"PENRITH LAKES SCHEME"

LAND REHABILITATION PROCESS

OLD CASTLEREAGH ROAD AND LUGARD STREET, PENRITH

Traffic Impact Assessment

June 2019
(Issue B)

Reference 18210

TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Transportation, Traffic and Design Consultants
Suite 502, Level 5
282 Victoria Avenue
CHATSWOOD 2067
Telephone (02) 9411 5660
Facsimile (02) 9904 6622
Email: bernard@ttpa.com.au

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1. INTRODUCTION

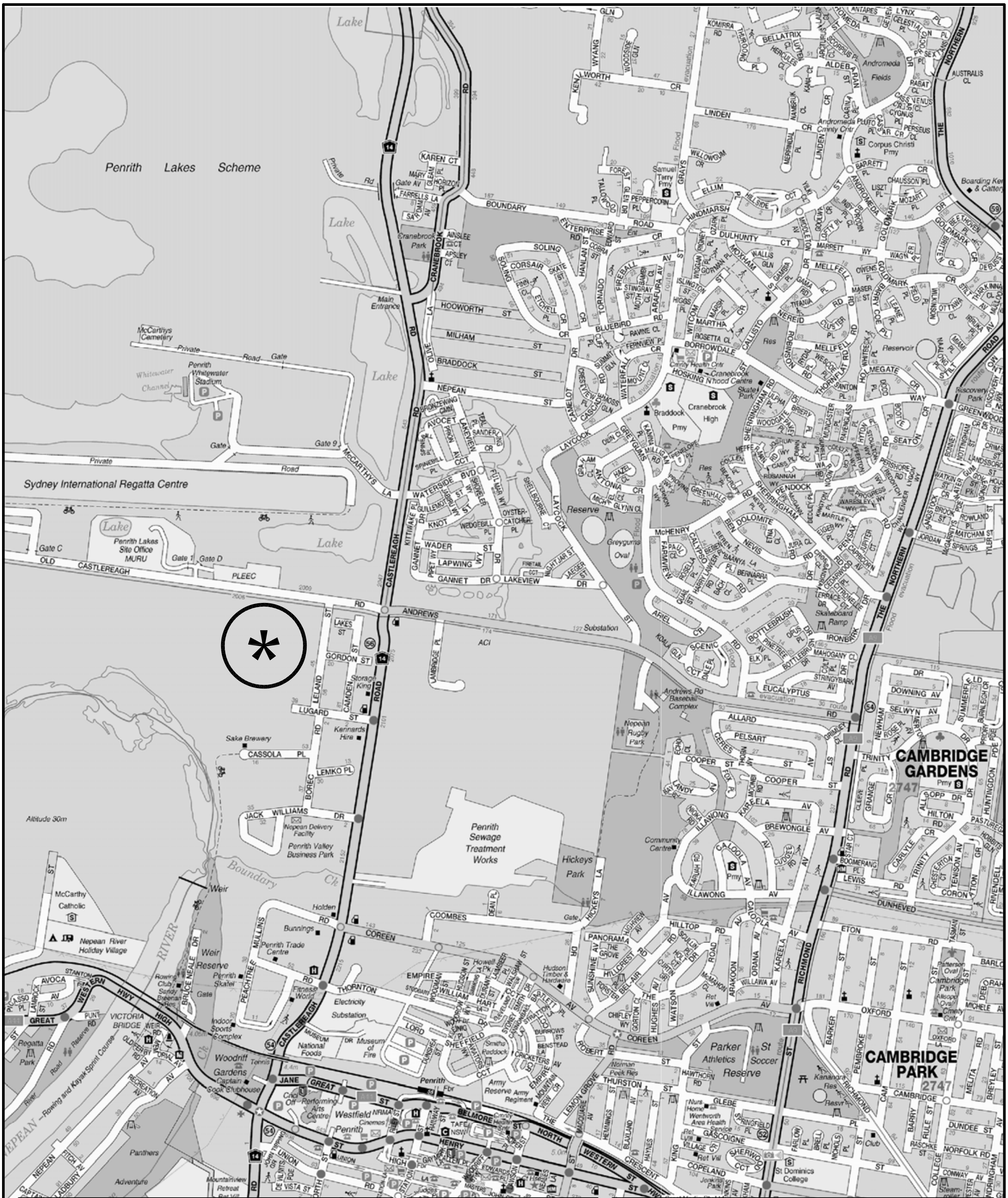
This report has been prepared to accompany an Application to the Department of Planning to seek consent to undertake an extensive site rehabilitation works on the Penrith Lakes Employment land which is bounded by Old Castlereagh Road and Castlereagh Road at Penrith (Figure 1).

The previously mined land comprises former tailing dams which will need to be rehabilitated first prior to accommodating the envisaged employment uses on the land. The site rehabilitation process will necessitate the importation of approximately 3 million tonnes of VENM/ENM to provide a cap/raft across the site forming solid footings for future buildings to sit within.

The proposed rehabilitation process will operate on a 24 hours and 7 days basis and it is envisaged that the import of fill will take up to 2 years to complete, subject to market supply of materials.

The purpose of this report is to:

* describe the site, its context, and the proposed rehabilitation process
* describe the existing road network serving the site and the prevailing traffic conditions
* describe the proposed upgrade for the arterial road system
* assess the suitability of the proposed access strategy
* assess the potential traffic implications associated with the truck movements
* propose, if necessary, any required upgrade/treatments to the surrounding intersections to accommodate the envisaged traffic



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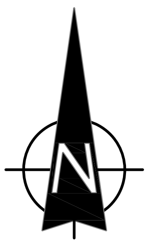


Location

Fig 1

2. PROPOSED DEVELOPMENT SCHEME

2.1 SITE, CONTEXT, AND EXISTING CIRCUMSTANCES

The site (Figure 2) has frontage to the southern side of Old Castlereagh Road just to the west of Castlereagh Road and occupies an irregular shaped area of 46.36ha. The site, which is located approximately 2 km north of the Penrith CBD, is relatively level and is also accessed by Lugard Street which connects to Castlereagh Road and terminates at the eastern boundary.

The site is cleared and vacant with sparse grassland, scattered trees/shrubs and an unsealed “track” which runs across the southern part and connects to Lugard Street.

Land uses in the vicinity of the site include:

- the small light industrial buildings adjoining to the east and south
- the Penrith Lakes facilities extending to the north and west
- the Nepean River which runs immediately to the south-west
- the industrial area which extends to the east and south
- the residential precinct which extends to the north along the eastern side of Castlereagh Road.

2.2 PRECINCT PLANNING

State Environmental Planning Policy (Penrith Lakes Scheme 1989 as amended) is the planning policy for the precinct. The aims of this policy are as follows:

a) *to provide a development control process that ensures that environmental and technical matters are considered in the implementation of the Penrith Lakes Scheme,*

b) *to identify and protect items of the environmental heritage,*

LEGEND

SITE

FIG 2

c) to identify certain land that may be rezoned for employment, environmental, parkland, residential, tourism and waterway purposes and land that will be rezoned as unzoned land,

d) to permit interim development that will not detrimentally impact on the implementation of the Penrith Lakes Scheme,

e) to ensure that the implementation of the Penrith Lakes Scheme does not detrimentally impact on the ongoing operation and use of Olympic legacy infrastructure, including the Sydney International Regatta Centre and the Penrith Whitewater Stadium.

2.3 PROPOSED REHABILITATION PROCESS

The former tailing dams which resulted from the previous mining activities on the site will need to be rehabilitated first prior to accommodating the various envisaged development and uses on the land. The site rehabilitation process will necessitate the importation of approximately 3 million tonnes of VENM/ENM to the site in order to provide a cap/raft across the site providing sufficiently solid footings for future buildings to sit within.

It is understood that the existing consent (DA2), originally granted in 1987 and subsequently modified several times, allows for the import of 13 million tonnes into the Penrith Lakes Scheme at a maximum of three (3) tonnes per year. An application has been lodged to modify this consent to specifically allocate 2 million tonnes out of the total approved 13 million tonnes to the subject site. The proposed rehabilitation will require a total of approximately 3 million tonnes of fill, with actual volume dependent on final settlement of the fill materials. This represents approximately 1 million tonnes above that which is approved. The baseline traffic survey data and modelling include the current traffic generation from filling operations taking place at the Penrith Lakes Scheme. An estimate of fill volume is provided in the following summary:

Fill Volume Range	**Volume (m^3)**	**Tonne (based on 2.2 t/m^3)**
Lower range	1,245,624	2,740,373
Best estimate	1,356,415	2,984,113

Upper range	1,454,424	3,199,733

It is understood that the NSW Government infrastructure projects are approved to remove the excavated material from their construction sites 24 hours per day, seven days per week. To allow these projects to achieve this, Great River NSW Pty Ltd proposes to receive, place and compact this fill material 24 hours per day, seven days per week.

Vehicle accesses for the site will be provided via Lugard Street and/or Old Castlereagh Road.

Details of the scheme are reflected on the plans which are reproduced in Appendix A.

3. ROAD NETWORK AND TRAFFIC CONDITIONS

3.1 ROAD NETWORK

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

- *Great Western Highway and M4 Western Motorway* – a State Road and east-west arterial routes which run to the South of Penrith to/from the Blue Mountains crossing.

- *Parker Street* / *Richmond Road* / *The Northern Road* – a State Road and arterial route which connects between Richmond and Camden

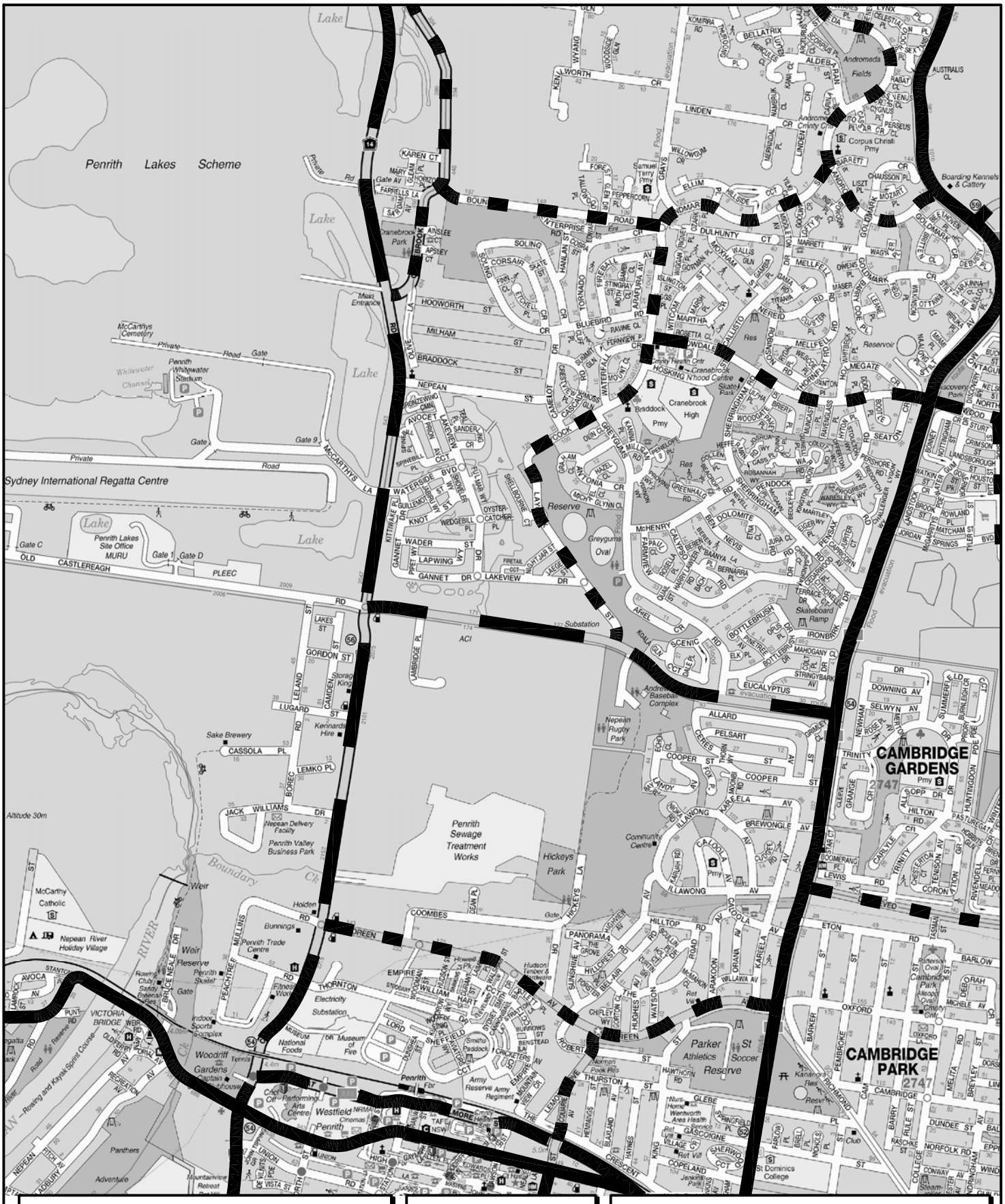
- *Castlereagh Road* – a State Road and arterial route which connects between Penrith and Richmond

- *Cranebrook Road* – a State Road and collector road route which connects between Castlereagh Road and Richmond Road providing a link to Windsor

- *Andrews Road* – a Regional Road and collector route linking between Castlereagh Road and The Northern Road

- *Old Castlereagh Road* – a local road providing access into the Penrith Lakes precinct which connects to Castlereagh Road

- *Lugard Street, Leland Street, and Camden Street* – local access roads serving the industrial area on the western side of Castlereagh Road.



LEGEND

- ARTERIAL
- SUB-ARTERIAL
- COLLECTOR

N

ROAD NETWORK

FIG 3

3.2 TRAFFIC CONTROLS

The traffic controls, which have been applied to the road system serving the site, (Figure 4) comprise:

