Appendix No. 7

Traffic & Parking Assessment Report
(March 2010)

Proposed Residential Subdivision

370 Old Northern Road, Castle Hill

ADDENDUM REPORT

TRAFFIC AND PARKING ASSESSMENT REPORT

31 March 2010

Ref 10046

VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants

Suite 6, 20 Young Street, Neutral Bay NSW 2089 - PO Box 1868, Neutral Bay NSW 2089
Ph: 9904 3224 Fax: 9904 3228, Email: varga@vtp.net.au

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

1. INTRODUCTION

This report has been prepared to accompany an Application to Council for a proposed residential subdivision which is to be located at 370 Old Northern Road, Castle Hill (Figures 1 and 2).

The subject site is located on the western side of Old Northern Road, approximately half-way between Old Northern Road and Hastings Road. The site occupies an area of approximately 2.9 hectares, and has a street frontage approximately 20m in length to Old Northern Road only.

Vehicular access to the site is currently provided via a two-lane roadway which intersects with Old Northern Road in the form of a T-junction.

The purpose of this report is to review the traffic and parking implications of the proposed residential subdivision. It is pertinent to note in this regard that a previous traffic report[1] reviewed a very broad range of development scenarios which were permissible (with consent) on the site. The most intensive of those landuses was a potential research and development establishment with a floor area of approximately 10,000m^2, which was expected to generate approximately 200 vehicles per hour during peak periods.

By contrast, the proposed development comprises a residential subdivision with 15 dwelling house allotments, and is expected to generate approximately 13 vehicles per hour during pea periods.

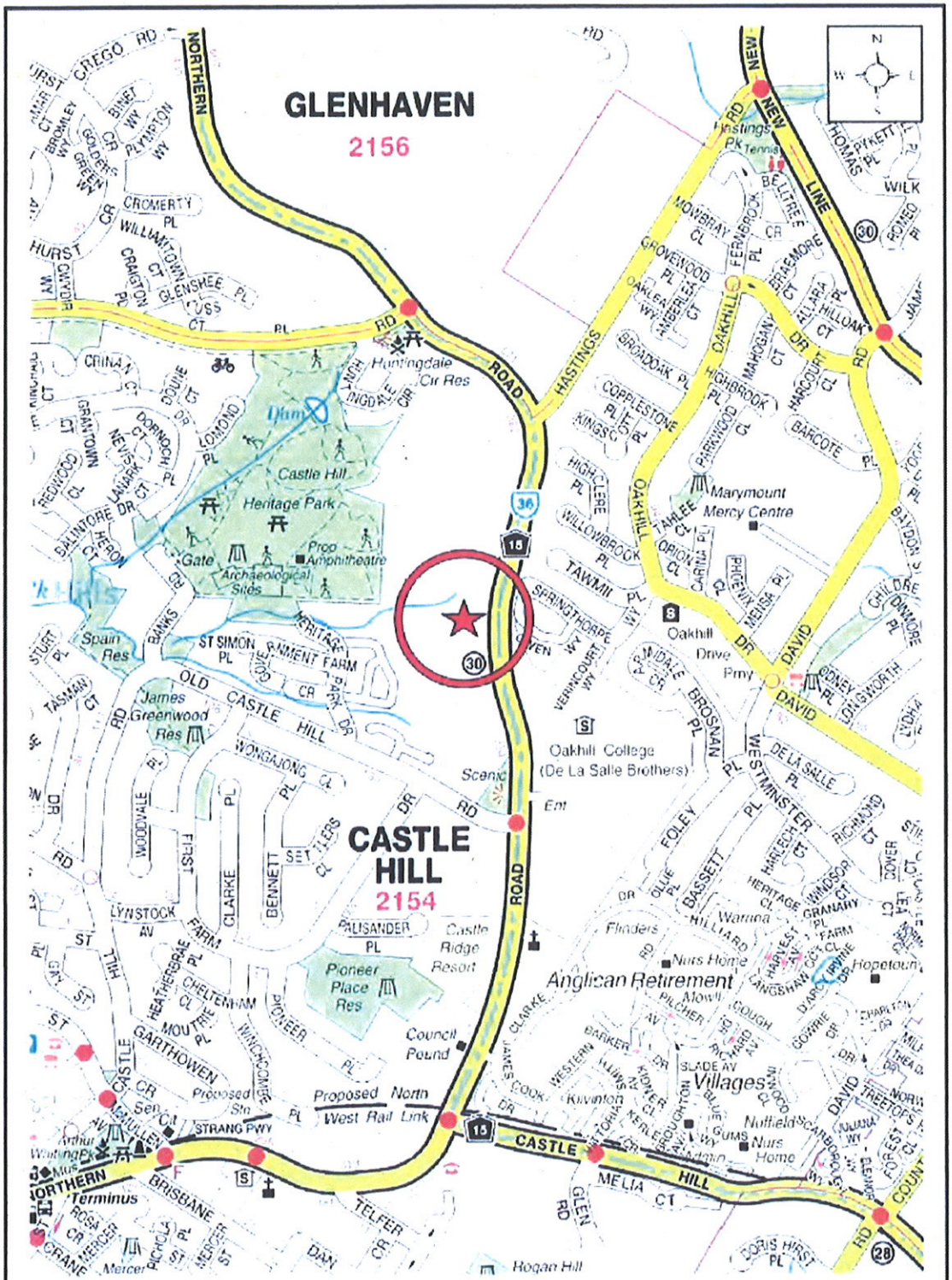
Vehicular access to the proposed subdivision is to be provided via the existing access road off Old Northern Road.

The Old Northern Road/access road intersection is to be upgraded to improve the safety of in/out turning movements to/from the south, as detailed in Chapter 2 of this report, whilst a new turning area is proposed at the western end of the access road.

[1] Varga Traffic Planning Pty Ltd *"370 Old Northern Road, Castle Hill - Traffic Assessment Report"* (7 May 2009)

Accordingly this report:

- reviews the vehicular access arrangements which are proposed to serve the site
- estimates the traffic generation potential of the proposed development
- assesses the traffic implications of the proposed development in terms of road network capacity, and
- assesses the parking implications of the proposed development.



VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants

LOCATION

FIGURE 1


N
W
E
S
VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants
SITE
FIGURE 2

2. TRAFFIC ASSESSMENT

Proposed Development

The proposed development will comprise a residential subdivision yielding 15 dwelling house allotments.

The proposed residential dwelling house allotments range in size from approximately 500m^2 up to 2,740m^2, with an average lot size of 1,160m^2. Each dwelling house allotment makes provision for off-street carparking to be provided in accordance with Council's Parking Code requirements, with vehicular access to be provided via individual driveways to each lot.

