

Matthews Contracting

11 Addison Road,
Ingleside

TRAFFIC ASSESSMENT REPORT

22 May 2013

Ref 13153

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

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1. INTRODUCTION

This report has been prepared to accompany an application to Council to regularise an existing use of a site which is located at 11 Addison Road, Ingleside (Figures 1 and 2).

The subject site is currently occupied by a residential dwelling house fronting Addison Road. The rear of the site is occupied by *Matthews Contracting*, with vehicular access to that part of the site provided from Tumburra Street via Wirreanda Road.

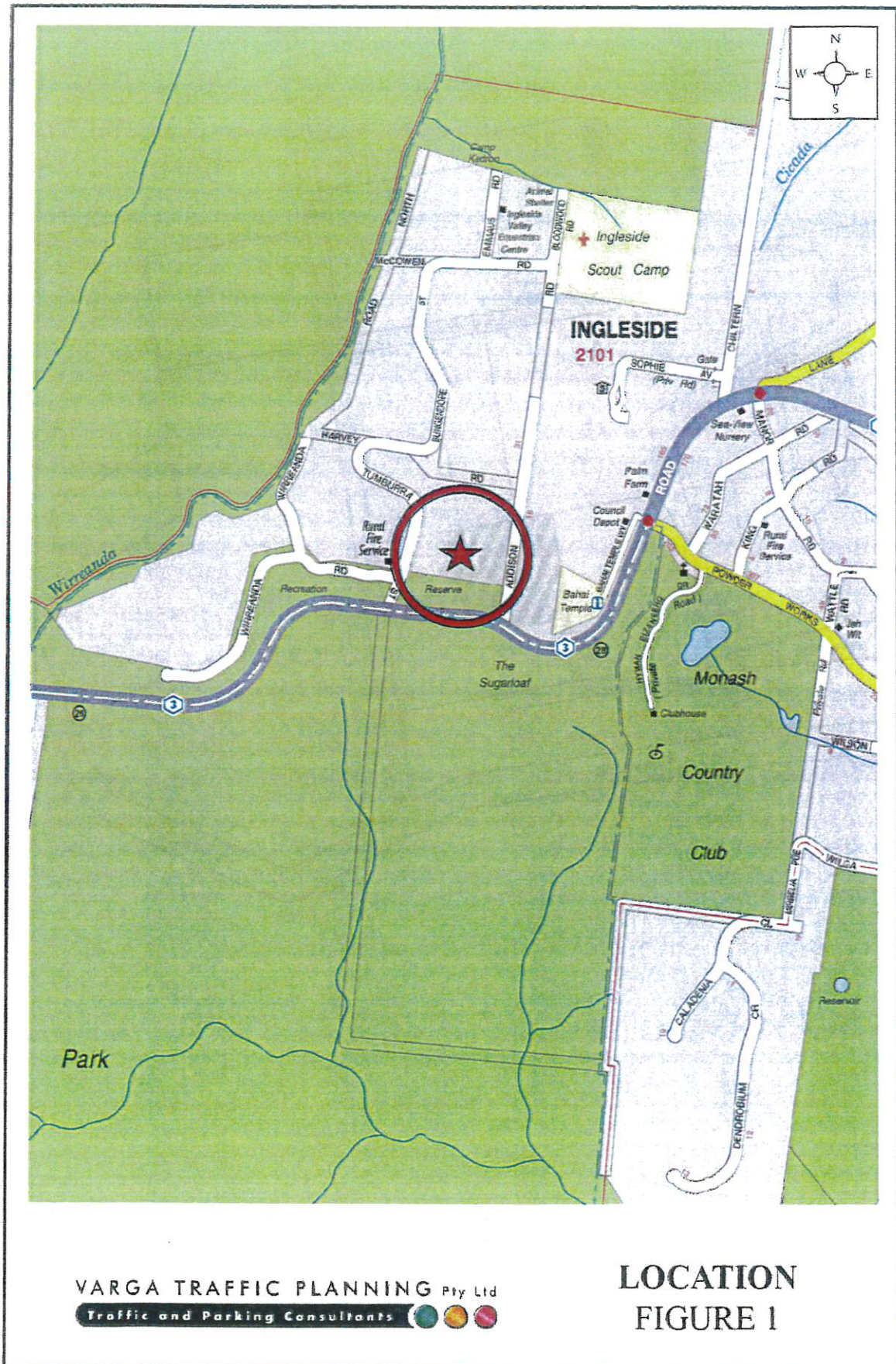
Matthews Contracting is involved in demolition, excavation and earthmoving, and the subject site is used for the storage of earthmoving equipment and trucks associated with the haulage of excavated material.

It is understood that *Matthews Contracting* has operated on the site since 1988, albeit without consent.

The purpose of this report is to assess the traffic implications of the existing uses of the site and to that end this report:

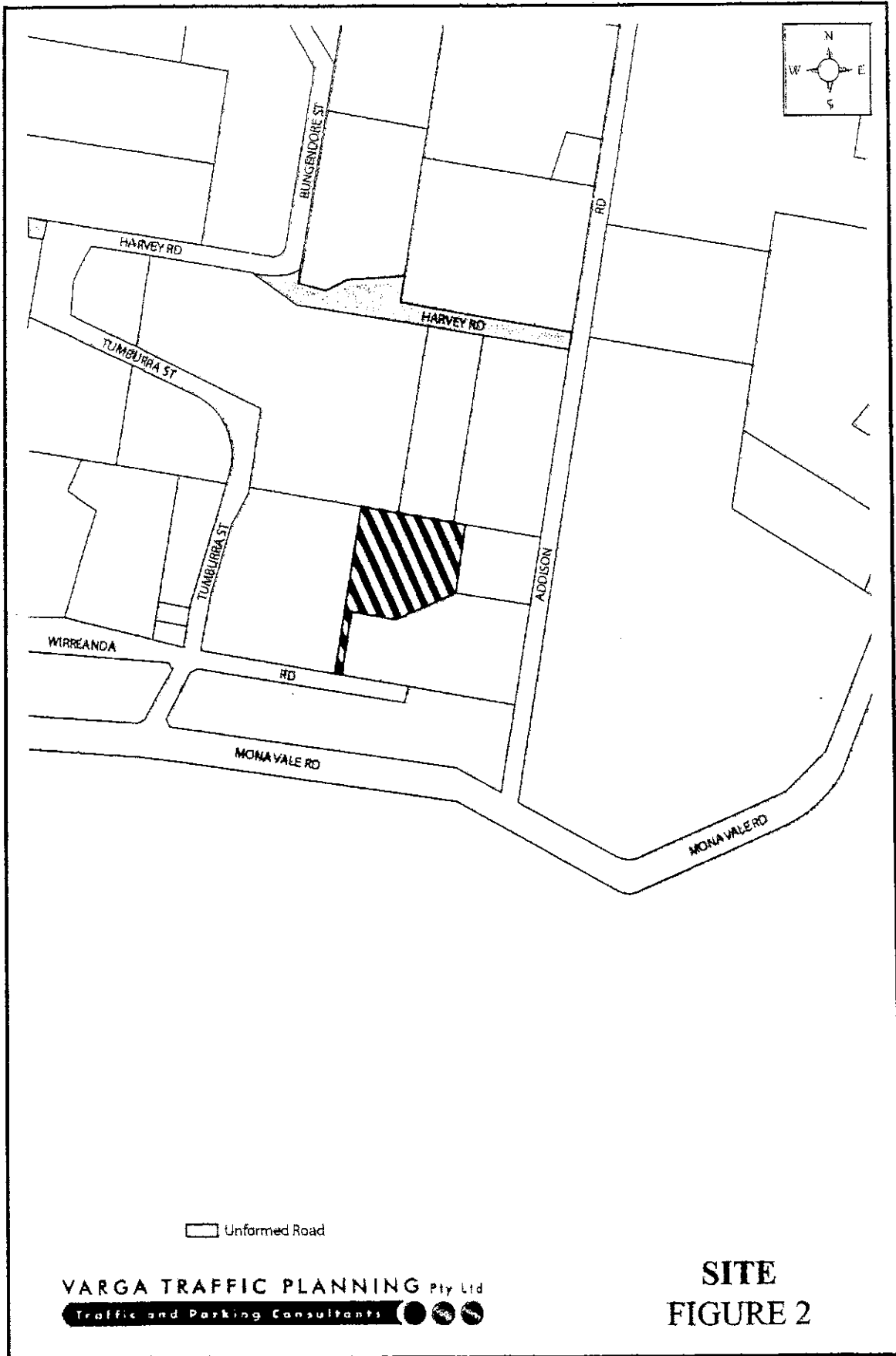
- describes the site and provides details of the development proposal
- reviews the road network in the vicinity of the site, and the traffic controls which apply to that road network
- reviews the results of traffic surveys conducted in Tumburra Street at its intersection with Wirreanda Street which provides access to the *Matthews Contracting* site
- assesses the traffic implications of the development "proposal" in terms of road network capacity
- reviews the geometric design features of the vehicular access arrangements in Wirreanda Road

- assesses the driveway sight distance/visibility available at the Tumburra Street/Wirreanda Road intersection which provides access to the site.



VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants

LOCATION
FIGURE 1



2. PROPOSED DEVELOPMENT

The subject site is located on the western side of Addison Road, and has a street frontage approximately 78.1m in length to that road. The total site area is approximately 18,604m².

The Addison Road frontage of the site is occupied by a dwelling house, with vehicular access to the house provided by a domestic driveway.

The rear of the site is occupied by *Matthews Contracting* with vehicular access to that part of the site being provided via the Tumburra Street and Wirreanda Road intersection.

A survey plan of the site prepared by *Bee & Lethbridge Pty Ltd*, surveyors is reproduced in the following pages and illustrates the following:

- the existing dwelling house which is located on the Addison Road frontage of the site
- a number of buildings associated with *Matthews Contracting* operations on the rear of the site as follows:
 - a metal workshop building, a timber lunchroom and carport
 - a small office building and associated carport structure, and
 - a number of small sheds.

Vehicular access to the *Matthews Contracting* site is provided via Tumburra Street and Wirreanda Road (east), with an 8.0m wide Right-Of-Way connecting Wirreanda Road (east) to the south-western corner of the subject site.

A gravel driveway provides an internal vehicle link between the *Matthews Contracting* site and the residential dwelling, however this driveway is very steep and does not appear to have been used for some considerable time. The steep gradient and loose surface would preclude the use of this driveway by trucks and cars other than four-wheel drive vehicles.



1. Vehicle & Truck Access 1:500

<p>Submission 210814 DEVELOPMENT APPLICATION to Pioneer Council</p>	<p>Canvas Architecture & Design ABN 60 164 221 722 206 GOLF AVE MONA VALE NSW 2103 Roslyn Miller BARCH (PHONE 1) USYD roslyn.miller@canvasad.com.au (02) 3440 3574 3405 09 19 30</p>	<p>1403: MATTHEWS CONTRACTING 11 Addison Rd INGLESIDE NSW 2101 Lot 1832 in DP 812302 Site Area 18004.5m²</p>	<p>Drawing Name Vehicle & Truck Access Diagrams</p>	<p>Drawing Scale 1:500 Drawn RT</p>		<p>Layout ID SD08A</p>
<p>NOTES This drawing is the property of Canvas Architecture & Design and may not be printed, reproduced or transferred in any form or by any means in part or in whole without the written permission of Canvas Architecture & Design. All levelling and dimensions are to be checked and verified on site prior to the commencement of any work. All noise and vibration limits to comply with BCA and AS/NZS standards.</p>						

3. TRAFFIC ASSESSMENT

Road Hierarchy

The road hierarchy allocated to the road network in the vicinity of the site by the Roads and Maritime Services is illustrated on Figure 3.

Mona Vale Road is classified by the RMS as a *Regional Road* and provides the key east-west road link in the area. It typically carries 1 traffic lane in each direction, with additional lanes provided at key intersections to accommodate turning movements.

Tumburra Street is a local, unclassified road which is primarily used to provide vehicular and pedestrian access to frontage properties. It typically carries 1 traffic lane in each direction.

Wirreanda Road is a local, unclassified road which takes the form of two cul-de-sacs extending to the east and west of Tumburra Street respectively.