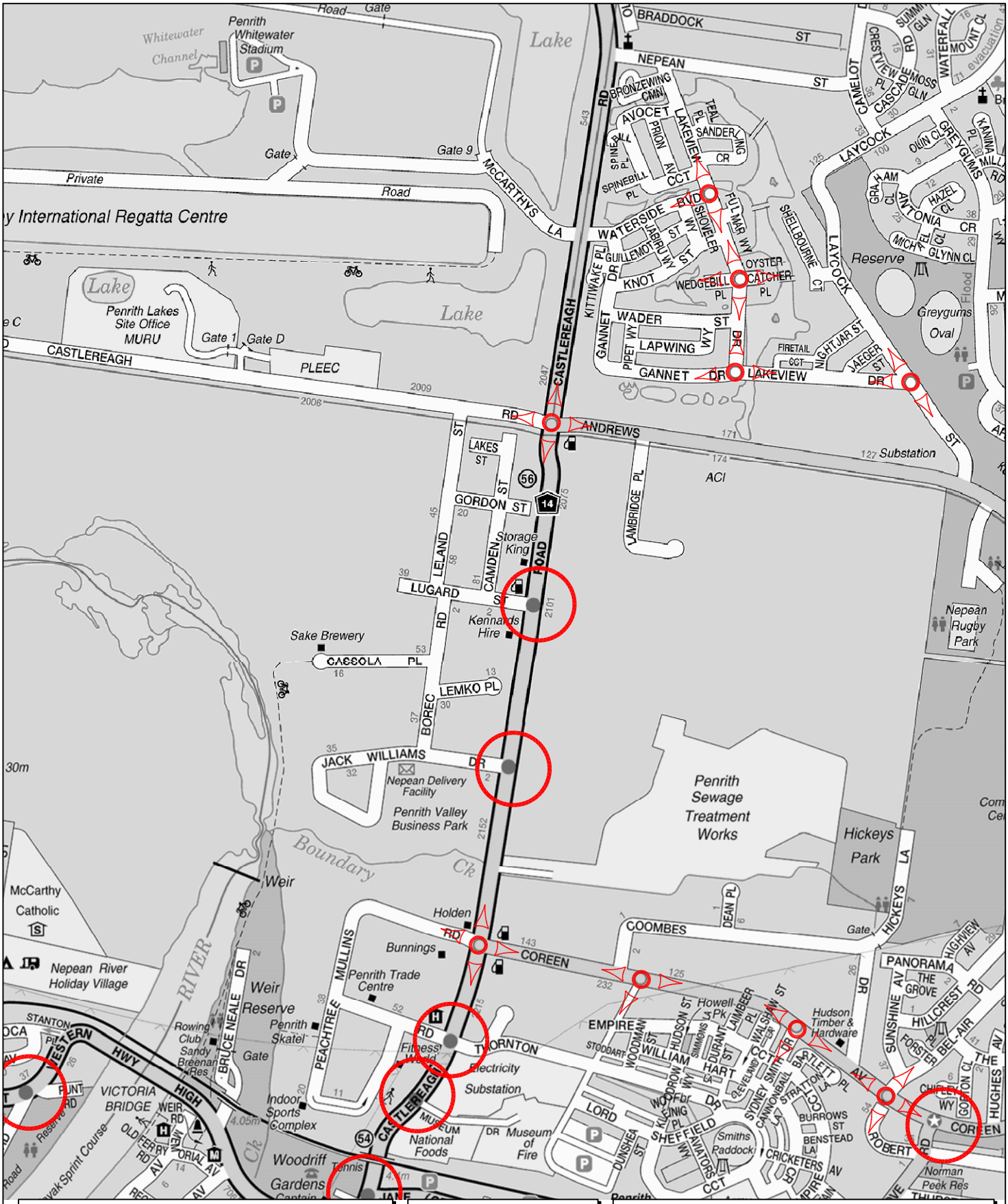
- the traffic signals at the Castlereagh Road / Lugard Street intersection. Details of this intersection arrangement are provided on the signal design plan reproduced overleaf
- the roundabout at the Castlereagh Road / Old Castlereagh Road / Andrews Road intersection
- the traffic signals at other intersections along Castlereagh Road including Jack Williams Drive, Jane Street, and High Street
- the 60 kmph speed limit on Castlereagh Road and 50 kmph on the local access road system
- the NHVR approved B Double routes along roads in the area including Castlereagh Road, Old Castlereagh Road, and Lugard Street (see details overleaf)

3.3 TRAFFIC CONDITIONS

An indication of the prevailing traffic conditions on the road system serving the development site is provided in data[1] published by RMS and surveys undertaken for this study. The data published by RMS is provided in the following:

Location	AADT	Heavy Vehicles
Castlereagh Road, north of Jack Williams Dr.	31,823	3,491 (11%)

1 *Traffic Volume Data for Sydney Region*
Roads and Maritime Services



LEGEND

- TRAFFIC SIGNAL CONTROL
- ROUNDABOUT
- RESTRICTED TURNING MOVEMENT

N

TRAFFIC CONTROLS

FIG 4

In addition to the above, an indication of the mid-block traffic volumes, including heavy vehicles, at Castlereagh Road and Old Castlereagh Road are provided in Figure 5.

The results of recent traffic surveys undertaken at the Castlereagh Road / Old Castlereagh Road / Andrews Road and Castlereagh Road / Lugard Street intersections during the morning and afternoon peak traffic period are provided in Appendix B and summarised in the following:

		AM	**PM**
Castlereagh Road	NB	580	893
	RT	350	479
	LT	10	1
	SB	1,261	645
	RT	16	9
	LT	111	96
Old Castlereagh Road	EB	14	47
	RT	7	14
	LT	14	42
Andrews Road	WB	54	29
	RT	91	98
	LT	589	463
Castlereagh Road	NB	836	1,386
	LT	49	57
	SB	1,743	1,204
	RT	67	67
Lugard Street	LT	26	71
	RT	59	89

The operational performance of these intersections under the prevailing traffic demands has been assessed using the SIDRA model. The results of that assessment are provided in Appendix C and summarised in the following table.

LEGEND

LIGHT VEHICLE (HEAVY VEHICLE)

5-DAY AVERAGE PEAK HOUR FLOW (AM)

FIG 5

LEGEND

5-DAY AVERAGE PEAK HOUR FLOW (PM)

FIG 6

	AM		PM	
	LOS	**AVD**	**LOS**	**AVD**
Castlereagh / Andrews / Old Castlereagh	B	13.8s	A	6.7s
Castlereagh / Lugard	B	11.4s	B	13.6s

The results of this SIDRA modelling indicate that these intersections currently operate quite satisfactorily with significant reserve capacity.

3.4 TRANSPORT SERVICES

The existing bus network servicing the area is identified on the diagrams overleaf with 673, 783 and 784 services along Castlereagh Road connecting to Penrith CBD and Railway Station.

4. FUTURE CIRCUMSTANCES

RMS, with Federal and State funding, propose to upgrade the 6.5km long Mulgoa Road/Castlereagh Road route between Glenmore Park and Andrews Road at Penrith to support the future traffic demands resultant to expected urban development in the area. The Mulgoa Road/Castlereagh Road Corridor Upgrade is part of a plan to progressively upgrade a number of major arterial roads in Western Sydney to deliver a more efficient, reliable network that meets the future needs of the community and the economy.

There are a number of key developments served by Mulgoa Road/Castlereagh Road that will contribute to increased population/employment and traffic movements in its immediate vicinity. These include:

- Penrith Panthers Entertainment precinct
- Penrith Station precinct
- Riverlink and Nepean River precincts
- Penrith Stadium
- Penrith Lakes Scheme
- Penrith Homemaker Centre
- New urban land releases at Glenmore Park and Thornton.

Related to the proposed is “Jane Street and Mulgoa Road Infrastructure Upgrade” and while it is a separate proposal, planning and staging of these two projects are being coordinated. The diagram overleaf shows the location of both the proposal and the Jane Street and Mulgoa Road Infrastructure Upgrade.

Details of the assessments undertaken for the upgrade and the identified Preferred Option are provided in a Preferred Options Report[2] which includes a Traffic and

Transport Assessment Study[3]. The preferred upgrade option is to widen the roadway to provide 3 lanes in each direction plus turning lanes at intersections. Details of the proposal for the Jack Williams Drive to Andrews Road section are provided in Appendix D and include:

- Replacement of the roundabout at the Andrews Road/Old Castlereagh Road intersection with a traffic signal controlled arrangement
- Provision for bus bays and bus "start up" arrangements
- Widening along the eastern side of Old Castlereagh Road.

The traffic modelling undertaken took into account the projected future traffic growth, including development in the Penrith Lakes Scheme, both for a normal growth scenario (i.e. 1.3% p.a.) and an accelerated growth scenario (i.e. 2.0% p.a.) as follows:

Daily Volumes Andrews Road – Museum Drive Section

	2015	**2026**	**2036**
Normal Growth	36,700	53,000	60,000
Accelerated Growth	36,700	55,000	65,000

The assessed operational performance outcome with the upgrade works completed was as follows:

	2020				**2026**				**2036**			
	AM		**PM**		**AM**		**PM**		**AM**		**PM**	
	LOS	**AVD**	**LOS**	**AVD**	**LOS**	**AVD**	**LOS**	**AVD**	**LOS**	**AVD**	**LOS**	**AVD**
Andrews Road / Old Castlereagh Road	C	33	C	34	C	37	C	39	C	38	C	41

[2] *Mulgoa Road/Castlereagh Road Corridor Upgrade Preferred Option Report Hills Environmental April 2017*

[3] *Mulgoa Road/Castlereagh Road Corridor Upgrade Transport & Traffic Assessment Study Arcadis January 2017*

Jack Williams Drive	A	13	B	16	B	26	B	19	B	20	B	17

Details of modelling for the Lugard Street intersection are not provided. The proposed staging plan reproduced overleaf indicates that the Andrews Road/Old Castlereagh Road intersection works and the widening between Andrews Road and Lugard Street will be undertaken as the first “short term” stage.

In relation to bus services, pedestrians and cyclists, the upgrade scheme will:

- provide bus priority measures as “start-up lanes” at intersections and bus bays and this will ensure optimised bus travel lines for the expected increased bus services required to meet the urban development needs

- provide a Shared Path along the eastern side of Castlereagh Road as well as a normal pathway on the western side and signalised pedestrian crossings at intersections

5. ACCESS, INTERNAL CIRCULATION, AND PARKING

5.1 ACCESS

The site will be accessed via the following 2 locations:

- Old Castlereagh Road via a left in, right out only arrangement; and/or
- Lugard Street via a right in, left out only arrangement at the intersection of Castlereagh Road and Lugard Street.

The accesses will be formalised to accommodate the necessary access manoeuvres of the largest truck (i.e. 17.5m Truck & Dog unit) and will be constructed with appropriate pavement strength to accommodate the anticipated truck loadings and frequency of movements.

5.2 INTERNAL CIRCULATION & PARKING

Trucks and workers' vehicles will be able to circulate the vast site with no undue difficulty during the rehabilitation process. Designated workers' car parking areas will be provided at locations with proximity to the site offices to minimise pedestrian activities in the site compound.

6. TRAFFIC IMPACT ASSESSMENT

6.1 TRAFFIC PROJECTIONS

The intended fill importation is based on:

- 24 hours and 7 days of operation
- 365 days of operation a year
- Average truck tonnage 35 tonnes
- 2 access locations i.e. Old Castlereagh Road and Lugard Street

Based on the above operating parameters the hourly traffic projection is calculated as follows:

3,000,000 tonnes / 365 days = 8,219 tonnes per day

8,219 tonnes per day / 35 tonnes per truck = 235 trucks per day

235 trucks per day / 24 hours per day = **9-10 trucks per hour**

However, to provide a conservative basis to this assessment, the following 'scaled up' operating parameters are considered:

- 11 hours per day operation i.e. 45% of the full 24-hour day
- 264 days of operation per year i.e. 70% of the full operating year
- 1 access location i.e. either Old Castlereagh Road or Lugard Street only

Based on the above conservative operating parameters the hourly traffic projection is calculated as follows:

3,000,000 tonnes / 264 days = 11,364 tonnes per day

11,364 tonnes per day / 35 tonnes per truck = 325 trucks per day

325 trucks per day / 11 hours per day = **29 trucks per hour**

6.2 ACCESS SCENARIOS

The following site access scenarios are considered for the purpose of this assessment:

Option 1 Via Old Castlereagh Road (left in and left out only)

Option 2 via Lugard Street (right in and right out only to/from Castlereagh Road)

6.3 TRAFFIC MODELLING

SIDRA modelling program has been used to assess the operating circumstances at the 2 site accesses during the network traffic peak. The Old Castlereagh Road traffic flows are adopted from the surveyed link flows while the recent traffic flows at the intersection of Castlereagh Road and Lugard Street are based on the turning count surveys.

The outcome of the SIDRA modelling assessment indicates a satisfactory operating level of service for both accesses under the conservative truck projections. Further to the current year assessment, a sensitivity analysis based on a conservative annual background traffic growth of 1.5% has also been undertaken to provide an indication of how the intersections will operate over the course of the rehabilitation works program.

Details of the SIDRA model results are provided in Appendix C and summarised in the following:

	AM Peak		**PM Peak**	
	LOS	**AVD**	**LOS**	**AVD**
2019				
Old Castlereagh Rd. Access	A	1.7s	A	1.8s
Lugard St/Castlereagh Rd	B	12.5s	B	15.2s
Andrews/Castlereagh RAB Opt 1	B	15.5s	A	7.0s
Andrews/Castlereagh RAB Opt 2	B	17.5s	A	7.0s
2022				
Old Castlereagh Rd. Access	A	1.7s	A	1.8s
Lugard St/Castlereagh Rd	B	13.8s	B	16.6s
Andrews/Castlereagh RAB Opt 1	B	15.5s	B	17.5s
Andrews/Castlereagh RAB Opt 2	A	7.4s	A	7.0s

The assessment outcome indicates that the relevant access and road intersections will operate with ample reserve capacities when assessed under conservative circumstances. Particularly, it is noted that the intersections level of service is not adversely impacted even when projected with a conservative growth rate across the entire period of the project.

On this basis, it is assessed that the traffic generation and implications resulting from the proposed site rehabilitation works will be acceptable and that no addition road/intersection upgrade and/or treatment will be necessary.

7. CONCLUSION

The traffic assessment undertaken for the proposed site rehabilitation works to prepare the site for the delivery of the Penrith Lakes Scheme has concluded that:

- the largest delivery vehicle will be on average of 35-tonne (payload) truck & dog articulated truck
- the trucks will approach and depart the site via Old Castlereagh Road and/or Lugard Street
- the anticipated operating circumstance will involve some 9-10 vph
- the assessment adopts a highly conservative basis which projects the truck movements from 10 vph to 29 vph
- the assessment is underpinned by SIDRA traffic modelling which indicates a satisfactory post-development operating circumstance
- the sensitivity analysis adopting a conservative background traffic growth rate of 1.5% indicates that the Castlereagh Road/Lugard Street intersection and the Old Castlereagh Road access intersection will continue to operate satisfactorily over the course of 3 years
- based on the modelling outcome the proposed access road system will be appropriate and that there is no immediate need to upgrade or treat the existing intersection and roadways.

APPENDIX A

SITE PLANS

PENRITH LAKES EMPLOYMENT LAND

OLD CASTLEREAGH ROAD, CASTLEREAGH

TWO YEAR PLAN

DRAWING SCHEDULE

DWG No.	SHEET TITLE	REV
C2000	COVER SHEET	3
C2001	GENERAL ARRANGEMENT PLAN	3
C2002	PLAN SHEET (1 OF 2)	3
C2003	PLAN SHEET (2 OF 2)	3
C2004	SITE SECTIONS (1 OF 2)	3
C2005	SITE SECTIONS (2 OF 2)	3

GCA
ENGINEERING SOLUTIONS

A.B.N. 92 086 017 745
1 HARTLEY DRIVE, THORNTON NSW 2322
PO BOX 3337, THORNTON NSW 2322
PHONE: (02) 4964 1811 ◆ FAX: (02) 4964 1822

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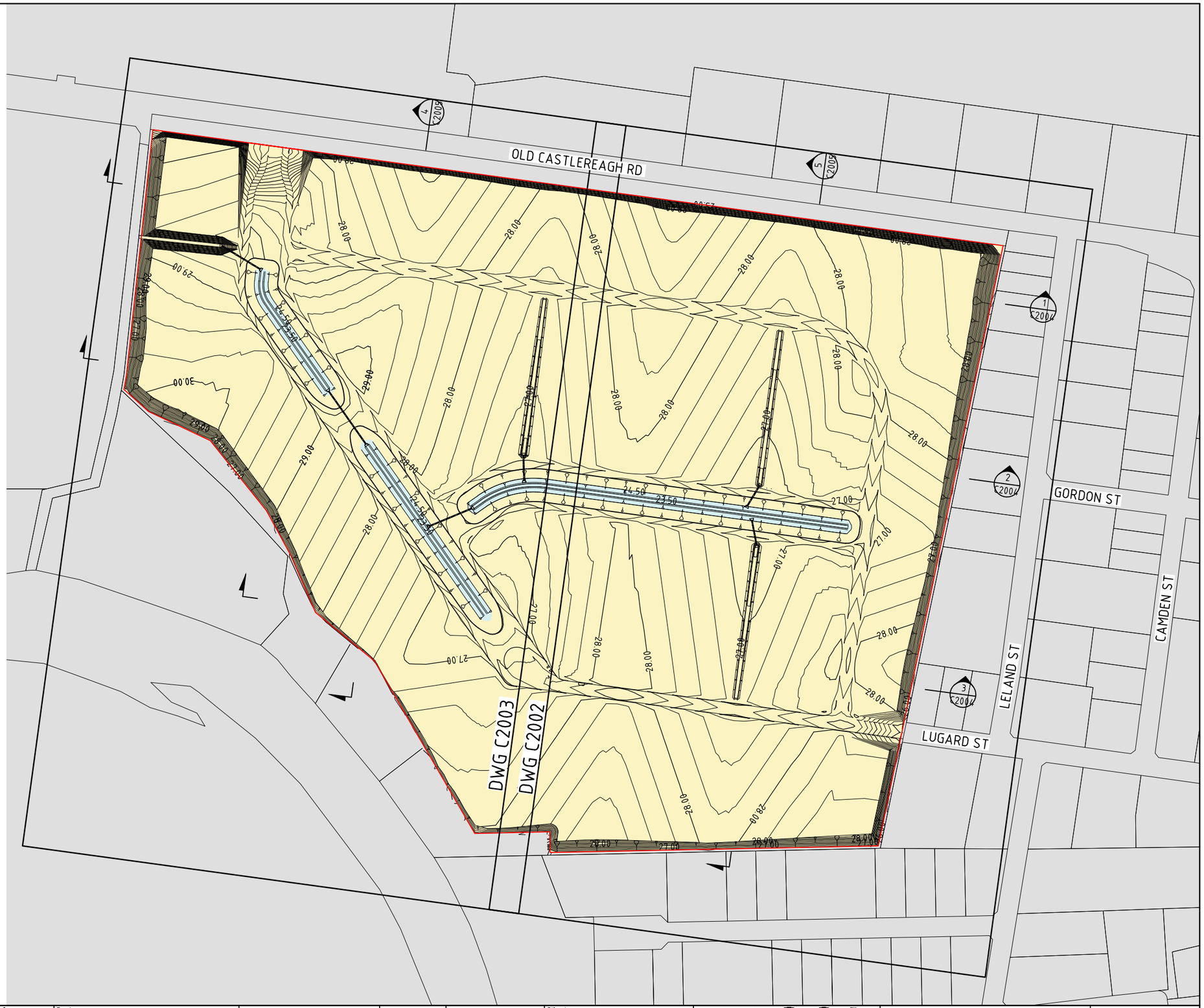
GENERAL NOTES:

1. ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS THE RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION & LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.
2. WORKING HOURS ON SITE SHALL BE IN ACCORDANCE WITH THE CONDITIONS OF CONSENT.
3. SITE ACCESS SHALL BE OBTAINED USING EXISTING ACCESS POINTS.
4. VEHICULAR ACCESS AND ALL SERVICES ARE TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION WORKS.
5. TRAFFIC CONTROL MEASURES TO BE IN ACCORDANCE WITH AS 1742.3-1996.
6. ALL LEVELS MUST BE OBTAINED FROM ESTABLISHED BENCH MARKS AS DIRECTED BY THE SUPERVISOR.
7. ALL EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH:
   - LETTER FROM PELLS SULLIVAN MEYNINK (PSM) TO GREAT RIVER NSW PTY LTD DATED 15 MARCH 2019, TITLED "ADDITIONAL DETAILS REGARDING PROPOSED GEOTECHNICAL REHABILITATION WORKS FOR THE PROPOSED INDUSTRIAL DEVELOPMENT OF SOUTHERN WETLANDS SIDE, PENRITH LAKES"
   - PENRITH LAKES, SOUTHERN WETLANDS GEOTECHNICAL DESIGN, GROUND TREATMENT (PELLS SULLIVAN MEYNINK, 25 MARCH 2019, REF: PSM3688-013R REV 1)
7. THE WORKS AREA IS TO BE REVEGETATED PROGRESSIVELY (TO THE EXTENT PRACTICAL) IN ACCORDANCE WITH THE PLAN(S) PREPARED BY CLOUSTON ASSOCIATES.

EROSION AND SEDIMENT CONTROL

1. SITE EROSION AND SEDIMENT CONTROLS SHALL BE PLANNED AND IMPLEMENTED IN ACCORDANCE WITH THE LAND REHABILITATION MANUAL 1987.
2. CAPACITIES OF DRAINAGE AND EROSION CONTROL WORKS ARE TO BE DETERMINED IN ACCORDANCE WITH THE AUSTRALIAN RAINFALL AND RUNOFF MANUAL
3. MINIMUM STORM RETURN PERIODS ARE TO BE:
   - LATERAL DRAINS – 5 YEARS
   - WATERWAYS – 20 YEARS



Amendment	Description	Drawn	App'd	Date
3	CLIENT COMMENTS	A.S.	A.S.	13.05.19
2	TWO YEAR PLAN	A.S.	A.S.	07.05.19
1	ORIGINAL ISSUE	KS	AS	26.04.19

North

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Designed	Cad Reference
KS	18255 C2001 r3
Scale	A1 SHEET
1:2000	

Project Approval
IAN HILL (B.E)
Consulting Civil Engineer

Client

GCA ENGINEERING SOLUTIONS
A.B.N. 92 086 017 745
1 HARTLEY DRIVE, THORNTON NSW 2322
PO BOX 3337, THORNTON NSW 2322
PHONE: (02) 4964 1811 ◆ FAX: (02) 4964 1822

PENRITH LAKES EMPLOYMENT LAND

TWO YEAR PLAN

GENERAL ARRANGEMENT PLAN

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18255C	
Drawing No	Revision
C2001	3

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DWG C2002

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SP68321
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LOT 12 DP793163
LOT 10 DP793163
LOT 8 DP793163

Amendment	Description	Drawn	App'd	Date
3	CLIENT COMMENTS	A.S.	A.S.	13.05.19
2	TWO YEAR PLAN	A.S.	A.S.	07.05.19
1	ORIGINAL ISSUE	KS	AS	26.04.19

North

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Designed: KS
Cad Reference: 18255 C2001 r3
Scale: 1:2000
A1 SHEET
Project Approval
IAN HILL (B.E)
Consulting Civil Engineer

Client

GCA ENGINEERING SOLUTIONS
A.B.N. 92 086 017 745
1 HARTLEY DRIVE, THORNTON NSW 2322
PO BOX 3337, THORNTON NSW 2322
PHONE: (02) 4964 1811 ◆ FAX: (02) 4964 1822

PENRITH LAKES EMPLOYMENT LAND

TWO YEAR PLAN

SITE PLAN - SHEET 1 OF 2

Project No: 18255C
Drawing No: C2002
Revision: 3

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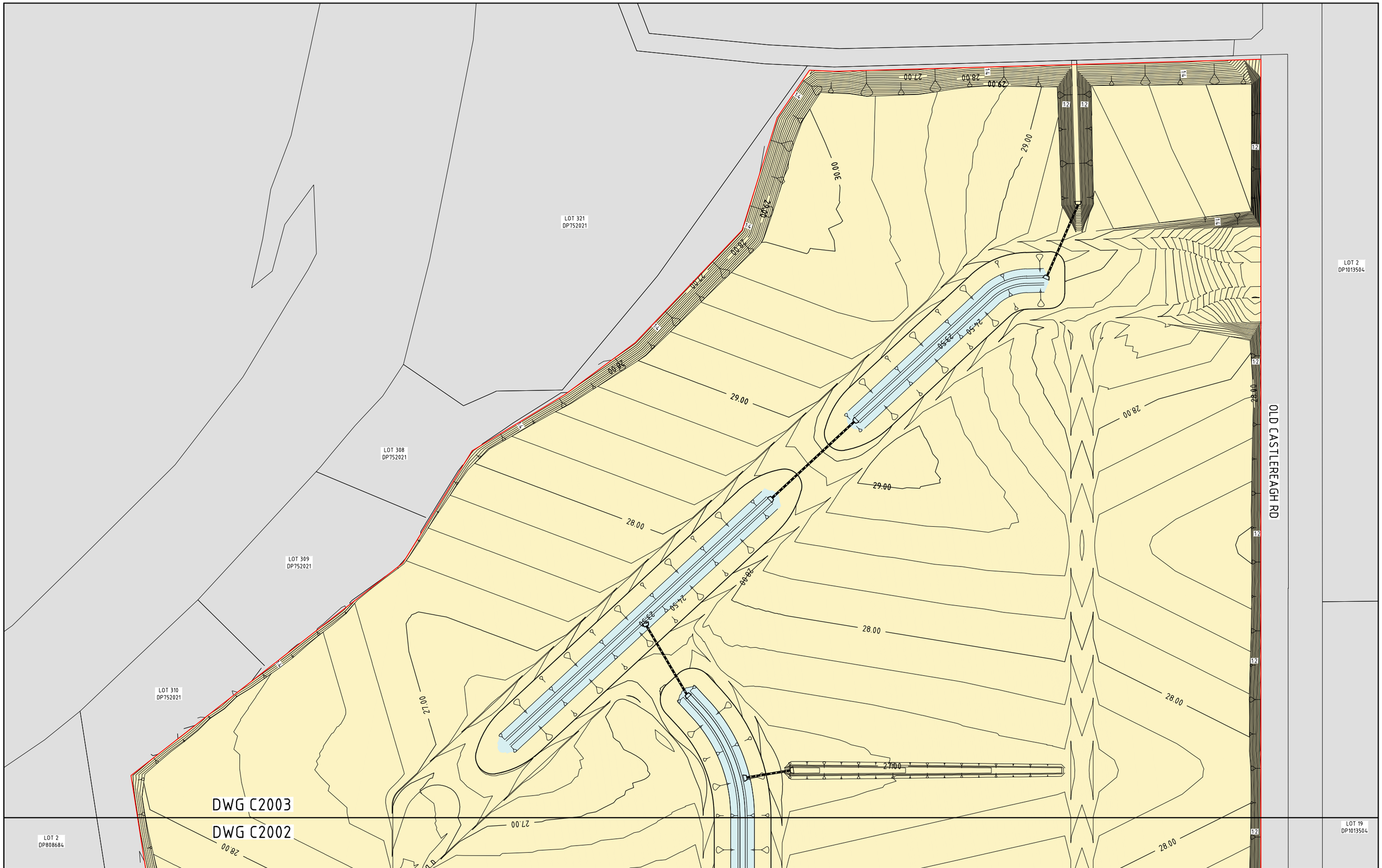

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North

Scale
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1:1000 (A1) 1:2000 (A3)

Designed: KS
Cad Reference: 18255 C2001 r3
Scale: 1:2000
A1 SHEET
Project Approval
IAN HILL (B.E)
Consulting Civil Engineer

Client

GCA ENGINEERING SOLUTIONS
A.B.N. 92 086 017 745
1 HARTLEY DRIVE, THORNTON NSW 2322
PO BOX 3337, THORNTON NSW 2322
PHONE: (02) 4964 1811 ◆ FAX: (02) 4964 1822

PENRITH LAKES EMPLOYMENT LAND

TWO YEAR PLAN

SITE PLAN - SHEET 2 OF 2

Project No: 18255C
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Revision: 3

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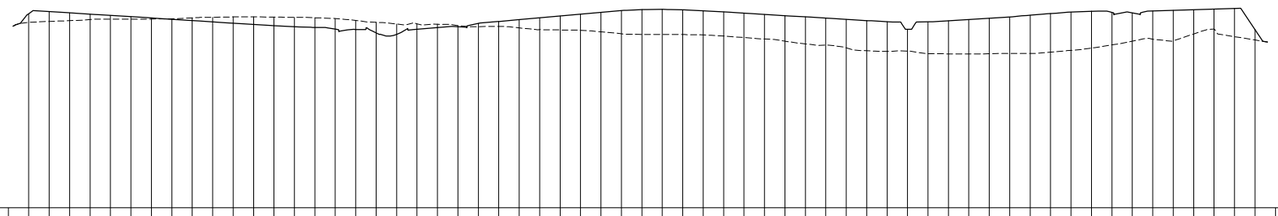

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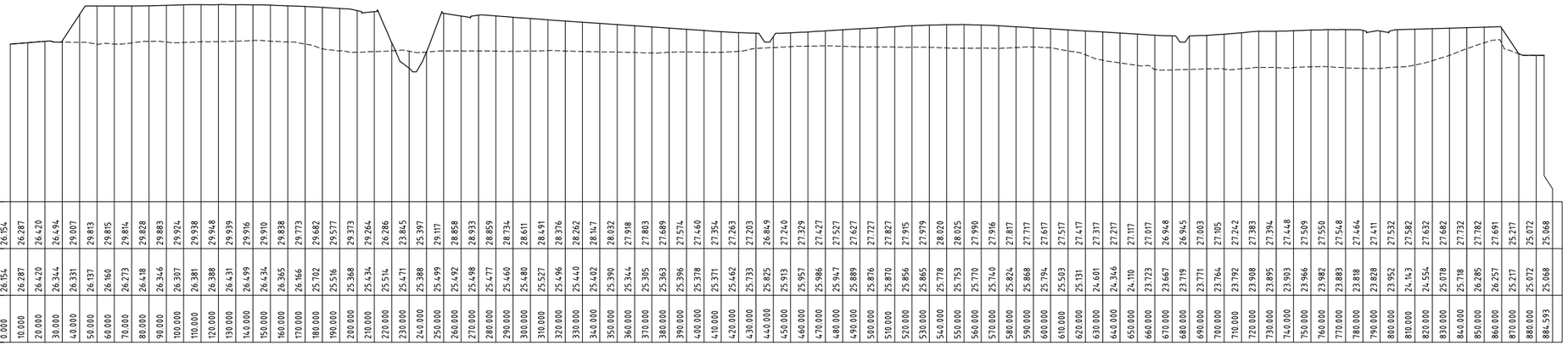
10.000		
20.000		
30.000		
40.000		
50.000	27.803	27.113
60.000	27.984	27.182
70.000	27.880	27.242
80.000	27.775	27.338
90.000	27.670	27.360
100.000	27.566	27.361
110.000	27.461	27.374
120.000	27.357	27.396
130.000	27.252	27.471
140.000	27.147	27.520
150.000	27.043	27.547
160.000	26.938	27.555
170.000	26.836	27.537
180.000	26.754	27.505
190.000	26.694	27.482
200.000	26.549	27.411
210.000	26.529	27.265
220.000	26.246	27.103
230.000	26.121	26.971
240.000	26.543	26.994
250.000	26.683	26.955
260.000	26.761	26.846
270.000	27.019	26.758
280.000	27.179	26.780
290.000	27.323	26.659
300.000	27.472	26.509
310.000	27.622	26.487
320.000	27.771	26.463
330.000	27.920	26.336
340.000	28.069	26.174
350.000	28.154	26.126
360.000	28.174	26.117
370.000	28.138	26.113
380.000	28.052	26.080
390.000	27.952	25.983
400.000	27.852	25.870
410.000	27.752	25.747
420.000	27.652	25.575
430.000	27.552	25.345
440.000	27.452	25.253
450.000	27.352	25.033
460.000	27.252	24.787
470.000	27.158	24.734
480.000	26.545	24.761
490.000	27.142	24.550
500.000	27.229	24.530
510.000	27.333	24.527
520.000	27.437	24.548
530.000	27.541	24.576
540.000	27.692	24.568
550.000	27.823	24.680
560.000	27.944	24.824
570.000	28.012	25.010
580.000	27.918	25.265
590.000	27.875	25.567
600.000	28.033	25.731
610.000	28.083	25.605
620.000	28.133	26.159
630.000	28.182	26.555
640.000	28.231	25.938
650.000	26.512	25.670
660.000		
670.000		
678.075		