Plans of the proposed residential subdivision have been prepared by *Jackson Teece Architecture* and are reproduced in the following pages.

Proposed Intersection Improvements

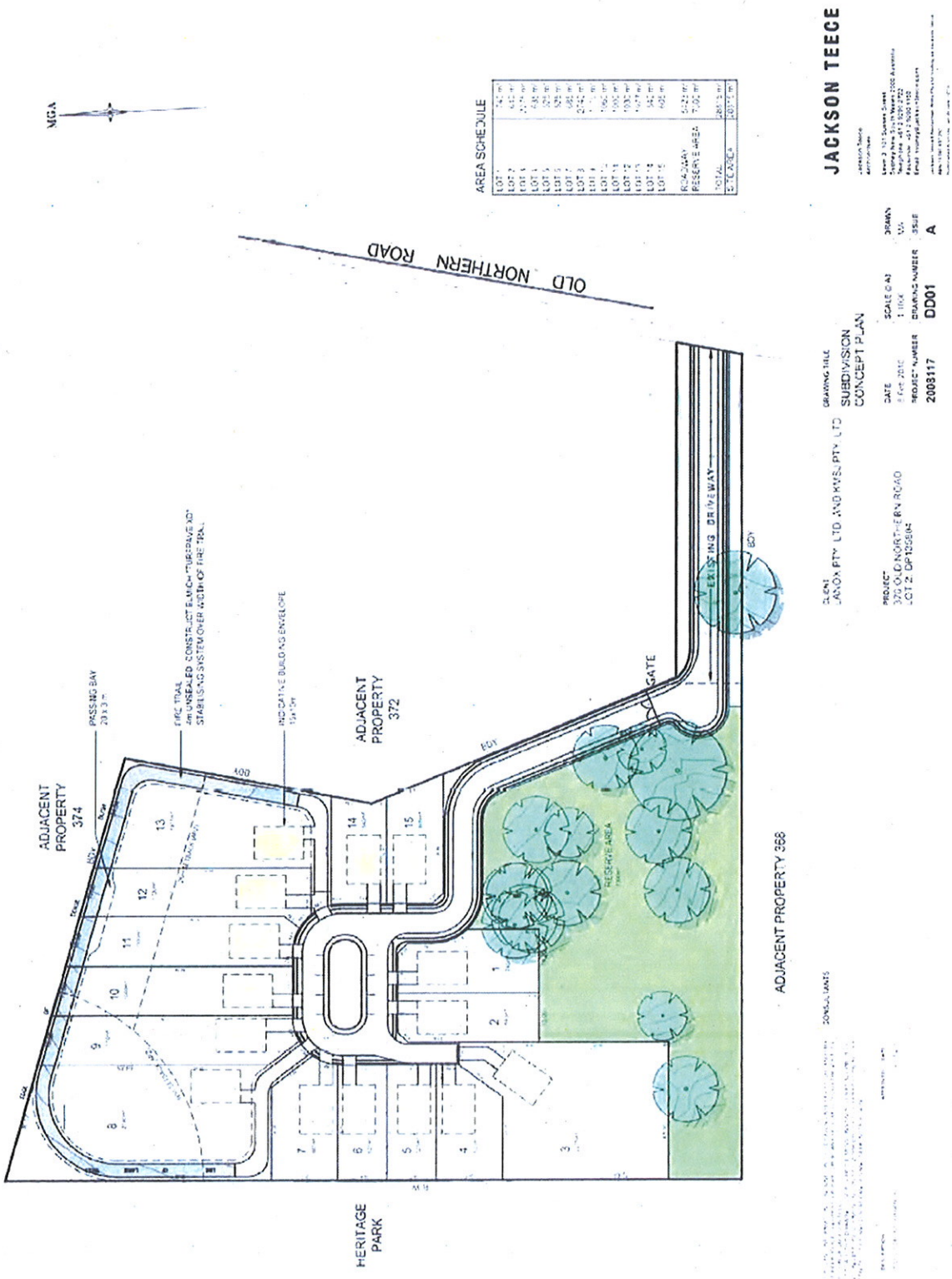
Vehicular access to the site is to be provided via the existing access road which intersects with Old Northern Road.

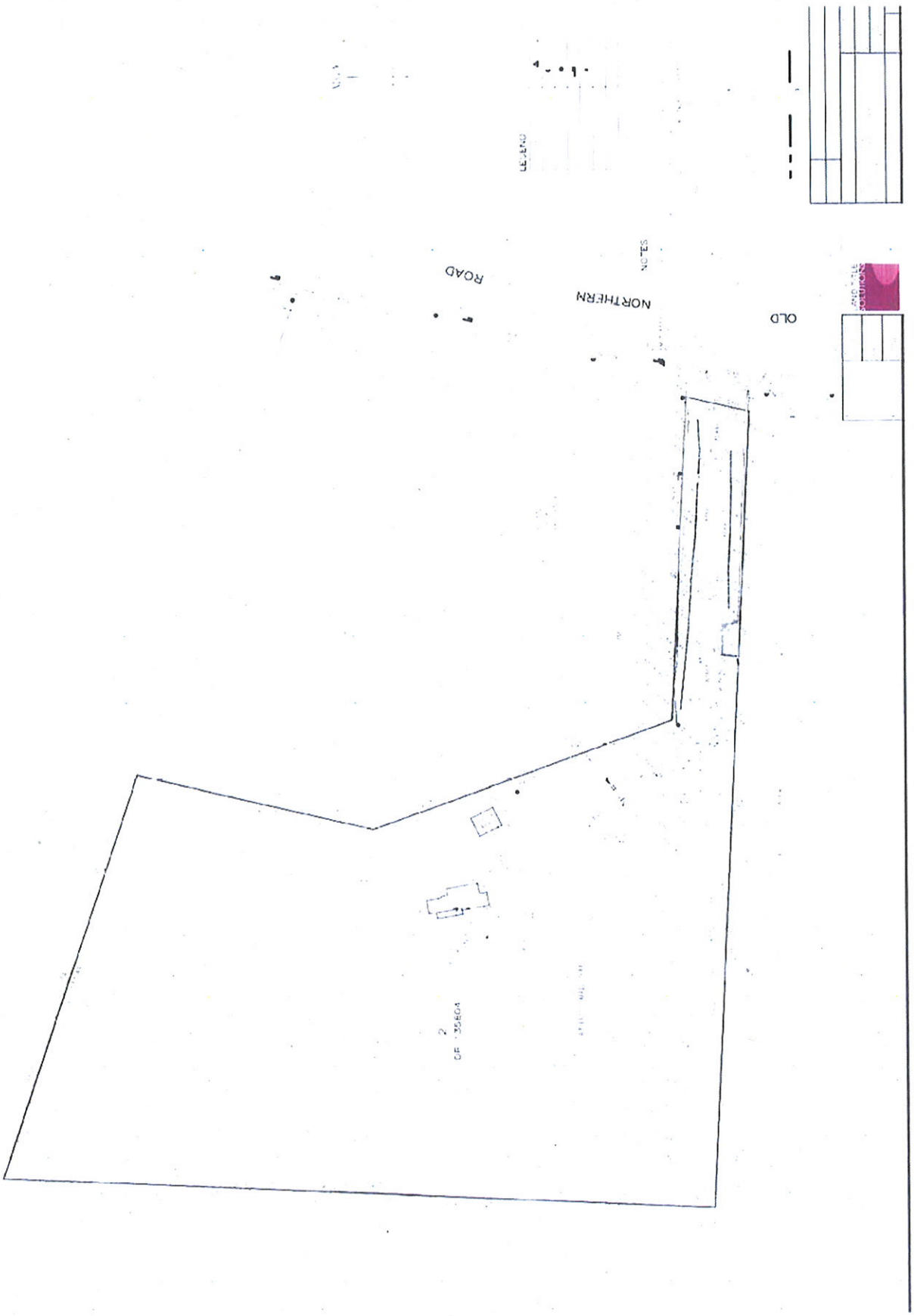
It is proposed to upgrade the intersection of the Old Northern Road with the site access road to improve the safety of turning movements in/out of the site to/from the south. Key features of the proposed improvements are:

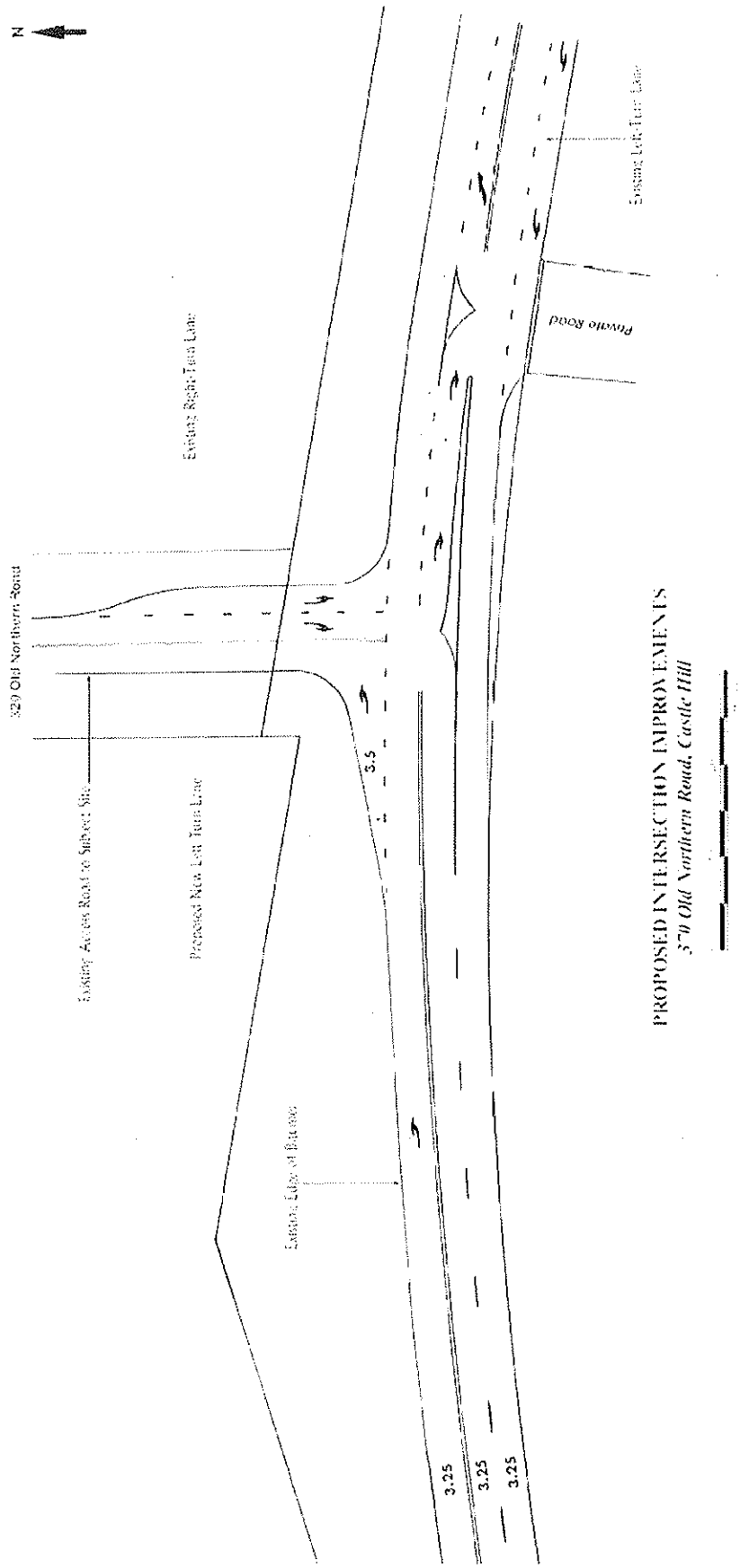
- the provision of a new "half seagull" right-turn exit from the site, providing two separate southbound lanes in Old Northern Road, and

- the provision of a new "Type BAL" left-turn treatment for northbound vehicles in Old Northern Road turning left into the existing access road.

A plan illustrating the proposed upgrade of the intersection is reproduced in the following pages.


MGA
OLD NORTHERN ROAD
ADJACENT PROPERTY 374
ADJACENT PROPERTY 372
ADJACENT PROPERTY 368
HERITAGE PARK
PASSING BAY
FIRE TRAIL
INDICATIVE BUILDING ENVELOPE
EXISTING DRIVEWAY
GATE
RESERVE AREA
AREA SCHEDULE
JACKSON TEECE
SUBDIVISION
CONCEPT PLAN
DD01
A


LEGEND
NOTES
ROAD
NORTHERN
OLD
PROPOSED
LOT 2
DP 356041



PROPOSED INTERSECTION IMPROVEMENTS
570 Old Northern Road, Castle Hill

It is not proposed to provide a right-turn entry into the site from Old Northern Road. No change is proposed to the existing access arrangements serving the private road located to the north, on the opposite side of Old Northern Road. The lane widths proposed are consistent with the existing lane width on this section of Old Northern Road.