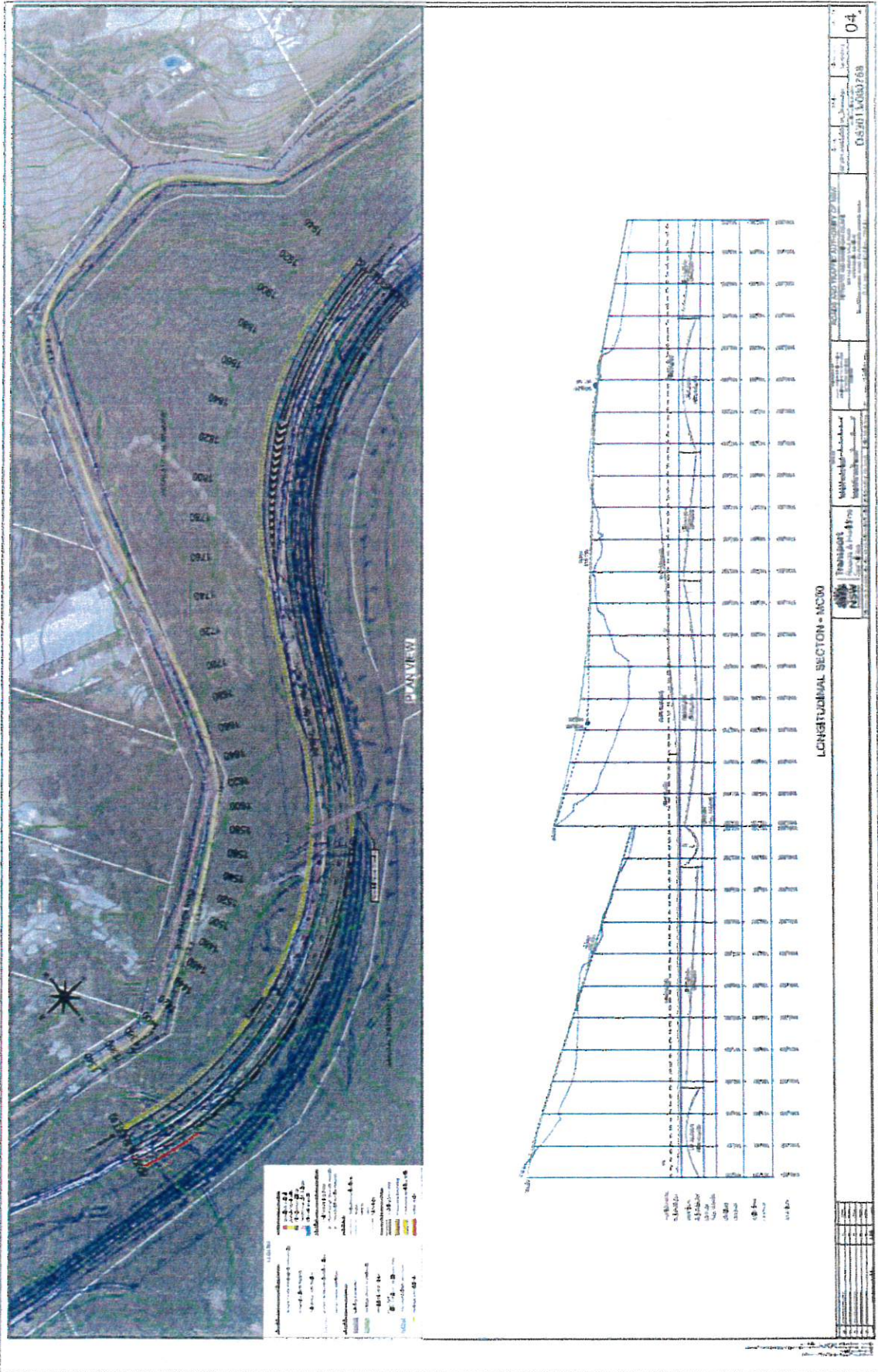
It is understood that the Roads and Maritime Services is currently undertaking a route development study of Mona Vale Road to review the options for upgrading Mona Vale Road to a four-lane dual-carriageway road between Terrey Hills and Ingleside. Discussions with the RMS have indicated that the current thinking for this section of Mona Vale Road is to provide a grade-separated intersection at Tumburra Street catering for all turning movements.

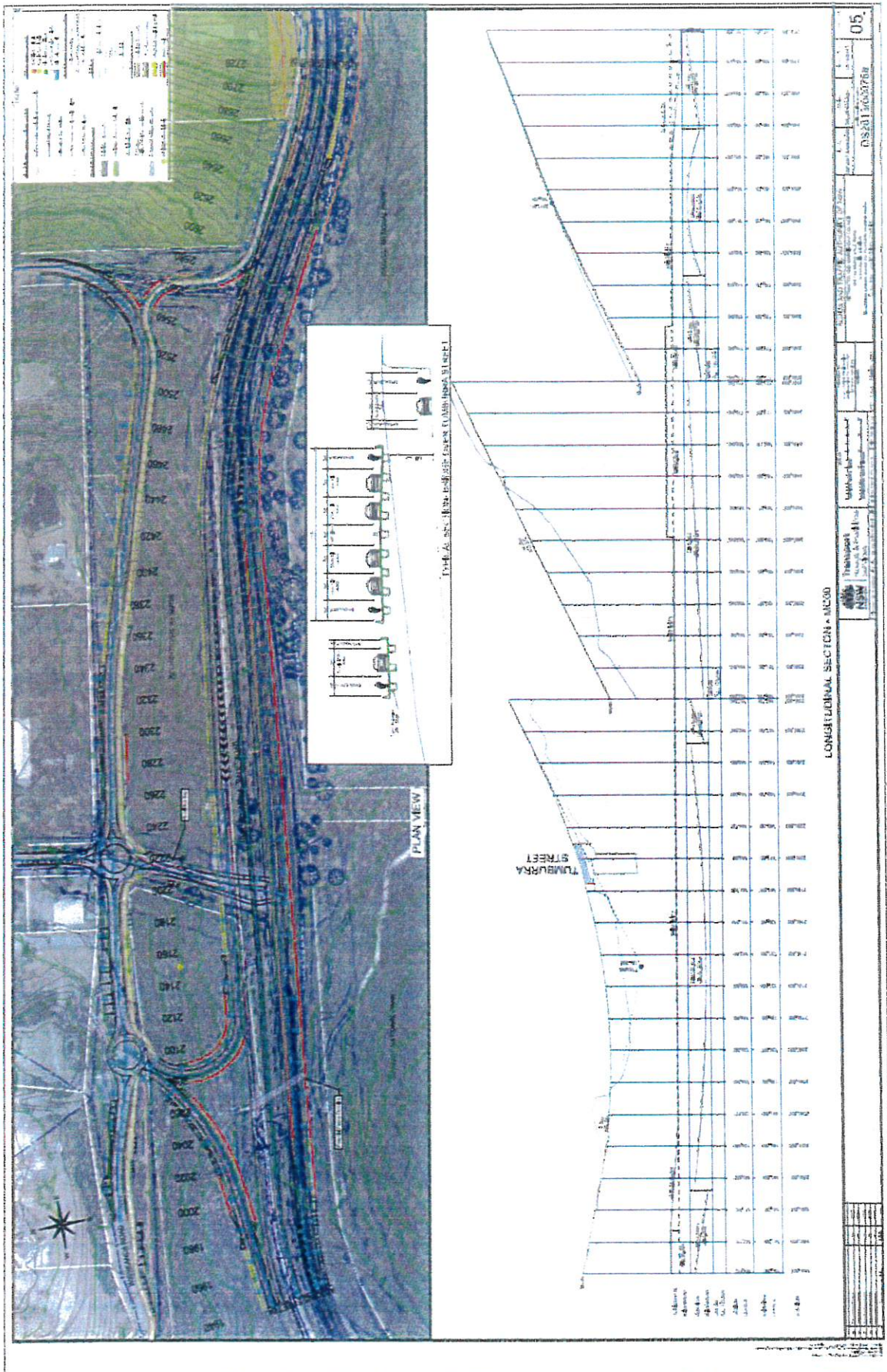
Proposed Road Improvements

The Roads and Maritime Services is currently preparing a route development strategy for the upgrading of Mona Vale Road between Terrey Hills and Ingleside. The objective of the route development strategy is to provide a four-lane dual carriageway roadway (ie; with two lanes in each direction) in the “missing link” between the existing four-lane roadways at Terrey Hills and Ingleside. Extracts from the Road and Maritime Services Strategic Design Plans are reproduced in the following pages, revealing that:

- a four-lane dual carriageway road is proposed in Mona Vale Road to carry two traffic lanes plus a breakdown lane in each direction







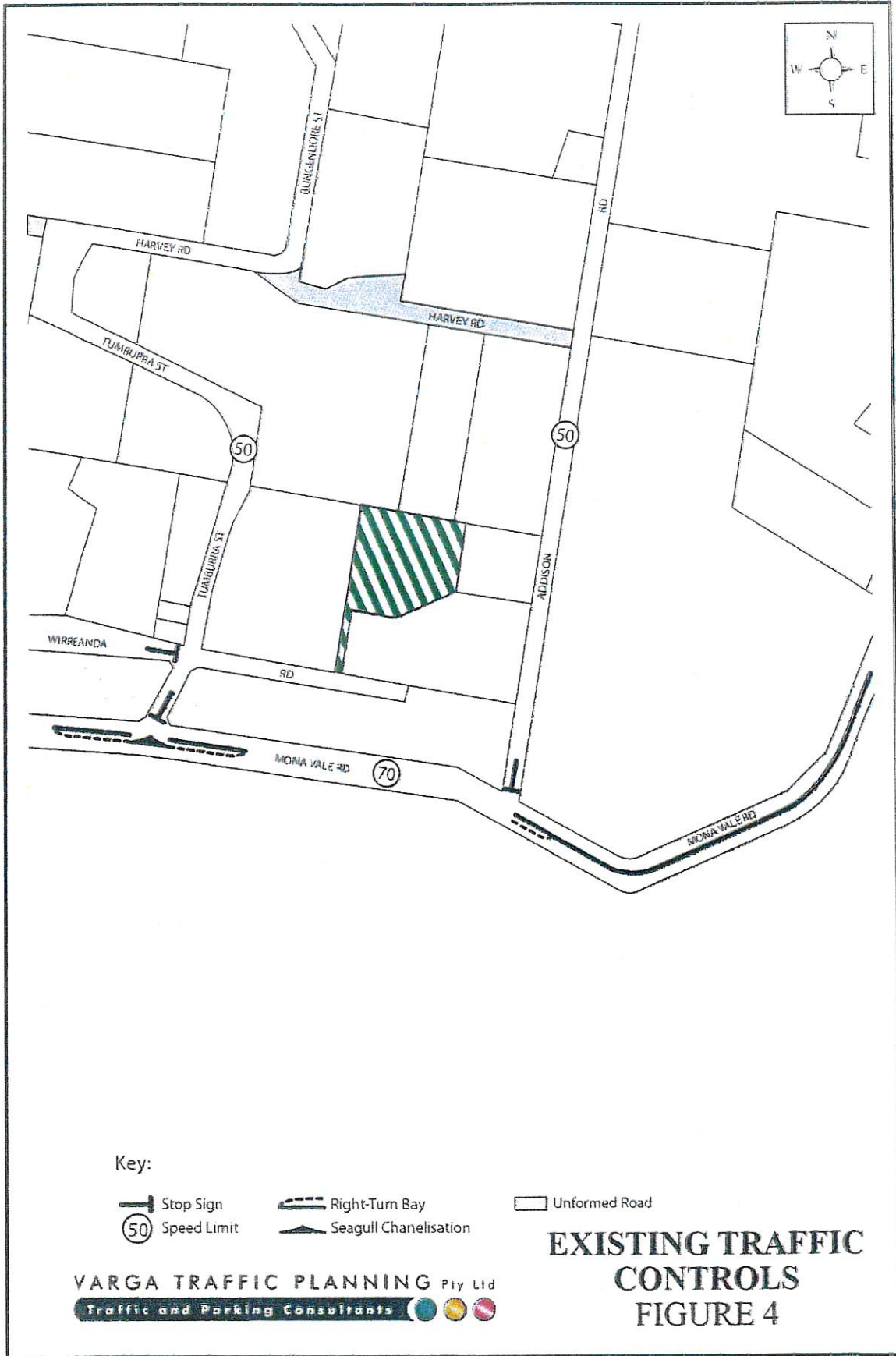
- opposing traffic flows in Mona Vale Road will be separated by an uninterrupted central median island incorporating a raised concrete barrier
- a grade-separated intersection (overpass) is proposed at Tumburra Street, with *on* and *off ramps* proposed to cater for all turning movements on and off Mona Vale Road
- two new roundabouts are proposed in Wirreanda Road to connect the *on* and *off ramps* to the local road network
- Wirreanda Road is to be extended to the east of Tumburra Street to connect with Addison Road
- Addison Road is to be closed where it intersects with Mona Vale Road
- the construction of a paved 3.0m wide *shared pedestrian/bicycle path* along the entire length of Wirreanda Road on its southern side.

Advice from RMS project development indicates that the EIS for the upgrading of Mona Vale Road is expected to be exhibited in 2015, and that construction is expected to commence in 2018.

Existing Traffic Controls

The existing traffic controls which apply to the road network in the vicinity of the site are illustrated on Figure 4. Key features of those traffic controls are:

- a 70 km/h SPEED LIMIT in Mona Vale Road
- a 50 km/h SPEED LIMIT which applies to all other local roads in the surrounding area
- STOP SIGNS in Wirreanda Road at its intersection with Tumburra Street
- STOP SIGNS in Tumburra Street at its intersection with Mona Vale Road.



Existing Traffic Conditions

An indication of the existing traffic conditions on the road network in the vicinity of the site is provided by detailed peak period traffic surveys undertaken as part of a recent traffic study. The traffic surveys were undertaken in Tumburra Street at its intersection with Wirreanda Road and are reproduced in full in Appendix A.

The results of the traffic surveys reveal that:

- two-way traffic flows in Tumburra Street are relatively low, typically in the order of 50-60 vehicles per hour (vph) during peak periods
- two-way traffic flows in Wirreanda Road (west) are lower, typically in the order of *less than 20 vph* during peak periods
- two-way traffic flows in Wirreanda Road (east) are lower still, typically in the order of *less than 10 vph* during peak periods.

The traffic surveys were also used to identify the vehicle types traversing the intersection. The results of the vehicle classification surveys are summarised in the table below:

VEHICLE CLASSIFICATIONS						
SUMMARY OF TRAFFIC SURVEY RESULT						
3 HOUR TOTALS						
	6:30am-9:30am			3:30pm-6:10pm		
	Heavy Vehicles	Light Vehicles	Total Vehicles	Heavy Vehicles	Light Vehicles	Total Vehicles
Tumburra St (South)	28 vehicles	110 vehicles	138 vehicles	21 vehicles	123 vehicles	144 vehicles
Tumburra St (North)	23 vehicles	66 vehicles	89 vehicles	10 vehicles	80 vehicles	90 vehicles
Wirreanda St (West)	14 vehicles	41 vehicles	55 vehicles	13 vehicles	40 vehicles	53 vehicles
Wirreanda St (East)	1 vehicle	19 vehicles	20 vehicles	0 vehicle	15 vehicles	15 vehicles
3 HOUR TOTALS	66 vehicles	236 vehicles	302 vehicles	44 vehicles	258 vehicles	302 vehicles

The vehicle classification surveys reveal that:

- heavy vehicles accounted for approximately 22% of all vehicle movements traversing the intersection during the 3 hour duration of the surveys in the morning, and approximately 15% of vehicles in the afternoon
- the majority of vehicles proceeding to/from Mona Vale Road via Tumburra Street South had an origin or destination in Tumburra Street (north), although the proportion of heavy vehicles using Wirreanda Street (west) was only slightly lower than Tumburra Street (north).