A1 SCALE: HORIZONTAL 1:1500, VERTICAL 1:250

SITE SECTION 3

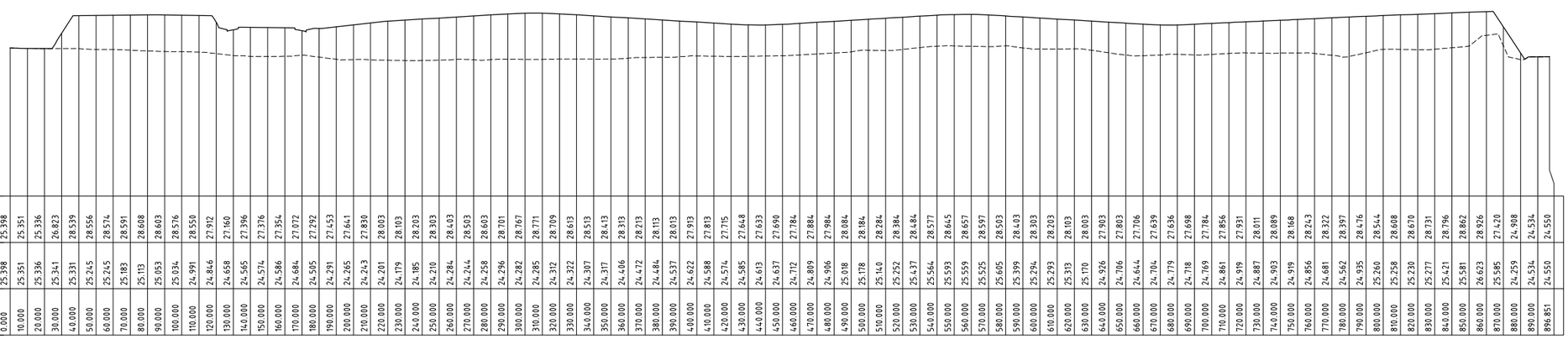


DATUM RL = 11.00

CHAINAGE	FINISHED SURFACE	NATURAL SURFACE
0.000	26.154	26.154
10.000	26.287	26.287
20.000	26.420	26.420
30.000	26.494	26.344
40.000	29.007	26.331
50.000	29.813	26.137
60.000	29.815	26.160
70.000	29.814	26.273
80.000	29.828	26.418
90.000	29.883	26.346
100.000	29.924	26.307
110.000	29.938	26.381
120.000	29.948	26.388
130.000	29.939	26.431
140.000	29.916	26.499
150.000	29.910	26.434
160.000	29.838	26.365
170.000	29.773	26.166
180.000	29.682	25.102
190.000	29.577	25.516
200.000	29.373	25.368
210.000	29.264	25.434
220.000	26.286	25.514
230.000	23.845	25.471
240.000	25.397	25.388
250.000	29.117	25.499
260.000	28.858	25.492
270.000	28.933	25.498
280.000	28.859	25.477
290.000	28.734	25.480
300.000	28.611	25.480
310.000	28.491	25.527
320.000	28.376	25.496
330.000	28.262	25.440
340.000	28.147	25.402
350.000	28.032	25.390
360.000	27.918	25.344
370.000	27.803	25.305
380.000	27.689	25.363
390.000	27.574	25.396
400.000	27.460	25.378
410.000	27.354	25.371
420.000	27.263	25.462
430.000	27.203	25.733
440.000	26.849	25.825
450.000	27.240	25.913
460.000	27.329	25.957
470.000	27.427	25.986
480.000	27.527	25.947
490.000	27.627	25.889
500.000	27.727	25.876
510.000	27.827	25.870
520.000	27.915	25.856
530.000	27.979	25.865
540.000	28.020	25.778
550.000	28.025	25.753
560.000	27.990	25.770
570.000	27.916	25.740
580.000	27.817	25.824
590.000	27.717	25.868
600.000	27.617	25.794
610.000	27.517	25.563
620.000	27.417	25.131
630.000	27.317	24.681
640.000	27.217	24.346
650.000	27.117	24.110
660.000	27.017	23.723
670.000	26.948	23.667
680.000	26.945	23.719
690.000	27.003	23.771
700.000	27.105	23.764
710.000	27.242	23.792
720.000	27.383	23.908
730.000	27.394	23.895
740.000	27.448	23.903
750.000	27.509	23.966
760.000	27.550	23.982
770.000	27.548	23.883
780.000	27.464	23.818
790.000	27.411	23.828
800.000	27.532	23.952
810.000	27.582	24.143
820.000	27.632	24.554
830.000	27.682	25.078
840.000	27.732	25.718
850.000	27.782	26.285
860.000	27.691	26.257
870.000	25.217	25.217
880.000	25.072	25.072
884.593	25.068	

A1 SCALE: HORIZONTAL 1:1500, VERTICAL 1:250

SITE SECTION 2



DATUM RL = 11.00

CHAINAGE	FINISHED SURFACE	NATURAL SURFACE
0.000	25.398	25.398
10.000	25.351	25.351
20.000	25.336	25.336
30.000	25.341	25.331
40.000	28.539	25.245
50.000	28.556	25.245
60.000	28.574	25.183
70.000	28.591	25.113
80.000	28.608	25.053
90.000	28.603	25.034
100.000	28.576	24.991
110.000	28.550	24.846
120.000	27.912	24.658
130.000	27.160	24.565
140.000	27.396	24.574
150.000	27.376	24.586
160.000	27.354	24.684
170.000	27.072	24.505
180.000	27.292	24.291
190.000	27.453	24.265
200.000	27.641	24.243
210.000	27.830	24.201
220.000	28.003	24.179
230.000	28.103	24.185
240.000	28.203	24.210
250.000	28.303	24.284
260.000	28.403	24.244
270.000	28.503	24.258
280.000	28.603	24.296
290.000	28.701	24.282
300.000	28.767	24.285
310.000	28.771	24.312
320.000	28.709	24.322
330.000	28.613	24.307
340.000	28.513	24.317
350.000	28.413	24.406
360.000	28.313	24.472
370.000	28.213	24.484
380.000	28.113	24.537
390.000	28.013	24.622
400.000	27.913	24.588
410.000	27.813	24.574
420.000	27.715	24.585
430.000	27.648	24.613
440.000	27.633	24.637
450.000	27.690	24.712
460.000	27.784	24.809
470.000	27.884	24.906
480.000	27.984	25.018
490.000	28.084	25.178
500.000	28.184	25.140
510.000	28.284	25.252
520.000	28.384	25.437
530.000	28.484	25.564
540.000	28.577	25.593
550.000	28.645	25.559
560.000	28.657	25.525
570.000	28.597	25.605
580.000	28.503	25.399
590.000	28.403	25.294
600.000	28.303	25.293
610.000	28.203	25.313
620.000	28.103	25.170
630.000	28.003	24.926
640.000	27.903	24.706
650.000	27.803	24.644
660.000	27.706	24.704
670.000	27.639	24.779
680.000	27.636	24.718
690.000	27.698	24.769
700.000	27.784	24.861
710.000	27.856	24.919
720.000	27.931	24.887
730.000	28.011	24.903
740.000	28.089	24.919
750.000	28.168	24.856
760.000	28.243	24.681
770.000	28.322	24.562
780.000	28.397	24.935
790.000	28.476	25.260
800.000	28.544	25.258
810.000	28.608	25.230
820.000	28.670	25.277
830.000	28.731	25.421
840.000	28.796	25.581
850.000	28.862	26.623
860.000	28.926	25.585
870.000	27.420	24.259
880.000	24.908	24.534
890.000	24.534	24.550
896.851	24.550	

A1 SCALE: HORIZONTAL 1:1500, VERTICAL 1:250

SITE SECTION 1

Amendment	Description	Drawn	App'd	Date
3	CLIENT COMMENTS	K.S.	A.S.	13.05.19
2	TWO YEAR PLAN	A.S.	A.S.	07.05.19
1	ORIGINAL ISSUE	KS	AS	26.04.19

North

Scale

Designed: KS

Cad Reference: 18255 C2004 r3

Scale: 1:2000

A1 SHEET

Project Approval
IAN HILL (B.E)
Consulting Civil Engineer

Client

GCA ENGINEERING SOLUTIONS
A.B.N. 92 086 017 745
1 HARTLEY DRIVE, THORNTON NSW 2322
PO BOX 3337, THORNTON NSW 2322
PHONE: (02) 4964 1811 ◆ FAX: (02) 4964 1822

PENRITH LAKES EMPLOYMENT LAND

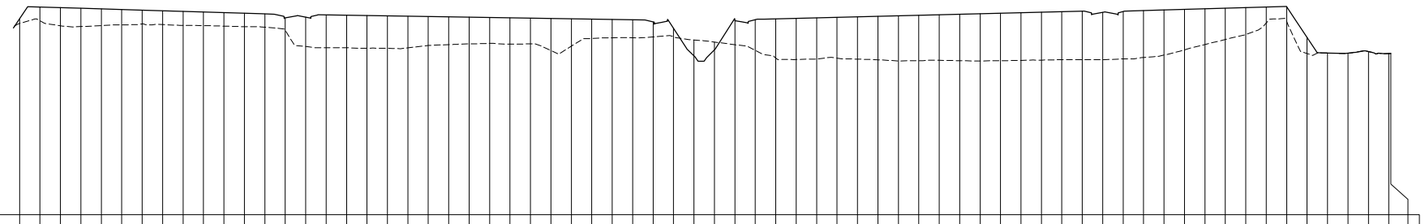
TWO YEAR PLAN

SITE SECTIONS - SHEET 1 OF 2

Project No: 18255C

Drawing No: C2004

Revision: 3



DATUM RL = 11.00

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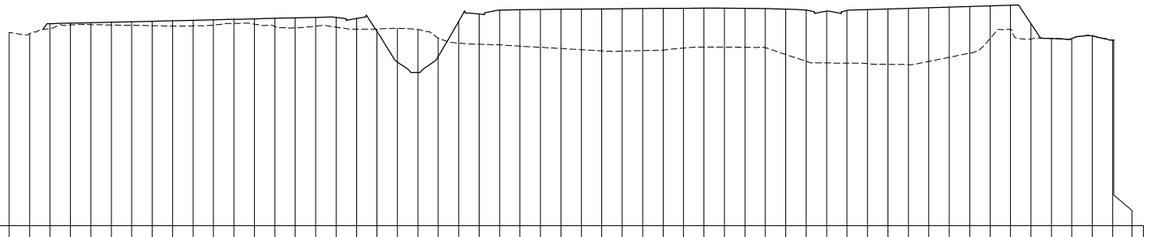
FINISHED SURFACE	26.961	27.923	27.877	27.831	27.778	27.723	27.669	27.618	27.568	27.517	27.467	27.416	27.365	27.042	27.101	27.280	27.253	27.227	27.201	27.175	27.149	27.122	27.096	27.070	27.044	27.018	26.991	26.965	26.939	26.913	26.887	26.711	26.189	23.932	24.435	26.817	26.886	26.964	27.005	27.047	27.089	27.130	27.172	27.213	27.255	27.297	27.338	27.380	27.421	27.463	27.505	27.546	27.588	27.494	27.552	27.637	27.687	27.736	27.784	27.833	27.882	27.930	27.960	25.460	24.177	24.157	24.289	24.137	24.141
NATURAL SURFACE	26.572	26.805	26.397	26.332	26.416	26.462	26.559	26.492	26.433	26.413	26.366	26.322	26.281	26.014	24.702	24.601	24.602	24.572	24.558	24.598	24.793	24.857	24.918	24.958	24.902	24.923	24.383	24.732	25.361	25.419	25.413	25.487	25.497	25.241	25.069	24.855	24.389	23.771	23.647	23.684	23.764	23.675	23.624	23.533	23.550	23.584	24.006	23.551	23.531	23.549	23.519	23.598	23.624	23.631	23.639	23.690	23.820	23.806	24.433	24.811	25.276	25.693	26.618	26.734	24.127	24.177	24.157	24.289	24.137	24.141
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000	280.000	290.000	300.000	310.000	320.000	330.000	340.000	350.000	360.000	370.000	380.000	390.000	400.000	410.000	420.000	430.000	440.000	450.000	460.000	470.000	480.000	490.000	500.000	510.000	520.000	530.000	540.000	550.000	560.000	570.000	580.000	590.000	600.000	610.000	620.000	630.000	640.000	650.000	660.000	670.000	680.000	680.940

A1 SCALE: HORIZONTAL 1:1500, VERTICAL 1:250

SITE SECTION 5



DATUM RL = 11.00

	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000	280.000	290.000	300.000	310.000	320.000	330.000	340.000	350.000	360.000	370.000	380.000	390.000	400.000	410.000	420.000	430.000	440.000	450.000	460.000	470.000	480.000	490.000	500.000	510.000	520.000	530.000	540.000	540.561
FINISHED SURFACE	26.748	26.654	27.475	27.514	27.553	27.593	27.632	27.671	27.711	27.750	27.789	27.829	27.868	27.907	27.947	27.986	27.976	27.892	26.828	24.350	23.500	24.787	27.671	28.264	28.583	28.604	28.623	28.643	28.659	28.677	28.691	28.705	28.720	28.726	28.742	28.745	28.729	28.699	28.657	28.583	28.490	28.553	28.624	28.674	28.724	28.774	28.823	28.872	28.920	28.969	27.457	26.271	26.255	26.478	26.146	26.148
NATURAL SURFACE	26.748	26.654	27.059	27.365	27.393	27.365	27.338	27.307	27.278	27.293	27.358	27.495	27.442	27.248	27.132	27.269	27.189	27.032	27.038	27.086	26.993	26.303	25.898	25.792	25.743	25.641	25.547	25.451	25.358	25.259	25.239	25.279	25.330	25.484	25.567	25.558	25.546	25.526	24.961	24.409	24.270	24.256	24.209	24.158	24.135	24.400	24.731	25.061	26.248	27.028	26.232	26.271	26.255	26.478	26.146	26.148
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000	280.000	290.000	300.000	310.000	320.000	330.000	340.000	350.000	360.000	370.000	380.000	390.000	400.000	410.000	420.000	430.000	440.000	450.000	460.000	470.000	480.000	490.000	500.000	510.000	520.000	530.000	540.000	540.561

A1 SCALE: HORIZONTAL 1:1500, VERTICAL 1:250

SITE SECTION 4

Amendment	Description	Drawn	App'd	Date
3	CLIENT COMMENTS	K.S.	A.S.	13.05.19
2	TWO YEAR PLAN	A.S.	A.S.	07.05.19
1	ORIGINAL ISSUE	KS	AS	26.04.19

North

Scale

Designed: KS

Cad Reference: 18255 C2005 r3

Scale: 1:2000

A1 SHEET

Project Approval
IAN HILL (B.E)
Consulting Civil Engineer

Client

GCA ENGINEERING SOLUTIONS
A.B.N. 92 086 017 745
1 HARTLEY DRIVE, THORNTON NSW 2322
PO BOX 3337, THORNTON NSW 2322
PHONE: (02) 4964 1811 ◆ FAX: (02) 4964 1822

PENRITH LAKES EMPLOYMENT LAND

TWO YEAR PLAN

SITE SECTIONS - SHEET 2 OF 2

Project No: 18255C

Drawing No: C2005

Revision: 3

APPENDIX B

TRAFFIC SURVEY RESULTS

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

Traffic Count Summary Report

Count Number 7387 Ref : TTPA

Street **CASTLEREIGH ROAD, CRANEBROOK : From ANDREWS ROAD to GREAT WESTERN HIGHWAY : SOUTH BOUND**

Location Combined Counts (7382,7383,7384,7385) South of Andrews Road *Carriageway*

Start Date	20-MAY-19
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	58
Weekly 85th Percentile Speed	67
Five Day AADT	9302
Seven Day AADT	8042

