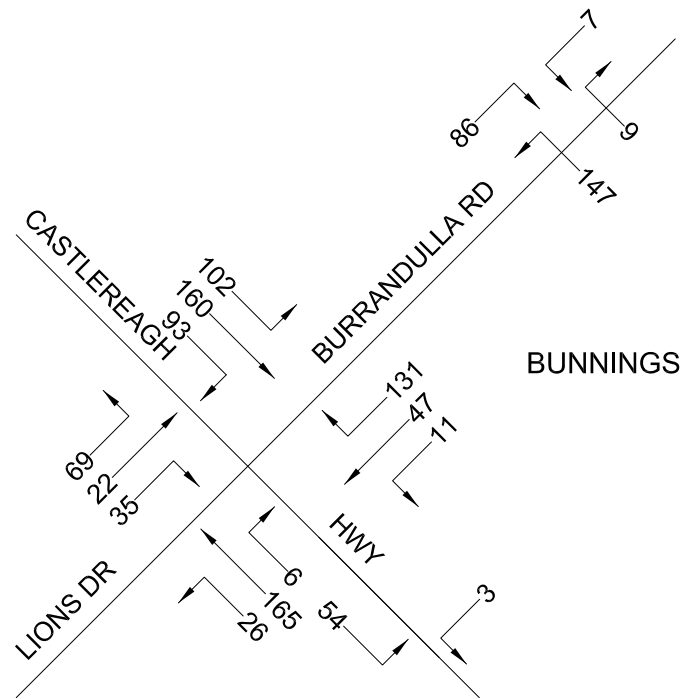
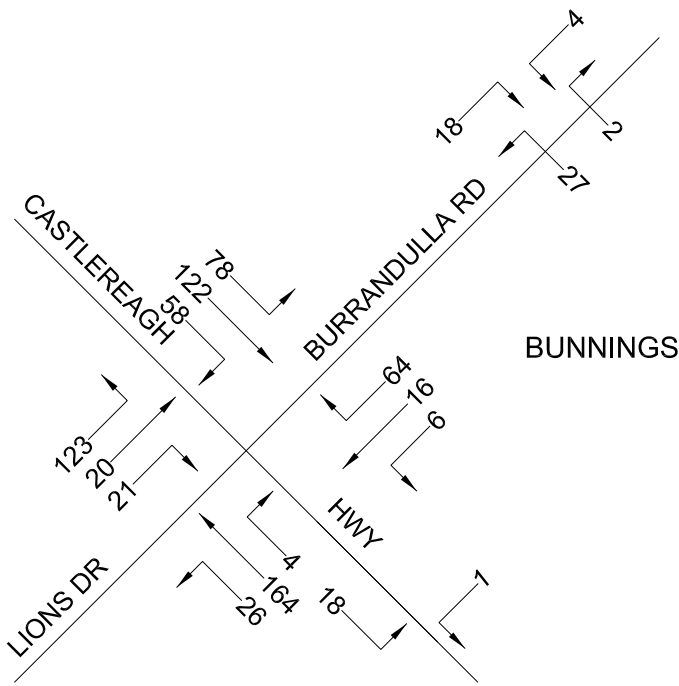
The operational performance of the existing intersection has been assessed using SIDRA. The results of this assessment indicating a good level of service (LOS A) are provided in Appendix D and summarised in the following, while a guide to interpreting the SIDRA results is provided overleaf.

	AM		PM		Sat MD	
	LOS	AVD	LOS	AVD	LOS	AVD
Castlereagh / Lions	A	3.9	A-B	5.1	A-B	5.7

TfNSW have raised an issue in relation to robustness of the surveyed traffic volumes even though they were undertaken in the 2019 pre-Christmas period. Additional traffic surveys have been under taken involving “tube counts” of the Castlereagh Highway approach movements for the week 9/12/2021 to 15/12/2021. The results of these surveys are also provided in Appendix C and the summarised data is compared in the following:

	2019	2021 (5 day av.)
NB App AM	194	204
SB App AM	258	280
NB App PM	158	183
SB App PM	342	345
NB App Saturday	197	214
SB App Saturday	369	380

It can be seen that the recorded volumes are very similar having regard for day to day variations.



**EXISTING
TRAFFIC VOLUMES**

FIG 4

Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good	Good
'B'	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
'C'	Satisfactory	Satisfactory but accident study required
'D'	Operating near capacity	Near capacity and Accident Study required
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
'F'	Unsatisfactory and requires additional capacity	Unsatisfactory and requires other control mode

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below, which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

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

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by **traffic signals**¹ both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a **roundabout or GIVE WAY or STOP signs**, satisfactory intersection operation is indicated by a DS of 0.8 or less.

¹ the values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs

4.0 Traffic

The former RMS released Technical Direction TDT 2013-4b which includes traffic generation criteria for “hardware” use. However, this data is significantly flawed in relation to application to a contemporary Bunnings due to the fact that the underlying surveys predominantly involved small Mitre 10 outlets (e.g. 1,600 to 2,000m²). The reality is that the traffic generation rate (i.e. vtpm per 100m²) for “hardware” use decreases significantly as the floor area increases.

The results of the traffic surveys at the existing Bunnings at Mudgee reveal the following:

- The peak trade occurs at midday on Saturday with some 306 vtpm
- The peak weekday trade occurs between 4.30 and 5.30pm with some 137 vtpm
- The trade between 3.0 and 4.0pm (school departure) on weekdays is only some 80 vtpm
- The trade between 8.0 and 9.0am (school arrivals) on weekdays is only some 70 vtpm

The late November surveys represent a 95th percentile level of annual trade for Bunnings and it has been the experience with the upgrading of high trading Bunnings in regional areas that the increased floor space has not resulted in any significant additional trading (although the “spend” and “time on site” increases).

The RMS Bulky Goods landuse study established that bulky goods outlets generally do not trade in the morning road network peak period. It is also noted that the existing peak traffic movement circumstances at the access intersection occur during the afternoon period (4.30 to 5.30pm). Hence, it is apparent that the weekday afternoon (4.30 to 5.30pm) and Saturday Midday periods will reflect the peak cumulative traffic circumstances in relation to the Bunnings related developments (i.e. new Bunnings, the 3 lot uses and reuse of the existing Bunnings site). The traffic generation of the proposed school will therefore be irrelevant to the assessment of the Bunnings development.

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There is no reason for the proposed Bunnings to generate significantly more traffic movements than the existing Bunnings (as indicated on Figure 4) apart from that resulting from future population growth in Mudgee. Rather the increased floorspace will be reflected in an increased “length of stay” and “spend” by customers as a result of the larger range of goods which can be accommodated for display and sale.

The 2014 Mudgee Traffic Study included very detailed assessment, however the intersection of Castlereagh Highway, Lions Drive and Burrundulla Road was relatively peripheral although the following was reported:

- ❖ There were only 4 injury/tow away accidents at the intersection in the 4 years to 2012 resulting in 2 injuries
- ❖ The number of residential dwellings in Mudgee (as at 2014) is projected to increase by 2025 (i.e. +47%)
- ❖ The number of trips generated (as at 2014) by new industrial development would increase by some 200 vtp
- ❖ The identified total movements through the intersection during the PM peak in 2014 was 784 vtp and the projected future total additional movements was 270 vph (+ 34%). The total in 2019 was 797 vtp.

Council's Contributions Plan 2019 adopts the following LGA Population Forecast for 2017-2029:

	2017	2029	Change
Mudgee	12,500	13,800	10%
Outside Mudgee	12,315	13,015	6%
LGA	24,815	26,815	8%

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For the purpose of this assessment, it is reasonable to assume that for a “10 year Design Horizon” the traffic generation of the proposed Bunnings will be some 10% more than the existing generation as a result of the increased population.

Application of this projected growth to the recently surveyed traffic generation would indicate the following 2032 peak traffic generation for the proposed Bunnings:

WDAM	WDPM	WEMD
77 vtp	151 vtp	337 vtp

The other factors which need to be included in assessing the potential future traffic outcome at the access intersection are:

- the general background traffic growth
- the growth and redistribution of the Bunnings movements for the new site
- the traffic generation of development on the 3 residue lots
- the traffic generation of the reuse of the existing Bunnings site

The projected traffic generation of the new St Matthews Catholic School in the afternoon school peak will not overlap the Bunnings/intersection PM peak while the Bunnings and bulky goods generation during morning school peak will be relatively minor.

The traffic impact assessment for the proposed School relocation indicated a total traffic generation during the AM and PM school peak periods of some 380 vtp with some 17%–18% travelling through the Castlereagh Highway and Lions Drive intersection (4% to/from the southwest).

The general background traffic growth will comprise:

- residential growth
- commercial/industrial growth
- tourism growth
- intrastate highway growth

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A factor of +2% p.a. is assessed to be an appropriate provision for a 2032 “design horizon” (2020 + 12 years) given the Council projected +1% p.a. population growth.

The proposed relocation of the existing Bunnings to the opposite side of the highway will result in:

- vehicles travelling to/from the west not passing through the intersection
- vehicles travelling to/from the north turning right into and left out of Lions Drive and not into/out of Burrundulla Road
- the negligible movements to/from the south and east also being redirected

Additional to the Bunnings traffic movements will be the movements generated by the uses on the 3 lots with a total developable area of 16,247m². The site is located over 3km from the town centre and the most likely use outcome on these lots is warehouse or light industry with an FSR outcome of 0.65:1.

The RMS Study for Business Parks and Industrial Estates included surveys of 2 comparable “regional sites” (see Appendix E) and the average network peak traffic generation rates of these 2 sites were as follows:

	Average
AM	0.46 vtp/100m ²
PM	0.42 vtp/100m ²

Application of the worst case factors would indicate:

	AM	PM	SAT
10,558m ²	48 vtp	44 vtp	20 vtp (say)

It is also necessary to consider the potential reuse of the existing Bunnings building and the most likely “high end” use would be bulky goods and the application of the TfNSW “regional” traffic generation rates to the building (less the yard area) of 4,133m² would indicate the following:

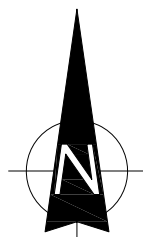
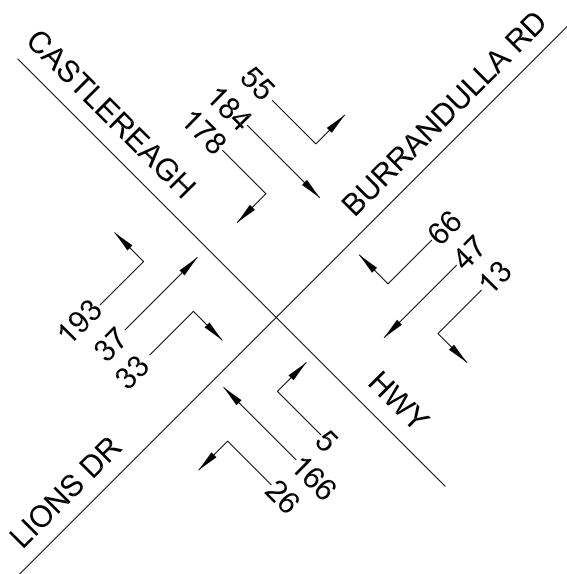
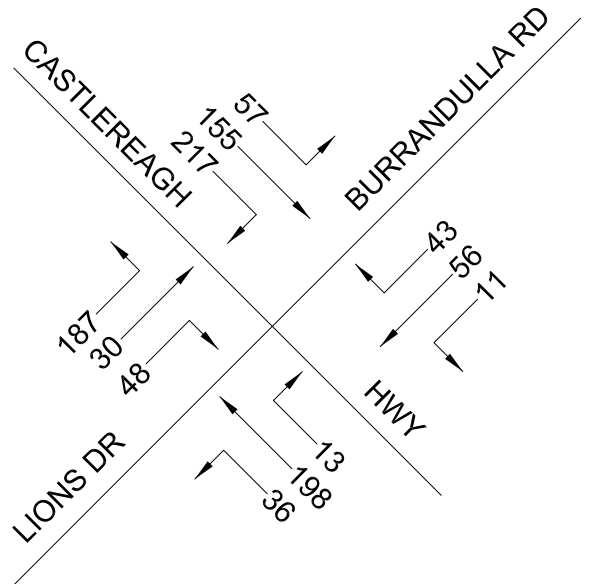
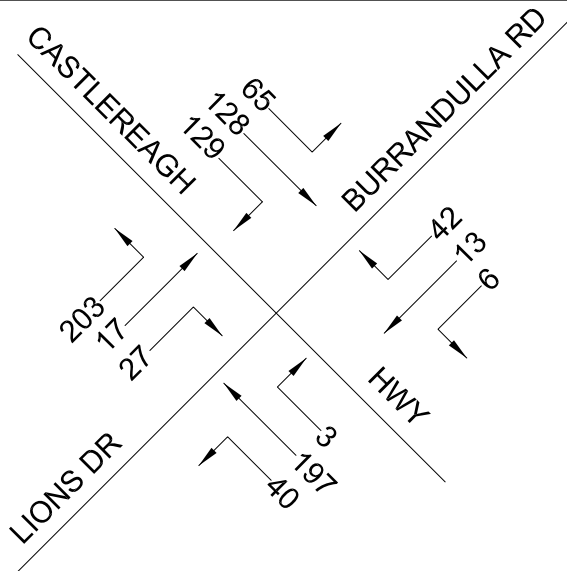
AM	Not open
PM	60 vtp/h
SAT	108 vtp/h

In order to establish the projected 2032 traffic outcome with the proposed new Bunnings and the other related traffic changes a process has been undertaken involving:

- deducting the existing Bunnings traffic movements from the intersection movements
- increasing the main intersection movements by 24% (2020 – 2032)
- adding the increased and redirected new Bunnings movements
- adding the projected school movements (AM peak)
- adding the movements resultant to a reuse of the existing Bunnings building
- adding the projected residue lot traffic movements

The resultant 2032 peak traffic movements are shown on Figure 5 and it can be seen that the right turn movements into and left turn out of Lions Drive become significant. There is only a single approach lane in Lions Drive at present and it is apparent that it is not possible for semi-trailers to satisfactorily access into or out of Lions Drive at the intersection under the present geometrical constraints. Accordingly, it will be necessary to undertake roadworks to enable the semi-trailer access and the right turn movement into Lions Drive and left turn out will be increased as a result of the proposed Bunnings development (and the proposed school). A further assessment has been undertaken to identify how the capacity of the intersection could be maximised without unduly extensive roadworks and this assessment has identified an arrangement incorporating:

- provision of a separate left turn lane on the Lions Drive approach
- extended right turn lane for the turn into Lions Drive
- provision for semi-trailers to access Lions Drive satisfactorily



**FUTURE 2032
TRAFFIC VOLUMES**

FIG 5

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Details of this proposed intersection upgrade are provided overleaf and it will be necessary to install NO STOPPING restrictions along the Lions Drive for the extent of the site frontage.