The driver sight distances/visibility available to/from the subject intersection substantially exceeds the requirements specified in the AUSTROADS publication *Guide to Traffic Engineering Practice Part 5 - Intersections at Grade.*

Projected Traffic Generation

An indication of the traffic generation potential of the proposed development is provided by reference to the Roads and Traffic Authority publication *Guide to Traffic Generating Developments Section 3 - Land Use Traffic Generation (October 2002).* The RTA *Guidelines* are based on extensive surveys of a wide range of landuses and nominate the following traffic generation rates which are applicable to the proposed subdivision:

Dwelling Houses: 0.85 peak hour vehicle trips/dwelling

Application of the above traffic generation rates to the proposed 15 lots subdivision yields a traffic generation potential of approximately 13 vehicles per hour during commuter peak periods.

Capacity Analysis

As noted in the introduction to this report, a previous traffic report reviewed a very broad range of development scenarios which were permissible (with consent) on the site. The most intensive of those landuses was a potential research and development establishment with a floor area of approximately 10,000m^2 which was expected to generate approximately 200 vehicles per hour during peak periods.

A capacity analysis of the upgraded intersection was undertaken in the previous report using the INTANAL capacity analysis program. That analysis assumed that:

- a potential future development on the site may generate up to 200 vph during peak periods

- approximately 80% of that traffic would approach/depart the site to/from the south.

The results of that analysis found that the proposed upgrade in this intersection could accommodate 200 vph turning in/out of the site, with the following key performance indicators:

- the intersection would operate at *Level of Service "B"* during peak periods, and

- total average vehicle delays at the upgraded intersection would be in the order of 7 seconds per vehicle during the AM peak, and 21 seconds per vehicle during the PM peak.

Given that the previous capacity analysis found that the proposed access arrangements could satisfactorily accommodate 200 vph, it is clear that the current proposal, which is expected to generate only 13 vph, could be accommodated at the upgraded intersection without difficulty.

In the circumstances, it is reasonable to conclude that the proposed residential subdivision would not have any unacceptable traffic implications in terms of road network capacity.

3. PARKING IMPLICATIONS

The off-street parking requirements applicable to the proposed subdivision are specified in Council's *Baulkham Hills Development Control Plan – Parking (September 2007)* in the following terms:

Dwelling House: 1 space per dwelling

The proposed residential dwelling house allotments incorporated in the subdivision proposal range in size from approximately 500m^2 to approximately 2,740m^2, with an average lot size of 1,160m^2. Each dwelling house allotment makes provision for off-street carparking to be provided on-site in accordance with Council's Parking Code requirements, with a separate vehicular access driveway to be provided to each lot.

Whilst the detailed building design layouts proposed on each of the lots is not yet known, it is clear that the requisite off-street carparking can be provided on each of the proposed allotments in accordance with Council's parking requirements.

In addition, carparking for visitors will also be available in the driveways of each of the proposed allotments, and at the kerbside on the road in the front of the proposed houses.

In the circumstances, it is reasonable to conclude that the proposed residential subdivision will not have any unacceptable parking implications, and is recommended for approval.

APPENDIX A

PREVIOUS TRAFFIC REPORT

Proposed Upgrade of Site Access Arrangements

370 Old Northern Road, Castle Hill

TRAFFIC ASSESSMENT REPORT

7 May 2009

Ref 09047

VARGA TRAFFIC PLANNING Pty Ltd

Transport, Traffic and Parking Consultants

Suite 6, 20 Young Street, Neutral Bay NSW 2089 - PO Box 1868, Neutral Bay NSW 2089
Ph: 9904 3224 Fax: 9904 3228, Email: varga@vtp.net.au

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

1. INTRODUCTION

This report has been prepared to accompany an Application to Baulkham Hills Council for a proposal to upgrade the access arrangements serving the site located at 370 Old Northern Road, Castle Hill (Figures 1 and 2).

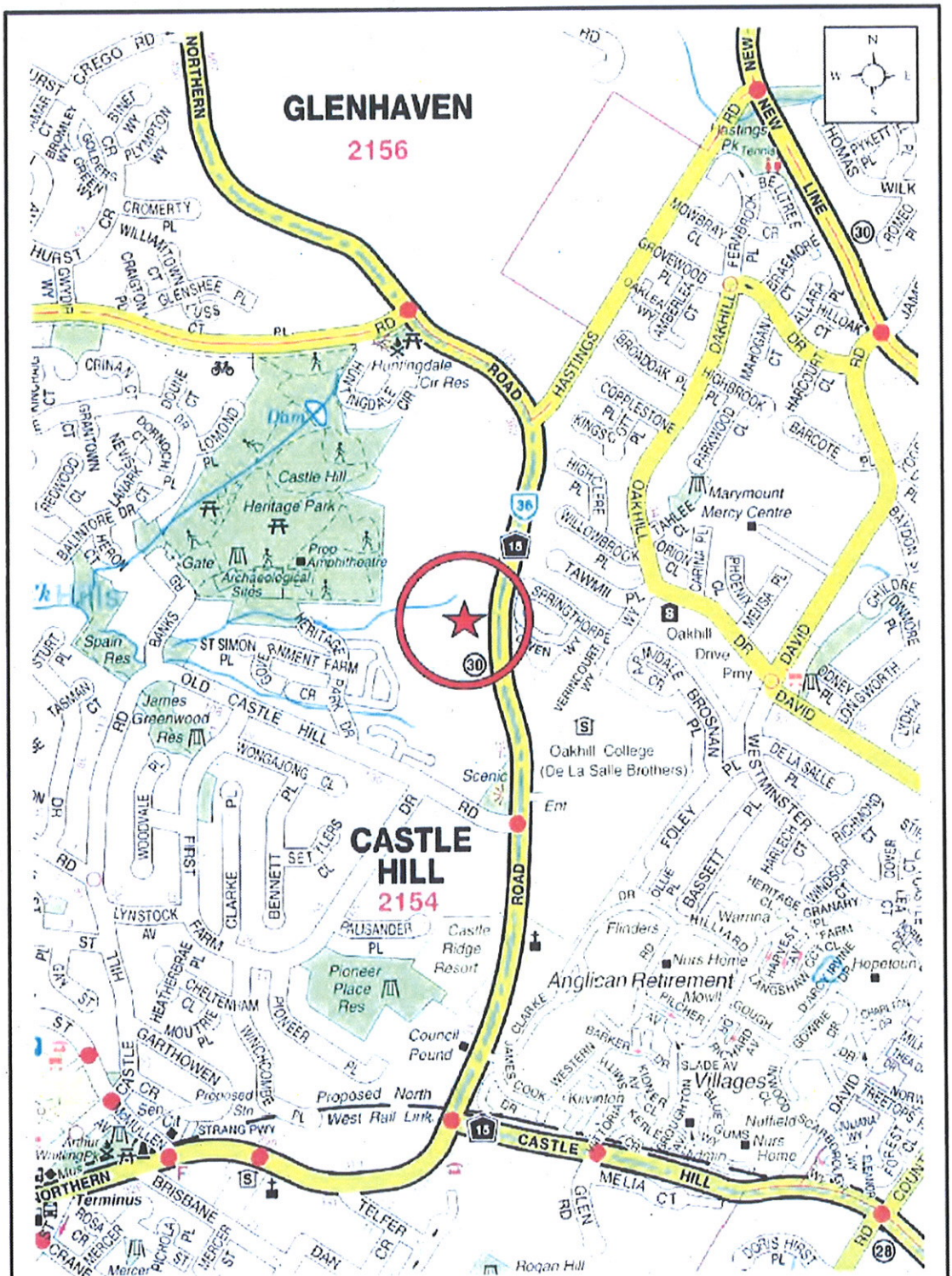
The subject site is located on the western side of Old Northern Road, approximately half-way between Old Castle Hill Road and Hastings Road.