TOTAL COUNT MATRIX

	MON *20TH*	TUE *21ST*	WED *22ND*	THU *23RD*	FRI *24TH*	SAT *25TH*	SUN *26TH*	5 Day Total	5 Day Average	7 Day Total	7 Day Average
Midnight - 1am	17	24	24	25	31	48	42	**121**	**24**	**211**	**30**
1am - 2am	12	18	27	28	27	23	27	**112**	**22**	**162**	**23**
2am - 3am	33	22	17	17	37	35	19	**126**	**25**	**180**	**26**
3am - 4am	53	46	54	60	47	32	13	**260**	**52**	**305**	**44**
4am - 5am	160	182	177	159	151	54	30	**829**	**166**	**913**	**130**
5am - 6am	379	384	370	382	345	129	43	**1860**	**372**	**2032**	**290**
6am - 7am	630	667	633	645	629	178	81	**3204**	**641**	**3463**	**495**
7am - 8am	817	902	859	877	841	305	115	**4296**	**859**	**4716**	**674**
8am - 9am	**844**	**913**	**868**	**892**	**904**	487	208	**4421**	**884**	**5116**	**731**
9am - 10am	613	615	627	633	620	540	341	**3108**	**622**	**3989**	**570**
10am - 11am	554	488	513	539	540	477	346	**2634**	**527**	**3457**	**494**
11am - Midday	484	537	493	539	557	**550**	**373**	**2610**	**522**	**3533**	**505**
Midday - 1pm	483	491	513	511	549	210	359	**2547**	**509**	**3116**	**445**
1pm - 2pm	447	432	490	482	481	329	**425**	**2332**	**466**	**3086**	**441**
2pm - 3pm	468	494	541	506	538	**334**	344	**2547**	**509**	**3225**	**461**
3pm - 4pm	**645**	**670**	**610**	648	**620**	306	337	**3193**	**639**	**3836**	**548**
4pm - 5pm	510	532	527	**653**	557	258	295	**2779**	**556**	**3332**	**476**
5pm - 6pm	494	543	555	639	558	314	308	**2789**	**558**	**3411**	**487**
6pm - 7pm	414	444	498	594	538	287	226	**2488**	**498**	**3001**	**429**
7pm - 8pm	315	302	326	381	368	182	147	**1692**	**338**	**2021**	**289**
8pm - 9pm	171	204	263	254	223	98	140	**1115**	**223**	**1353**	**193**
9pm - 10pm	121	137	158	153	167	91	86	**736**	**147**	**913**	**130**
10pm - 11pm	80	81	95	110	97	91	46	**463**	**93**	**600**	**86**
11pm - Midnight	43	34	48	49	75	50	26	**249**	**50**	**325**	**46**
Total	**8787**	**9162**	**9286**	**9776**	**9500**	**5408**	**4377**	**46511**	**9302**	**56296**	**8042**

 CFE Information Technologies

Data displayed has been compiled from pneumatic traffic count processes and is subject to the documented limitations

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

Traffic Count Summary Report

Count Number 7387 Ref : TTPA

Street **CASTLEREIGH ROAD, CRANEBROOK : From GREAT WESTERN HIGHWAY to ANDREWS ROAD : NORTH BOUND**

Location Combined Counts (7382,7383,7384,7385) South of Andrews Road *Carriageway*

TOTAL COUNT MATRIX

Start Date	20-MAY-19
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	59
Weekly 85th Percentile Speed	68
Five Day AADT	20921
Seven Day AADT	17758

	MON *20TH*	TUE *21ST*	WED *22ND*	THU *23RD*	FRI *24TH*	SAT *25TH*	SUN *26TH*	5 Day Total	5 Day Average	7 Day Total	7 Day Average
Midnight - 1am	41	52	62	59	68	80	71	**282**	**56**	**433**	**62**
1am - 2am	45	26	41	50	42	39	42	**204**	**41**	**285**	**41**
2am - 3am	40	31	36	25	39	26	17	**171**	**34**	**214**	**31**
3am - 4am	44	38	46	48	48	20	23	**224**	**45**	**267**	**38**
4am - 5am	126	109	119	127	121	40	30	**602**	**120**	**672**	**96**
5am - 6am	508	513	437	393	379	72	21	**2230**	**446**	**2323**	**332**
6am - 7am	999	984	979	893	916	159	59	**4771**	**954**	**4989**	**713**
7am - 8am	1199	1187	1102	1124	1105	281	106	**5717**	**1143**	**6104**	**872**
8am - 9am	**1333**	**1381**	**1236**	**1171**	**1237**	497	212	**6358**	**1272**	**7067**	**1010**
9am - 10am	1119	1095	925	993	1134	847	278	**5266**	**1053**	**6391**	**913**
10am - 11am	1070	951	904	918	1103	1327	316	**4946**	**989**	**6589**	**941**
11am - Midday	1117	998	1091	1050	1107	**1582**	**422**	**5363**	**1073**	**7367**	**1052**
Midday - 1pm	1185	1080	1083	1168	1203	**1588**	659	**5719**	**1144**	**7966**	**1138**
1pm - 2pm	1144	1096	1208	1066	1288	1400	748	**5802**	**1160**	**7950**	**1136**
2pm - 3pm	1426	1288	1384	1329	1534	1058	916	**6961**	**1392**	**8935**	**1276**
3pm - 4pm	1759	1784	1821	1769	1885	699	**942**	**9018**	**1804**	**10659**	**1523**
4pm - 5pm	2121	2015	2097	1995	**2099**	511	891	**10327**	**2065**	**11729**	**1676**
5pm - 6pm	**2399**	**2258**	**2299**	**2267**	2004	543	699	**11227**	**2245**	**12469**	**1781**
6pm - 7pm	1347	1445	1525	1572	1477	322	440	**7366**	**1473**	**8128**	**1161**
7pm - 8pm	782	843	990	1100	802	177	351	**4517**	**903**	**5045**	**721**
8pm - 9pm	547	574	714	942	559	120	312	**3336**	**667**	**3768**	**538**
9pm - 10pm	381	497	542	768	416	128	215	**2604**	**521**	**2947**	**421**
10pm - 11pm	179	216	236	315	112	110	139	**1058**	**212**	**1307**	**187**
11pm - Midnight	86	96	91	173	91	69	98	**537**	**107**	**704**	**101**
Total	**20997**	**20557**	**20968**	**21315**	**20769**	**11695**	**8007**	**104606**	**20921**	**124308**	**17758**

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Traffic Count Summary Report

Count Number	**7382**	Ref : **TTPA**	**Lat/Long : S33 43.719 / E150 41.685**
Street	**CASTLEREIGH ROAD, CRANEBROOK : From CRANEBROOK ROAD to ANDREWS ROAD : SOUTH BOUND**		
Location	Combined Counts (7378,7379,7380,7381) North of Andrews Road		*Carriageway*

TOTAL COUNT MATRIX

Start Date	20-MAY-19
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	66
Weekly 85th Percentile Speed	79
Five Day AADT	11778
Seven Day AADT	10231

	MON *20TH*	TUE *21ST*	WED *22ND*	THU *23RD*	FRI *24TH*	SAT *25TH*	SUN *26TH*	5 Day Total	5 Day Average	7 Day Total	7 Day Average
Midnight - 1am	15	14	18	20	25	41	50	**92**	**18**	**183**	**26**
1am - 2am	14	17	27	28	20	26	31	**106**	**21**	**163**	**23**
2am - 3am	25	18	22	19	29	31	23	**113**	**23**	**167**	**24**
3am - 4am	59	49	43	63	47	22	12	**261**	**52**	**295**	**42**
4am - 5am	155	164	175	151	144	45	35	**789**	**158**	**869**	**124**
5am - 6am	447	489	497	492	437	141	38	**2362**	**472**	**2541**	**363**
6am - 7am	843	853	898	872	803	234	103	**4269**	**854**	**4606**	**658**
7am - 8am	1138	1205	1143	1185	1063	411	141	**5734**	**1147**	**6286**	**898**
8am - 9am	**1402**	**1389**	**1425**	**1413**	**1269**	625	273	**6898**	**1380**	**7796**	**1114**
9am - 10am	794	801	839	826	814	629	455	**4074**	**815**	**5158**	**737**
10am - 11am	587	634	630	624	661	650	477	**3136**	**627**	**4263**	**609**
11am - Midday	574	553	568	643	623	**657**	**540**	**2961**	**592**	**4158**	**594**
Midday - 1pm	528	524	564	599	664	**561**	453	**2879**	**576**	**3893**	**556**
1pm - 2pm	531	548	566	569	578	452	**505**	**2792**	**558**	**3749**	**536**
2pm - 3pm	648	641	681	656	657	437	442	**3283**	**657**	**4162**	**595**
3pm - 4pm	**945**	**933**	**936**	**927**	**934**	405	437	**4675**	**935**	**5517**	**788**
4pm - 5pm	737	835	785	911	798	370	409	**4066**	**813**	**4845**	**692**
5pm - 6pm	674	750	765	823	720	445	351	**3732**	**746**	**4528**	**647**
6pm - 7pm	417	532	543	621	568	353	235	**2681**	**536**	**3269**	**467**
7pm - 8pm	254	292	327	363	338	223	172	**1574**	**315**	**1969**	**281**
8pm - 9pm	160	163	239	222	205	143	159	**989**	**198**	**1291**	**184**
9pm - 10pm	118	131	169	142	179	130	97	**739**	**148**	**966**	**138**
10pm - 11pm	71	72	90	97	119	125	37	**449**	**90**	**611**	**87**
11pm - Midnight	41	31	42	47	74	72	22	**235**	**47**	**329**	**47**
Total	**11177**	**11638**	**11992**	**12313**	**11769**	**7228**	**5497**	**58889**	**11777**	**71614**	**10230**

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Traffic Count Summary Report

Count Number 7382 Ref : TTPA **Lat/Long : S33 43.719 / E150 41.685**

Street **CASTLEREIGH ROAD, CRANEBROOK : From ANDREWS ROAD to CRANEBROOK ROAD : NORTH BOUND**

Location Combined Counts (7378,7379,7380,7381) North of Andrews Road *Carriageway*

TOTAL COUNT MATRIX

Start Date	20-MAY-19
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	63
Weekly 85th Percentile Speed	72
Five Day AADT	12681
Seven Day AADT	10932

	MON *20TH*	TUE *21ST*	WED *22ND*	THU *23RD*	FRI *24TH*	SAT *25TH*	SUN *26TH*	5 Day Total	5 Day Average	7 Day Total	7 Day Average
Midnight - 1am	23	32	37	32	40	54	74	**164**	**33**	**292**	**42**
1am - 2am	38	16	27	31	23	28	35	**135**	**27**	**198**	**28**
2am - 3am	25	21	25	18	17	14	16	**106**	**21**	**136**	**19**
3am - 4am	37	29	37	41	36	25	17	**180**	**36**	**222**	**32**
4am - 5am	63	58	57	74	51	25	24	**303**	**61**	**352**	**50**
5am - 6am	279	234	249	223	198	43	18	**1183**	**237**	**1244**	**178**
6am - 7am	572	588	596	573	532	107	55	**2861**	**572**	**3023**	**432**
7am - 8am	709	674	705	699	665	145	84	**3452**	**690**	**3681**	**526**
8am - 9am	**776**	**776**	**738**	**789**	**786**	289	196	**3865**	**773**	**4350**	**621**
9am - 10am	590	551	560	585	551	417	232	**2837**	**567**	**3486**	**498**
10am - 11am	539	509	533	572	568	627	296	**2721**	**544**	**3644**	**521**
11am - Midday	564	580	669	590	630	**925**	**370**	**3033**	**607**	**4328**	**618**
Midday - 1pm	572	625	656	737	707	**1135**	488	**3297**	**659**	**4920**	**703**
1pm - 2pm	635	668	724	711	774	783	510	**3512**	**702**	**4805**	**686**
2pm - 3pm	857	852	970	906	1047	572	602	**4632**	**926**	**5806**	**829**
3pm - 4pm	1115	1132	1194	1156	1295	489	**615**	**5892**	**1178**	**6996**	**999**
4pm - 5pm	1289	1304	1415	1372	**1371**	433	563	**6751**	**1350**	**7747**	**1107**
5pm - 6pm	**1411**	**1478**	**1507**	**1474**	1254	414	469	**7124**	**1425**	**8007**	**1144**
6pm - 7pm	720	812	885	941	817	287	274	**4175**	**835**	**4736**	**677**
7pm - 8pm	403	485	578	636	477	182	237	**2579**	**516**	**2998**	**428**
8pm - 9pm	320	366	399	522	340	135	190	**1947**	**389**	**2272**	**325**
9pm - 10pm	201	306	328	469	286	161	128	**1590**	**318**	**1879**	**268**
10pm - 11pm	118	139	139	198	128	131	82	**722**	**144**	**935**	**134**
11pm - Midnight	55	57	60	93	80	77	47	**345**	**69**	**469**	**67**
Total	**11911**	**12292**	**13088**	**13442**	**12673**	**7498**	**5622**	**63406**	**12681**	**76526**	**10932**

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Traffic Count Summary Report

Count Number	**7377**	Ref : **TTPA**	**Lat/Long : S33 43.787 / E150 41.558**
Street	**OLD CASTLEREAGH ROAD, CRANEBROOK : From CASTLEREAGH ROAD to CUL DE SAC (CEMETERY) : WEST BOUND**		
Location	Just west of Castlereigh Road		*Carriageway*

TOTAL COUNT MATRIX

Start Date	20-MAY-19
Start Time	200
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	56
Weekly 85th Percentile Speed	67
Five Day AADT	973
Seven Day AADT	928

	MON *20TH / 27TH*	TUE *21ST*	WED *22ND*	THU *23RD*	FRI *24TH*	SAT *25TH*	SUN *26TH*	5 Dav Total	5 Dav Average	7 Dav Total	7 Dav Average
Midnight - 1am	0	0	0	0	2	13	3	**2**	**0**	**18**	**3**
1am - 2am	3	2	4	2	4	6	2	**15**	**3**	**23**	**3**
2am - 3am	1	2	0	6	2	1	1	**11**	**2**	**13**	**2**
3am - 4am	2	0	3	3	1	2	0	**9**	**2**	**11**	**2**
4am - 5am	8	9	6	7	9	8	1	**39**	**8**	**48**	**7**
5am - 6am	29	27	29	33	27	8	1	**145**	**29**	**154**	**22**
6am - 7am	64	60	65	57	69	38	10	**315**	**63**	**363**	**52**
7am - 8am	**123**	**108**	**94**	88	93	**206**	18	**506**	**101**	**730**	**104**
8am - 9am	106	96	91	**93**	90	60	30	**476**	**95**	**566**	**81**
9am - 10am	63	101	73	74	176	43	99	**487**	**97**	**629**	**90**
10am - 11am	56	67	64	43	**188**	42	**171**	**418**	**84**	**631**	**90**
11am - Midday	64	57	54	53	134	74	85	**362**	**72**	**521**	**74**
Midday - 1pm	58	51	62	**70**	**97**	**132**	51	**338**	**68**	**521**	**74**
1pm - 2pm	65	55	52	66	46	101	**64**	**284**	**57**	**449**	**64**
2pm - 3pm	64	50	58	56	51	43	53	**279**	**56**	**375**	**54**
3pm - 4pm	**84**	59	**76**	59	62	39	34	**340**	**68**	**413**	**59**
4pm - 5pm	53	**60**	72	66	56	56	22	**307**	**61**	**385**	**55**
5pm - 6pm	31	56	32	42	38	32	6	**199**	**40**	**237**	**34**
6pm - 7pm	18	41	39	20	33	16	5	**151**	**30**	**172**	**25**
7pm - 8pm	17	19	24	11	11	9	7	**82**	**16**	**98**	**14**
8pm - 9pm	13	17	10	7	1	11	6	**48**	**10**	**65**	**9**
9pm - 10pm	4	4	5	7	5	2	2	**25**	**5**	**29**	**4**
10pm - 11pm	3	1	2	5	2	7	0	**13**	**3**	**20**	**3**
11pm - Midnight	3	3	4	3	2	9	1	**15**	**3**	**25**	**4**
Total	**932**	**945**	**919**	**871**	**1199**	**958**	**672**	**4866**	**973**	**6496**	**928**

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Traffic Count Summary Report

Count Number 7377 Ref : TTPA **Lat/Long : S33 43.787 / E150 41.558**

Street **OLD CASTLEREAGH ROAD, CRANEBROOK : From CUL DE SAC (CEMETERY) to CASTLEREAGH ROAD : EAST BOUND**

Location Just west of Castlereigh Road *Carriageway*

TOTAL COUNT MATRIX

Start Date	20-MAY-19
Start Time	200
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	57
Weekly 85th Percentile Speed	72
Five Day AADT	921
Seven Day AADT	880