The operational performance with the projected 2032 traffic movements with these proposed changes has been assessed using SIDRA with the results provided in Appendix D and summarised in the following indicating a satisfactory performance outcome:

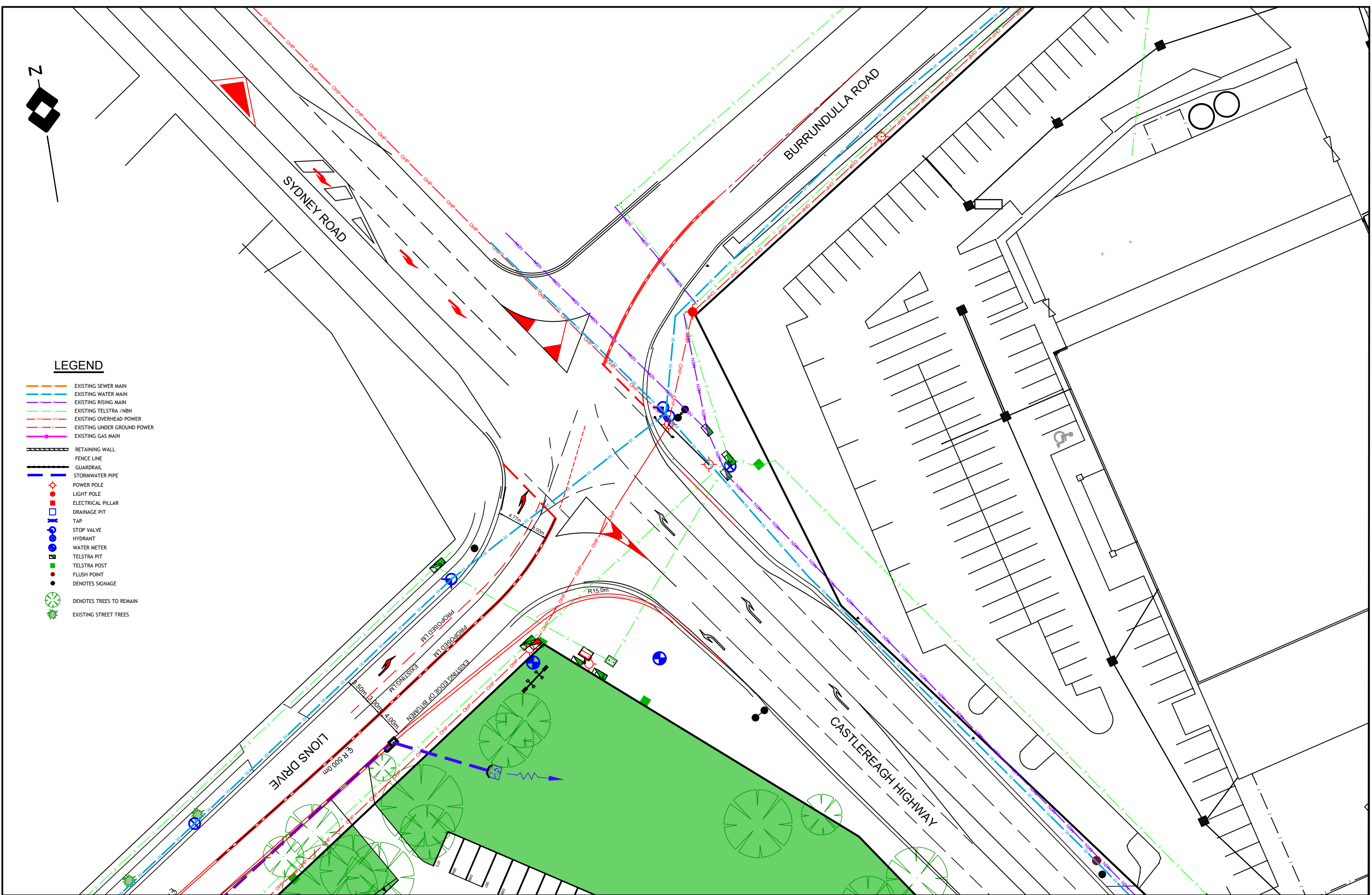
	AM		PM		SAT MD	
	LOS	AVD	LOS	AVD	LOS	AVD
Castlereagh / Lions / Burrundulla	A-B	4.2	A-B	5.4	A-B	5.4

These proposed changes to the intersection would avoid the need for an expensive roundabout construction and will maintain a satisfactory LOS during the design horizon period and beyond.

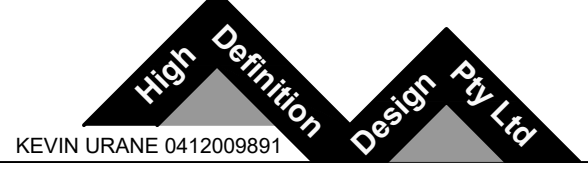


LEGEND

- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING RISING MAIN
- EXISTING TELSTRA / NBN
- EXISTING OVERHEAD POWER
- EXISTING UNDER GROUND POWER
- EXISTING GAS MAIN
- RETAINING WALL
- FENCE LINE
- GUARDRAIL
- STORMWATER PIPE
- POWER POLE
- LIGHT POLE
- ELECTRICAL PILLAR
- DRAINAGE PIT
- TAP
- STOP VALVE
- HYDRANT
- WATER METER
- TELSTRA PIT
- TELSTRA POST
- FLUSH POINT
- DENOTES SIGNAGE
- DENOTES TREES TO REMAIN
- EXISTING STREET TREES

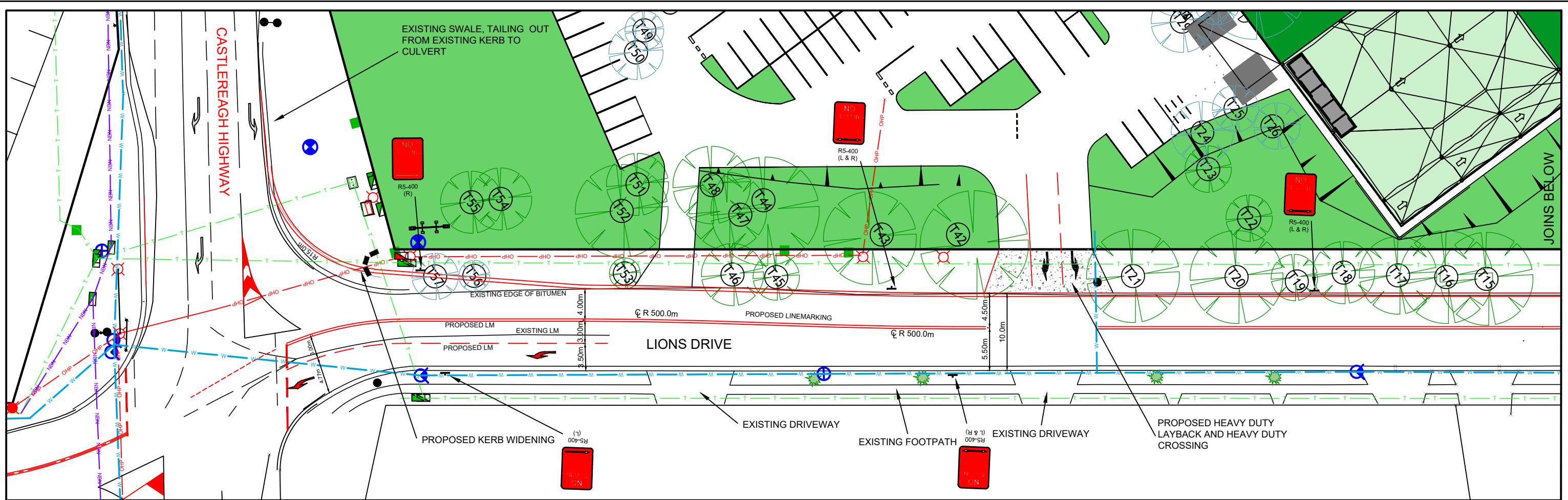


TITLE: PROPOSED ROAD WORKS
 CNR CASTLEREAGH HIGHWAY AND LIONS DRIVE
 MUDGEE
 ROAD WORKS DETAIL PLAN 1 OF 2
 CLIENT: BUNNINGS GROUP LIMITED



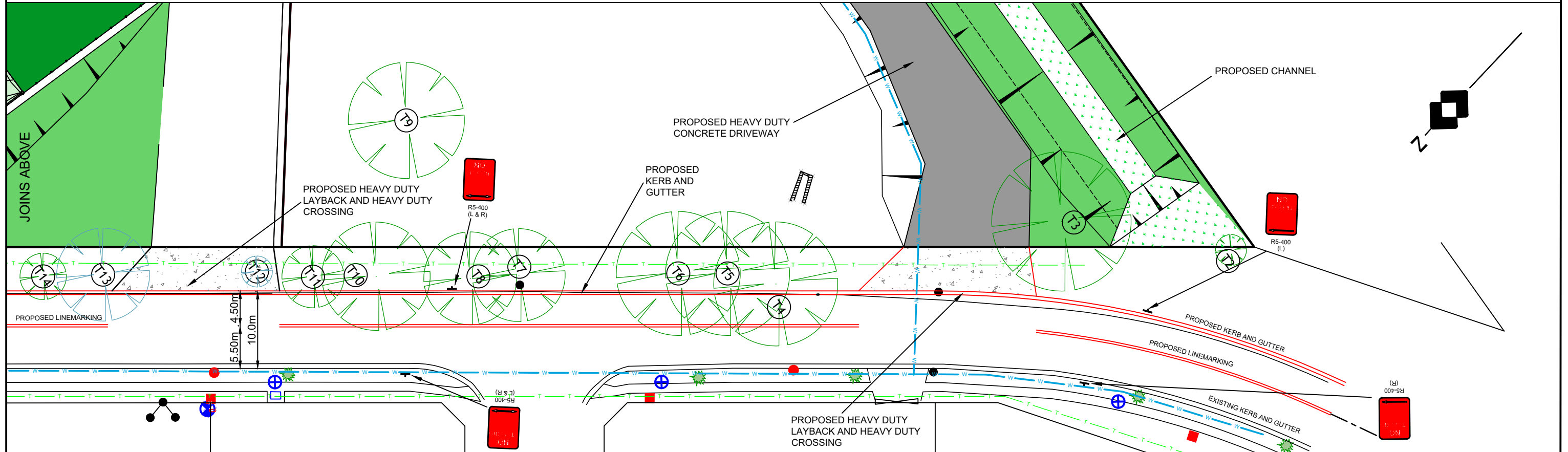
NOTE:
 ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

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Cad Ref:	HD259 r7					Drawing No	HD05
	7	DA ISSUE		KU	23.06.22	Revision	7
	6	CLIENT DA ISSUE		KU	26.05.22		
	5	CONCEPT INTERSECTION LAYOUT		KU	28.04.22		
No		Amendment		Drawn	Date		



LEGEND

- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING RISING MAIN
- EXISTING TELSTRA /NBN
- EXISTING OVERHEAD POWER
- EXISTING UNDER GROUND POWER
- EXISTING GAS MAIN
- POWER POLE
- LIGHT POLE
- ELECTRICAL PILLAR
- WATER METER
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- DRAINAGE PIT
- TAP
- STOP VALVE
- HYDRANT
- FLUSH POINT
- DENOTES SIGNAGE
- DENOTES TREE TOP REMOVE
- DENOTES TREES TO REMAIN
- EXISTING STREET TREES



TITLE: PROPOSED ROAD WORKS
 CNR CASTLEREAGH HIGHWAY AND LIONS DRIVE
 MUDGEE
 ROAD WORKS DETAIL PLAN 2 OF 2
 CLIENT: BUNNINGS GROUP LIMITED



High Definition Design Pty Ltd
 KEVIN URANE 0412009891

NOTE:
 ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

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	6	CLIENT DA ISSUE		KU	26.05.22		
	5	CONCEPT INTERSECTION LAYOUT		KU	28.04.22		
No		Amendment		Drawn	Date		

5.0 Parking

Council's DCP specifies a parking provision requirement for Bulky Goods Retailing, Rural Supplies, Hardware and Building Supplies as follows:

1 space per 50m² GFA

Application of this criteria to the proposed Bunnings retail floorspace of 9,203m² (excluding the BMLSY) would indicate the provision of some 184 parking spaces.

It is proposed to provide a total of 185 parking spaces for the new Bunnings use and this would be more than adequate. Details of the parking on the 3 residue lots have not been resolved at this time; however, there is no apparent reason why adequate parking could not be provided for the envisaged uses on these sites.

6.0 Access, Internal Circulation & Servicing

6.1 Access

The proposed vehicle access arrangements comprise:

Bunnings:

- ❖ an ingress only driveway for the car park on Lions Drive located in the eastern part of the site frontage
- ❖ a combined ingress/egress driveway for the car park on Lions Drive located towards the centre of the site frontage
- ❖ a combined ingress/egress driveway for trucks on Lions Drive located at the western site boundary

Other Lots:

- ❖ a combined ingress/egress driveway on the Lions Drive frontage located towards the western boundary

6.2 Internal Circulation

The design of the internal circulation and parking areas including the aisles and bays etc. accords with the design criteria of AS2890.1 & 6 and the circulation system will be very flexible due to the two-way traffic provisions.

6.3 Servicing

The trucks servicing with the proposed Bunnings will enter and exit the site separate to the carpark movements along the western side of the building. The proposed design provisions for these service vehicles accords with the AS2890.2 criteria and details of the turning path assessment are provided in Appendix F.