The site occupies an area of approximately 2.9 hectares and has a street frontage to Old Northern Road only. Vehicular access to the site is currently provided via a two-lane roadway which intersects with Old Northern Road in the form of a T-junction.

The purpose of this report is to review the traffic implications of a proposal to upgrade the existing access arrangements to provide improved left and right-turn facilities for traffic entering and exiting the site from the south. It is not proposed to provide a right-turn entry into the site.

To that end this report:

- describes the site and provides details of the type of developments which may be permitted on the site
- estimates the traffic generation potential of a future development on the site
- reviews the geometric design layout features of the proposed upgraded access arrangements
- assesses the traffic implications of the development proposal in terms of road network capacity.



VARGA TRAFFIC PLANNING Pty. Ltd
Transport, Traffic and Parking Consultants


N
W
E
S
VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants
SITE
FIGURE 2

2. TRAFFIC ASSESSMENT

The subject site is located on the western side of Old Northern Road, approximately mid-way between the intersections with the Old Castle Hill Road and with Hastings Road.

The site occupied an area of approximately 2.9 ha and has a street frontage to Old Northern Road approximately 20m in width. The site does not have any other street frontages.

Vehicular access to the site is provided via a 6m wide concrete access road which extends of a length of approximately 100m to the west of its intersection with Old Northern Road. The road layout includes kerb and gutter on both sides of the road, and makes provision for pedestrian footpaths on both sides of the road.

Adjacent Development to the South

Council has approved a residential subdivision of a site located immediately to the south of the subject site comprising 45 residential dwelling allotments. Vehicular access to that approved residential subdivision is to be provided via a new access road which connects with Heritage Park Drive.

Discussions with Council officers have indicated that, if approval is granted to the proposed upgrading of the site access arrangements, consideration would be given to providing a road link between the two sites. This road link would provide an alternative means of egress from the residential subdivision to Old Northern Road, thereby alleviating to some degree the congestion which currently occurs at the intersection of Old Northern Road and Old Castle Hill Road during peak periods.

Development Potential of the Subject Site

There are a broad range of landuses currently permissible (with consent) on the subject site, as set out below:

Agricultural products Establishments:	Recreation areas:
Attached dual occupancies:	Recreation facilities:
Bush fire fighting establishments:	Renewable energy facilities:
Cemeteries:	Retail plan nurseries:
Childcare centres:	Rural industrial (other than poultry processing):
Community facilities:	Rural workers' dwellings:
Exhibition Homes:	Veterinary establishments:
Exhibition Villages:	Wholesale plant nurseries:
Firewood establishments.	Animal boarding, breeding and training establishments:
Health care premises:	Clubs:
Intensive animal industries:	Educational establishments:
Intensive horticulture establishments:	Guest houses;
Landscape supply establishments:	Hospitals:
Leisure facilities:	Institutions:
Places of worship:	Reception establishments:
Public buildings:	Research establishments:
Public utility6 undertakings:	Telecommunications facilities.

The nature of the potential future uses of the site is not yet known. Some of the developments permissible on the site could be expected to generate relatively low levels of traffic activity, whilst other permissible developments could generate significantly higher levels of traffic activity.

The most intensive use of the site is likely to take the form of a research and development or educational establishment. These types of landuses could be expected to generate similar levels of traffic activity to commercial office premises, that is, in the order of approximately 2 vehicle trips per hour/100m^2.

Preliminary assessments suggest that a development of this type could be expected to yield a floor area in the order of 10,000m^2, resulting in a traffic generation potential of approximately 200 vehicles per hour (vph).

For the purposes of this assessment therefore, a research and development or education establishment with a floor area of approximately 10,000m^2 has been adopted, yielding a traffic generation potential of approximately 200 vehicles per hour. The majority of those projected traffic flows are expected to approach/depart to/from the south via Old Northern Road.

Proposed Intersection Improvements

The improvements proposed to the intersection are intended to facilitate improved access in and out of the site from the south. Key features of the proposed improvements are:

- provision of a new northbound left-turn deceleration lane approximately 60m in length, and

- provision of a new "half seagull" right-turn exit from the site, providing two separate southbound lanes in Old Northern Road.

A plan illustrating the proposed traffic arrangements is reproduced in the following pages.