	MON *20TH / 27TH*	TUE *21ST*	WED *22ND*	THU *23RD*	FRI *24TH*	SAT *25TH*	SUN *26TH*	5 Day Total	5 Day Average	7 Day Total	7 Day Average
Midnight - 1am	2	2	4	1	4	19	17	**13**	**3**	**49**	**7**
1am - 2am	3	2	2	5	7	6	2	**19**	**4**	**27**	**4**
2am - 3am	3	4	1	4	2	1	1	**14**	**3**	**16**	**2**
3am - 4am	2	2	2	7	1	2	1	**14**	**3**	**17**	**2**
4am - 5am	4	5	7	4	4	1	0	**24**	**5**	**25**	**4**
5am - 6am	7	7	6	8	6	6	1	**34**	**7**	**41**	**6**
6am - 7am	14	18	11	11	13	5	4	**67**	**13**	**76**	**11**
7am - 8am	21	32	41	25	33	9	4	**152**	**30**	**165**	**24**
8am - 9am	32	41	34	39	34	51	9	**180**	**36**	**240**	**34**
9am - 10am	45	54	43	58	56	**167**	18	**256**	**51**	**441**	**63**
10am - 11am	47	70	39	37	43	67	33	**236**	**47**	**336**	**48**
11am - Midday	**67**	**87**	**67**	**68**	**144**	86	**54**	**433**	**87**	**573**	**82**
Midday - 1pm	63	60	61	76	**208**	**104**	54	**468**	**94**	**626**	**89**
1pm - 2pm	67	53	62	60	198	71	135	**440**	**88**	**646**	**92**
2pm - 3pm	86	63	74	79	78	40	**202**	**380**	**76**	**622**	**89**
3pm - 4pm	89	77	98	80	87	38	35	**431**	**86**	**504**	**72**
4pm - 5pm	**107**	**117**	**112**	**99**	98	83	73	**533**	**107**	**689**	**98**
5pm - 6pm	81	99	95	81	59	19	19	**415**	**83**	**453**	**65**
6pm - 7pm	39	32	31	31	27	11	5	**160**	**32**	**176**	**25**
7pm - 8pm	18	14	17	13	14	14	13	**76**	**15**	**103**	**15**
8pm - 9pm	10	22	21	21	8	14	4	**82**	**16**	**100**	**14**
9pm - 10pm	13	27	10	12	19	11	3	**81**	**16**	**95**	**14**
10pm - 11pm	2	16	36	6	9	21	1	**69**	**14**	**91**	**13**
11pm - Midnight	7	5	7	5	3	21	1	**27**	**5**	**49**	**7**
Total	**829**	**909**	**881**	**830**	**1155**	**867**	**689**	**4604**	**920**	**6160**	**880**

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Traffic Count Summary Report

Count Number 7376 Ref : TTPA **Lat/Long : S33 43.812 / E150 41.763**

Street **ANDREWS ROAD, CRANEBROOK : From CASTLEREIGH ROAD to RICHMOND ROAD : EAST BOUND**

Location Just east of Castlereigh Road *Carriageway*

TOTAL COUNT MATRIX

Start Date	20-MAY-19
Start Time	200
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	58
Weekly 85th Percentile Speed	74
Five Day AADT	7896
Seven Day AADT	7188

	MON *20TH / 27TH*	TUE *21ST*	WED *22ND*	THU *23RD*	FRI *24TH*	SAT *25TH*	SUN *26TH*	5 Day Total	5 Day Average	7 Day Total	7 Day Average
Midnight - 1am	14	26	32	29	34	42	43	**135**	**27**	**220**	**31**
1am - 2am	8	10	18	24	21	27	23	**81**	**16**	**131**	**19**
2am - 3am	10	10	11	17	16	22	15	**64**	**13**	**101**	**14**
3am - 4am	17	20	21	21	20	21	14	**99**	**20**	**134**	**19**
4am - 5am	65	53	68	57	63	34	20	**306**	**61**	**360**	**51**
5am - 6am	211	240	211	231	222	74	21	**1115**	**223**	**1210**	**173**
6am - 7am	333	338	365	329	317	130	60	**1682**	**336**	**1872**	**267**
7am - 8am	376	400	386	409	410	184	89	**1981**	**396**	**2254**	**322**
8am - 9am	**431**	**488**	**514**	**459**	462	383	137	**2354**	**471**	**2874**	**411**
9am - 10am	406	445	399	412	**476**	628	228	**2138**	**428**	**2994**	**428**
10am - 11am	396	376	356	391	384	782	217	**1903**	**381**	**2902**	**415**
11am - Midday	383	370	392	407	410	**862**	**292**	**1962**	**392**	**3116**	**445**
Midday - 1pm	426	382	435	436	495	**832**	289	**2174**	**435**	**3295**	**471**
1pm - 2pm	407	426	436	450	473	687	411	**2192**	**438**	**3290**	**470**
2pm - 3pm	532	479	454	467	520	587	**472**	**2452**	**490**	**3511**	**502**
3pm - 4pm	654	663	658	633	713	350	369	**3321**	**664**	**4040**	**577**
4pm - 5pm	778	781	804	724	749	300	365	**3836**	**767**	**4501**	**643**
5pm - 6pm	**870**	**838**	**837**	**840**	**762**	286	279	**4147**	**829**	**4712**	**673**
6pm - 7pm	523	591	595	582	537	212	194	**2828**	**566**	**3234**	**462**
7pm - 8pm	314	332	376	413	315	90	161	**1750**	**350**	**2001**	**286**
8pm - 9pm	211	221	311	349	220	88	131	**1312**	**262**	**1531**	**219**
9pm - 10pm	159	206	182	266	164	85	90	**977**	**195**	**1152**	**165**
10pm - 11pm	73	89	112	108	53	70	48	**435**	**87**	**553**	**79**
11pm - Midnight	36	48	40	63	47	58	36	**234**	**47**	**328**	**47**
Total	**7633**	**7832**	**8013**	**8117**	**7883**	**6834**	**4004**	**39478**	**7895**	**50316**	**7188**

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Traffic Count Summary Report

Count Number 7376 Ref : TTPA **Lat/Long : S33 43.812 / E150 41.763**

Street **ANDREWS ROAD, CRANEBROOK : From RICHMOND ROAD to CASTLEREIGH ROAD : WEST BOUND**

Location Just east of Castlereigh Road *Carriageway*

TOTAL COUNT MATRIX

Start Date	20-MAY-19
Start Time	200
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	53
Weekly 85th Percentile Speed	62
Five Day AADT	7872
Seven Day AADT	7065

	MON *20TH / 27TH*	TUE *21ST*	WED *22ND*	THU *23RD*	FRI *24TH*	SAT *25TH*	SUN *26TH*	5 Day Total	5 Day Average	7 Day Total	7 Day Average
Midnight - 1am	13	26	17	16	15	44	55	**87**	**17**	**186**	**27**
1am - 2am	11	11	23	12	13	32	20	**70**	**14**	**122**	**17**
2am - 3am	18	12	22	14	22	22	17	**88**	**18**	**127**	**18**
3am - 4am	23	31	35	33	26	43	13	**148**	**30**	**204**	**29**
4am - 5am	110	122	117	111	99	48	16	**559**	**112**	**623**	**89**
5am - 6am	290	244	280	261	253	79	34	**1328**	**266**	**1441**	**206**
6am - 7am	494	528	517	513	471	171	59	**2523**	**505**	**2753**	**393**
7am - 8am	**683**	**721**	**686**	**660**	638	384	123	**3388**	**678**	**3895**	**556**
8am - 9am	628	588	634	639	**660**	473	222	**3149**	**630**	**3844**	**549**
9am - 10am	481	529	523	528	582	529	353	**2643**	**529**	**3525**	**504**
10am - 11am	493	409	428	481	468	578	**448**	**2279**	**456**	**3305**	**472**
11am - Midday	362	447	412	419	482	**747**	426	**2122**	**424**	**3295**	**471**
Midday - 1pm	376	406	420	428	437	**683**	355	**2067**	**413**	**3105**	**444**
1pm - 2pm	410	371	391	415	411	385	**368**	**1998**	**400**	**2751**	**393**
2pm - 3pm	474	448	470	452	509	328	282	**2353**	**471**	**2963**	**423**
3pm - 4pm	**564**	**598**	**627**	600	**595**	337	255	**2984**	**597**	**3576**	**511**
4pm - 5pm	555	542	543	**607**	566	287	200	**2813**	**563**	**3300**	**471**
5pm - 6pm	529	559	522	575	494	270	210	**2679**	**536**	**3159**	**451**
6pm - 7pm	419	481	469	478	478	243	169	**2325**	**465**	**2737**	**391**
7pm - 8pm	321	286	305	350	282	126	114	**1544**	**309**	**1784**	**255**
8pm - 9pm	169	230	221	226	188	92	81	**1034**	**207**	**1207**	**172**
9pm - 10pm	112	113	138	122	103	100	61	**588**	**118**	**749**	**107**
10pm - 11pm	69	63	64	78	100	93	31	**374**	**75**	**498**	**71**
11pm - Midnight	28	33	34	45	79	58	29	**219**	**44**	**306**	**44**
Total	**7632**	**7798**	**7898**	**8063**	**7971**	**6152**	**3941**	**39362**	**7872**	**49455**	**7065**

 CFE Information Technologies

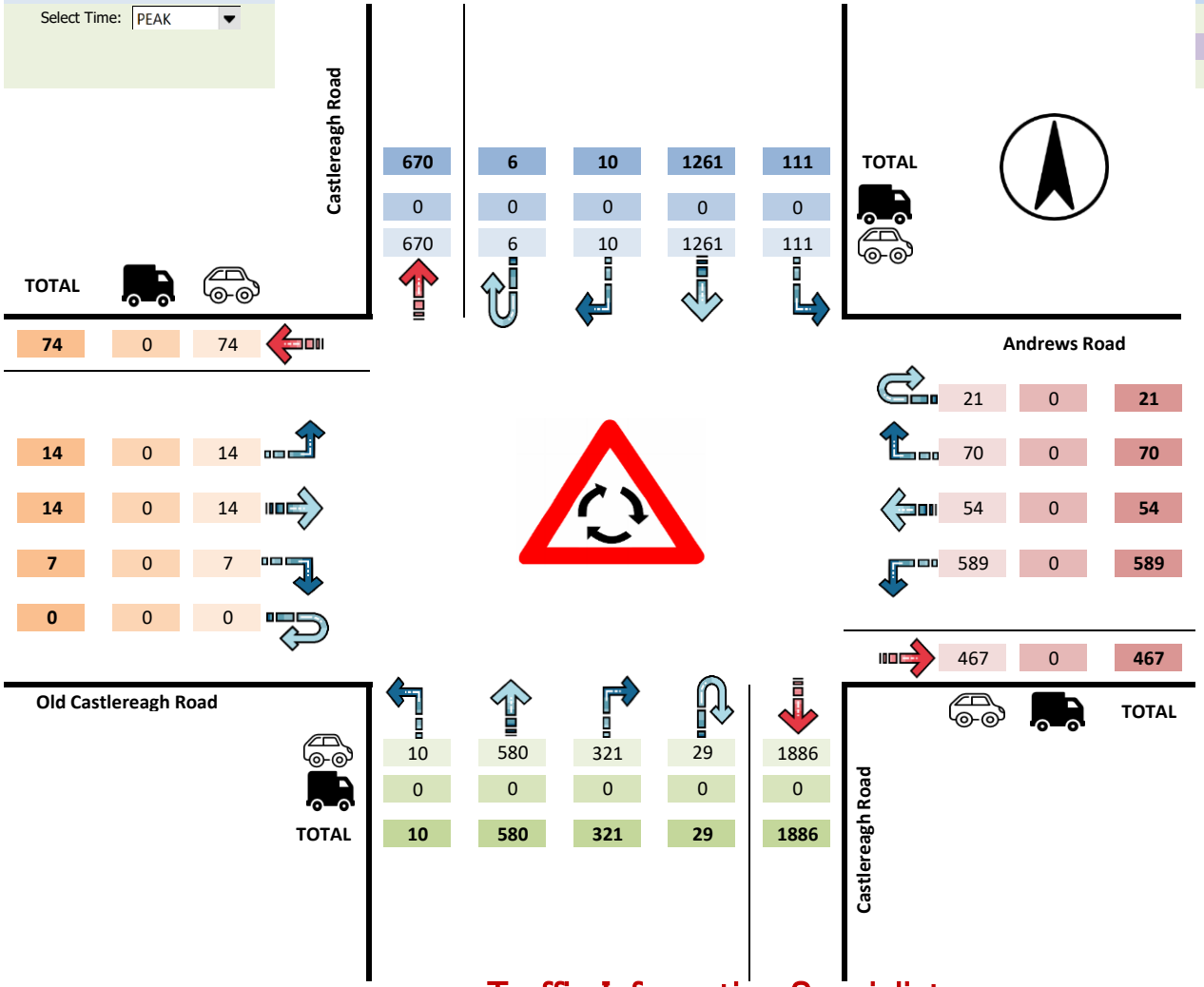
Data displayed has been compiled from pneumatic traffic count processes and is subject to the documented limitations

Location	Castlereagh Road	Duration	0700 - 0900
	Andrews Road		1500 - 1800
	Castlereagh Road		-
	Old Castlereagh Road	Day/Date	Tuesday, October 16, 2018
Suburb	PENRITH	Weather	-

DATA SELECTION

Select Time: PEAK

TIME RANGE		
PEAK	-	AM
PEAK		
7:45	-	8:45



Traffic Information Specialists

ABN: 42 613 389 923

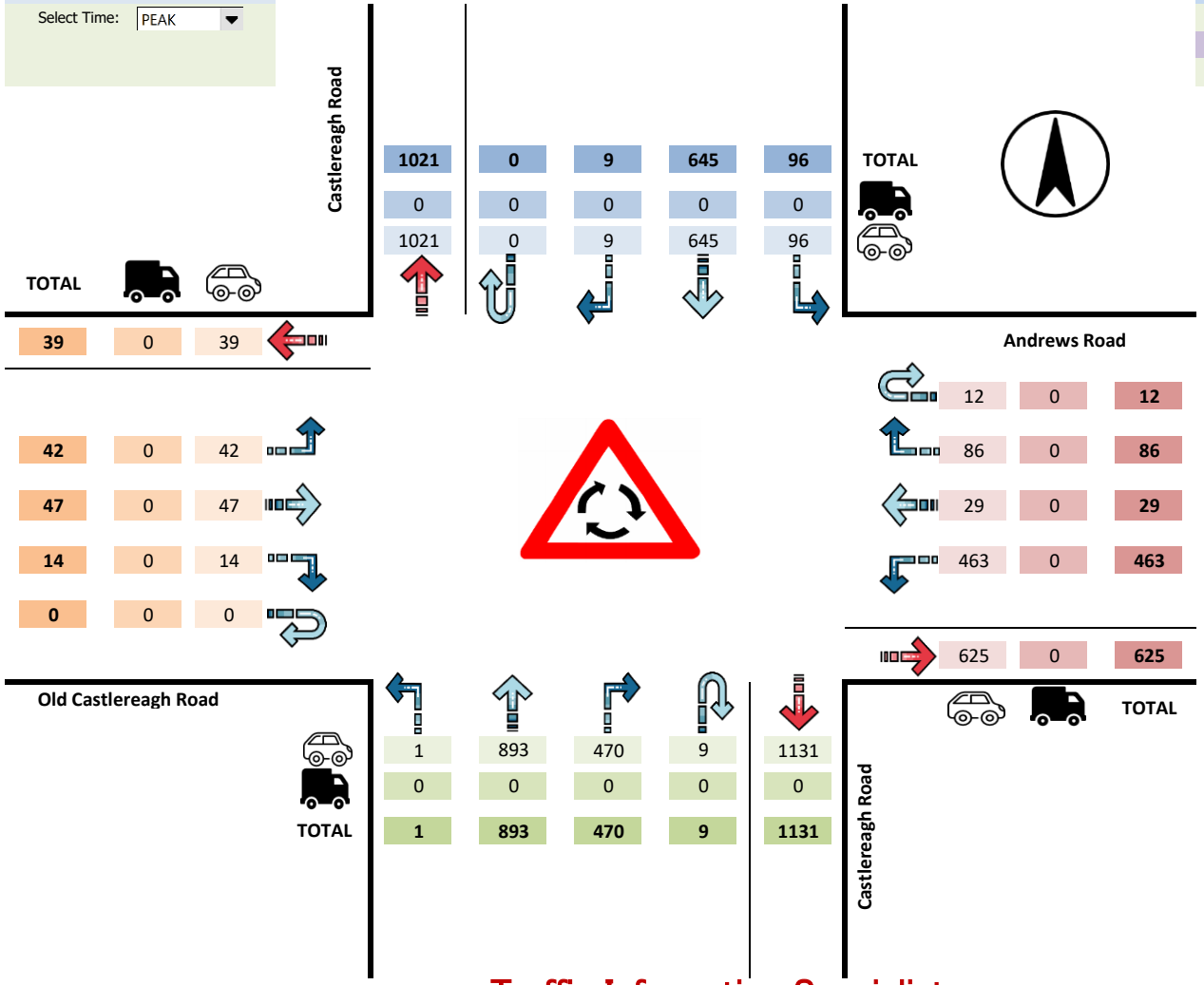
Email info@trafficinfospecialist.com.au

Location	Castlereagh Road	Duration	0700 - 0900
	Andrews Road		1500 - 1800
	Castlereagh Road		-
	Old Castlereagh Road	Day/Date	Tuesday, October 16, 2018
Suburb	PENRITH	Weather	-