The surveys also revealed that, over the 3 hour duration of the surveys in the morning and afternoon (ie; total 6 hours) there were 35 vehicle movements recorded using Wirreanda Street (east), however only one of those vehicle movements (ie; a left-turn exit towards Mona Vale Road) was a heavy vehicle (ie; a medium sized rigid truck).

Wirreanda Road (east) provides vehicular access to 3 separate properties. These are *Granma's Refuge* (a vocational training facility), a domestic dwelling, and the *Matthews Contracting* site. It is likely that the majority of traffic activity occurring in Wirreanda Road (east) is generated by *Granma's Refuge* and *Matthews Contracting*.

In that respect, the surveys in Wirreanda Road (east) reveal that:

- two-way peak hour traffic flows in Wirreanda Road (east) are minimal, typically less than 10 vehicles per hour
- the majority of vehicles traversing Wirreanda Road (east) are light vehicles (ie; cars, utilities and the like)
- truck traffic activity in Wirreanda Road (east) is very low.

Traffic Generation Potential

There are 6 trucks based on the site, comprising 2 truck and dog combinations approximately 17m long, two semi-trailer approximately 17m long, a medium rigid truck approximately 8m long and a low-loader "float" semi-trailer which is approximately 19m long.

Only 5 of those trucks are used on a regular basis, as the low-loader "float" truck is used only occasionally to transport earthmoving equipment to a job site, if required).

The usual traffic activity generated by *Matthews Contracting* on the subject site therefore comprises the arrival of 5 drivers in the morning and their departure in the 5 trucks shortly thereafter (usually around 6am), with those movements reversed in the afternoon (usually around 3pm).

Typical traffic flows generated by *Matthews Contracting* would therefore comprise 4 light vehicle movements per hour arriving at the site followed by 4 heavy vehicle movements departing the site in the morning peak hour (ie; total 8 vph), with those movements reversed during the afternoon peak hour.

Accordingly, the peak traffic flows generated by *Matthews Contracting* will therefore typically be *less than* 10 vph each morning and afternoon peak period.

It is pertinent to note that:

- the "site" peak periods do not coincide with the on-road commuter peak periods, and
- there will be *no change* in the current traffic generation potential of the site as a consequence of this application.

In any event, that existing level of traffic activity is *statistically insignificant* and clearly does not have any unacceptable traffic implications in terms of either road network capacity or traffic-related environmental effects.

Off-Street Parking Provisions

Provision has been made for off-street carparking on the upper level of the *Matthews Contracting* site for approximately 8 cars on a hard stand area, adjacent to the administration office. Approximately 6 cars are parked in a tandem arrangement comprising 2 cars each, with provision for at least 2 additional cars to be accommodated on one side of a large manoeuvring/turning area.

Provision for 4 additional car parking spaces is provided on the middle level of the *Matthews Contracting* site, on the southern side of the gravel access road which connects the lower level with the administration office on the upper level.

Additional carparking could be accommodated on the middle level of the *Matthews Contracting* site, however the grass in this area is in very good condition, and there does not therefore appear to be any need for cars to be parked in this area. Notwithstanding, the potential remains for cars or other vehicles to be parked in this area, should the need ever arise.

The trucks are parked or stored on the lower level of the *Matthews Contracting* site in an informal arrangement (ie; the area is unsealed and therefore is not linemarked). The flexibility provided by the informal parking/storage arrangement best suits the needs of the company's operations.

On a recent site inspection all but one of the trucks were found to be parked on the site. The only truck absent was the medium rigid truck, however an appropriate parking space for that truck (ie; between 2 other trucks) was readily apparent.

It was clear from the site inspection that all 6 trucks could be accommodated within the lower level of the site in conjunction with the storage areas for the earth moving equipment and materials stock piles, whilst still maintaining a large circulation/manoeuvring area which would allow vehicles of *any size* to turn around and/or exit the site whilst travelling in a forward direction at all times.

In summary, all carparking and truck parking/storage is fully contained within the *Matthews Contracting* site, such that there is *never* any need for any vehicles to be parked or stored outside the site. The current parking/storage arrangements have been in use for many years, and it is therefore reasonable to conclude that the subject development does not have any unacceptable parking implications.

Vehicle Swept Turning Path Diagrams

Attached are a number of *swept turning path* diagrams which have been prepared using the AutoTURN v9.21 (2012) program in accordance with the requirements of *AS2890.2 – 2002*. The turning path diagrams illustrate the truck parking area and *swept turning path* requirements of those trucks, confirming that all trucks can enter and exit the site whilst travelling in a forward direction at all times (as occurs at present).

Also attached are *swept turning path* diagrams illustrating the turning/manoeuvring requirements of the trucks used by *Matthews Contracting* when turning right into Wirreanda Road (east) or left into Tumburra Street (south) are reproduced in the following pages. The same trucks have been in use by *Matthews Contracting* for many years, and the *swept turning path* diagrams confirm that each of those trucks can be accommodated at the Tumburra Street/Wirreanda Road intersection without difficulty.

Driver Sight Distance/Visibility

The driver sight distance/visibility requirements applicable to vehicular access driveways are specified in the Standards Australia publication *Parking Facilities Part 1: Off-Street Car Parking AS2890.1 – 2004*.

The driver sight distance/visibility requirements are consistent with AUSTRROADS 2009 requirements and suitable adjustments for gradient have been made in accordance with AUSTRROADS recommendations.

The Standards Australia publication nominates 2 driver sight distance/visibility requirements for a prevailing vehicle speed on the frontage road of 50 km/h as set out in the table below:

Sight Distance Requirements at Access Driveways
Frontage Road Speed: 50 km/h (Adjusted for Gradient)
(Access Driveways Other Than Domestic)

	Downhill	Uphill
Desirable Sight Distance:	82m	62m
Maximum Stopping Sight Distance:	55m	48m

A site inspection undertaken at the subject driveway location (ie; Wirreanda Road (east)) has found that driver sight distance/visibility available to/from Wirreanda Road (east) *exceeds* 100m in both directions along Tumburra Street, as illustrated on the photos below.



Driver Visibility Towards the South along Tumburra Street



Driver Visibility Towards the North along Tumburra Street

There is a dip in Wirreanda Road (west) when approaching the intersection, although vehicles are required to stop by a STOP sign when they reach the intersection. Notwithstanding, good visibility is available to/from vehicles approaching the intersection in Wirreanda Road (west) as illustrated by the red car in the series of photos reproduced below.

**Visibility Towards the West Along Wirreanda Road (West)
(Note the red car approaching with its headlights on)**

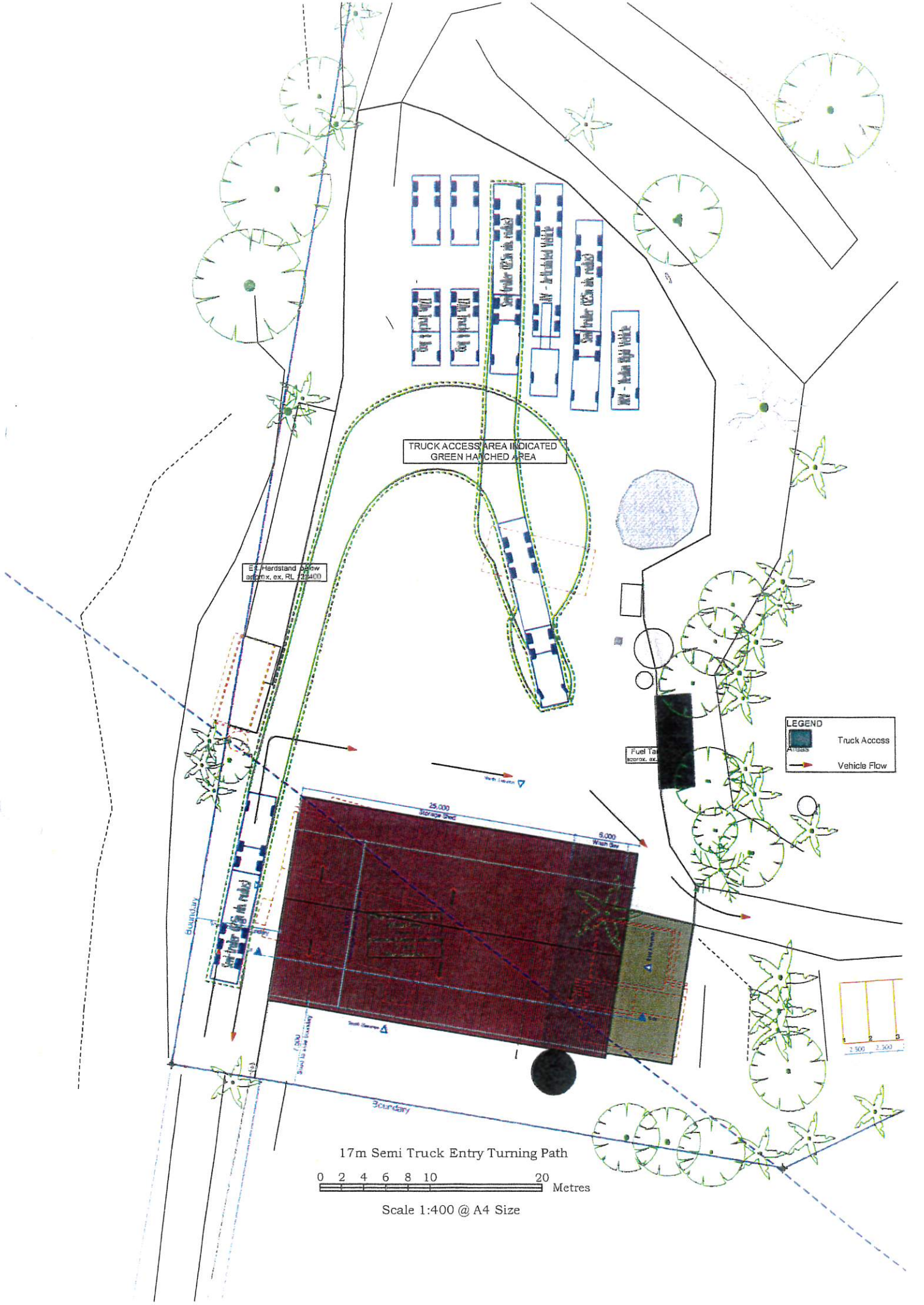


Conclusion

The foregoing assessment has found that:

- vehicular access to the *Matthews Contracting* site is provided via Wirreanda Road (east)
- traffic surveys have shown that traffic activity in Wirreanda Road (east) is minimal, typically less than 10 vph in peak periods
- traffic activity generated by *Matthews Contracting* is estimated to be *less than* 10 vph
- the peak traffic activity generated by *Matthews Contracting* occurs around 6am and around 3pm, and *does not* coincide with commuter peak periods
- traffic activity generated by *Matthews Contracting* at other times of the day is expected to be minimal
- analysis of *swept turning path* diagrams indicates that the trucks currently used by *Matthews Contracting* can be satisfactorily accommodated at the Tumburra Street/Wirreanda Road intersection
- driver sight distance/visibility at the Tumburra Street/Wirreanda Road intersection satisfies Standards Australia and AUSTRROADS requirements.

In the circumstances, it is reasonable to conclude that the continued operation of *Matthews Contracting* on the subject site will not have any unacceptable traffic implications, and is therefore recommended for approval.