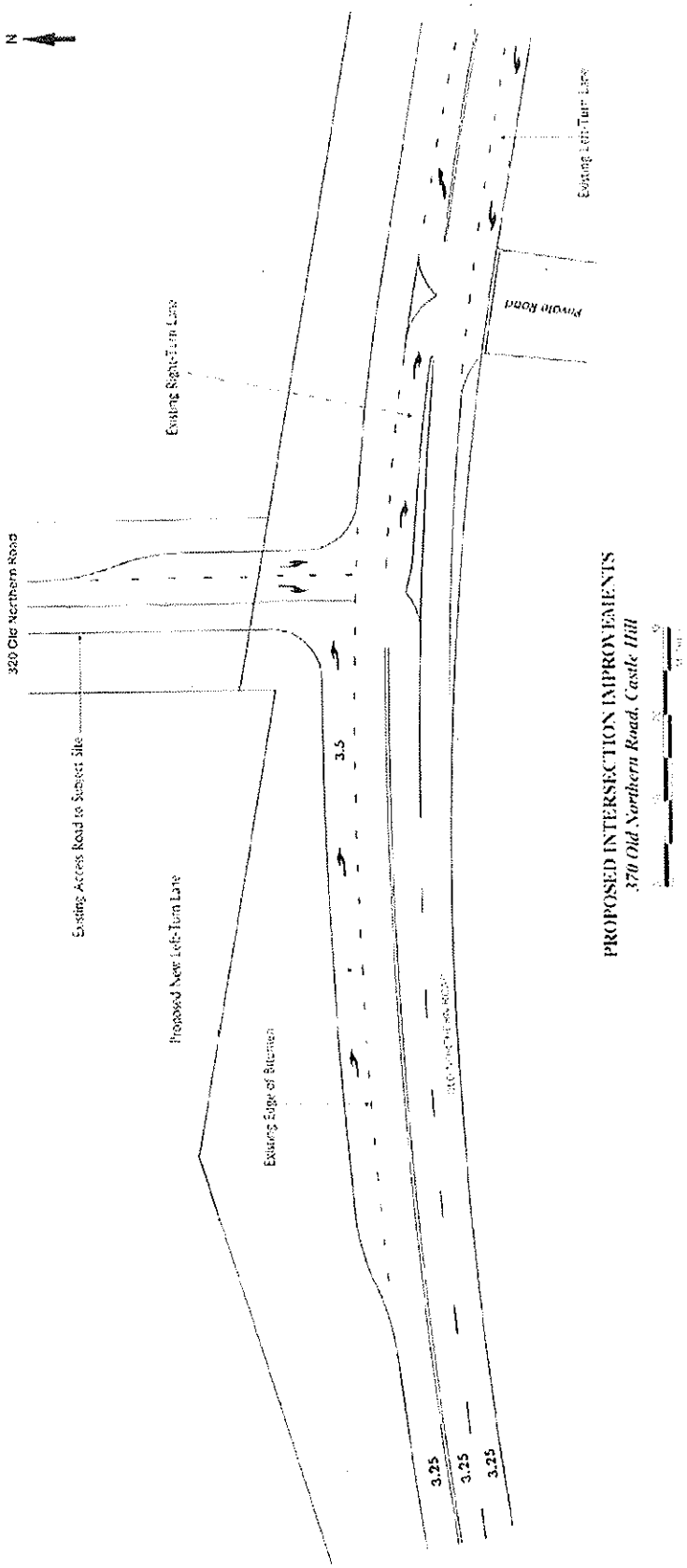
It is not proposed to provide a right-turn entry into the site from Old Northern Road. No change is proposed to the access arrangements serving the private road located to the north, on the opposite side of Old Northern Road.

The lane widths proposed are consistent with the existing lane widths on this section of Old Northern Road. The proposed arrangements will require road widening along the western side of Old Northern Road, to the south of the subject intersection to accommodate the proposed left-turn lane.

The driver sight distances/visibility available to/from the subject intersection substantially exceed the requirements specified in the AUSTROADS publication *Guide to Traffic Engineering Practice Part 5 - Intersections at Grade*.

Capacity Analysis

A capacity analysis of the proposed access arrangements has been undertaken using the INTANAL capacity analysis program. Criteria for evaluating the results of INTANAL analysis are reproduced in the following pages.



PROPOSED INTERSECTION IMPROVEMENTS
370 Old Northern Road, Castle Hill

The analysis assumes that a potential future development on the site may generate up to 200 vph, with approximately 80% of that traffic expected to arrive at the site during the AM peak, and depart the site during the PM peak. The majority of traffic is expected to approach/depart the site from the south.

The results of the capacity analysis of the upgraded intersection under the projected future traffic demands is summarised in the table below, revealing that:

- the intersection is expected to operate at *Level of Service "B"* during peak periods

- total average vehicle delays at the upgraded intersection are expected to be in the order of 7 seconds/vehicle during the AM peak, and 21 seconds per vehicle during the PM peak.

In summary, the analysis indicates that the proposed traffic arrangements will not have any unacceptable traffic implications in terms of road network capacity.

Conclusion

The foregoing analysis has found that the improvements proposed to the existing site access arrangements at 370 Old Northern Road can be provided in the adverse effects on the safety and efficiency of this section of Old Northern Road and are recommended for approval.

RESULTS OF INTANAL ANALYSIS OF OLD NORTHERN ROAD & SITE ACCESS DRIVEWAY			
Key Indicators		**Projected Development Traffic Demand**	
		AM	**PM**
Level of Service		B	B
Degree of Saturation		0.25	0.78
Average Vehicle Delay (secs/veh)			
Old Northern Road (north)	T	0.0	0.0
Site Access Driveway (west)	L R	12.1 24.8	15.1 27.8
Old Northern Road (south)	L T	3.6 0.0	3.6 0.0
TOTAL AVERAGE VEHICLE DELAY		**7.2**	**21.1**

OLD_ACCP

Criteria for Interpreting Results of Intanal Analysis

1. *Level of Service (LOS)*

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good operation.	Good operation.
'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, Roundabout	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.*

APPENDIX A

TRAFFIC SURVEY DATA

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning
Job no/Name : 2647 Castle Hill Old Northern Rd
Day/Date : Tuesday 7th April 2009

Lights

	NORTH		EAST		SOUTH		
	Old Northern Rd		School 2nd Access		Old Northern		
Time Per	T	L	R	L	R	T	TOT
0630 - 0645	169	0	0	0	0	80	249
0645 - 0700	234	0	0	0	0	88	322
0700 - 0715	261	0	0	0	0	106	367
0715 - 0730	234	2	1	1	0	113	351
0730 - 0745	231	6	0	2	1	140	380
0745 - 0800	257	30	3	16	7	150	463
0800 - 0815	281	58	0	51	18	164	572
0815 - 0830	286	30	2	51	20	174	563
0830 - 0845	260	10	0	24	3	185	482
0845 - 0900	291	3	1	0	0	135	430
0900 - 0915	271	1	1	0	2	104	379
0915 - 0930	245	1	0	0	1	109	356
Per End	3020	141	8	145	52	1548	4914

Heavies

	NORTH		EAST		SOUTH		
	Old Northern		School 2nd Access		Old Northern		
Time Per	T	L	R	L	R	T	TOT
0630 - 0645	8	0	0	0	0	9	17
0645 - 0700	6	0	0	0	0	7	13
0700 - 0715	10	0	0	0	0	5	15
0715 - 0730	13	0	0	0	0	4	17
0730 0745	9	0	0	0	0	4	13
0745 - 0800	9	0	0	0	0	10	19
0800 - 0815	7	0	0	0	1	9	17
0815 - 0830	7	0	0	1	0	10	18
0830 - 0845	6	0	0	0	0	11	17
0845 - 0900	8	0	0	0	0	10	18
0900 - 0915	3	0	0	0	0	7	10
0915 - 0930	8	0	0	0	0	6	14
Per End	94	0	0	1	1	92	188