DATA SELECTION

Select Time: PEAK

TIME RANGE		
PEAK	-	PM
PEAK		
15:45	-	16:45



Traffic Information Specialists

ABN: 42 613 389 923

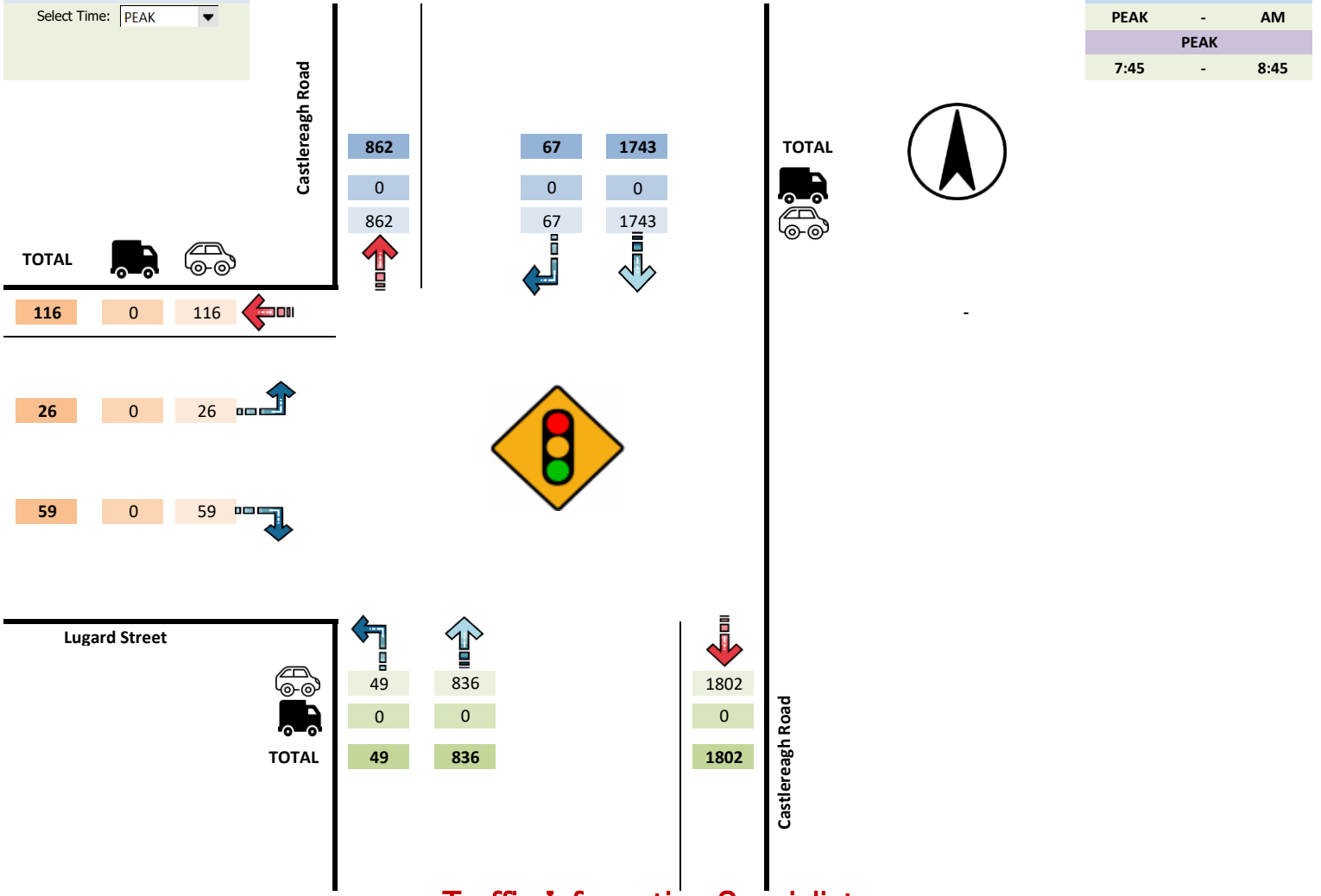
Email info@trafficinfospecialist.com.au

Location	Castlereagh Road	**Duration**	0700 - 0900
	-		1500 - 1800
	Castlereagh Road		-
	Lugard Street	**Day/Date**	Tuesday, October 16, 2018
Suburb	PENRITH	**Weather**	-

DATA SELECTION

Select Time: PEAK

TIME RANGE		
PEAK	-	AM
PEAK		
7:45	-	8:45



Traffic Information Specialists

ABN: 42 613 389 923

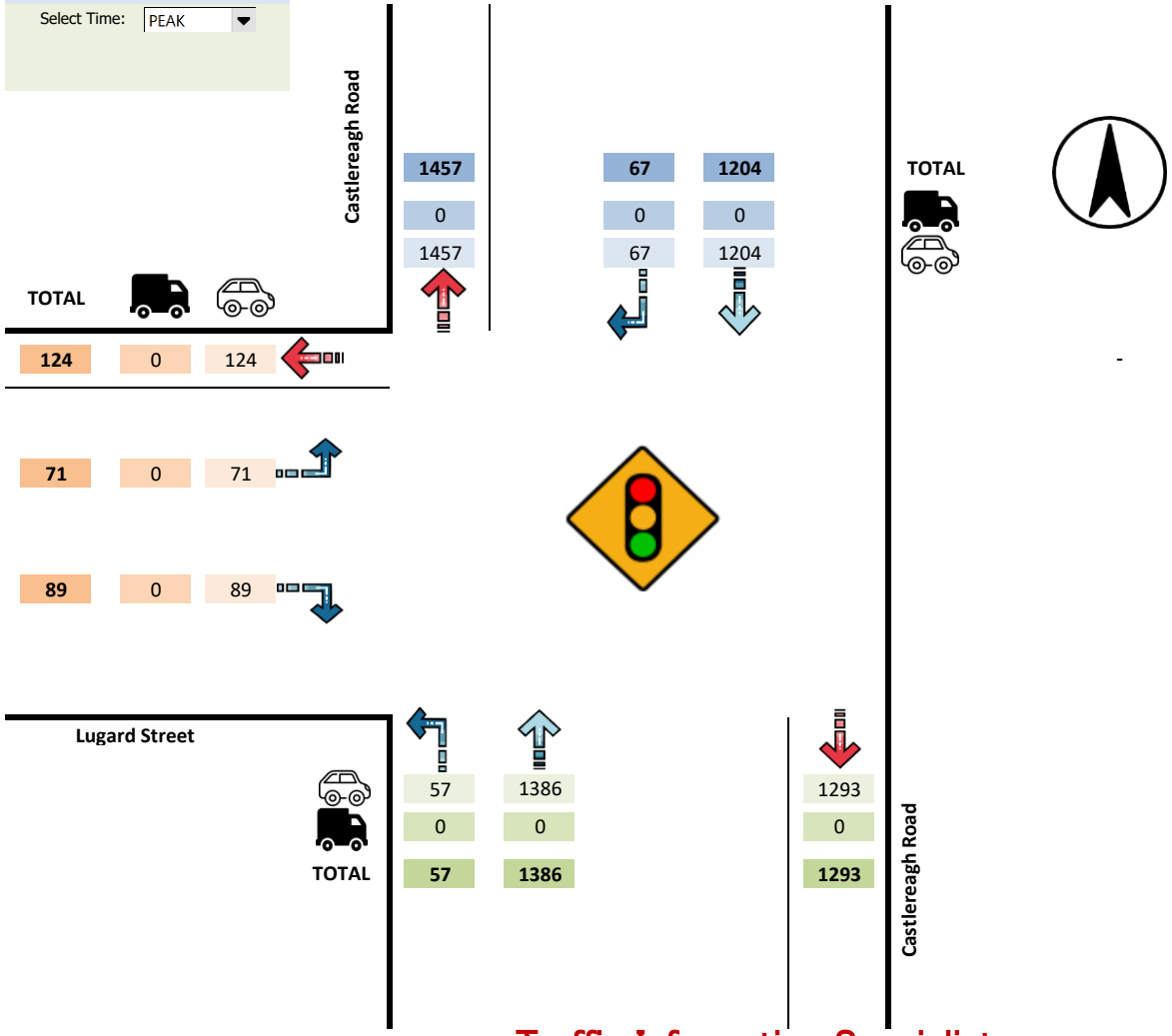
Email info@trafficinfospecialist.com.au

Location	Castlereagh Road	Duration	0700 - 0900
	-		1500 - 1800
	Castlereagh Road		-
	Lugard Street	Day/Date	Tuesday, October 16, 2018
Suburb	PENRITH	Weather	-

DATA SELECTION

Select Time: PEAK

TIME RANGE		
PEAK	-	PM
PEAK		
15:30	-	16:30



Traffic Information Specialists

ABN: 42 613 389 923

Email info@trafficinfospecialist.com.au

APPENDIX C

SIDRA RESULTS

MOVEMENT SUMMARY

Site: 101 [Andrews Rd / Castlereagh Rd / Old Castlereagh Rd PM Ex]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	1	35.0	0.608	4.1	LOS A	5.2	47.0	0.53	0.34	54.8
2	T1	940	35.0	0.608	3.5	LOS A	5.2	47.0	0.54	0.38	56.9
3	R2	504	35.0	0.608	11.3	LOS B	5.0	45.4	0.56	0.59	54.5
Approach		1445	35.0	0.608	6.2	LOS A	5.2	47.0	0.54	0.45	56.0
East: Andrews Rd											
4	L2	487	35.0	0.557	6.6	LOS A	3.7	33.5	0.76	0.85	54.2
5	T1	31	35.0	0.228	5.8	LOS A	1.0	8.9	0.65	0.81	53.3
6	R2	103	35.0	0.228	13.4	LOS B	1.0	8.9	0.65	0.81	53.7
Approach		621	35.0	0.557	7.7	LOS A	3.7	33.5	0.74	0.84	54.0
North: Castlereagh Rd											
7	L2	101	35.0	0.487	6.8	LOS A	3.4	31.3	0.75	0.69	53.7
8	T1	679	35.0	0.487	6.7	LOS A	3.4	31.3	0.75	0.73	56.1
9	R2	9	35.0	0.487	14.8	LOS B	3.2	29.3	0.76	0.79	56.4
Approach		789	35.0	0.487	6.8	LOS A	3.4	31.3	0.75	0.73	55.8
West: Old Castlereagh Rd											
10	L2	44	35.0	0.103	7.1	LOS A	0.5	4.6	0.77	0.77	53.9
11	T1	49	35.0	0.103	7.6	LOS A	0.5	4.6	0.76	0.81	55.0
12	R2	15	35.0	0.103	16.1	LOS B	0.4	3.9	0.76	0.85	54.2
Approach		108	35.0	0.103	8.5	LOS A	0.5	4.6	0.76	0.80	54.4
All Vehicles		2964	35.0	0.608	6.7	LOS A	5.2	47.0	0.65	0.62	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model 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: 101 [Andrews Rd / Castlereagh Rd / Old Castlereagh Rd PM Dev Sce 2]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	1	35.0	0.620	4.1	LOS A	5.4	49.0	0.54	0.34	54.8
2	T1	940	35.0	0.620	3.5	LOS A	5.4	49.0	0.55	0.38	56.9
3	R2	535	35.0	0.620	11.3	LOS B	5.2	47.3	0.57	0.60	54.3
Approach		1476	35.0	0.620	6.3	LOS A	5.4	49.0	0.56	0.46	55.9
East: Andrews Rd											
4	L2	518	35.0	0.595	6.9	LOS A	4.1	37.7	0.78	0.90	54.1
5	T1	31	35.0	0.232	5.9	LOS A	1.0	9.1	0.66	0.81	53.3
6	R2	103	35.0	0.232	13.4	LOS B	1.0	9.1	0.66	0.81	53.7
Approach		652	35.0	0.595	7.9	LOS A	4.1	37.7	0.76	0.88	54.0
North: Castlereagh Rd											
7	L2	101	35.0	0.503	7.2	LOS A	3.7	33.7	0.78	0.74	53.5
8	T1	679	35.0	0.503	7.2	LOS A	3.7	33.7	0.78	0.79	56.0
9	R2	9	35.0	0.503	15.4	LOS B	3.4	31.3	0.78	0.85	56.3
Approach		789	35.0	0.503	7.3	LOS A	3.7	33.7	0.78	0.79	55.7
West: Old Castlereagh Rd											
10	L2	44	35.0	0.105	7.2	LOS A	0.5	4.7	0.78	0.78	53.8
11	T1	49	35.0	0.105	7.7	LOS A	0.5	4.7	0.77	0.82	54.8
12	R2	15	35.0	0.105	16.3	LOS B	0.4	4.1	0.76	0.86	54.0
Approach		108	35.0	0.105	8.7	LOS A	0.5	4.7	0.77	0.81	54.3
All Vehicles		3025	35.0	0.620	7.0	LOS A	5.4	49.0	0.67	0.65	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model 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: 101 [Andrews Rd / Castlereagh Rd / Old Castlereagh Rd PM Dev Sce 1]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	1	35.0	0.629	4.4	LOS A	5.4	49.3	0.59	0.36	54.5
2	T1	940	35.0	0.629	3.7	LOS A	5.4	49.3	0.60	0.41	56.6
3	R2	504	35.0	0.629	11.7	LOS B	5.3	48.1	0.62	0.63	54.3
Approach		1445	35.0	0.629	6.5	LOS A	5.4	49.3	0.61	0.49	55.7
East: Andrews Rd											
4	L2	487	35.0	0.558	6.6	LOS A	3.7	33.7	0.76	0.85	54.1
5	T1	61	35.0	0.271	5.7	LOS A	1.2	10.9	0.67	0.77	53.9
6	R2	103	35.0	0.271	13.3	LOS B	1.2	10.9	0.67	0.77	54.3
Approach		652	35.0	0.558	7.6	LOS A	3.7	33.7	0.74	0.83	54.2
North: Castlereagh Rd											
7	L2	101	35.0	0.499	6.9	LOS A	3.6	32.5	0.77	0.71	53.6
8	T1	679	35.0	0.499	6.9	LOS A	3.6	32.5	0.77	0.76	56.1
9	R2	9	35.0	0.499	15.1	LOS B	3.3	30.2	0.77	0.82	56.3
Approach		789	35.0	0.499	7.0	LOS A	3.6	32.5	0.77	0.76	55.7
West: Old Castlereagh Rd											
10	L2	44	35.0	0.137	7.1	LOS A	0.7	6.2	0.79	0.76	53.7
11	T1	80	35.0	0.137	7.5	LOS A	0.7	6.2	0.78	0.81	55.2
12	R2	15	35.0	0.137	16.2	LOS B	0.6	5.4	0.77	0.85	54.5
Approach		139	35.0	0.137	8.3	LOS A	0.7	6.2	0.78	0.80	54.7
All Vehicles		3025	35.0	0.629	7.0	LOS A	5.4	49.3	0.68	0.65	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model 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: 101 [Andrews Rd / Castlereagh Rd / Old Castlereagh Rd AM Dev Sce 2]