TRUCK ACCESS AREA INDICATED GREEN HATCHED AREA

E.P. Hardstand below approx. ex. RL 23400

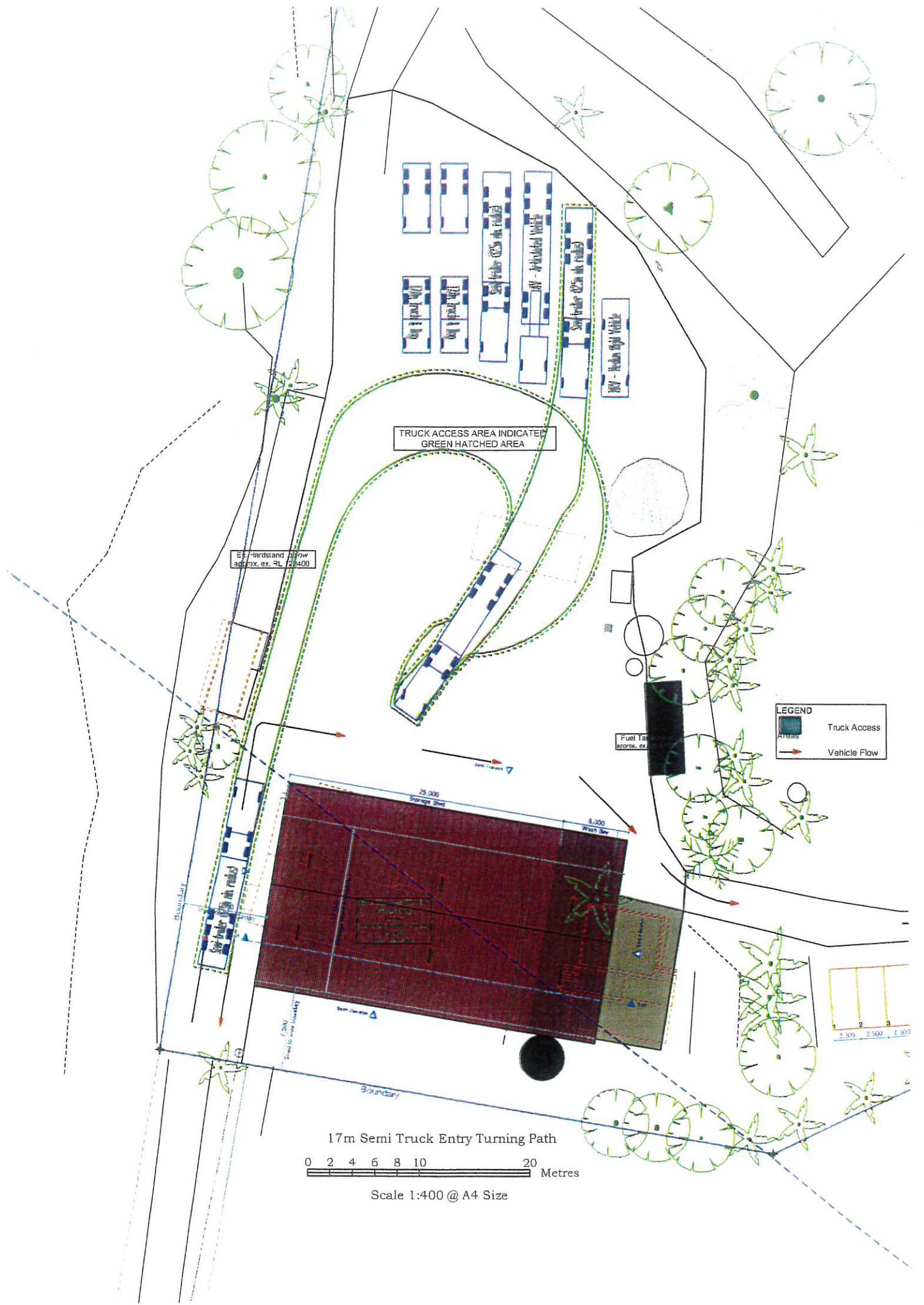
Fuel Tanks

LEGEND
 Truck Access
 Vehicle Flow

17m Semi Truck Entry Turning Path

0 2 4 6 8 10 20 Metres

Scale 1:400 @ A4 Size

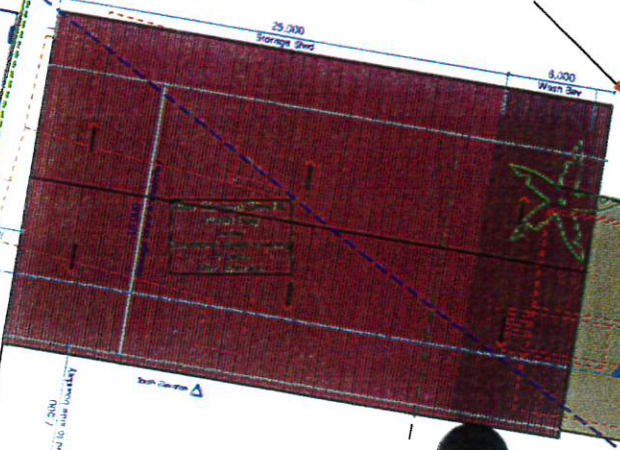


EE - Hardstand 350w approx. ex. RL 121400

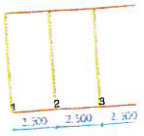
TRUCK ACCESS AREA INDICATED GREEN HATCHED AREA

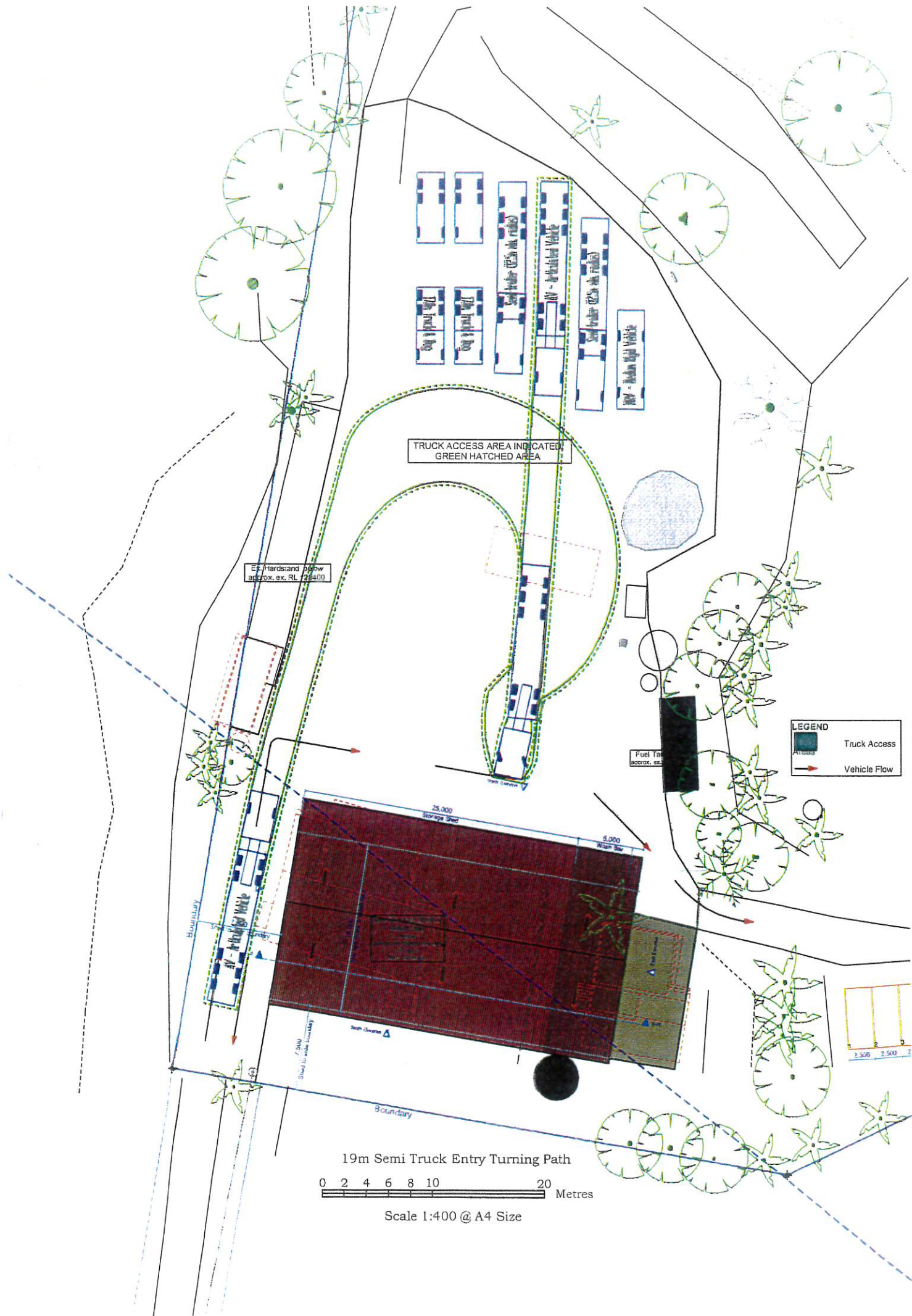
LEGEND
 Truck Access
 Vehicle Flow

Fuel Tank approx. ex.