7.0 Conclusion

This assessment of the proposed Bunnings development at Mudgee has confirmed that:

- ❖ There will be no adverse traffic implications subject to the undertaking of minor upgrading works at the Castlereagh Highway/Lyons Road intersection. Ultimately, development on the 3 residue lots will be subject to individual Development Applications to Council.
- ❖ The proposed parking provision will be quite adequate and appropriate
- ❖ The proposed vehicle access, internal circulation and servicing arrangements will be quite satisfactory

Appendix A

Plan of Existing Bunnings



EXISTING SITE PLAN
SCALE: 1:300 @ A1

ALL DIMENSIONS ARE TO BE CONFIRMED ON SITE PRIOR TO MANUFACTURE AND CONSTRUCTION

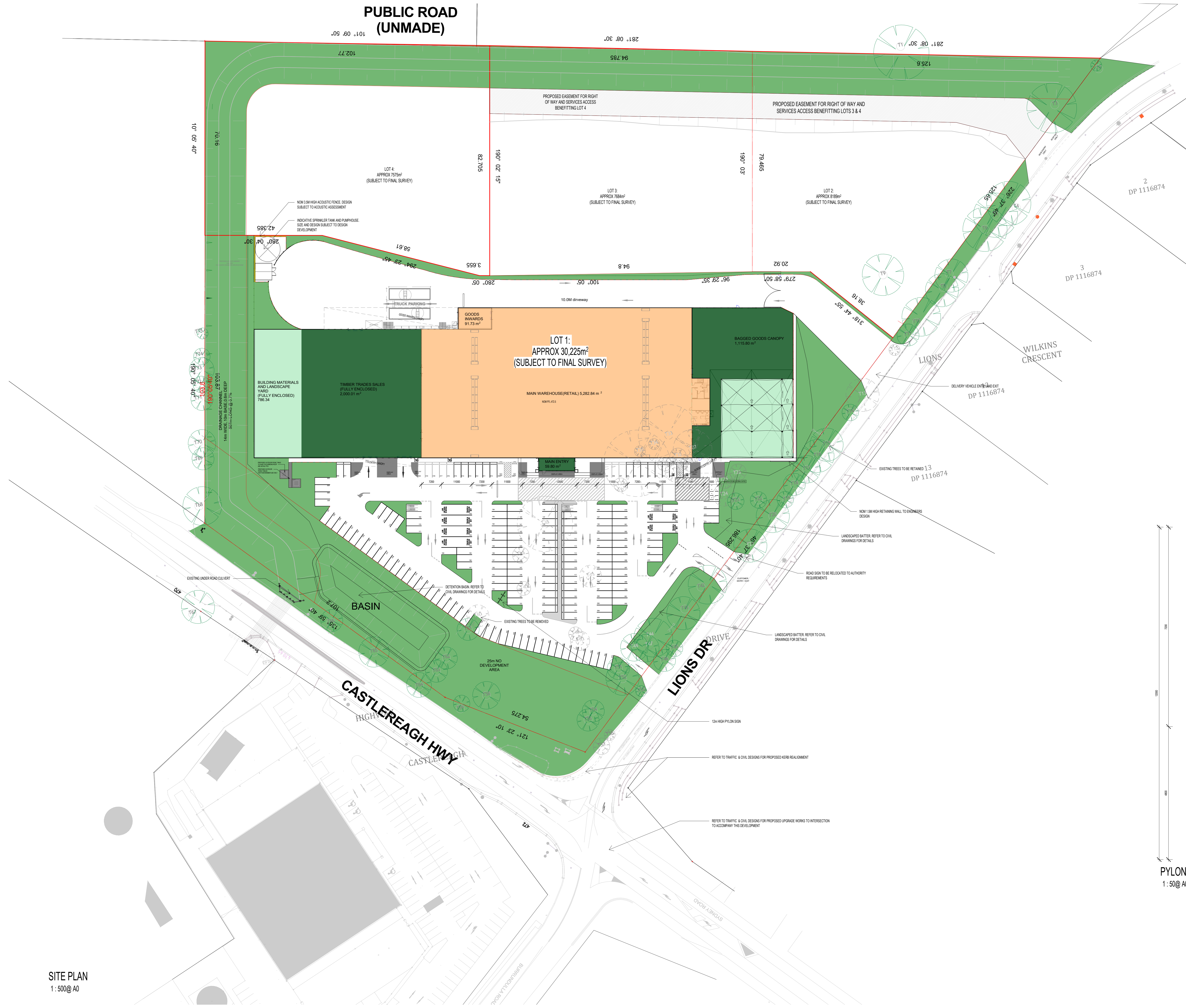
STORE TYPE SFS			
FOR COMMENT			
22/05/17	B	REMOVED/RELOCATED SPEED HUMPS	P00T
14/01/16	A	REMOVED/RELOCATED SPEED HUMPS	GS
		- INITIAL EXISTING SITE PLAN	
DATE:	REV. AMENDMENT:		DWN:
AUTHORISATION:			
CHIEF OPERATING OFFICER:		DATE:	
GM MARKETING & MERCH:		DATE:	
NATIONAL MERCH MANAGER:		DATE:	
VISUAL MERCH MANAGER:		DATE:	
STORE PLANNING MANAGER:		DATE:	
Bunnings Unit Label 11-15 Jullien Street, Mooroolbathup, VIC, 3623 Tel: 03 5462 8227 Fax: 03 5462 8227 www.bunnings.com.au			
PSO APPROVED			
DRAWING NO. #####	DATE OF PSO:####		
CAPEX APPROVED			
DRAWING NO. #####	CAPEX NO. #####	DATE ISSUED:####	
ISSUED FOR CAPEX FEASIBILITY			
DATE ISSUED:####	DRAWING NO. #####		
PROJECT NAME:	SERIES SIZE:		SFS
MUDGE			
PROJECT ADDRESS			
CNR CASTLEREAGH HWY & BURRUNDULLA RD			
MUDGE NSW 2850			
STORE NUMBER:	STORE TYPE:		SFS
7091			
DRAWING STAGE:			
EXISTING			
DRAWING TITLE:			
EXISTING SITE PLAN			
PLOT DATE: 6/22/2017 9:41 AM			
CHECKED BY:			
DRAWN: KH	PROJECT NORTH:	DRAWING NO:	REVISION:
SCALE: AS SHOWN		SP1_01	B
DATE: 22/01/13			

FILE LOCATION: \\server\cgs\proj\2017\6222\2017\6222\2017_01_13\6222_01_13_SFS_SitePlan.dwg

Appendix B

Development Plans

**PUBLIC ROAD
(UNMADE)**



LOT AREAS (m ²)		
	GROSS AREA	NET AREA
LOT 1 (BUNNINGS SITE)	30,225m ²	
LOT 2	8,189m ²	5,394m ²
LOT 3	7,684m ²	5,589m ²
LOT 4	7,575m ²	5,264m ²

NET AREA EXCLUDES DRAINAGE, SERVICES AND ROAD EASEMENTS & OTHER AREAS THAT ARE NOT ABLE TO BE BUILT ON

BUNNINGS MUDGEJE, NSW - AREA ANALYSIS	
	PROPOSED
MAIN WAREHOUSE (RETAIL)	5282.84 m ²
MAIN ENTRY	59.8 m ²
WAREHOUSE AREA	5342.84 m ²
OUTDOOR NURSERY AREA	745.44 m ²
BAGGED GOODS CANOPY AREA	1,115.8 m ²
TOTAL NURSERY AREA	1,861.24 m²
TIMBER TRADE SALES AREA	2,000.01 m ²
BUILDING MATERIALS AND LANDSCAPE YARD AREA	796.34 m ²
TOTAL TIMBER TRADE AREA	2,786.35 m²
TOTAL RETAIL AREA	9,990.23 m²
STANDARD CARPARKS	175
ACCESSIBLE CARPARKS	4
TRADE & TRAILER BAYS	6
TOTAL SITE CARPARKS	185
TROLLEY BAYS	3



PYLON SIGN
1:50@A0

SITE PLAN
1:500@A0

DATE	REV	DESCRIPTION	BY
01.07.22	H	DA APPLICATION ISSUE	OH
15.06.22	G	SIGNAGE REVISED	AZ
14.06.22	F	DA APPLICATION ISSUE	AZ
03.06.22	E	PRELIMINARY ISSUE	AZ
29.04.22	D	PRELIMINARY ISSUE	AZ
14.04.22	C	PRELIMINARY ISSUE	AZ
04.04.22	B	PRELIMINARY ISSUE	AZ
18.03.22	A	PRELIMINARY ISSUE	AZ

DATE	REV	DESCRIPTION	BY
		AMENDMENT	

CONTRACTOR TO CHECK ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK OR PREPARING ANY SHOP DRAWINGS.

THIS DRAWING IS FOR REFERENCE ONLY AND IS NOT FOR CONSTRUCTION PURPOSES.

UNLESS OTHERWISE AGREED THIS DRAWING AND THE INTELLECTUAL PROPERTY CONTAINED HEREIN ARE THE PROPERTY OF MICHAEL CURR ARCHITECT PTY LTD.

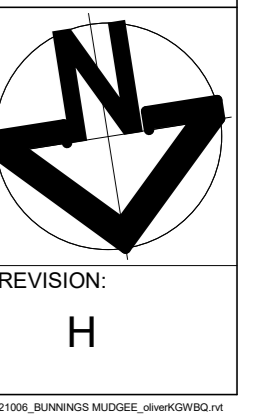


ARCHITECT:
Michael Carr Architect PTY LTD.
221 Marry Street, South Melbourne 3205
Ph 03 9645 9635 Fax 03 9698 4064
Email acarr@mcarraarchitect.com.au

CLIENT:
BUNNINGS WAREHOUSE
132 LIONS DRIVE
MUDGEJE NSW 2850

ARCHITECTURAL
DRAWING TITLE:
SITE PLAN

SCALE: As indicated @ A0	PROJECT No: 21006
DATE: JUNE 2022	VERIFICATION: THIS DRAWING HAS BEEN REVIEWED & VERIFIED BY:
FILE: -	DRAWING No: TP-02
DESIGNED: -	REVISION: H
DRAWN: OH	
CHECKED: AZ	



Appendix C

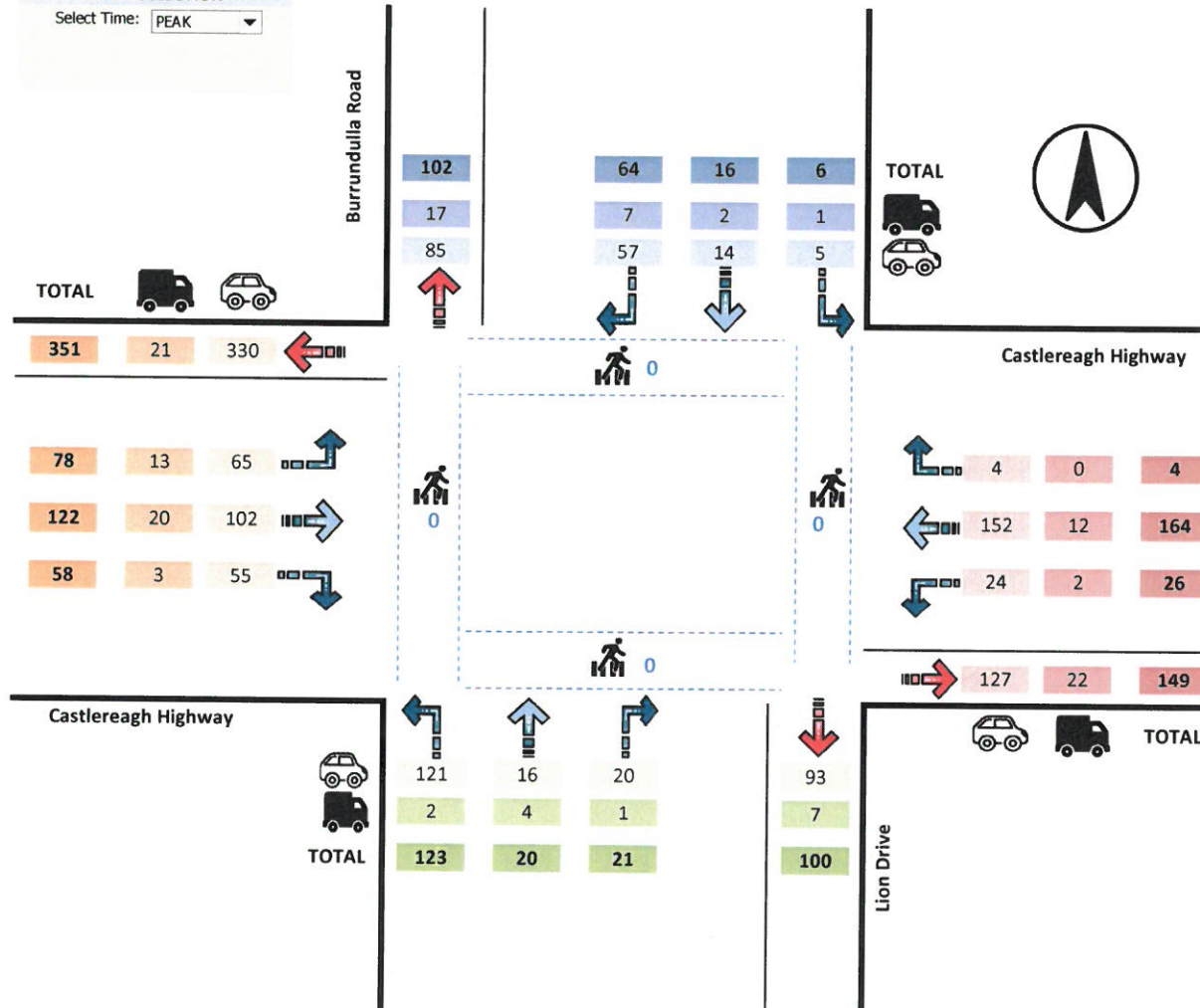
Traffic Survey Results

Location Burrundulla Road
Castlereagh Highway
Lion Drive
Castlereagh Highway
 Suburb MUDGEES

Duration 0 7:00 - 9:00
 0 15:00 - 18:00
 -
 Day/Date Thursday, 28 November, 2019
 Weather -