Combined

	NORTH		EAST		SOUTH		
	Old Northern		School 2nd Access		Old Northern		
Time Per	T	L	R	L	R	T	TOT
0630 - 0645	177	0	0	0	0	89	266
0645 - 0700	240	0	0	0	0	95	335
0700 - 0715	271	0	0	0	0	111	382
0715 - 0730	247	2	1	1	0	117	368
0730 - 0745	240	6	0	2	1	144	393
0745 - 0800	266	30	3	16	7	160	482
0800 - 0815	288	58	0	51	19	173	589
0815 - 0830	293	30	2	52	20	184	581
0830 - 0845	266	10	0	24	3	196	499
0845 - 0900	299	3	1	0	0	145	448
0900 - 0915	274	1	1	0	2	111	389
0915 - 0930	253	1	0	0	1	115	370
Per End	3114	141	8	146	53	1640	5102

Lights

	NORTH		EAST		SOUTH		
	Old Northern		School 2nd Access		Old Northern		
Peak Per	T	L	R	L	R	T	TOT
0630 - 0730	898	2	1	1	0	387	1289
0645 - 0745	960	8	1	3	1	447	1420
0700 - 0800	983	38	4	19	8	509	1561
0715 - 0815	1003	96	4	70	26	567	1766
0730 - 0830	1055	124	5	120	46	628	1978
0745 - 0845	1084	128	5	142	48	673	2080
0800 - 0900	1118	101	3	126	41	658	2047
0815 - 0915	1108	44	4	75	25	598	1854
0830 - 0930	1067	15	2	24	6	533	1647
PEAK HR	1084	128	5	142	48	673	2080

Heavies

	NORTH		EAST		SOUTH		
	Old Northern		School 2nd Access		Old Northern		
Peak Per	T	L	R	L	R	T	TOT
0630 - 0730	37	0	0	0	0	25	62
0645 - 0745	38	0	0	0	0	20	58
0700 - 0800	41	0	0	0	0	23	64
0715 - 0815	38	0	0	0	1	27	66
0730 - 0830	32	0	0	1	1	33	67
0745 - 0845	29	0	0	1	1	40	71
0800 - 0900	28	0	0	1	1	40	70
0815 - 0915	24	0	0	1	0	38	63
0830 - 0930	25	0	0	0	0	34	59
PEAK HR	29	0	0	1	1	40	71

Combined

	NORTH		EAST		SOUTH		
	Old Northern		School 2nd Access		Old Northern		
Peak Per	T	L	R	L	R	T	TOT
0630 - 0730	935	2	1	1	0	412	1351
0645 - 0745	998	8	1	3	1	467	1478
0700 - 0800	1024	38	4	19	8	532	1625
0715 - 0815	1041	96	4	70	27	594	1832
0730 - 0830	1087	124	5	121	47	661	2045
0745 - 0845	1113	128	5	143	49	713	2151
0800 - 0900	1146	101	3	127	42	698	2117
0815 - 0915	1132	44	4	76	25	636	1917
0830 - 0930	1092	15	2	24	6	567	1706
PEAK HR	1113	128	5	143	49	713	2151

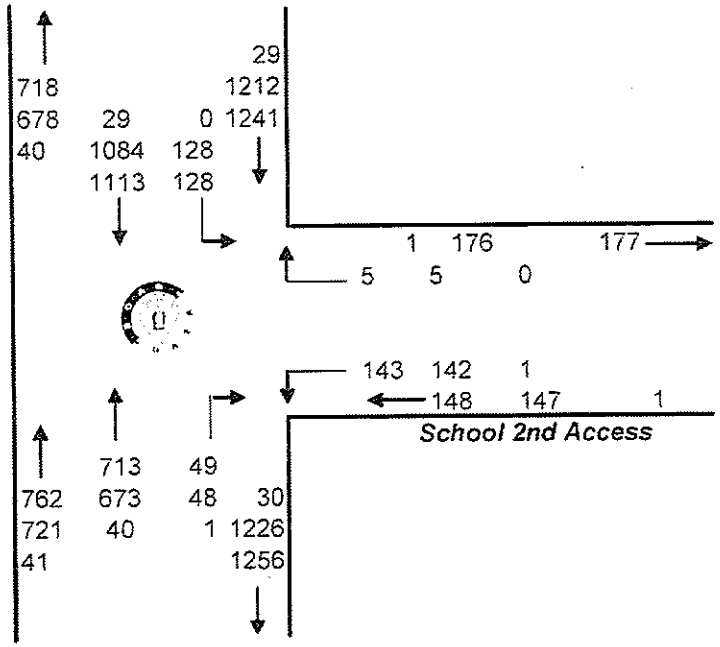
R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.9415-3971, Fax 9403-5338, Mob.0418-239019

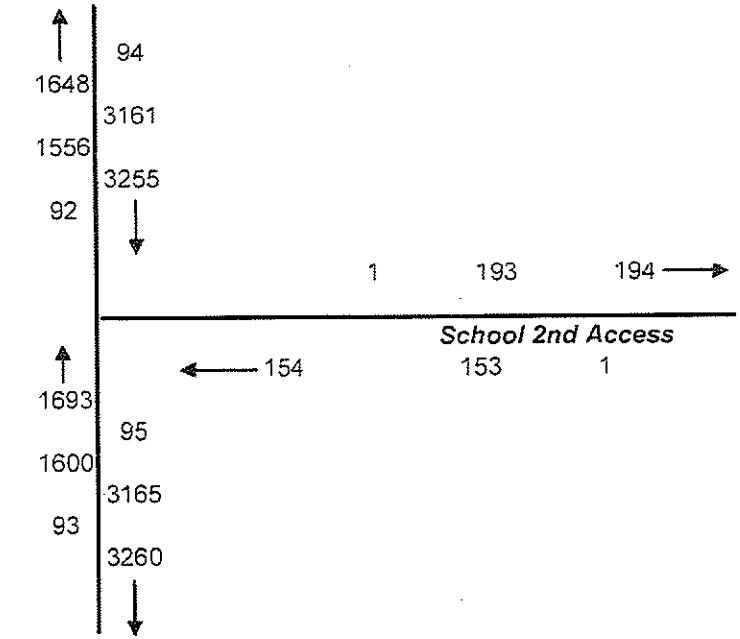
Client : Varga Traffic Planning
Job no/Name : 2647 Castle Hill Old Northern Rd
Day/Date : Tuesday 7th April 2009