17m Semi Truck Entry Turning Path
 0 2 4 6 8 10 20 Metres
 Scale 1:400 @ A4 Size





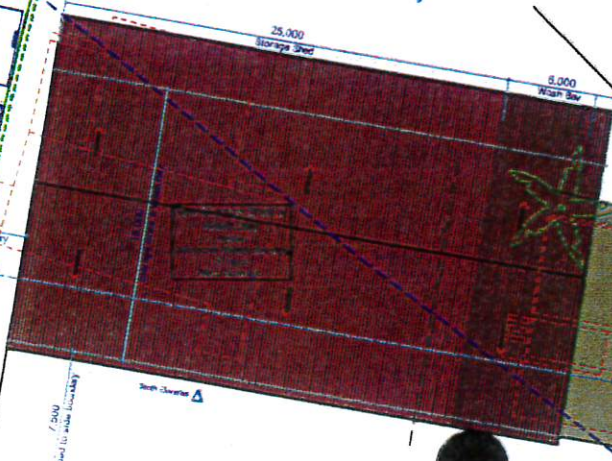
TRUCK ACCESS AREA INDICATED
GREEN HATCHED AREA

E2 Hardsand below
approx. ex. RL 28400

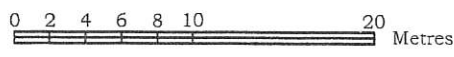
Fuel Tank
approx. 25,000

LEGEND

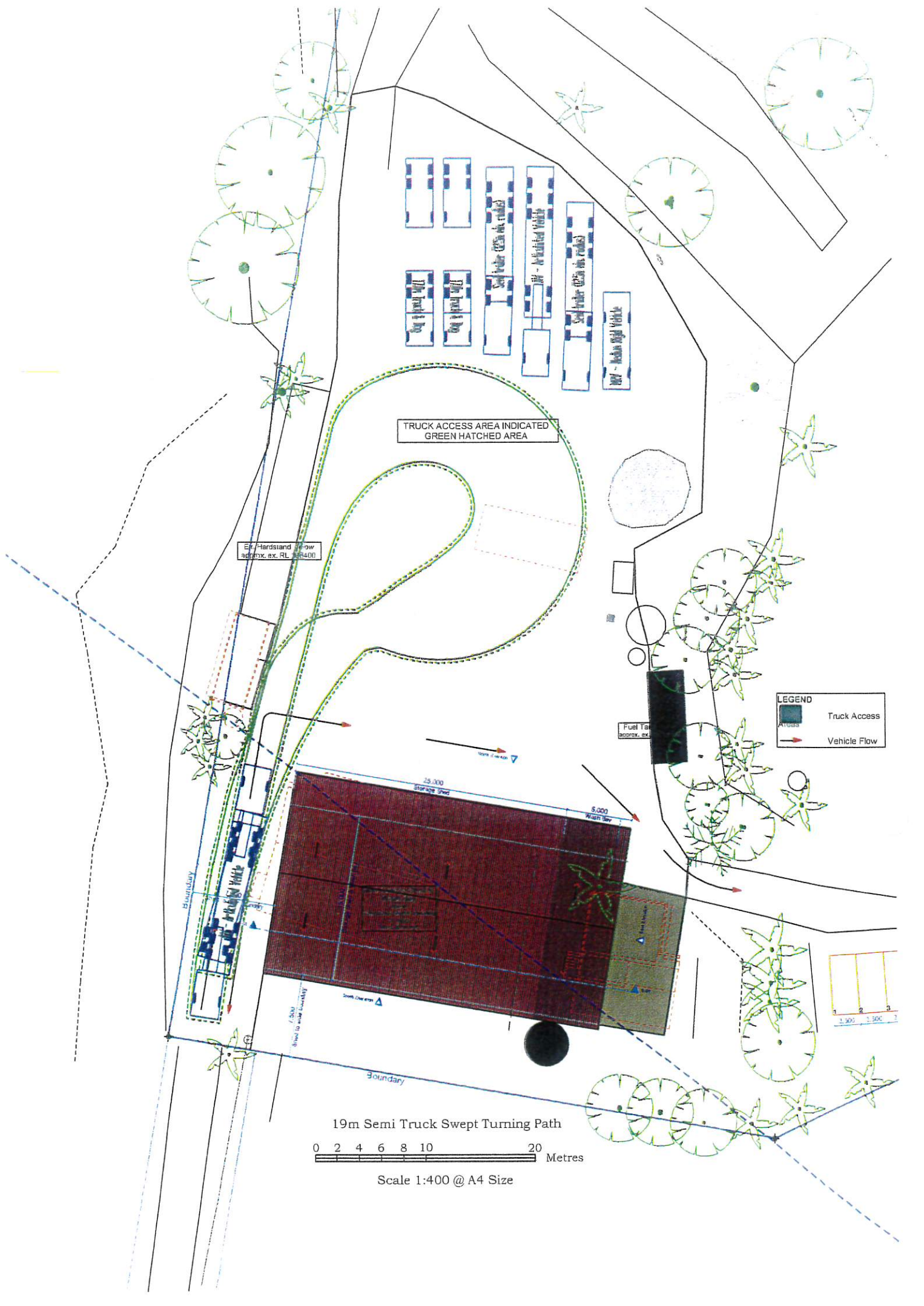
- Truck Access
- Vehicle Flow



19m Semi Truck Entry Turning Path



Scale 1:400 @ A4 Size



TRUCK ACCESS AREA INDICATED GREEN HATCHED AREA

Ex. Hardstand flow approx. ex. RL 106400

LEGEND

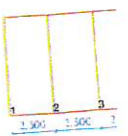
- Truck Access
- Vehicle Flow

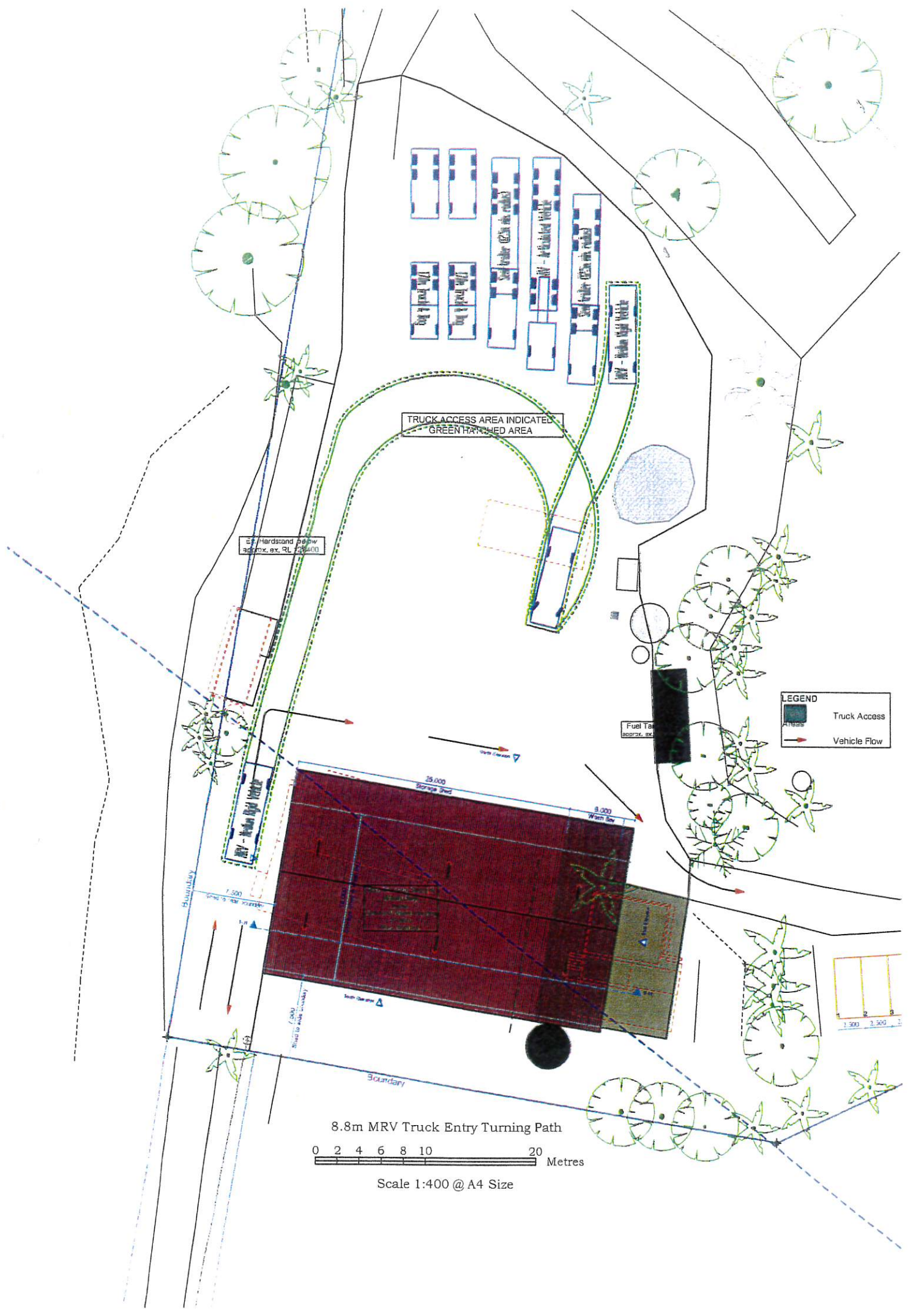
25,000 Storage Shed
5,000 Warm Shed

19m Semi Truck Swept Turning Path

0 2 4 6 8 10 20 Metres

Scale 1:400 @ A4 Size





TRUCK ACCESS AREA INDICATED GREEN HATCHED AREA

MRV - Medium Right Vehicle approx. ex. RL 25,400

25,000 Storage shed
8,000 Wash Bay

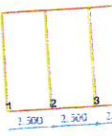
Boundary

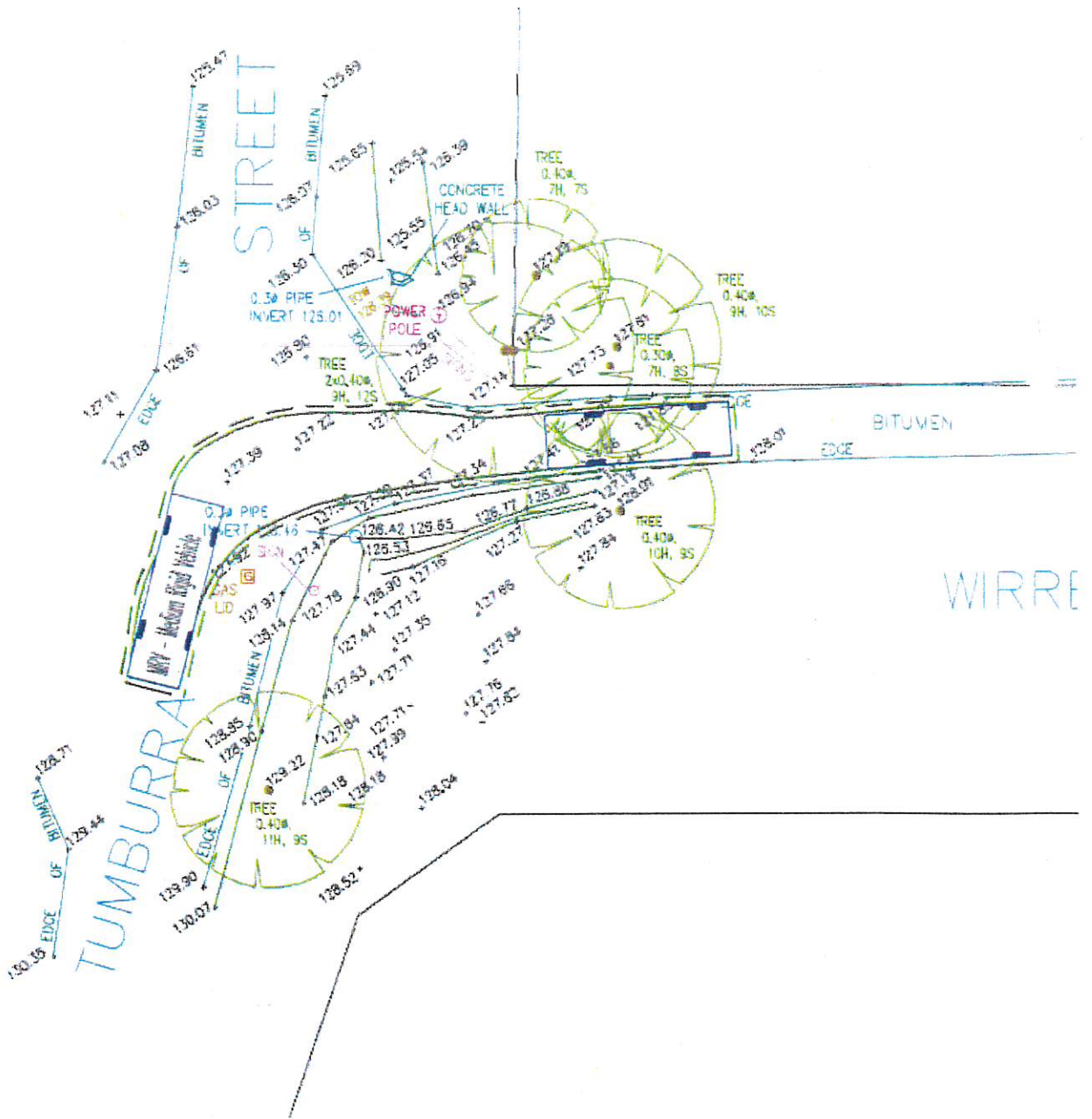
Boundary

LEGEND
 Truck Access Areas
 Vehicle Flow

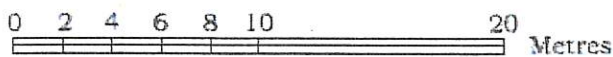
8.8m MRV Truck Entry Turning Path
 0 2 4 6 8 10 20 Metres