DATA SELECTION
 Select Time: PEAK

TIME RANGE		
PEAK	-	AM
PEAK		
8:00	-	9:00

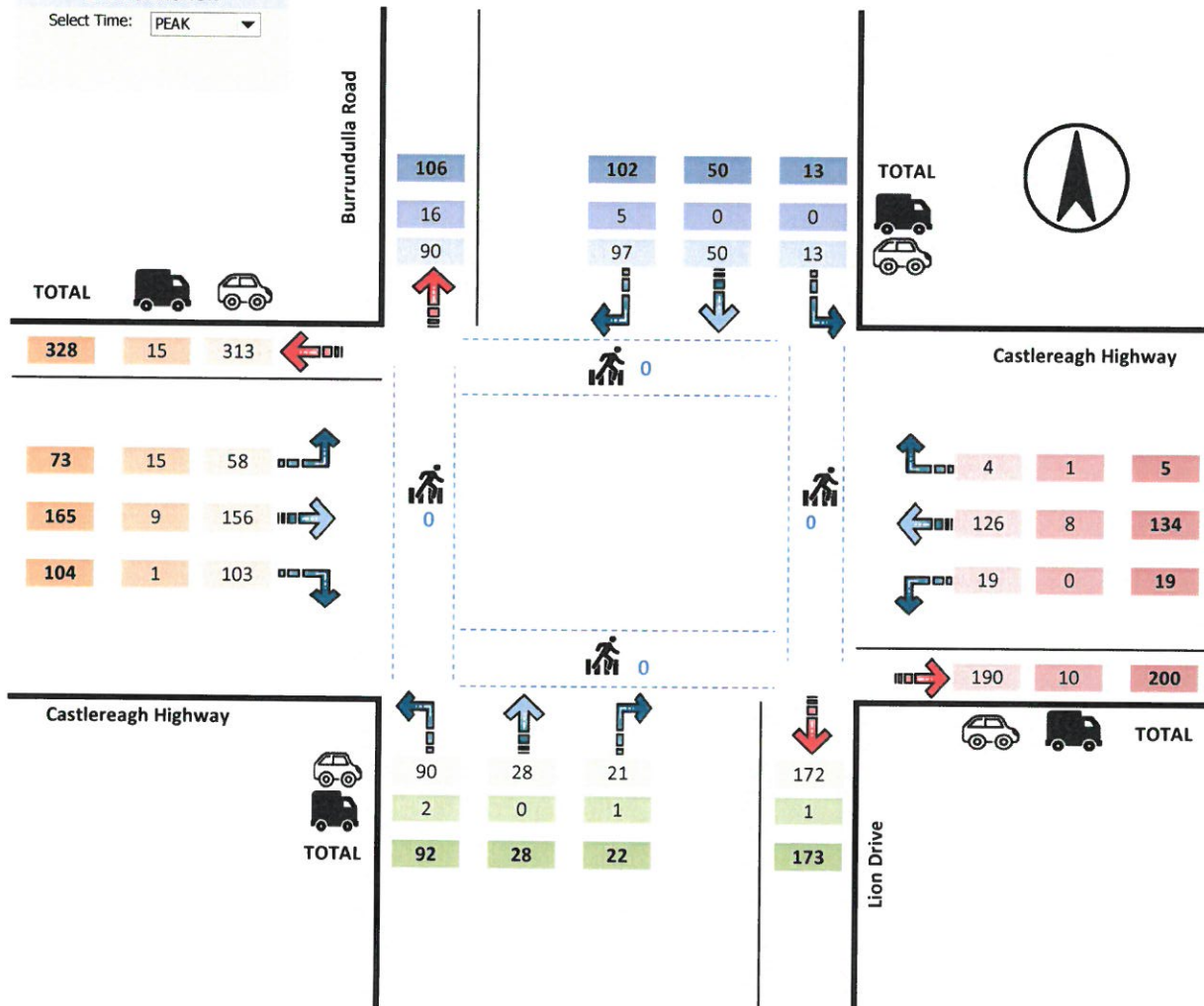


Location Burrundulla Road
Castlereagh Highway
Lion Drive
Castlereagh Highway
 Suburb MUDGEE

Duration 0 7:00 - 9:00
 0 15:00 - 18:00
 -
 Day/Date Thursday, 28 November, 2019
 Weather -

DATA SELECTION
 Select Time: PEAK

TIME RANGE		
PEAK	-	PM
PEAK		
16:30	-	17:30



Location Burrundulla Road Duration 7:00 - 9:00
Castlereagh Highway 15:00 - 18:00
Lion Drive -
Castlereagh Highway Day/Date Thursday, 28 November, 2019
Suburb MUDGEES Weather -

All Vehicles Time Per Hour	NORTH EAST Burrundulla Road										SOUTH EAST Castlereagh Highway										TOTAL		TOTAL
	L			T			R			TOTAL	L			T			R			TOTAL	LIGHT	HEAVY	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ		LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ				
7:00 - 8:00	4	1	5	8	2	10	25	12	37	52	9	1	10	78	16	94	4	1	5	109	420	61	481
7:15 - 8:15	4	1	5	6	2	8	31	8	39	52	13	1	14	96	16	112	3	1	4	130	471	62	533
7:30 - 8:30	2	0	2	7	2	9	41	5	46	57	16	2	18	125	11	136	2	0	2	156	532	50	582
7:45 - 8:45	3	0	3	12	3	15	46	3	49	67	20	2	22	139	10	149	2	0	2	173	585	52	637
8:00 - 9:00	5	1	6	14	2	16	57	7	64	86	24	2	26	152	12	164	4	0	4	194	635	67	702
Period End																							
15:00 - 16:00	6	1	7	26	8	34	97	12	109	150	19	1	20	116	8	124	2	2	4	148	685	61	746
15:15 - 16:15	5	2	7	27	0	27	90	7	97	131	18	1	19	116	13	129	3	1	4	152	711	54	765
15:30 - 16:30	4	2	6	25	0	25	94	7	101	132	17	1	18	113	12	125	4	1	5	148	727	50	777
15:45 - 16:45	5	2	7	30	0	30	91	6	97	134	14	0	14	117	15	132	5	0	5	151	737	46	783
16:00 - 17:00	5	1	6	35	0	35	96	4	100	141	18	0	18	130	12	142	5	0	5	165	759	46	805
16:15 - 17:15	12	0	12	44	0	44	95	4	99	155	15	0	15	128	9	137	3	0	3	155	762	41	803
16:30 - 17:30	13	0	13	50	0	50	97	5	102	165	19	0	19	126	8	134	4	1	5	158	765	42	807
16:45 - 17:45	11	0	11	44	0	44	99	2	101	156	23	0	23	132	6	138	8	1	9	170	757	34	791
17:00 - 18:00	11	0	11	45	0	45	93	2	95	151	21	0	21	123	7	130	7	1	8	159	695	26	721
Period End																							

All Vehicles Time Per Hour	SOUTH WEST Lion Drive										NORTH WEST Castlereagh Highway										TOTAL		TOTAL
	L			T			R			TOTAL	L			T			R			TOTAL	LIGHT	HEAVY	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ		LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ				
7:00 - 8:00	77	1	78	21	2	23	11	0	11	112	41	4	45	92	19	111	50	2	52	208	420	61	481
7:15 - 8:15	92	1	93	16	2	18	13	0	13	124	48	4	52	96	23	119	53	3	56	227	471	62	533
7:30 - 8:30	105	0	105	13	1	14	17	0	17	136	52	5	57	96	22	118	56	2	58	233	532	50	582
7:45 - 8:45	111	2	113	17	1	18	20	1	21	152	63	6	69	97	20	117	55	4	59	245	585	52	637
8:00 - 9:00	121	2	123	16	4	20	20	1	21	164	65	13	78	102	20	122	55	3	58	258	635	67	702
Period End																							
15:00 - 16:00	88	4	92	24	0	24	19	1	20	136	58	5	63	137	12	149	93	7	100	312	685	61	746
15:15 - 16:15	91	4	95	31	1	32	18	1	19	146	55	4	59	151	14	165	106	6	112	336	711	54	765
15:30 - 16:30	90	2	92	29	1	30	22	1	23	145	63	7	70	155	13	168	111	3	114	352	727	50	777
15:45 - 16:45	103	2	105	29	1	30	21	1	22	157	60	7	67	158	12	170	104	0	104	341	737	46	783
16:00 - 17:00	96	2	98	28	1	29	26	0	26	153	63	14	77	151	11	162	106	1	107	346	759	46	805
16:15 - 17:15	90	2	92	30	0	30	26	0	26	148	59	14	73	153	11	164	107	1	108	345	762	41	803
16:30 - 17:30	90	2	92	28	0	28	21	1	22	142	58	15	73	156	9	165	103	1	104	342	765	42	807
16:45 - 17:45	82	1	83	26	0	26	23	1	24	133	48	13	61	156	9	165	105	1	106	332	757	34	791
17:00 - 18:00	84	1	85	24	0	24	15	1	16	125	33	5	38	158	8	166	81	1	82	286	695	26	721
Period End																							

Location	MUDGEE BUNNINGS
Suburb	MUDGEE
Client	TTPA
Job No/Name	19143
Survey Duration	5 HOURS
Day/Date	Thursday, 28 November 2019

MOVEMENTS Time Per 15 Mins	1				2		3	Total MOVEMENTS		
	A	B	C	D	A	B	A	IN	OUT	TOTAL
7:00 - 7:15	3	2	2	2	0	4	0	8	5	13
7:15 - 7:30	8	0	6	0	0	6	0	12	8	20
7:30 - 7:45	6	2	2	0	0	1	0	3	8	11
7:45 - 8:00	6	0	7	1	0	1	1	9	7	16
8:00 - 8:15	6	1	2	2	0	4	0	8	7	15
8:15 - 8:30	5	1	4	0	0	3	0	7	6	13
8:30 - 8:45	6	0	5	0	0	6	0	11	6	17
8:45 - 9:00	10	0	7	2	1	5	3	14	14	28
Period End	50	6	35	7	1	30	4	72	61	133
15:00 - 15:15	10	3	10	2	0	2	0	14	13	27
15:15 - 15:30	10	2	5	1	0	4	0	10	12	22
15:30 - 15:45	10	3	4	1	0	3	0	8	13	21
15:45 - 16:00	6	0	3	1	0	2	0	6	6	12
16:00 - 16:15	10	1	5	1	0	3	0	9	11	20
16:15 - 16:30	12	0	8	1	0	5	0	14	12	26
16:30 - 16:45	19	1	14	1	0	8	0	23	20	43
16:45 - 17:00	19	2	9	0	0	4	0	13	21	34
17:00 - 17:15	14	2	7	0	0	5	0	12	16	28
17:15 - 17:30	18	0	8	1	0	5	0	14	18	32
17:30 - 17:45	10	0	8	1	1	3	0	12	11	23
17:45 - 18:00	19	2	3	1	0	3	0	7	21	28
Period End	157	16	84	11	1	47	0	142	174	316

MOVEMENTS Time Per Hour	1				2		3	Total MOVEMENTS		
	A	B	C	D	A	B	A	IN	OUT	TOTAL
7:00 - 8:00	23	4	17	3	0	12	1	40	19	59
7:15 - 8:15	26	3	17	3	0	12	1	43	18	61
7:30 - 8:30	23	4	15	3	0	9	1	38	16	54
7:45 - 8:45	23	2	18	3	0	14	1	41	19	60
8:00 - 9:00	27	2	18	4	1	18	3	46	24	70
Period End										
15:00 - 16:00	36	8	22	5	0	11	0	58	24	82
15:15 - 16:15	36	6	17	4	0	12	0	53	22	75
15:30 - 16:30	38	4	20	4	0	13	0	58	21	79
15:45 - 16:45	47	2	30	4	0	18	0	77	24	101
16:00 - 17:00	60	4	36	3	0	20	0	96	27	123
16:15 - 17:15	64	5	38	2	0	22	0	102	29	131
16:30 - 17:30	70	5	38	2	0	22	0	108	29	137
16:45 - 17:45	61	4	32	2	1	17	0	94	23	117
17:00 - 18:00	61	4	26	3	1	16	0	88	23	111
Period End										



Location	MUDGE BUNNINGS
Suburb	MUDGE
Client	TTPA
Job No/Name	19143
Survey Duration	3 HOURS
Day/Date	Saturday, 30 November 2019

MOVEMENTS Time Per 15 Mins	1				2		3	Total MOVEMENTS		
	A	B	C	D	A	B	A	IN	OUT	TOTAL
11:00 - 11:15	39	1	26	1	0	18	0	45	40	85
11:15 - 11:30	35	0	22	0	0	6	0	28	35	63
11:30 - 11:45	35	3	17	1	0	16	0	34	38	72
11:45 - 12:00	36	0	29	2	3	13	0	44	39	83
12:00 - 12:15	38	2	18	3	0	14	0	35	40	75
12:15 - 12:30	24	5	22	0	0	11	0	33	29	62
12:30 - 12:45	49	2	17	2	0	12	0	31	51	82
12:45 - 13:00	24	0	18	1	0	6	0	25	24	49
13:00 - 13:15	26	1	15	1	0	13	0	29	27	56
13:15 - 13:30	35	3	14	0	0	9	0	23	38	61
13:30 - 13:45	25	2	10	0	0	12	0	22	27	49
13:45 - 14:00	17	0	14	1	0	3	0	18	17	35
Period End	383	19	222	12	3	133	0	367	405	772

MOVEMENTS Time Per Hour	1				2		3	Total MOVEMENTS		
	A	B	C	D	A	B	A	IN	OUT	TOTAL
11:00 - 12:00	145	4	94	4	3	53	0	242	206	448
11:15 - 12:15	144	5	86	6	3	49	0	233	204	437
11:30 - 12:30	133	10	86	6	3	54	0	222	203	425
11:45 - 12:45	147	9	86	7	3	50	0	236	213	449
12:00 - 13:00	135	9	75	6	0	43	0	210	193	403
12:15 - 13:15	123	8	72	4	0	42	0	195	177	372
12:30 - 13:30	134	6	64	4	0	40	0	198	184	382
12:45 - 13:45	110	6	57	2	0	40	0	167	158	325
13:00 - 14:00	103	6	53	2	0	37	0	156	148	304
Period End										



Location Burrundulla Road Duration 11:00 - 14:00
Castlereagh Highway 0:00 - 0:00
Lion Drive -
Castlereagh Highway Day/Date Saturday, 30 November 2019
Suburb MUDGEE Weather -

All Vehicles Time Per Hour	NORTH EAST Burrundulla Road									SOUTH EAST Castlereagh Highway									TOTAL		TOTAL		
	L			I			R			TOTAL	L			I			R			TOTAL		LIGHT	HEAVY
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ		LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ				
11:00 - 12:00	12	0	12	42	0	42	138	3	141	195	25	0	25	160	3	163	8	0	8	196	842	23	865
11:15 - 12:15	10	0	10	47	0	47	138	2	140	197	26	0	26	170	4	174	6	0	6	206	858	23	881
11:30 - 12:30	11	0	11	47	1	48	131	3	134	193	26	0	26	162	3	165	6	0	6	197	860	25	885
11:45 - 12:45	11	0	11	47	1	48	137	3	140	199	23	0	23	148	5	153	8	0	8	184	845	26	871
12:00 - 13:00	9	0	9	48	1	49	131	1	132	190	21	0	21	144	6	150	9	0	9	180	810	22	832
12:15 - 13:15	10	0	10	44	1	45	114	1	115	170	20	0	20	135	6	141	8	0	8	169	752	24	776
12:30 - 13:30	11	0	11	45	0	45	123	0	123	179	13	0	13	137	6	143	6	0	6	162	731	19	750
12:45 - 13:45	9	0	9	44	0	44	107	0	107	160	16	0	16	129	6	135	5	0	5	156	670	18	688
13:00 - 14:00	12	0	12	40	0	40	92	1	93	145	15	0	15	128	9	137	6	0	6	158	644	20	664
Period End																							

All Vehicles Time Per Hour	SOUTH WEST Lion Drive									NORTH WEST Castlereagh Highway									TOTAL		TOTAL		
	L			I			R			TOTAL	L			I			R			TOTAL		LIGHT	HEAVY
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ		LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ				
11:00 - 12:00	68	2	70	20	0	20	27	0	27	117	107	2	109	157	12	169	78	1	79	357	842	23	865
11:15 - 12:15	67	1	68	19	0	19	33	0	33	120	101	3	104	160	10	170	81	3	84	358	858	23	881
11:30 - 12:30	68	1	69	22	0	22	35	0	35	126	102	2	104	160	12	172	90	3	93	369	860	25	885
11:45 - 12:45	59	0	59	23	0	23	34	1	35	117	103	2	105	165	11	176	87	3	90	371	845	26	871
12:00 - 13:00	60	1	61	26	0	26	30	1	31	118	89	2	91	157	8	165	86	2	88	344	810	22	832
12:15 - 13:15	64	1	65	23	0	23	23	1	24	112	91	3	94	146	11	157	74	0	74	325	752	24	776
12:30 - 13:30	60	1	61	27	0	27	16	1	17	105	82	3	85	144	8	152	67	0	67	304	731	19	750
12:45 - 13:45	55	2	57	26	0	26	19	0	19	102	66	3	69	132	7	139	62	0	62	270	670	18	688
13:00 - 14:00	50	1	51	25	0	25	23	0	23	99	59	2	61	126	7	133	68	0	68	262	644	20	664
Period End																							

Count Number 886

Ref : TTP

Lat/Long : S32 36.794 / E149 36.331

Street CASTLEREIGH HIGHWAY, MUDGEE : From ILLFORD to MUDGEE TOWN CENTRE : NORTH

Location Combined Counts (884,885), just north and just south of Lions Rd.