PEAK HOUR
0745 - 0845

TOTAL VOLUMES FOR COUNT PERIOD

N





R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning
Job no/Name : 2647 Castle Hill Old Northern Rd
Day/Date : Monday 6th April 2009

Lights

	NORTH		EAST		SOUTH		
	~~Old Northern Rd~~		*School*		*Old*		
Time Per	T	L	R	L	R	T	TOT
1430 - 1445	130	0	3	6	1	182	322
1445 - 1500	136	3	0	0	6	223	368
1500 - 1515	180	7	3	4	9	236	439
1515 - 1530	198	5	9	26	4	227	469
1530 - 1545	159	0	3	3	1	225	391
1545 - 1600	187	1	1	1	0	219	409
1600 - 1615	177	0	0	1	1	240	419
1615 - 1630	165	0	2	0	0	238	405
1630 - 1645	163	1	2	1	1	247	415
1645 - 1700	148	0	1	0	0	276	425
1700 - 1715	142	2	3	1	0	276	424
1715 - 1730	158	3	2	0	0	267	430
1730 - 1745	163	1	1	0	0	312	477
1745 - 1800	115	0	0	0	0	258	373
1800 - 1815	133	0	0	0	0	294	427
1815 - 1830	94	0	0	1	0	238	333
Per End	2448	23	30	44	23	3958	6526

Heavies

	NORTH		EAST		SOUTH		
	Old		*School*		*Old*		
Time Per	T	L	R	L	R	T	TOT
1430 - 1445	6	0	0	0	0	3	9
1445 - 1500	13	0	0	0	0	5	18
1500 - 1515	9	0	0	0	0	6	15
1515 - 1530	9	0	0	0	0	5	14
1530 - 1545	7	0	0	0	0	13	20
1545 - 1600	9	0	0	0	0	10	19
1600 - 1615	8	0	0	0	0	10	18
1615 - 1630	5	0	0	0	0	5	10
1630 - 1645	3	0	0	0	0	4	7
1645 - 1700	4	0	0	0	0	2	6
1700 - 1715	0	0	0	0	0	0	0
1715 - 1730	2	0	0	0	0	6	8
1730 - 1745	1	0	0	0	0	1	2
1745 - 1800	3	0	0	0	0	3	6
1800 - 1815	1	0	0	0	0	5	6
1815 - 1830	1	0	0	0	0	4	5
Per End	81	0	0	0	0	82	163

Combined

	NORTH		EAST		SOUTH		
	Old		*School 2nd*		*Old*		
Time Per	T	L	R	L	R	T	TOT
1430 - 1445	136	0	3	6	1	185	331
1445 - 1500	149	3	0	0	6	228	386
1500 - 1515	189	7	3	4	9	242	454
1515 - 1530	207	5	9	26	4	232	483
1530 - 1545	166	0	3	3	1	238	411
1545 - 1600	196	1	1	1	0	229	428
1600 - 1615	185	0	0	1	1	250	437
1615 - 1630	170	0	2	0	0	243	415
1630 - 1645	166	1	2	1	1	251	422
1645 - 1700	152	0	1	0	0	278	431
1700 - 1715	142	2	3	1	0	276	424
1715 - 1730	160	3	2	0	0	273	438
1730 - 1745	164	1	1	0	0	313	479
1745 - 1800	118	0	0	0	0	261	379
1800 - 1815	134	0	0	0	0	299	433
1815 - 1830	95	0	0	1	0	242	338
Per End	2529	23	30	44	23	4040	6689

Lights

	NORTH		EAST		SOUTH		
	Old		*School*		*Old*		
Peak Per	T	L	R	L	R	T	TOT
1430 - 1530	644	15	15	36	20	868	1598
1445 - 1545	673	15	15	33	20	911	1667
1500 - 1600	724	13	16	34	14	907	1708
1515 - 1615	721	6	13	31	6	911	1688
1530 - 1630	688	1	6	5	2	922	1624
1545 - 1645	692	2	5	3	2	944	1648
1600 - 1700	653	1	5	2	2	1001	1664
1615 - 1715	618	3	8	2	1	1037	1669
1630 - 1730	611	6	8	2	1	1066	1694
1645 - 1745	611	6	7	1	0	1131	1756
1700 - 1800	578	6	6	1	0	1113	1704
1715 - 1815	569	4	3	0	0	1131	1707
1730 - 1830	505	1	1	1	0	1102	1610
PEAK HR	724	13	16	34	14	907	1708

Heavies

	NORTH		EAST		SOUTH		
	Old		*School*		*Old*		
Peak Per	T	L	R	L	R	T	TOT
1430 - 1530	37	0	0	0	0	19	56
1445 - 1545	38	0	0	0	0	29	67
1500 - 1600	34	0	0	0	0	34	68
1515 - 1615	33	0	0	0	0	38	71
1530 - 1630	29	0	0	0	0	38	67
1545 - 1645	25	0	0	0	0	29	54
1600 - 1700	20	0	0	0	0	21	41
1615 - 1715	12	0	0	0	0	11	23
1630 - 1730	9	0	0	0	0	12	21
1645 - 1745	7	0	0	0	0	9	16
1700 - 1800	6	0	0	0	0	10	16
1715 - 1815	7	0	0	0	0	15	22
1730 - 1830	6	0	0	0	0	13	19
PEAK HR	34	0	0	0	0	34	68

Combined

	NORTH		EAST		SOUTH		
	Old		*School 2nd*		*Old*		
Peak Per	T	L	R	L	R	T	TOT
1430 - 1530	681	15	15	36	20	887	1654
1445 - 1545	711	15	15	33	20	940	1734
1500 - 1600	758	13	16	34	14	941	1776
1515 - 1615	754	6	13	31	6	949	1759
1530 - 1630	717	1	6	5	2	960	1691
1545 - 1645	717	2	5	3	2	973	1702
1600 - 1700	673	1	5	2	2	1022	1705
1615 - 1715	630	3	8	2	1	1048	1692
1630 - 1730	620	6	8	2	1	1078	1715
1645 - 1745	618	6	7	1	0	1140	1772
1700 - 1800	584	6	6	1	0	1123	1720
1715 - 1815	576	4	3	0	0	1146	1729
1730 - 1830	511	1	1	1	0	1115	1629
PEAK HR	758	13	16	34	14	941	1776

R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.9415-3971, Fax 9403-5338, Mob.0418-239019

Client : Varga Traffic Planning
Job no/Name : 2647 Castle Hill Old Northern Rd
Day/Date : Monday 6th April 2009

PEAK HOUR
1500 - 1600

TOTAL VOLUMES FOR COUNT PERIOD

N