Scale 1:400 @ A4 Size

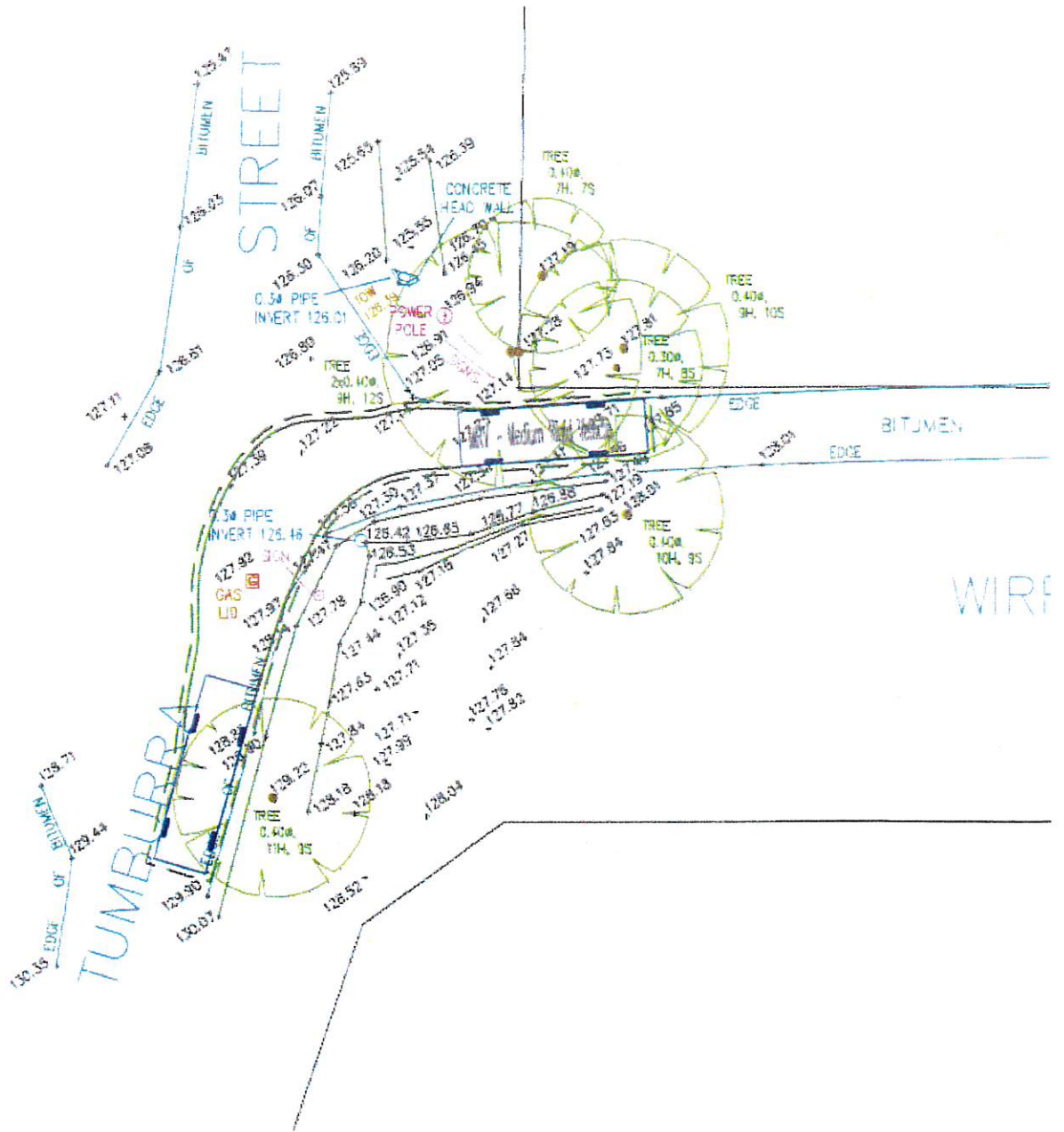




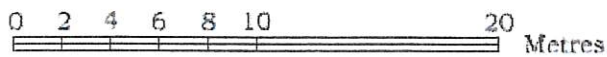
8.8m MRV Truck Right-Turn Turning Path



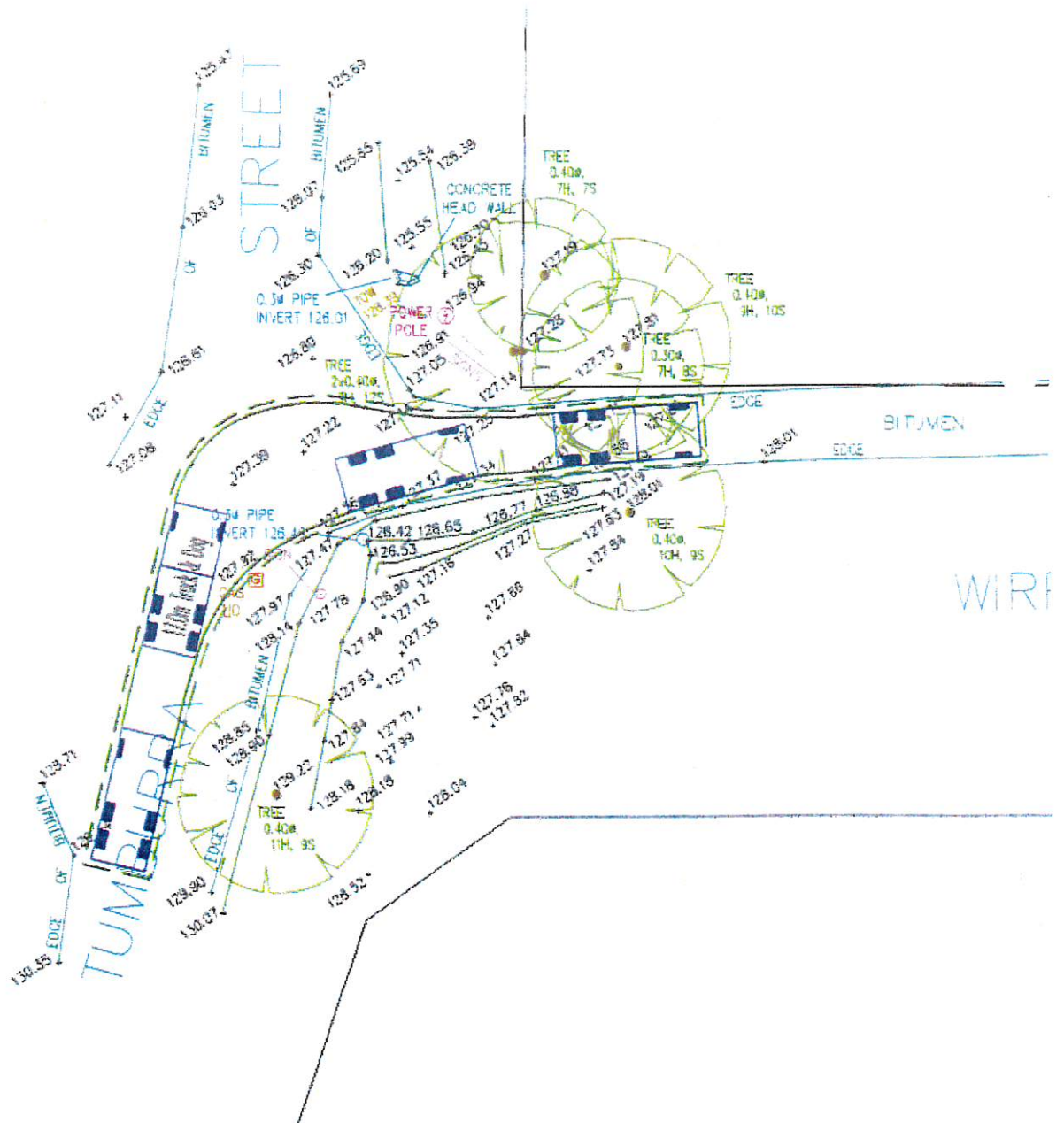
Scale 1:300 @ A4 Size



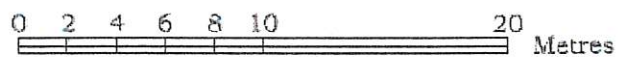
8.8m MRV Truck Left-Turn Turning Path



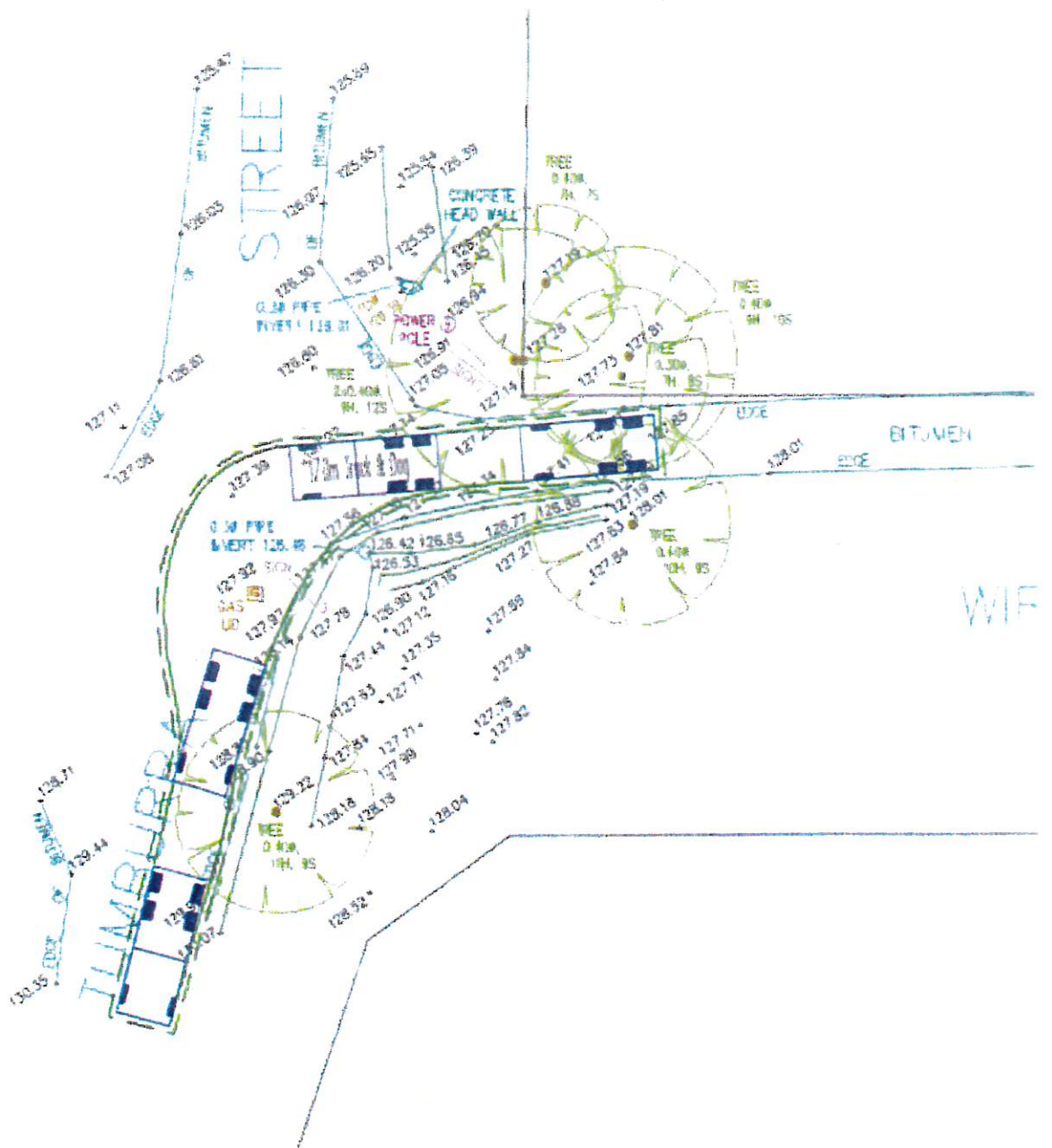
Scale 1:300 @ A4 Size



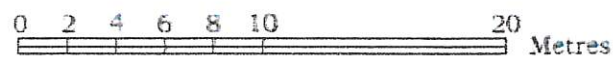
17.0m Truck & Dog Right-Turn Turning Path



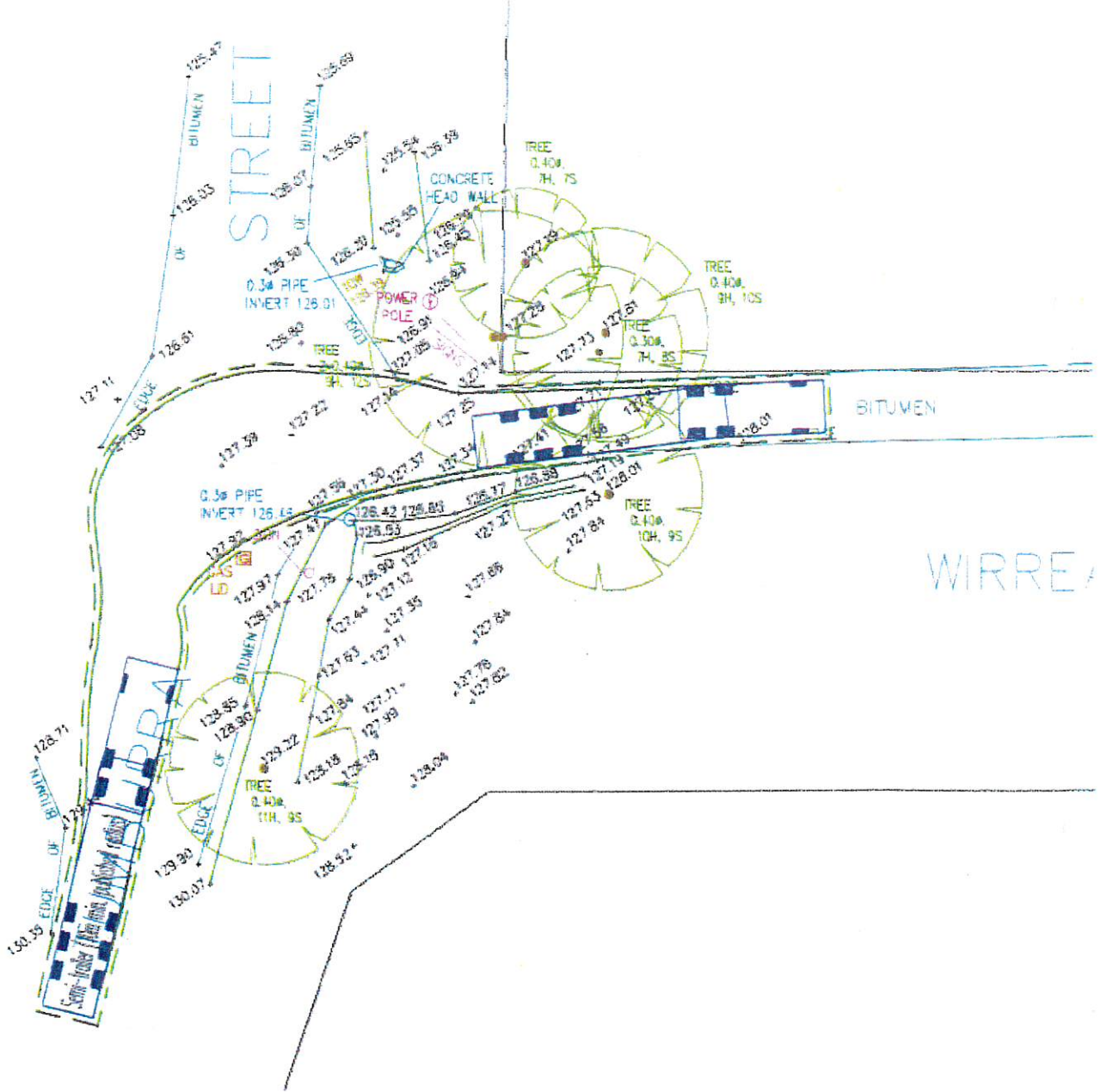
Scale 1:300 @ A4 Size



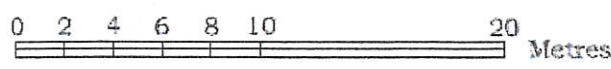
17.0m Truck & Dog Left-Turn Turning Path



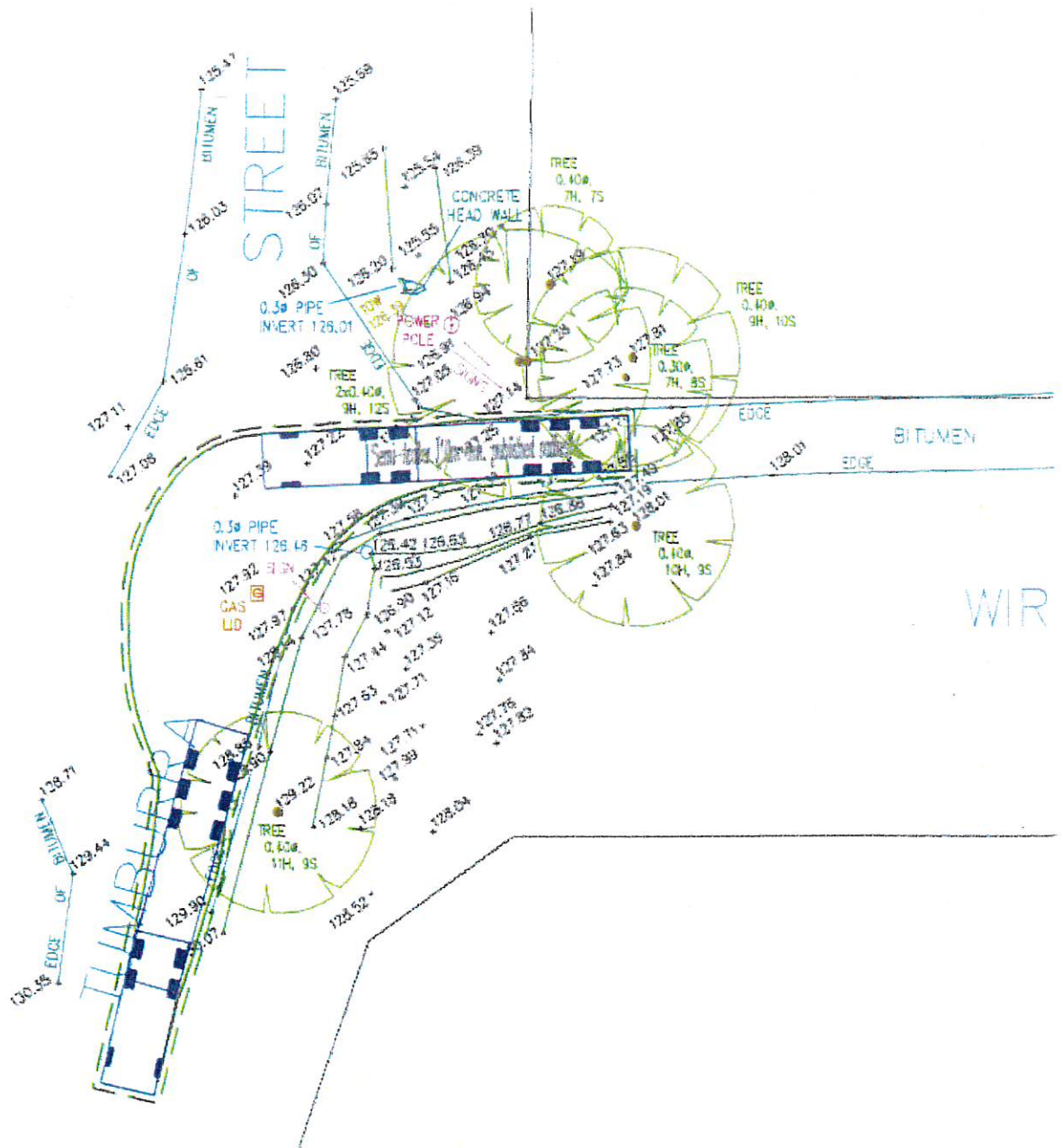
Scale 1:300 @ A4 Size



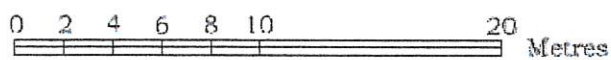
17.0m Semi Truck Right-Turn Turning Path