Carriageway

Start Date 08-DEC-21
 Start Time 100
 Duration 7 DAYS
 Interval 1 HOUR

Weekly 50th Percentile Speed 55
 Weekly 85th Percentile Speed 67
 Five Day AADT 2469
 Seven Day AADT 2406

TOTAL COUNT MATRIX

	MON 13TH	TUE 14TH	WED 8TH	THU 9TH	FRI 10TH	SAT 11TH	SUN 12TH	5 Day Total	5 Day Average	Total	7 Day Average
Midnight - 1am	6	11	11	14	17	16	6	59	12	81	12
1am - 2am	10	11	12	19	10	12	10	62	12	84	12
2am - 3am	11	10	12	3	7	8	7	43	9	58	8
3am - 4am	17	17	18	18	15	10	2	85	17	97	14
4am - 5am	25	37	29	29	27	10	9	147	29	166	24
5am - 6am	47	68	56	58	46	24	13	275	55	312	45
6am - 7am	111	104	108	81	101	49	24	505	101	578	83
7am - 8am	135	129	132	138	138	71	42	672	134	785	112
8am - 9am	199	208	205	209	198	150	83	1019	204	1252	179
9am - 10am	181	191	176	166	168	168	133	882	176	1183	169
10am - 11am	196	186	172	162	172	185	141	888	178	1214	173
11am - Midday	141	132	184	175	198	214	194	830	160	1238	177
Midday - 1pm	177	134	160	152	198	185	184	821	164	1190	170
1pm - 2pm	171	152	157	173	217	161	179	870	174	1210	173
2pm - 3pm	176	165	135	172	212	185	185	860	172	1230	176
3pm - 4pm	181	168	160	171	213	179	191	893	179	1263	180
4pm - 5pm	183	174	168	174	218	188	200	917	183	1305	186
5pm - 6pm	160	129	117	146	229	148	186	781	156	1115	159
6pm - 7pm	97	96	79	106	159	96	108	537	107	741	106
7pm - 8pm	60	78	38	51	110	71	95	337	67	503	72
8pm - 9pm	37	40	34	47	96	42	78	254	51	374	53
9pm - 10pm	29	29	24	31	50	32	50	163	33	245	35
10pm - 11pm	14	14	16	22	34	20	22	100	20	142	20
11pm - Midnight	16	14	13	7	27	18	14	77	15	109	16
Total	2380	2297	2216	2324	2860	2242	2156	12077	2415	16475	2354

Count Number 886 Ref : TTP Lat/Long : S32 36.794 / E149 36.331
 Street CASTLEREIGH HIGHWAY, MUDGEE : From MUDGEE TOWN CENTRE to ILLFORD : SOUTH
 Location Combined Counts (884,885), just north and just south of Lions Rd. Carriageway

Start Date 08-DEC-21
 Start Time 100
 Duration 7 DAYS
 Interval 1 HOUR

Weekly 50th Percentile Speed 46
 Weekly 85th Percentile Speed 56
 Five Day AADT 4562
 Seven Day AADT 4313

TOTAL COUNT MATRIX

	MON 13TH	TUE 14TH	WED 8TH	THU 9TH	FRI 10TH	SAT 11TH	SUN 12TH	5 Day Total	5 Day Average	Total	7 Day Average
Midnight - 1am	3	8	6	12	8	14	11	37	7	62	9
1am - 2am	2	3	2	4	8	4	3	19	4	26	4
2am - 3am	6	4	2	4	8	4	5	24	5	33	5
3am - 4am	7	8	8	4	6	4	3	33	7	40	6
4am - 5am	16	25	19	20	15	5	10	95	19	110	16
5am - 6am	38	47	55	60	60	32	23	260	52	315	45
6am - 7am	120	127	129	119	114	76	46	609	122	731	104
7am - 8am	225	238	217	216	214	171	126	1110	222	1407	201
8am - 9am	299	247	310	284	259	223	204	1399	280	1826	261
9am - 10am	262	245	305	283	244	304	326	1339	268	1969	281
10am - 11am	251	244	302	275	230	379	388	1302	260	2069	296
11am - Midday	290	214	282	287	256	380	380	1329	266	2089	298
Midday - 1pm	367	340	280	383	383	362	383	1753	351	2498	357
1pm - 2pm	328	323	295	363	407	336	336	1716	343	2388	341
2pm - 3pm	354	329	296	336	402	285	307	1717	343	2309	330
3pm - 4pm	360	321	292	325	408	262	332	1706	341	2300	329
4pm - 5pm	367	343	370	384	409	236	258	1873	345	2367	338
5pm - 6pm	326	340	293	321	348	163	162	1628	326	1953	279
6pm - 7pm	175	180	156	156	149	87	126	816	163	1029	147
7pm - 8pm	112	130	136	122	103	83	113	603	121	799	114
8pm - 9pm	63	89	80	92	81	64	74	405	81	543	78
9pm - 10pm	39	52	38	59	66	64	47	254	51	365	52
10pm - 11pm	25	26	34	35	39	46	16	159	32	221	32
11pm - Midnight	17	21	10	16	37	23	7	101	20	131	19
Total	4052	3904	3917	4160	4354	3607	3686	20287	4057	27580	3940

Appendix D

SIDRA Results

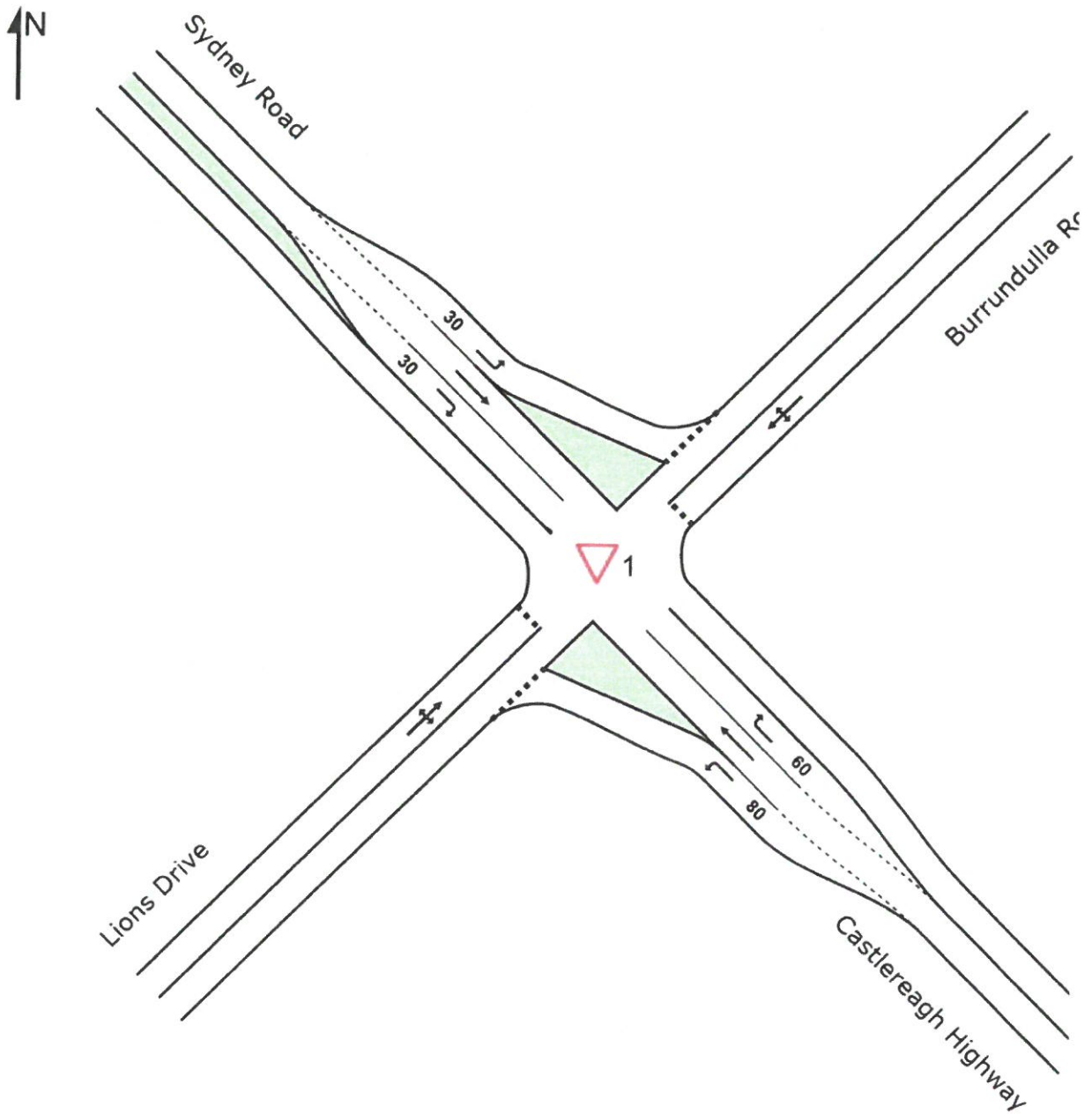
SITE LAYOUT

▽ Site: 1 [Castlereagh Highway and Lions Drive EX]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveaway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: 1 [Castlereagh Highway and Lions Drive AM EX]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road
 Site Category: BUNNINGS
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Castlereagh Highway												
4	L2	27	5.0	0.018	4.8	LOS A	0.1	0.5	0.17	0.47	0.17	46.7
5	T1	173	5.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	4	5.0	0.003	5.0	LOS A	0.0	0.1	0.23	0.50	0.23	45.6
Approach		204	5.0	0.091	0.7	LOS A	0.1	0.5	0.03	0.07	0.03	49.4
NorthEast: Burrundulla Road												
7	L2	6	5.0	0.200	5.2	LOS A	0.8	5.7	0.57	0.76	0.57	43.2
8	T1	17	5.0	0.200	7.7	LOS A	0.8	5.7	0.57	0.76	0.57	43.5
9	R2	67	5.0	0.200	12.1	LOS A	0.8	5.7	0.57	0.76	0.57	43.2
Approach		91	5.0	0.200	10.8	LOS A	0.8	5.7	0.57	0.76	0.57	43.2
NorthWest: Sydney Road												
10	L2	82	5.0	0.053	4.6	LOS A	0.2	1.6	0.09	0.47	0.09	46.9
11	T1	128	5.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	61	5.0	0.041	5.2	LOS A	0.2	1.3	0.29	0.54	0.29	45.5
Approach		272	5.0	0.069	2.6	LOS A	0.2	1.6	0.09	0.26	0.09	48.0
SouthWest: Lions Drive												
1	L2	129	5.0	0.194	5.4	LOS A	0.8	5.7	0.35	0.58	0.35	45.6
2	T1	21	5.0	0.194	7.6	LOS A	0.8	5.7	0.35	0.58	0.35	45.9
3	R2	22	5.0	0.194	9.7	LOS A	0.8	5.7	0.35	0.58	0.35	45.7
Approach		173	5.0	0.194	6.2	LOS A	0.8	5.7	0.35	0.58	0.35	45.7
All Vehicles		739	5.0	0.200	3.9	NA	0.8	5.7	0.19	0.35	0.19	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 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.

MOVEMENT SUMMARY

▽ Site: 1 [Castlereagh Highway and Lions Drive PM EX]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Castlereagh Highway												
4	L2	20	5.0	0.015	5.0	LOS A	0.1	0.4	0.25	0.48	0.25	46.5
5	T1	141	5.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	5	5.0	0.004	5.1	LOS A	0.0	0.1	0.28	0.51	0.28	45.5
Approach		166	5.0	0.075	0.8	LOS A	0.1	0.4	0.04	0.07	0.04	49.4
NorthEast: Burrundulla Road												
7	L2	14	5.0	0.390	7.0	LOS A	2.0	14.8	0.64	0.89	0.86	41.9
8	T1	53	5.0	0.390	10.6	LOS A	2.0	14.8	0.64	0.89	0.86	42.2
9	R2	107	5.0	0.390	15.4	LOS B	2.0	14.8	0.64	0.89	0.86	42.0
Approach		174	5.0	0.390	13.3	LOS A	2.0	14.8	0.64	0.89	0.86	42.0
NorthWest: Sydney Road												
10	L2	77	5.0	0.050	4.6	LOS A	0.2	1.5	0.10	0.47	0.10	46.9
11	T1	174	5.0	0.093	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	109	5.0	0.071	5.1	LOS A	0.3	2.4	0.26	0.54	0.26	45.6
Approach		360	5.0	0.093	2.5	LOS A	0.3	2.4	0.10	0.26	0.10	47.9
SouthWest: Lions Drive												
1	L2	97	5.0	0.188	5.3	LOS A	0.8	5.5	0.35	0.58	0.35	45.3
2	T1	29	5.0	0.188	8.3	LOS A	0.8	5.5	0.35	0.58	0.35	45.6
3	R2	23	5.0	0.188	11.4	LOS A	0.8	5.5	0.35	0.58	0.35	45.3
Approach		149	5.0	0.188	6.8	LOS A	0.8	5.5	0.35	0.58	0.35	45.4
All Vehicles		849	5.0	0.390	5.1	NA	2.0	14.8	0.24	0.41	0.29	46.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.