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	11	35.0	0.721	8.6	LOS A	6.2	56.1	0.89	0.92	52.8
2	T1	611	35.0	0.721	8.1	LOS A	6.2	56.1	0.89	0.93	55.0
3	R2	399	35.0	0.721	17.5	LOS B	5.6	50.8	0.88	1.08	50.5
Approach		1020	35.0	0.721	11.8	LOS B	6.2	56.1	0.88	0.99	53.0
East: Andrews Rd											
4	L2	87	35.0	0.946	32.4	LOS C	12.6	115.0	1.00	1.55	40.1
5	T1	620	35.0	0.946	34.5	LOS C	12.6	115.0	0.99	1.52	40.1
6	R2	96	35.0	0.946	47.0	LOS D	10.0	91.2	0.98	1.49	38.0
Approach		803	35.0	0.946	35.7	LOS D	12.6	115.0	0.99	1.52	39.9
North: Castlereagh Rd											
7	L2	117	35.0	0.833	11.5	LOS B	12.5	113.7	0.99	1.12	51.4
8	T1	1327	35.0	0.833	11.7	LOS B	12.5	113.7	0.99	1.15	53.1
9	R2	17	35.0	0.833	20.4	LOS C	11.6	105.5	0.99	1.19	52.7
Approach		1461	35.0	0.833	11.8	LOS B	12.5	113.7	0.99	1.15	53.0
West: Old Castlereagh Rd											
10	L2	15	35.0	0.033	5.8	LOS A	0.2	1.4	0.73	0.64	54.1
11	T1	15	35.0	0.033	5.7	LOS A	0.2	1.4	0.72	0.69	55.4
12	R2	7	35.0	0.033	13.8	LOS B	0.1	1.3	0.72	0.74	54.6
Approach		37	35.0	0.033	7.4	LOS A	0.2	1.4	0.72	0.68	54.7
All Vehicles		3321	35.0	0.946	17.5	LOS B	12.6	115.0	0.95	1.19	49.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model 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: 101 [Andrews Rd / Castlereagh Rd / Old Castlereagh Rd AM Dev Sce 1]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	11	35.0	0.719	8.8	LOS A	6.1	55.8	0.89	0.95	52.8
2	T1	611	35.0	0.719	8.3	LOS A	6.1	55.8	0.89	0.96	54.8
3	R2	368	35.0	0.719	17.8	LOS B	5.5	50.2	0.88	1.08	50.5
Approach		989	35.0	0.719	11.9	LOS B	6.1	55.8	0.89	1.00	53.0
East: Andrews Rd											
4	L2	57	35.0	0.920	26.6	LOS C	10.9	99.4	1.00	1.44	42.8
5	T1	651	35.0	0.920	28.3	LOS C	10.9	99.4	0.99	1.43	42.9
6	R2	96	35.0	0.920	40.4	LOS D	8.8	79.8	0.98	1.40	40.6
Approach		803	35.0	0.920	29.6	LOS C	10.9	99.4	0.99	1.42	42.6
North: Castlereagh Rd											
7	L2	117	35.0	0.813	10.2	LOS B	11.2	101.7	0.95	1.05	52.3
8	T1	1327	35.0	0.813	10.4	LOS B	11.2	101.7	0.95	1.09	54.1
9	R2	17	35.0	0.813	18.9	LOS B	10.5	95.1	0.95	1.13	53.8
Approach		1461	35.0	0.813	10.4	LOS B	11.2	101.7	0.95	1.09	54.0
West: Old Castlereagh Rd											
10	L2	15	35.0	0.050	5.7	LOS A	0.2	2.2	0.72	0.58	54.0
11	T1	35	35.0	0.050	5.6	LOS A	0.2	2.2	0.72	0.64	55.8
12	R2	7	35.0	0.050	13.8	LOS B	0.2	1.9	0.72	0.70	55.4
Approach		57	35.0	0.050	6.7	LOS A	0.2	2.2	0.72	0.63	55.3
All Vehicles		3311	35.0	0.920	15.5	LOS B	11.2	101.7	0.94	1.14	50.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model 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: 101 [Castlereagh Rd / Lugard St PM Ex]

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	60	35.0	0.738	21.0	LOS C	29.5	268.1	0.73	0.69	45.7
2	T1	1459	35.0	0.738	15.0	LOS B	29.6	269.5	0.73	0.68	48.0
Approach		1519	35.0	0.738	15.2	LOS B	29.6	269.5	0.73	0.68	47.9
North: Castlereagh Rd											
8	T1	1267	35.0	0.520	5.7	LOS A	14.1	128.7	0.42	0.39	54.8
9	R2	71	35.0	0.408	24.5	LOS C	2.5	23.0	0.83	0.78	41.3
Approach		1338	35.0	0.520	6.7	LOS A	14.1	128.7	0.44	0.41	53.9
West: Lugard St											
10	L2	75	35.0	0.201	44.5	LOS D	3.5	31.7	0.83	0.75	33.7
12	R2	94	35.0	0.473	59.7	LOS E	5.3	48.0	0.97	0.79	29.5
Approach		168	35.0	0.473	53.0	LOS D	5.3	48.0	0.91	0.77	31.2
All Vehicles		3025	35.0	0.738	13.6	LOS B	29.6	269.5	0.61	0.56	48.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	11.3	LOS B	0.1	0.1	0.43	0.43
All Pedestrians		105	32.8	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Castlereagh Rd / Lugard St PM Dev]

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	60	35.0	0.767	23.2	LOS C	31.6	287.6	0.78	0.73	44.5
2	T1	1459	35.0	0.767	17.3	LOS B	31.8	289.1	0.78	0.73	46.6
Approach		1519	35.0	0.767	17.5	LOS B	31.8	289.1	0.78	0.73	46.6
North: Castlereagh Rd											
8	T1	1267	35.0	0.520	5.7	LOS A	14.1	128.7	0.42	0.39	54.8
9	R2	101	35.0	0.486	28.9	LOS C	4.4	40.4	0.96	0.83	39.3
Approach		1368	35.0	0.520	7.5	LOS A	14.1	128.7	0.46	0.42	53.3
West: Lugard St											
10	L2	105	35.0	0.258	42.7	LOS D	4.8	44.0	0.82	0.77	34.2
12	R2	94	35.0	0.473	59.7	LOS E	5.3	48.0	0.97	0.79	29.5
Approach		199	35.0	0.473	50.7	LOS D	5.3	48.0	0.89	0.78	31.8
All Vehicles		3086	35.0	0.767	15.2	LOS B	31.8	289.1	0.65	0.59	47.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	12.6	LOS B	0.1	0.1	0.46	0.46
All Pedestrians		105	33.5	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Castlereagh Rd / Lugard St PM Dev - 2022]

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Design Life Analysis (Practical Capacity): Results for 3 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	63	35.0	0.812	25.5	LOS C	35.8	325.6	0.83	0.79	43.3
2	T1	1525	35.0	0.812	19.5	LOS B	35.9	326.9	0.83	0.78	45.3
Approach		1587	35.0	0.812	19.8	LOS B	35.9	326.9	0.83	0.78	45.2
North: Castlereagh Rd											
8	T1	1324	35.0	0.550	6.4	LOS A	15.8	143.7	0.45	0.41	54.3
9	R2	106	35.0	0.519	33.4	LOS C	4.8	43.3	0.98	0.85	37.5
Approach		1430	35.0	0.550	8.4	LOS A	15.8	143.7	0.49	0.45	52.6
West: Lugard St											
10	L2	110	35.0	0.261	42.0	LOS D	5.0	45.6	0.82	0.77	34.5
12	R2	98	35.0	0.465	58.7	LOS E[11]	5.5	49.7	0.96	0.79	29.8
Approach		208	35.0	0.465	49.8	LOS D	5.5	49.7	0.89	0.78	32.1
All Vehicles		3225	35.0	0.812	16.6	LOS B	35.9	326.9	0.68	0.63	46.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	56	54.3	LOS E[12]	0.2	0.2	0.95	0.95
P4	West Full Crossing	56	13.1	LOS B	0.1	0.1	0.47	0.47
All Pedestrians		112	33.7	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

12 Level of Service is worse than the Pedestrian Level of Service Target specified in the Parameter Settings dialog.

MOVEMENT SUMMARY

Site: 101 [Castlereagh Rd / Lugard St AM Dev - 2022]

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Design Life Analysis (Practical Capacity): Results for 3 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	54	35.0	0.535	22.6	LOS C	17.2	156.9	0.66	0.62	44.7
2	T1	920	35.0	0.535	16.7	LOS B	17.4	158.0	0.66	0.60	47.0
Approach		973	35.0	0.535	17.0	LOS B	17.4	158.0	0.66	0.60	46.8
North: Castlereagh Rd											
8	T1	1917	35.0	0.831	9.8	LOS A	37.7	343.0	0.67	0.63	51.7
9	R2	106	35.0	0.312	15.6	LOS B	2.2	20.1	0.62	0.74	45.9
Approach		2023	35.0	0.831	10.1	LOS B	37.7	343.0	0.67	0.64	51.3
West: Lugard St											
10	L2	61	35.0	0.125	36.5	LOS D	2.5	22.6	0.74	0.73	36.3
12	R2	65	35.0	0.308	57.3	LOS E[11]	3.5	32.0	0.94	0.76	30.1
Approach		125	35.0	0.308	47.3	LOS D	3.5	32.0	0.84	0.75	32.8
All Vehicles		3122	35.0	0.831	13.8	LOS B	37.7	343.0	0.67	0.63	48.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	56	54.3	LOS E[12]	0.2	0.2	0.95	0.95
P4	West Full Crossing	56	15.5	LOS B	0.1	0.1	0.51	0.51
All Pedestrians		112	34.9	LOS D			0.73	0.73

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

12 Level of Service is worse than the Pedestrian Level of Service Target specified in the Parameter Settings dialog.

MOVEMENT SUMMARY

Site: 101 [Castlereagh Rd / Lugard St AM Ex]

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	52	25.0	0.452	18.8	LOS B	14.2	120.9	0.57	0.54	47.1
2	T1	880	25.0	0.452	13.0	LOS B	14.3	121.7	0.57	0.53	49.3
Approach		932	25.0	0.452	13.3	LOS B	14.3	121.7	0.57	0.53	49.2
North: Castlereagh Rd											
8	T1	1835	25.0	0.735	7.6	LOS A	29.1	247.3	0.56	0.53	53.3
9	R2	71	25.0	0.200	12.7	LOS B	1.1	9.0	0.50	0.69	47.8
Approach		1905	25.0	0.735	7.8	LOS A	29.1	247.3	0.56	0.53	53.1
West: Lugard St											
10	L2	27	25.0	0.061	39.4	LOS D	1.2	9.9	0.76	0.70	35.5
12	R2	62	25.0	0.296	57.9	LOS E	3.4	28.7	0.94	0.76	30.1
Approach		89	25.0	0.296	52.2	LOS D	3.4	28.7	0.89	0.74	31.5
All Vehicles		2926	25.0	0.735	10.9	LOS B	29.1	247.3	0.57	0.54	50.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	13.1	LOS B	0.1	0.1	0.47	0.47
All Pedestrians		105	33.7	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Castlereagh Rd / Lugard St AM Dev]

Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Castlereagh Rd											
1	L2	52	25.0	0.478	21.2	LOS C	15.5	131.6	0.62	0.58	45.7
2	T1	880	25.0	0.478	15.3	LOS B	15.6	132.5	0.62	0.57	47.8
Approach		932	25.0	0.478	15.7	LOS B	15.6	132.5	0.62	0.57	47.6
North: Castlereagh Rd											
8	T1	1835	25.0	0.745	7.7	LOS A	29.9	254.6	0.56	0.53	53.3
9	R2	101	25.0	0.259	13.6	LOS B	1.7	14.6	0.55	0.71	47.3
Approach		1936	25.0	0.745	8.0	LOS A	29.9	254.6	0.56	0.54	52.9
West: Lugard St											
10	L2	58	25.0	0.116	37.0	LOS D	2.4	20.3	0.74	0.73	36.3
12	R2	62	25.0	0.296	57.9	LOS E	3.4	28.7	0.94	0.76	30.1
Approach		120	25.0	0.296	47.8	LOS D	3.4	28.7	0.85	0.74	32.8
All Vehicles		2987	25.0	0.745	12.0	LOS B	29.9	254.6	0.59	0.56	50.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	15.0	LOS B	0.1	0.1	0.50	0.50
All Pedestrians		105	34.7	LOS D			0.73	0.73

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Old Castlereagh Rd / Access PM Dev]

Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Access											
3	R2	31	100.0	0.049	8.1	LOS A	0.2	2.0	0.36	0.64	49.5
Approach		31	100.0	0.049	8.1	LOS A	0.2	2.0	0.36	0.64	49.5
East: Old Castlereagh Rd											
4	L2	31	100.0	0.073	6.1	LOS A	0.0	0.0	0.00	0.27	54.1
5	T1	72	35.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.27	57.9
Approach		102	54.4	0.073	2.8	NA	0.0	0.0	0.00	0.27	56.7
West: Old Castlereagh Rd											
11	T1	113	35.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		113	35.0	0.071	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		245	51.2	0.073	1.8	NA	0.2	2.0	0.04	0.19	57.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [Old Castlereagh Rd / Access PM Dev - 2022]

Giveway / Yield (Two-Way)
Design Life Analysis (Practical Capacity): Results for 3 years

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Access											
3	R2	32	100.0	0.052	8.2	LOS A	0.2	2.2	0.37	0.65	49.5
Approach		32	100.0	0.052	8.2	LOS A	0.2	2.2	0.37	0.65	49.5
East: Old Castlereagh Rd											
4	L2	32	100.0	0.077	6.1	LOS A	0.0	0.0	0.00	0.27	54.1
5	T1	75	35.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.27	57.9
Approach		107	54.4	0.077	2.8	NA	0.0	0.0	0.00	0.27	56.7
West: Old Castlereagh Rd											
11	T1	118	35.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		118	35.0	0.074	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		256	51.2	0.077	1.8	NA	0.2	2.2	0.05	0.19	57.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [Old Castlereagh Rd / Access AM Dev]

Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Access											
3	R2	31	100.0	0.050	8.3	LOS A	0.2	2.1	0.37	0.65	49.4
Approach		31	100.0	0.050	8.3	LOS A	0.2	2.1	0.37	0.65	49.4
East: Old Castlereagh Rd											
4	L2	31	100.0	0.095	6.1	LOS A	0.0	0.0	0.00	0.21	54.5
5	T1	106	35.0	0.095	0.0	LOS A	0.0	0.0	0.00	0.21	58.3
Approach		137	49.5	0.095	2.2	NA	0.0	0.0	0.00	0.21	57.4
West: Old Castlereagh Rd											
11	T1	92	35.0	0.058	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		92	35.0	0.058	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		259	50.3	0.095	1.7	NA	0.2	2.1	0.04	0.19	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [Old Castlereagh Rd / Access AM Dev - 2022]

Giveway / Yield (Two-Way)
Design Life Analysis (Practical Capacity): Results for 3 years

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Access											
3	R2	32	100.0	0.053	8.4	LOS A	0.2	2.2	0.38	0.66	49.3
Approach		32	100.0	0.053	8.4	LOS A	0.2	2.2	0.38	0.66	49.3
East: Old Castlereagh Rd											
4	L2	32	100.0	0.099	6.1	LOS A	0.0	0.0	0.00	0.21	54.5
5	T1	111	35.0	0.099	0.0	LOS A	0.0	0.0	0.00	0.21	58.3
Approach		143	49.5	0.099	2.2	NA	0.0	0.0	0.00	0.21	57.4
West: Old Castlereagh Rd											
11	T1	96	35.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		96	35.0	0.060	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		271	50.3	0.099	1.7	NA	0.2	2.2	0.05	0.19	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). 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.