Scale 1:300 @ A4 Size



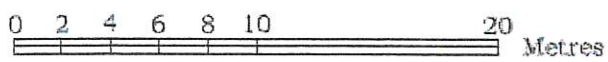
17.0m Semi Truck Left-Turn Turning Path



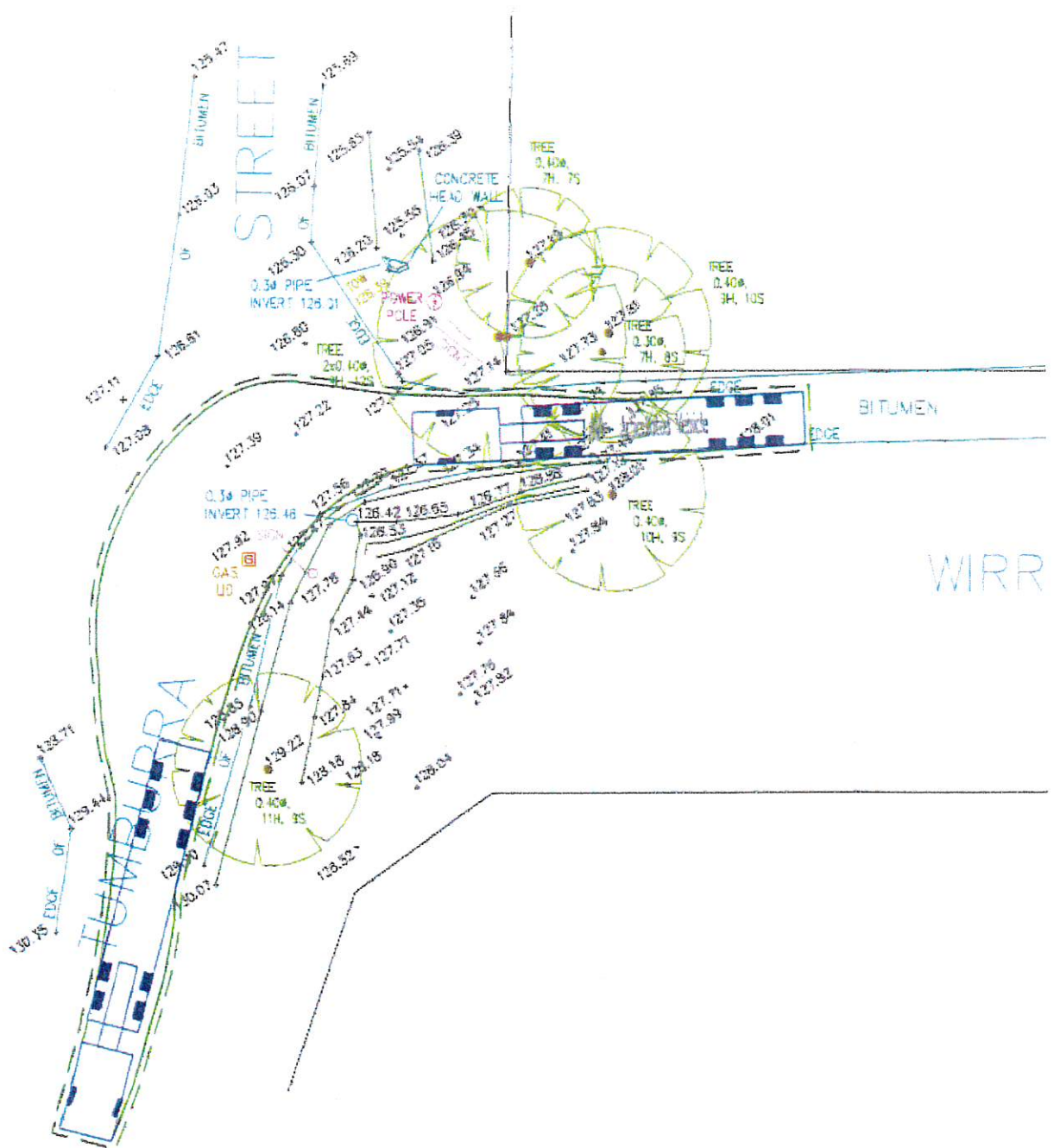
Scale 1:300 @ A4 Size



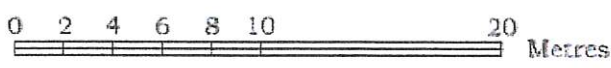
19m Semi "Float" Truck Right-Turn Turning Path



Scale 1:300 @ A4 Size



19m Semi "Float" Truck Left-Turn Turning Path



Scale 1:300 @ A4 Size

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 : 4573 INGLESIDE Tumburra St
 Day/Date : Wednesday 3rd April 2013

Time Period	NORTH			WEST			SOUTH			EAST			TOT
	Tumburra St			Wirreanda Rd			Tumburra St			Wirreanda Rd			
	L	I	R	L	I	R	L	I	R	L	I	R	
0630 - 0645	0	2	0	0	0	1	2	3	1	1	0	0	10
0645 - 0700	0	7	0	0	0	2	2	4	0	0	0	0	15
0700 - 0715	0	2	0	0	0	2	0	1	1	1	0	0	6
0715 - 0730	0	1	0	0	0	2	4	5	0	1	0	0	13
0730 - 0745	0	4	1	0	0	2	3	4	0	0	0	0	14
0745 - 0800	0	3	0	0	0	1	0	1	3	0	0	0	8
0800 - 0815	0	1	0	0	0	0	0	0	0	0	0	0	1
0815 - 0830	0	1	0	2	0	1	1	1	0	0	0	0	6
0830 - 0845	0	3	1	0	0	4	2	0	1	1	0	0	12
0845 - 0900	1	2	0	0	0	0	2	5	3	1	0	0	14
0900 - 0915	0	0	0	1	0	1	0	5	2	0	0	0	9
0915 - 0930	0	0	1	1	0	1	1	4	2	0	0	0	10
Period End	1	26	3	4	0	17	17	32	13	5	0	0	118

Peak Period	NORTH			WEST			SOUTH			EAST			TOT
	Tumburra St			Wirreanda Rd			Tumburra St			Wirreanda Rd			
	L	I	R	L	I	R	L	I	R	L	I	R	
0630 - 0730	0	12	0	0	0	7	8	12	2	3	0	0	44
0645 - 0745	0	14	1	0	0	8	9	13	1	2	0	0	48
0700 - 0800	0	10	1	0	0	7	7	10	4	2	0	0	41
0715 - 0815	0	9	1	0	0	5	7	10	3	1	0	0	36
0730 - 0830	0	9	1	2	0	4	4	6	3	0	0	0	29
0745 - 0845	0	8	1	2	0	6	3	2	4	1	0	0	27
0800 - 0900	1	7	1	2	0	5	5	6	4	2	0	0	33
0815 - 0915	1	6	1	3	0	6	5	11	6	2	0	0	41
0830 - 0930	1	5	2	2	0	6	5	14	8	2	0	0	45

PEAK HOUR	0	14	1	0	0	0	8	9	13	1	2	0	0	0	48
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Time Period	NORTH			WEST			SOUTH			EAST			TOT
	Tumburra St			Wirreanda Rd			Tumburra St			Wirreanda Rd			
	L	I	R	L	I	R	L	I	R	L	I	R	
0630 - 0645	0	3	0	0	0	1	0	1	0	0	0	0	5
0645 - 0700	0	0	0	0	0	0	0	0	0	0	0	0	0
0700 - 0715	0	0	0	0	0	0	0	0	0	0	0	0	0
0715 - 0730	0	0	1	0	0	0	0	2	0	0	0	0	3
0730 - 0745	0	2	0	0	0	0	0	1	0	0	0	0	3
0745 - 0800	0	0	0	0	0	2	0	0	0	0	0	0	0
0800 - 0815	0	1	0	0	0	0	0	0	0	0	0	0	3
0815 - 0830	0	0	0	0	0	0	2	0	0	0	0	0	2
0830 - 0845	0	0	0	0	0	0	0	1	0	0	0	0	1
0845 - 0900	0	0	0	0	0	0	0	0	0	0	0	0	0
0900 - 0915	0	1	0	0	0	0	1	0	0	0	0	0	2
0915 - 0930	0	0	0	0	0	0	0	0	0	0	0	0	0
Period End	0	7	1	0	0	3	1	7	0	0	0	0	19

Peak Period	NORTH			WEST			SOUTH			EAST			TOTAL
	Tumburra St			Wirreanda Rd			Tumburra St			Wirreanda Rd			
	L	I	R	L	I	R	L	I	R	L	I	R	
0630 - 0730	0	3	1	0	0	1	0	3	0	0	0	0	8
0645 - 0745	0	2	1	0	0	0	0	3	0	0	0	0	6
0700 - 0800	0	2	1	0	0	0	0	3	0	0	0	0	6
0715 - 0815	0	3	1	0	0	2	0	3	0	0	0	0	9
0730 - 0830	0	3	0	0	0	2	0	3	0	0	0	0	8
0745 - 0845	0	1	0	0	0	2	0	3	0	0	0	0	6
0800 - 0900	0	1	0	0	0	2	0	3	0	0	0	0	6
0815 - 0915	0	1	0	0	0	0	1	3	0	0	0	0	5
0830 - 0930	0	1	0	0	0	0	1	1	0	0	0	0	3

PEAK HOUR	0	2	1	0	0	0	0	3	0	0	0	0	0	0	6
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R.O.A.R. DATA
 Reliable, Original & Authentic Results
 Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning
 Job No/Name : 4573 INGLESIDE Tumburra St
 Day/Date : Wednesday 3rd April 2013

Time Period	NORTH Tumburra St			WEST Wirreanda Rd			SOUTH Tumburra St			EAST Wirreanda Rd			TOT
	L	I	R	L	I	R	L	I	R	L	I	R	
0630 - 0645	0	0	0	0	0	0	0	0	0	0	0	0	0
0645 - 0700	0	0	0	0	0	0	0	0	0	0	0	0	0
0700 - 0715	0	0	0	0	0	0	0	1	0	0	0	0	1
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	1	1	0	0	0	0	0	0	0	0	2
0745 - 0800	0	0	1	1	0	0	0	0	0	0	0	0	2
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0
0815 - 0830	0	0	0	0	0	0	0	1	0	0	0	0	1
0830 - 0845	0	1	0	0	0	0	0	0	0	0	0	0	1
0845 - 0900	0	0	0	0	0	0	1	0	0	0	0	0	1
0900 - 0915	0	0	0	0	0	0	0	0	0	1	0	0	1
0915 - 0930	0	0	0	0	0	0	0	0	0	0	0	0	0
Period End	0	1	2	2	0	0	1	2	0	1	0	0	9

Peak Period	NORTH Tumburra St			WEST Wirreanda Rd			SOUTH Tumburra St			EAST Wirreanda Rd			TOTAL
	L	I	R	L	I	R	L	I	R	L	I	R	
0630 - 0730	0	0	0	0	0	0	0	0	1	0	0	0	1
0645 - 0745	0	0	1	1	0	0	0	0	1	0	0	0	3
0700 - 0800	0	0	2	2	0	0	0	0	1	0	0	0	5
0715 - 0815	0	0	2	2	0	0	0	0	0	0	0	0	4
0730 - 0830	0	0	2	2	0	0	0	0	1	0	0	0	5
0745 - 0845	0	1	1	1	0	0	0	0	1	0	0	0	4
0800 - 0900	0	1	0	0	0	0	1	1	1	0	0	0	3
0815 - 0915	0	1	0	0	0	0	1	1	1	0	1	0	4
0830 - 0930	0	1	0	0	0	0	1	0	0	1	0	0	3

PEAK HOUR	0	0	1	1	0	0	0	0	1	0	0	0	3
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Time Period	NORTH Tumburra St			WEST Wirreanda Rd			SOUTH Tumburra St			EAST Wirreanda Rd			TOT
	L	I	R	L	I	R	L	I	R	L	I	R	
0630 - 0645	0	0	0	0	0	0	0	0	0	0	0	0	0
0645 - 0700	0	0	0	0	0	0	0	0	0	0	0	0	0
0700 - 0715	0	0	0	0	0	0	0	0	0	0	0	0	0
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0
0815 - 0830	0	0	0	0	0	0	0	0	0	0	0	0	0
0830 - 0845	0	0	0	0	0	0	0	0	0	0	0	0	0
0845 - 0900	0	0	0	0	0	0	0	0	0	0	0	0	0
0900 - 0915	0	0	0	0	0	0	0	0	0	0	0	0	0
0915 - 0930	0	0	0	0	0	0	0	0	0	0	0	0	0
Period End	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Period	NORTH Tumburra St			WEST Wirreanda Rd			SOUTH Tumburra St			EAST Wirreanda Rd			TOTAL
	L	I	R	L	I	R	L	I	R	L	I	R	
0630 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0
0645 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0
0700 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0
0715 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0830	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0845	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0900	0	0	0	0	0	0	0	0	0	0	0	0	0
0815 - 0915	0	0	0	0	0	0	0	0	0	0	0	0	0
0830 - 0930	0	0	0	0	0	0	0	0	0	0	0	0	0