MOVEMENT SUMMARY

▽ Site: 1 [Castlereagh Highway and Lions Drive SAT EX]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Castlereagh Highway												
4	L2	27	5.0	0.020	5.0	LOS A	0.1	0.6	0.24	0.48	0.24	46.5
5	T1	174	5.0	0.092	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	6	5.0	0.004	5.1	LOS A	0.0	0.1	0.27	0.51	0.27	45.5
Approach		207	5.0	0.092	0.8	LOS A	0.1	0.6	0.04	0.08	0.04	49.4
NorthEast: Burrundulla Road												
7	L2	12	5.0	0.471	7.9	LOS A	2.7	19.7	0.69	0.96	1.03	41.0
8	T1	49	5.0	0.471	12.3	LOS A	2.7	19.7	0.69	0.96	1.03	41.3
9	R2	138	5.0	0.471	16.8	LOS B	2.7	19.7	0.69	0.96	1.03	41.1
Approach		199	5.0	0.471	15.2	LOS B	2.7	19.7	0.69	0.96	1.03	41.1
NorthWest: Sydney Road												
10	L2	107	5.0	0.069	4.6	LOS A	0.3	2.1	0.10	0.47	0.10	46.9
11	T1	168	5.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	98	5.0	0.066	5.2	LOS A	0.3	2.2	0.29	0.54	0.29	45.5
Approach		374	5.0	0.090	2.7	LOS A	0.3	2.2	0.10	0.28	0.10	47.8
SouthWest: Lions Drive												
1	L2	73	5.0	0.193	5.4	LOS A	0.8	5.6	0.42	0.63	0.42	44.8
2	T1	23	5.0	0.193	8.5	LOS A	0.8	5.6	0.42	0.63	0.42	45.1
3	R2	37	5.0	0.193	11.6	LOS A	0.8	5.6	0.42	0.63	0.42	44.8
Approach		133	5.0	0.193	7.7	LOS A	0.8	5.6	0.42	0.63	0.42	44.9
All Vehicles		913	5.0	0.471	5.7	NA	2.7	19.7	0.26	0.43	0.34	46.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.

MOVEMENT SUMMARY

▽ Site: 1 [Castlereagh Highway and Lions Drive AM FUT]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Castlereagh Highway												
4	L2	36	5.0	0.025	4.9	LOS A	0.1	0.7	0.23	0.48	0.23	46.6
5	T1	207	5.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	3	5.0	0.002	5.0	LOS A	0.0	0.1	0.25	0.50	0.25	45.6
Approach		246	5.0	0.110	0.8	LOS A	0.1	0.7	0.04	0.08	0.04	49.4
NorthEast: Burrundulla Road												
7	L2	6	5.0	0.175	5.2	LOS A	0.6	4.7	0.61	0.78	0.61	42.1
8	T1	14	5.0	0.175	8.9	LOS A	0.6	4.7	0.61	0.78	0.61	42.4
9	R2	44	5.0	0.175	15.3	LOS B	0.6	4.7	0.61	0.78	0.61	42.1
Approach		64	5.0	0.175	13.0	LOS A	0.6	4.7	0.61	0.78	0.61	42.2
NorthWest: Sydney Road												
10	L2	63	5.0	0.040	4.6	LOS A	0.2	1.2	0.09	0.47	0.09	46.9
11	T1	145	5.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	120	5.0	0.083	5.3	LOS A	0.4	2.8	0.33	0.56	0.33	45.4
Approach		328	5.0	0.083	2.8	LOS A	0.4	2.8	0.14	0.29	0.14	47.6
SouthWest: Lions Drive												
1	L2	177	5.0	0.257	5.7	LOS A	1.1	7.8	0.40	0.61	0.40	45.4
2	T1	23	5.0	0.257	9.6	LOS A	1.1	7.8	0.40	0.61	0.40	45.7
3	R2	20	5.0	0.257	12.2	LOS A	1.1	7.8	0.40	0.61	0.40	45.4
Approach		220	5.0	0.257	6.7	LOS A	1.1	7.8	0.40	0.61	0.40	45.4
All Vehicles		859	5.0	0.257	4.0	NA	1.1	7.8	0.21	0.35	0.21	47.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.

MOVEMENT SUMMARY

▽ Site: 1 [Castlereagh Highway and Lions Drive PM FUT]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Castlereagh Highway												
4	L2	27	5.0	0.021	5.3	LOS A	0.1	0.6	0.31	0.50	0.31	46.4
5	T1	169	5.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	4	5.0	0.003	5.2	LOS A	0.0	0.1	0.30	0.51	0.30	45.5
Approach		201	5.0	0.090	0.8	LOS A	0.1	0.6	0.05	0.08	0.05	49.4
NorthEast: Burrundulla Road												
7	L2	14	5.0	0.371	7.4	LOS A	1.8	12.8	0.69	0.90	0.91	40.8
8	T1	52	5.0	0.371	12.3	LOS A	1.8	12.8	0.69	0.90	0.91	41.0
9	R2	69	5.0	0.371	20.1	LOS B	1.8	12.8	0.69	0.90	0.91	40.8
Approach		135	5.0	0.371	15.8	LOS B	1.8	12.8	0.69	0.90	0.91	40.9
NorthWest: Sydney Road												
10	L2	62	5.0	0.040	4.7	LOS A	0.2	1.2	0.12	0.47	0.12	46.9
11	T1	196	5.0	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	172	5.0	0.114	5.2	LOS A	0.5	3.9	0.30	0.55	0.30	45.5
Approach		429	5.0	0.114	2.8	LOS A	0.5	3.9	0.14	0.29	0.14	47.6
SouthWest: Lions Drive												
1	L2	159	5.0	0.278	5.5	LOS A	1.2	8.6	0.39	0.60	0.39	45.1
2	T1	39	5.0	0.278	10.6	LOS A	1.2	8.6	0.39	0.60	0.39	45.4
3	R2	20	5.0	0.278	14.6	LOS B	1.2	8.6	0.39	0.60	0.39	45.1
Approach		218	5.0	0.278	7.2	LOS A	1.2	8.6	0.39	0.60	0.39	45.1
All Vehicles		983	5.0	0.371	5.1	NA	1.8	12.8	0.25	0.40	0.28	46.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.

MOVEMENT SUMMARY

▽ Site: 1 [Castlereagh Highway and Lions Drive SAT FUT]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Castlereagh Highway												
4	L2	41	5.0	0.033	5.5	LOS A	0.1	0.9	0.35	0.53	0.35	46.2
5	T1	208	5.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	14	5.0	0.009	5.1	LOS A	0.0	0.3	0.27	0.52	0.27	45.5
Approach		263	5.0	0.110	1.1	LOS A	0.1	0.9	0.07	0.11	0.07	49.1
NorthEast: Burrundulla Road												
7	L2	12	5.0	0.347	7.1	LOS A	1.6	11.4	0.69	0.89	0.88	40.6
8	T1	62	5.0	0.347	13.1	LOS A	1.6	11.4	0.69	0.89	0.88	40.8
9	R2	45	5.0	0.347	22.8	LOS B	1.6	11.4	0.69	0.89	0.88	40.6
Approach		119	5.0	0.347	16.2	LOS B	1.6	11.4	0.69	0.89	0.88	40.7
NorthWest: Sydney Road												
10	L2	60	5.0	0.039	4.7	LOS A	0.2	1.2	0.13	0.47	0.13	46.8
11	T1	166	5.0	0.089	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	215	5.0	0.149	5.4	LOS A	0.7	5.2	0.34	0.57	0.34	45.4
Approach		441	5.0	0.149	3.3	LOS A	0.7	5.2	0.19	0.34	0.19	47.2
SouthWest: Lions Drive												
1	L2	189	5.0	0.390	6.6	LOS A	2.1	15.7	0.48	0.71	0.60	43.9
2	T1	37	5.0	0.390	13.3	LOS A	2.1	15.7	0.48	0.71	0.60	44.3
3	R2	40	5.0	0.390	18.5	LOS B	2.1	15.7	0.48	0.71	0.60	44.0
Approach		266	5.0	0.390	9.3	LOS A	2.1	15.7	0.48	0.71	0.60	44.0
All Vehicles		1089	5.0	0.390	5.6	NA	2.1	15.7	0.29	0.43	0.33	46.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). 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.

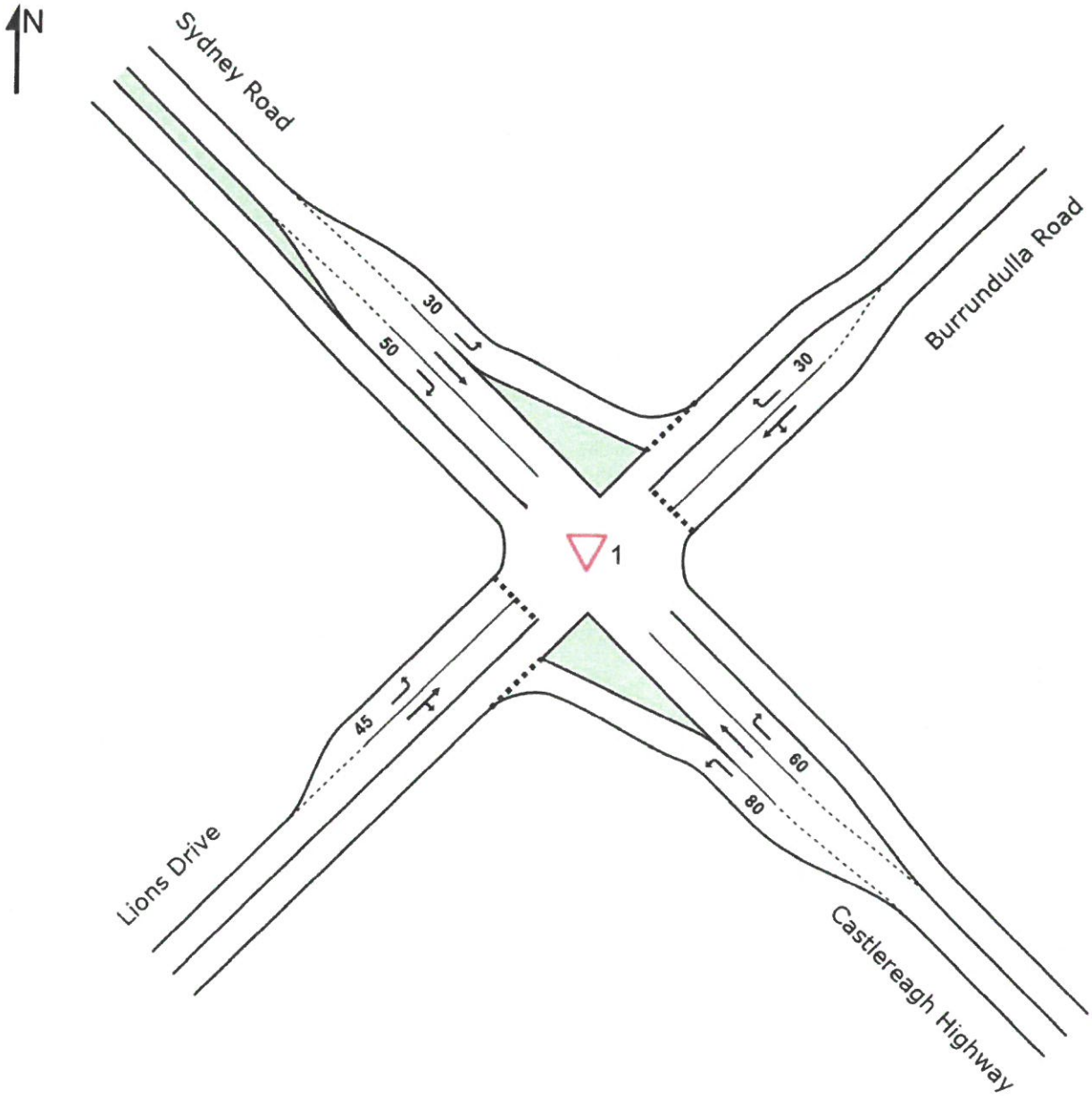
SITE LAYOUT

▽ Site: 1 [Castlereagh Highway and Lions Drive FUT DEV]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: 1 [Castlereagh Highway and Lions Drive AM FUT DEV]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Castlereagh Highway												
4	L2	36	5.0	0.025	4.9	LOS A	0.1	0.7	0.23	0.48	0.23	46.6
5	T1	207	5.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	3	5.0	0.002	5.0	LOS A	0.0	0.1	0.25	0.49	0.25	45.8
Approach		246	5.0	0.110	0.8	LOS A	0.1	0.7	0.04	0.08	0.04	49.4
NorthEast: Burrundulla Road												
7	L2	6	5.0	0.031	5.2	LOS A	0.1	0.9	0.42	0.57	0.42	44.9
8	T1	14	5.0	0.031	8.5	LOS A	0.1	0.9	0.42	0.57	0.42	45.3
9	R2	44	5.0	0.144	15.1	LOS B	0.5	3.7	0.71	0.86	0.71	41.1
Approach		64	5.0	0.144	12.7	LOS A	0.5	3.7	0.62	0.77	0.62	42.3
NorthWest: Sydney Road												
10	L2	63	5.0	0.040	4.6	LOS A	0.2	1.2	0.09	0.47	0.09	46.9
11	T1	145	5.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	120	5.0	0.083	5.3	LOS A	0.4	2.8	0.33	0.55	0.33	45.6
Approach		328	5.0	0.083	2.8	LOS A	0.4	2.8	0.14	0.29	0.14	47.7
SouthWest: Lions Drive												
1	L2	177	5.0	0.167	5.6	LOS A	0.7	4.8	0.33	0.57	0.33	45.8
2	T1	23	5.0	0.089	8.5	LOS A	0.3	2.5	0.58	0.74	0.58	44.1
3	R2	20	5.0	0.089	10.8	LOS A	0.3	2.5	0.58	0.74	0.58	43.8
Approach		220	5.0	0.167	6.4	LOS A	0.7	4.8	0.38	0.61	0.38	45.4
All Vehicles		859	5.0	0.167	3.9	NA	0.7	4.8	0.21	0.35	0.21	47.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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.

MOVEMENT SUMMARY

▽ Site: 1 [Castlereagh Highway and Lions Drive PM FUT DEV]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Castlereagh Highway												
4	L2	27	5.0	0.021	5.3	LOS A	0.1	0.6	0.31	0.50	0.31	46.4
5	T1	169	5.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	4	5.0	0.003	5.2	LOS A	0.0	0.1	0.30	0.50	0.30	45.7
Approach		201	5.0	0.090	0.8	LOS A	0.1	0.6	0.05	0.08	0.05	49.4
NorthEast: Burrundulla Road												
7	L2	14	5.0	0.120	5.5	LOS A	0.5	3.4	0.54	0.70	0.54	44.2
8	T1	52	5.0	0.120	9.8	LOS A	0.5	3.4	0.54	0.70	0.54	44.5
9	R2	69	5.0	0.252	18.1	LOS B	1.0	7.1	0.77	0.92	0.85	39.8
Approach		135	5.0	0.252	13.6	LOS A	1.0	7.1	0.65	0.81	0.70	41.9
NorthWest: Sydney Road												
10	L2	62	5.0	0.040	4.7	LOS A	0.2	1.2	0.12	0.47	0.12	46.9
11	T1	196	5.0	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	172	5.0	0.114	5.2	LOS A	0.5	3.9	0.30	0.54	0.30	45.7
Approach		429	5.0	0.114	2.8	LOS A	0.5	3.9	0.14	0.28	0.14	47.7
SouthWest: Lions Drive												
1	L2	159	5.0	0.144	5.4	LOS A	0.6	4.1	0.29	0.55	0.29	45.9
2	T1	39	5.0	0.134	9.5	LOS A	0.5	3.7	0.61	0.78	0.61	43.5
3	R2	20	5.0	0.134	13.0	LOS A	0.5	3.7	0.61	0.78	0.61	43.3
Approach		218	5.0	0.144	6.8	LOS A	0.6	4.1	0.38	0.61	0.38	45.2
All Vehicles		983	5.0	0.252	4.8	NA	1.0	7.1	0.24	0.39	0.25	46.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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.

MOVEMENT SUMMARY

▽ Site: 1 [Castlereagh Highway and Lions Drive SAT FUT DEV]

Castlereagh Highway, Lions Drive, Burrundulla Road, Sydney Road

Site Category: BUNNINGS

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Castlereagh Highway												
4	L2	41	5.0	0.033	5.5	LOS A	0.1	0.9	0.35	0.53	0.35	46.2
5	T1	208	5.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
6	R2	14	5.0	0.009	5.1	LOS A	0.0	0.3	0.27	0.50	0.27	45.7
Approach		263	5.0	0.110	1.1	LOS A	0.1	0.9	0.07	0.11	0.07	49.1
NorthEast: Burrundulla Road												
7	L2	12	5.0	0.153	5.3	LOS A	0.6	4.4	0.57	0.73	0.57	43.5
8	T1	62	5.0	0.153	10.9	LOS A	0.6	4.4	0.57	0.73	0.57	43.9
9	R2	45	5.0	0.194	19.9	LOS B	0.7	5.0	0.79	0.91	0.82	39.0
Approach		119	5.0	0.194	13.8	LOS A	0.7	5.0	0.65	0.80	0.66	41.9
NorthWest: Sydney Road												
10	L2	60	5.0	0.039	4.7	LOS A	0.2	1.2	0.13	0.47	0.13	46.8
11	T1	166	5.0	0.089	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	215	5.0	0.149	5.4	LOS A	0.7	5.2	0.34	0.56	0.34	45.6
Approach		441	5.0	0.149	3.3	LOS A	0.7	5.2	0.19	0.34	0.19	47.3
SouthWest: Lions Drive												
1	L2	189	5.0	0.180	5.7	LOS A	0.7	5.2	0.33	0.58	0.33	45.8
2	T1	37	5.0	0.211	11.0	LOS A	0.8	5.9	0.69	0.85	0.71	42.2
3	R2	40	5.0	0.211	15.3	LOS B	0.8	5.9	0.69	0.85	0.71	42.0
Approach		266	5.0	0.211	7.8	LOS A	0.8	5.9	0.44	0.65	0.44	44.6
All Vehicles		1089	5.0	0.211	5.0	NA	0.8	5.9	0.27	0.41	0.27	46.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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.

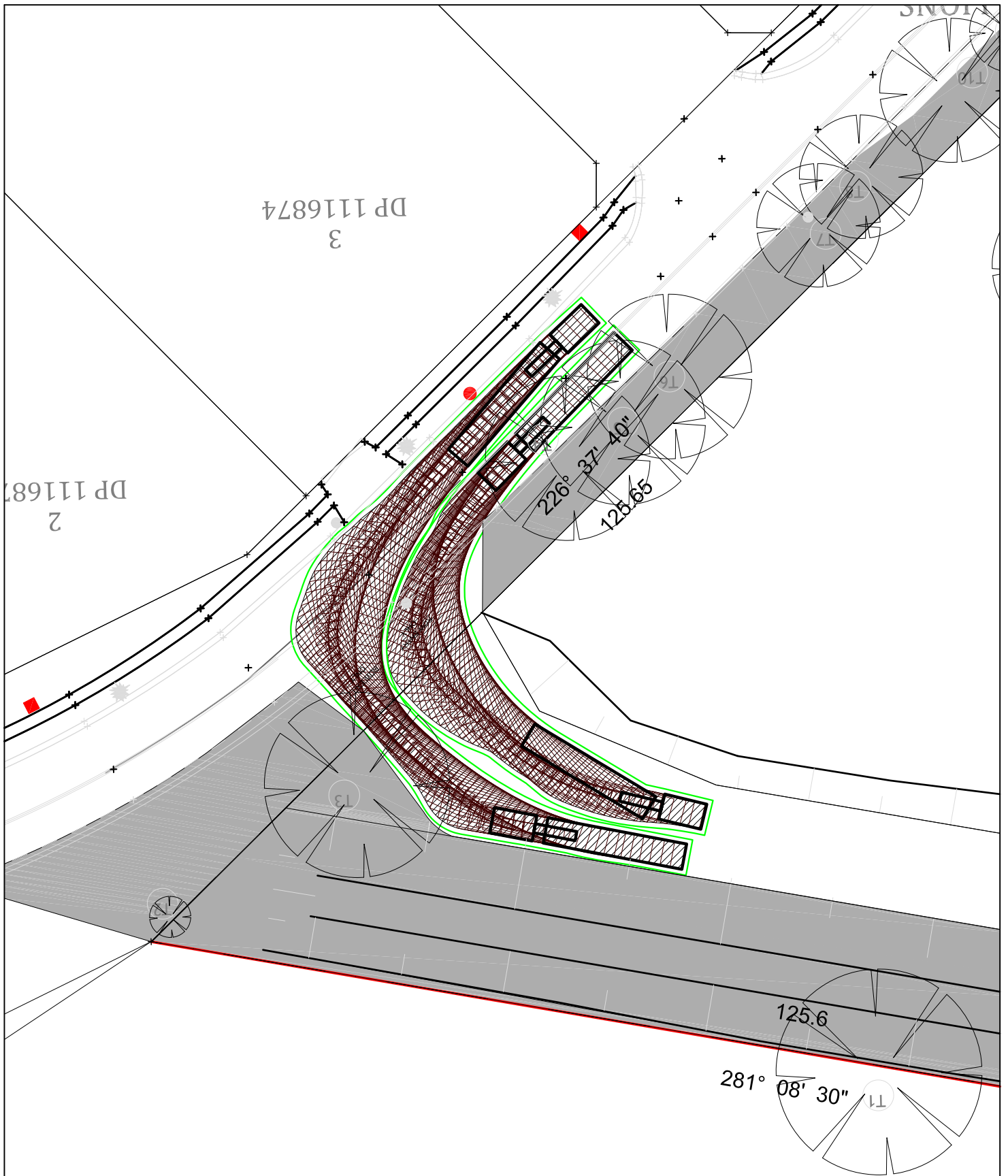
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

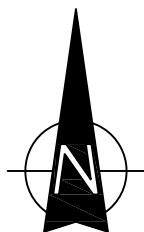
Appendix E

Extracts from RMS Study



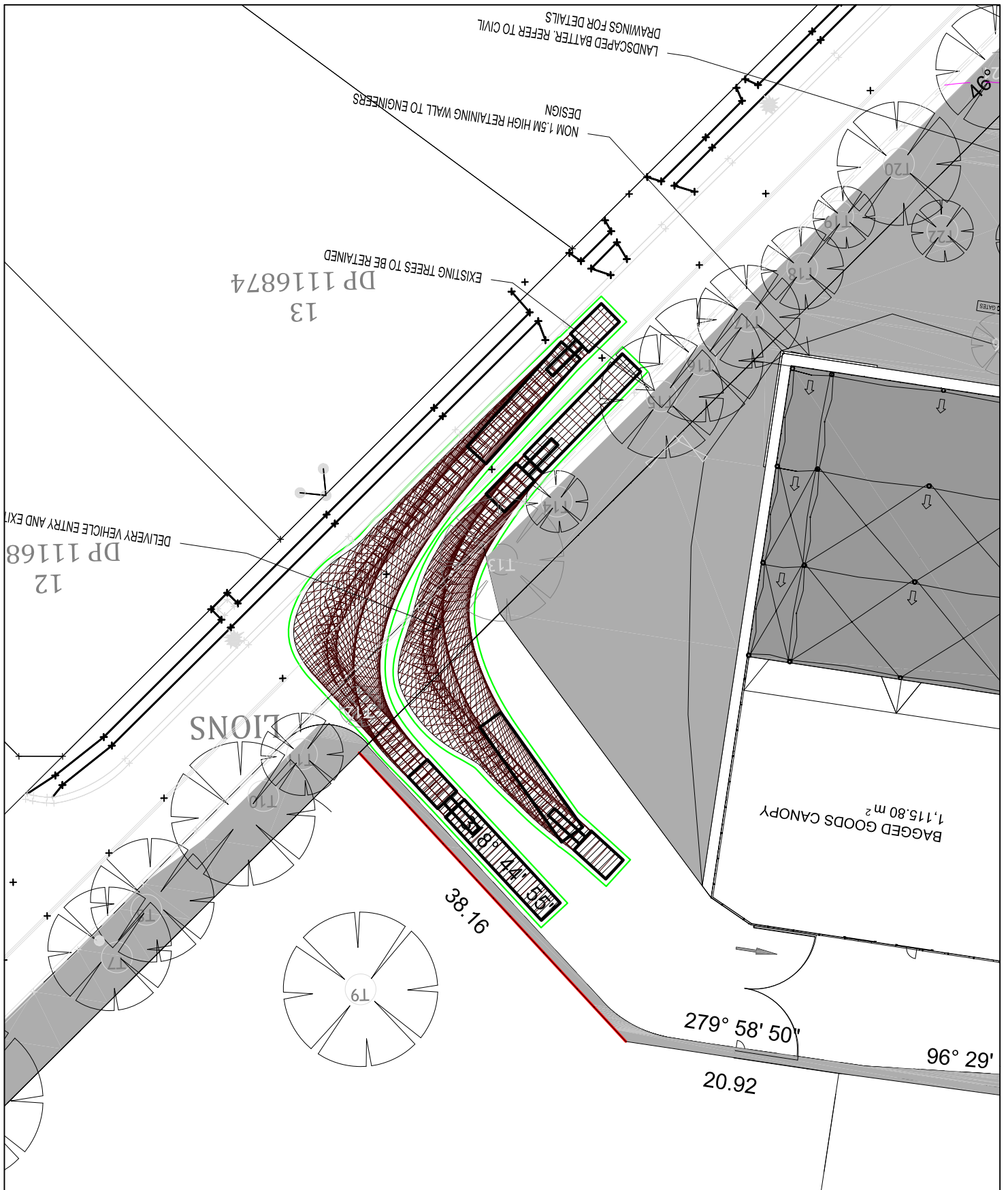
NOTE

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



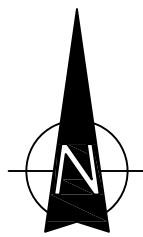
**SWEPT PATH ANALYSIS
OF 19m ARTICULATED
VEHICLES ENTERING AND
EXITING THE SITE**

SP 1

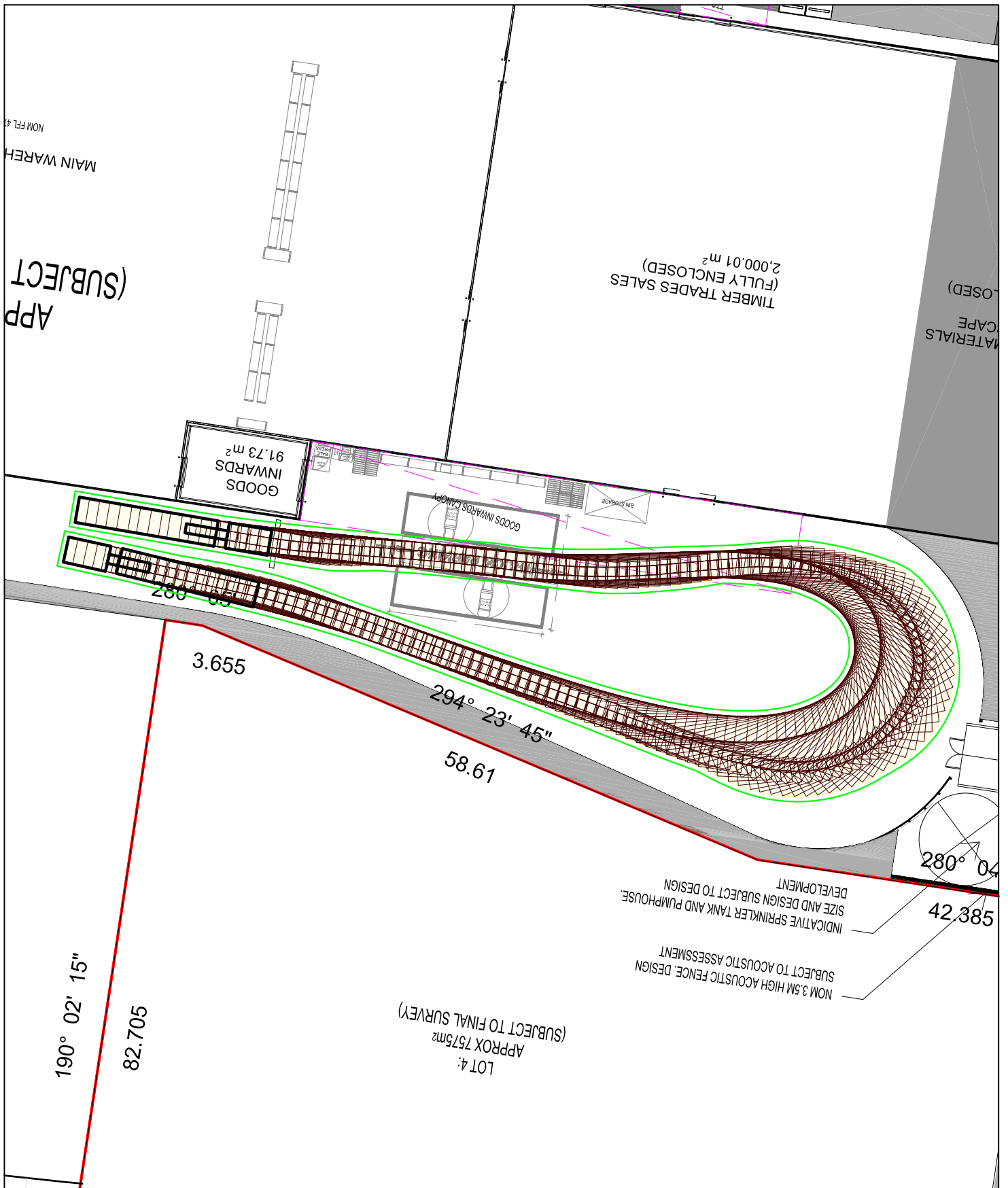


NOTE

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

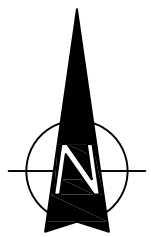


**SWEPT PATH ANALYSIS
OF 19m ARTICULATED
VEHICLES ENTERING AND
EXITING THE SITE**

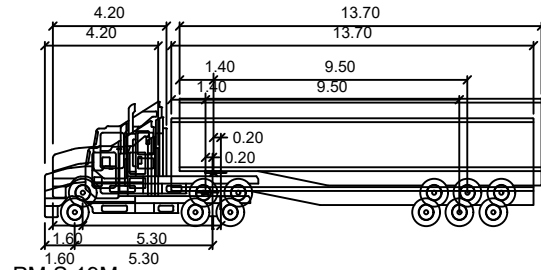
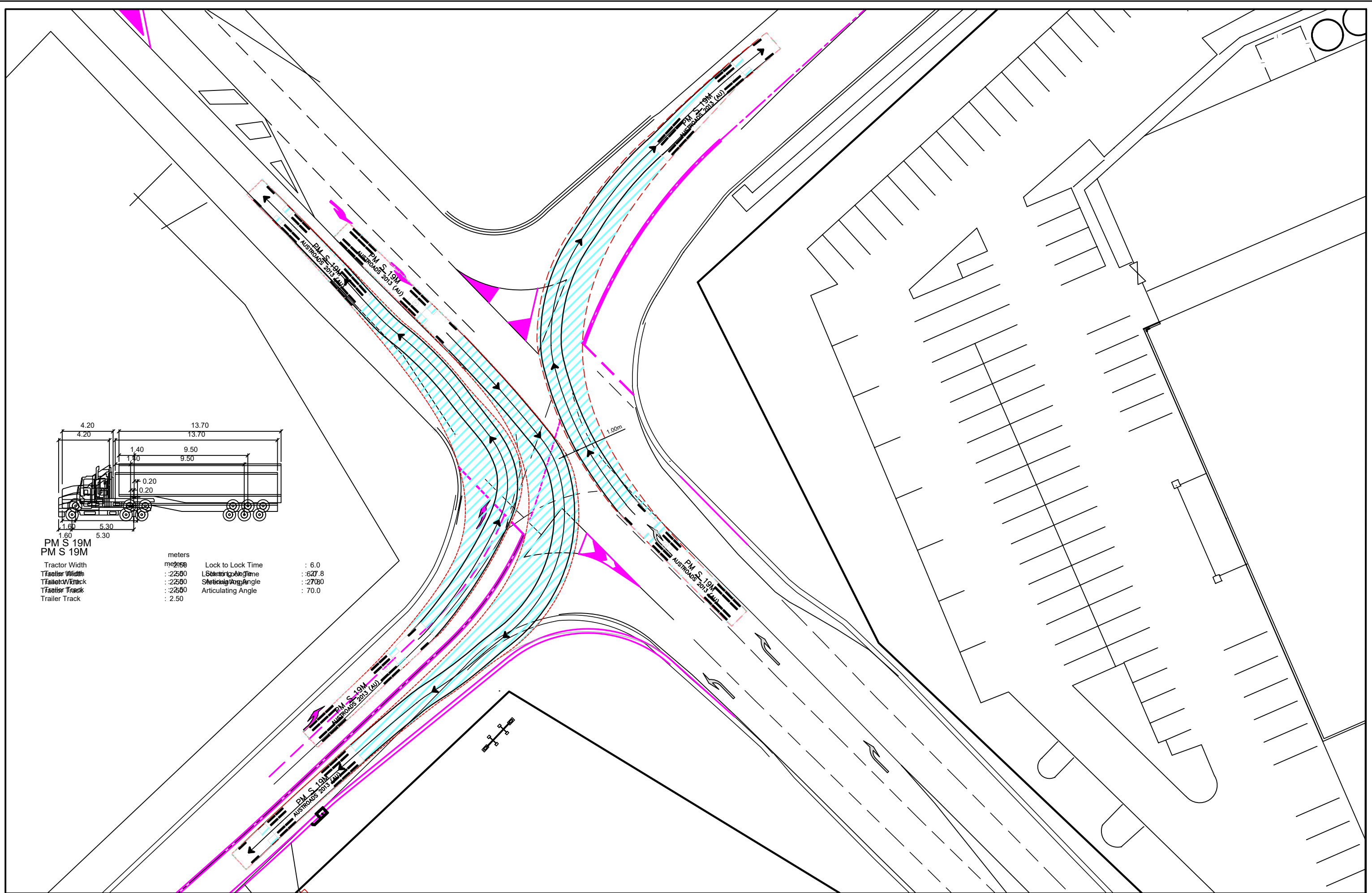


NOTE

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



SWEPT PATH ANALYSIS OF 19m ARTICULATED VEHICLE TURNING



PM S 19M
PM S 19M

Tractor Width	4.20	Lock to Lock Time	: 6.0
Trailer Width	9.50	Lock to Lock Angle	: 627.8
Trailer Track	2.50	Steering Angle	: 27080
Trailer Track	2.50	Articulating Angle	: 70.0

TITLE: PROPOSED ROAD WORKS
 CNR CASTLREAGH HIGHWAY AND LIONS DRIVE
 MUDGEE
 TURNING MOVEMENT 1 OF 3
 CLIENT: BUNNINGS GROUP LIMITED

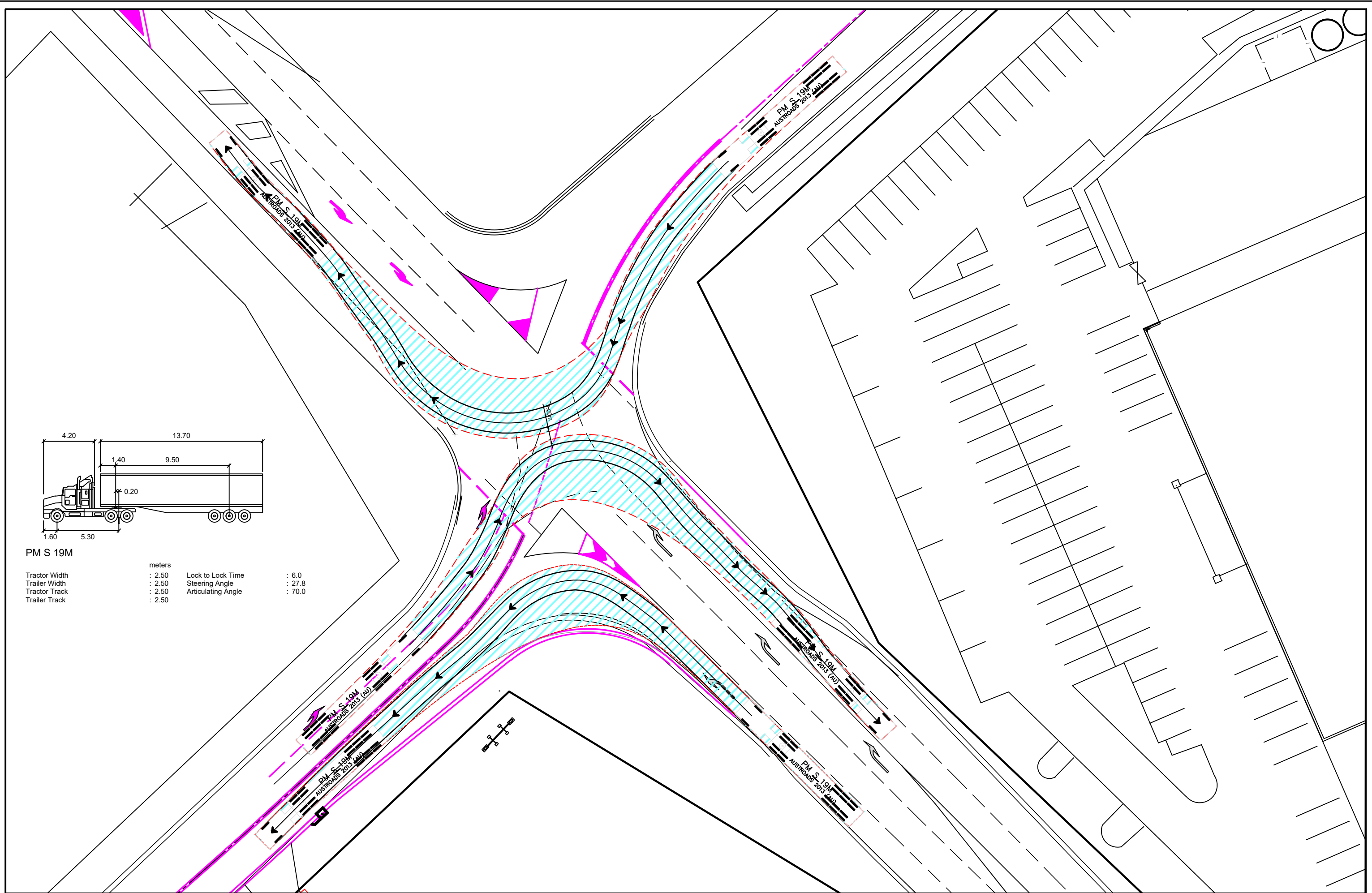


High Definition Design Pty Ltd
 KEVIN URANE 0412009891

NOTE:
 ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

1:200

Date:	15.06.15	Scale:	1:200 A1	Designed:	KU	Project No	HD259
Cad Ref:	HD259 r7					Drawing No	HD12
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	6	CLIENT DA ISSUE		KU	26.05.22		
	5	CONCEPT INTERSECTION LAYOUT		KU	28.04.22		
No		Amendment		Drawn	Date		



PM S 19M

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

TITLE: PROPOSED ROAD WORKS
 CNR CASTLEREAGH HIGHWAY AND LIONS DRIVE
 MUDGEE
 TURNING MOVEMENT 2 OF 3
 CLIENT: BUNNINGS GROUP LIMITED

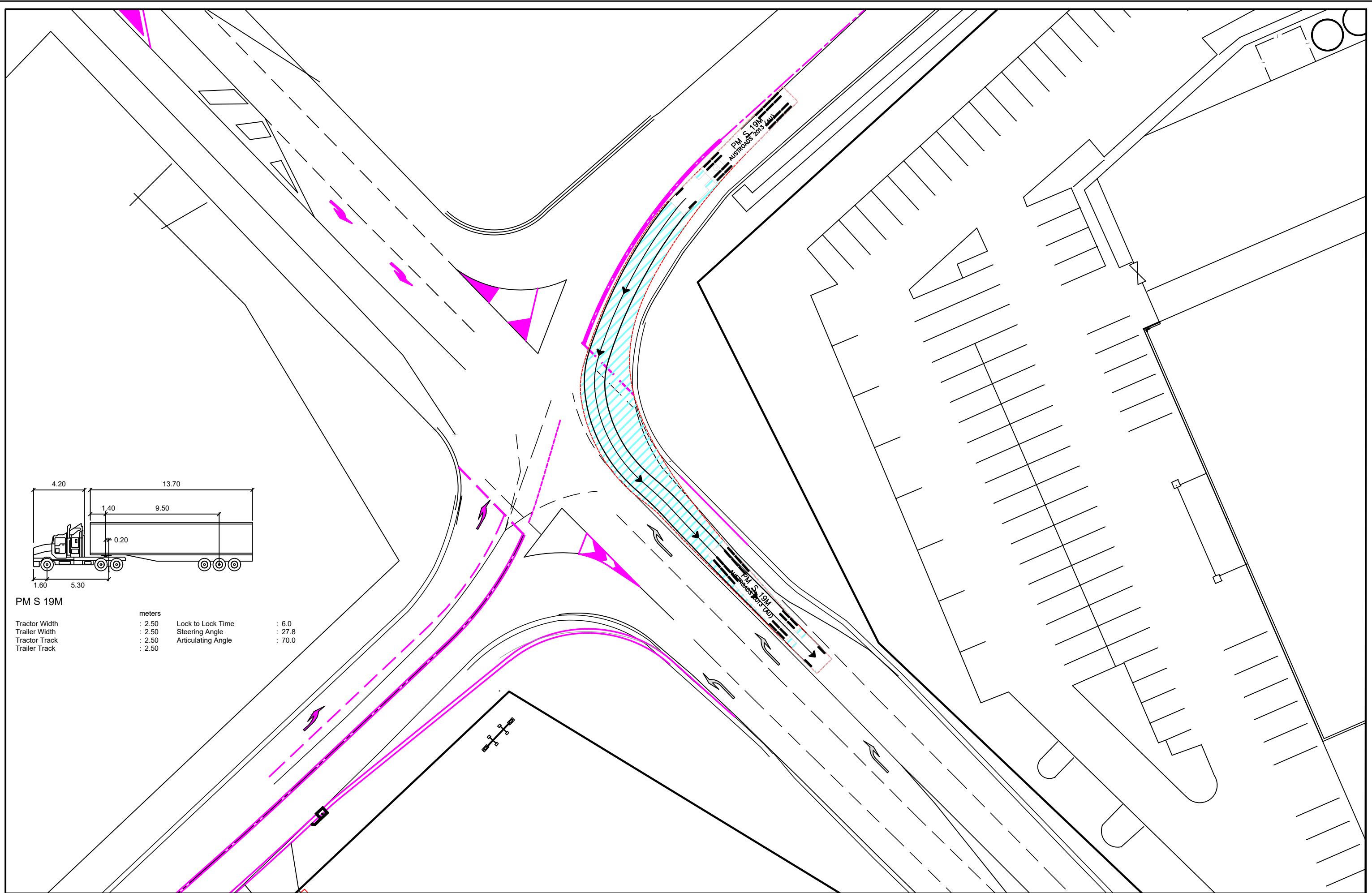


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NOTE:
 ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

1:200

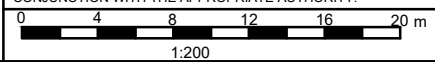
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No		Amendment		Drawn	Date		



PM S 19M

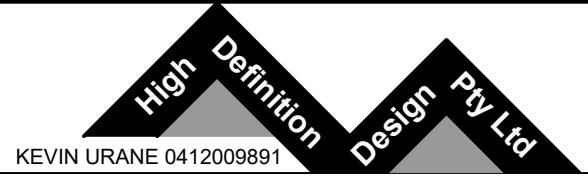
	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

NOTE:
 ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION AND LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.



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No		Amendment		Drawn	Date		

TITLE: PROPOSED ROAD WORKS
 CNR CASTLEREAGH HIGHWAY AND LIONS DRIVE
 MUDGEE
 TURNING MOVEMENT 3 OF 3
 CLIENT: BUNNINGS GROUP LIMITED



KEVIN URANE 0412009891

Appendix F

Turning Path Assessment