PEAK HOUR	0	0	0	0	0	0	0	0	0	0	0	0	0
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R.O.A.R. DATA

Reliable, Original & Authentic Results

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

Client : Varga Traffic Planning

Job No/Name : 4573 INGLESIDE Tumburra St

Day/Date : Wednesday 3rd April 2013

COMBINED	NORTH Tumburra St			WEST Wirreanda Rd			SOUTH Tumburra St			EAST Wirreanda Rd			TOT
	L	I	R	L	I	R	L	I	R	L	I	R	
	Time Period												
0630 - 0645	0	5	0	0	0	3	2	4	1	1	0	0	16
0645 - 0700	0	7	0	0	0	4	2	4	0	0	0	0	17
0700 - 0715	0	2	0	0	0	2	0	1	1	1	0	0	7
0715 - 0730	0	1	1	0	0	2	4	7	0	1	0	0	16
0730 - 0745	0	6	2	1	0	2	3	5	0	0	0	0	19
0745 - 0800	0	3	1	1	0	1	0	1	3	0	0	0	10
0800 - 0815	0	2	0	0	0	2	0	0	0	0	0	0	4
0815 - 0830	0	1	0	2	0	1	1	4	0	0	0	0	9
0830 - 0845	0	4	1	0	0	4	2	1	1	1	0	0	14
0845 - 0900	1	2	0	0	0	0	3	5	3	1	0	0	15
0900 - 0915	0	1	0	1	0	1	1	6	2	1	0	0	13
0915 - 0930	0	0	1	1	0	1	2	4	2	0	0	0	11
Period End	1	34	6	6	0	23	20	42	13	6	0	0	151

COMBINED	NORTH Tumburra St			WEST Wirreanda Rd			SOUTH Tumburra St			EAST Wirreanda Rd			TOTAL
	L	I	R	L	I	R	L	I	R	L	I	R	
	Peak Period												
0630 - 0730	0	15	1	0	0	11	8	16	2	3	0	0	56
0645 - 0745	0	16	3	1	0	10	9	17	1	2	0	0	59
0700 - 0800	0	12	4	2	0	7	7	14	4	2	0	0	52
0715 - 0815	0	12	4	2	0	7	7	13	3	1	0	0	49
0730 - 0830	0	12	3	4	0	6	4	10	3	0	0	0	42
0745 - 0845	0	10	2	3	0	8	3	6	4	1	0	0	37
0800 - 0900	1	9	1	2	0	7	6	10	4	2	0	0	42
0815 - 0915	1	8	1	3	0	6	7	16	6	3	0	0	51
0830 - 0930	1	7	2	2	0	6	8	16	8	3	0	0	53
PEAK HOUR	0	16	3	1	0	10	9	17	1	2	0	0	59



R.O.A.R DATA

Reliable, Original & Authentic Results

Ph. 88 196847, Fax 88 196849, Mob. 04 18-239019

Client : Varga Traffic Planning

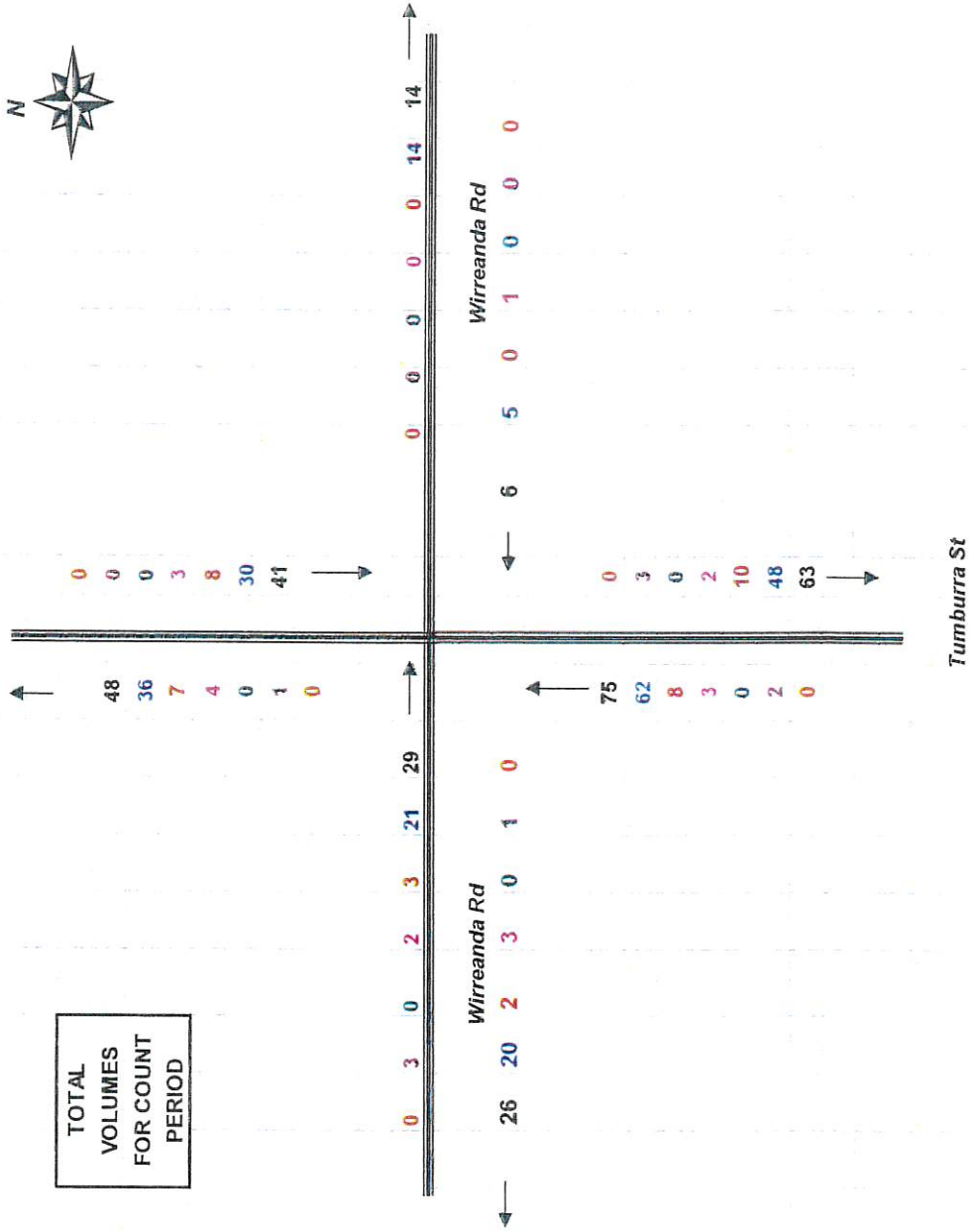
Job No/Name : 4573 INGLSIDE Tumburra St

Day/Date : Wednesday 3rd April 2013

Tumburra St



TOTAL
VOLUMES
FOR COUNT
PERIOD





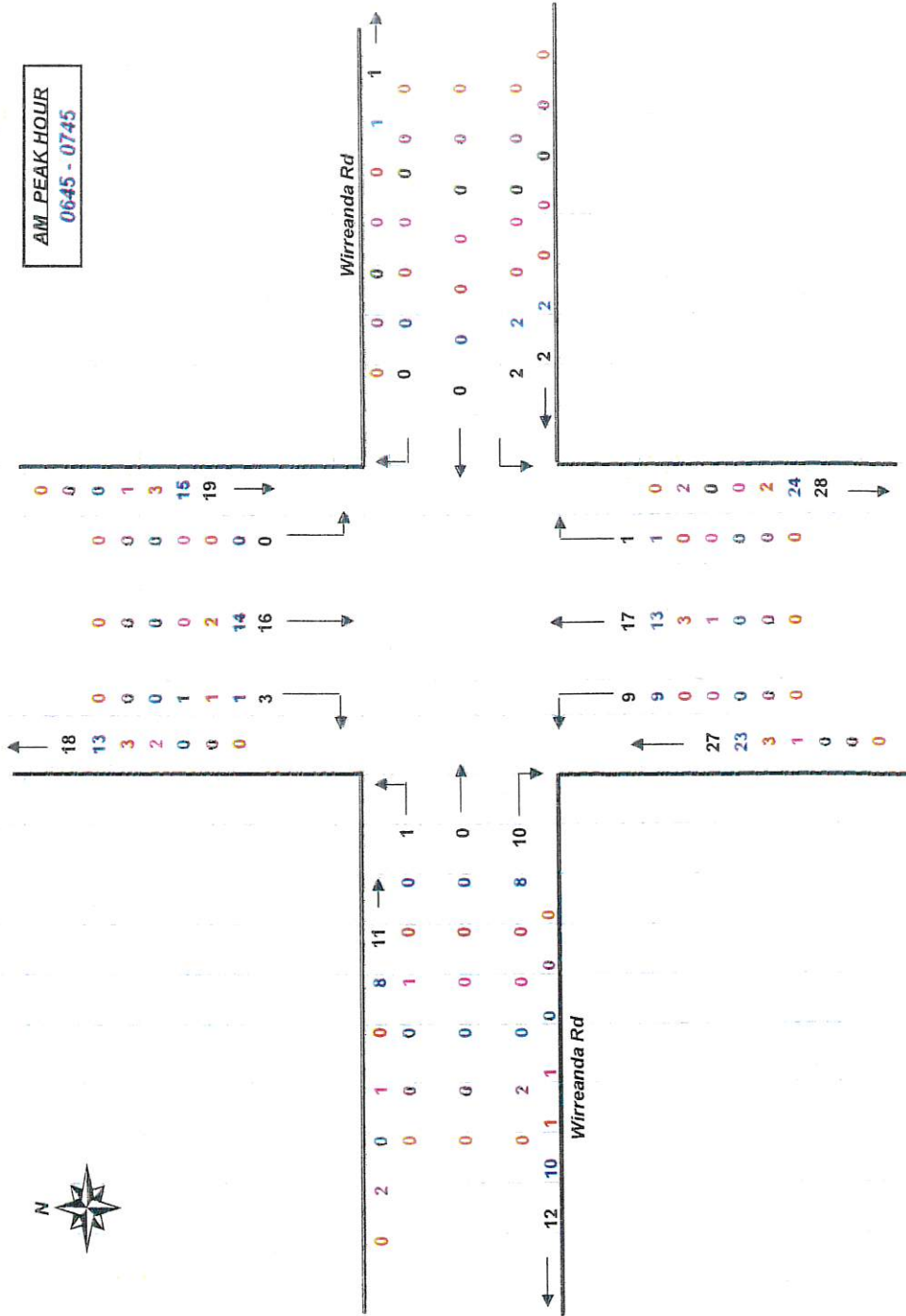
R.O.A.R DATA

Reliable, Original & Authentic Results
Ph. 88196847, Fax 88196849, Mob. 0418-239019

Client : Varga Traffic Planning
Job No/Name : 4573 INGLESIDE Tumburra St
Day/Date : Wednesday 3rd April 2013



Tumburra St



Tumburra St



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

Client : Varga Traffic Planning
 Job No/Name : 4573 INGLESIDE Tumburra St
 Day/Date : Wednesday 3rd April 2013

Time Period	NORTH						WEST						SOUTH						EAST																																																																																																																																																																								
	Tumburra St			Wirreanda Rd			Wirreanda Rd			Tumburra St			Wirreanda Rd			Wirreanda Rd			Tumburra St			Wirreanda Rd																																																																																																																																																																					
	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R																																																																																																																																																																			
1530 - 1545	0	2	0	0	0	0	1	3	3	1	2	0	0	0	0	12	1545 - 1600	0	3	0	0	0	6	1	6	0	1	0	1	18	1600 - 1615	0	5	0	0	0	1	1	6	1	0	0	0	14	1615 - 1630	0	2	0	0	0	1	0	2	1	2	0	0	8	1630 - 1645	0	2	0	0	0	0	0	3	0	0	0	0	5	1645 - 1700	0	4	0	0	0	5	0	1	0	1	0	0	11	1700 - 1715	0	7	0	0	0	3	1	1	0	1	0	0	14	1715 - 1730	0	3	0	0	0	2	0	1	0	1	0	0	7	1730 - 1745	0	3	0	1	0	0	2	3	0	0	0	0	9	1745 - 1800	1	2	0	0	0	4	2	3	0	0	0	1	13	1800 - 1815	0	4	1	1	0	3	0	1	0	0	0	0	10	1815 - 1830	0	4	0	0	0	1	0	3	0	0	0	0	8	Period End	1	41	1	2	0	27	10	33	3	9	0	2	0	0	2	129
Period End	1	41	1	2	0	27	10	33	3	9	0	2	0	0	2	129																																																																																																																																																																											

Peak Period	NORTH						WEST						SOUTH						EAST																																																																																																										
	Tumburra St			Wirreanda Rd			Wirreanda Rd			Tumburra St			Wirreanda Rd			Wirreanda Rd			Tumburra St			Wirreanda Rd																																																																																																							
	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R																																																																																																					
1530 - 1630	0	12	0	0	0	9	5	17	3	5	0	1	52	1645 - 1645	0	12	0	0	0	8	2	17	2	3	0	1	45	1600 - 1700	0	13	0	0	0	7	1	12	2	3	0	0	38	1615 - 1715	0	15	0	0	0	9	1	7	1	5	0	0	38	1630 - 1730	0	16	0	0	0	10	1	6	0	4	0	0	37	1645 - 1745	0	17	0	1	0	10	3	6	0	4	0	0	41	1700 - 1800	1	15	0	1	0	9	5	8	0	3	0	1	43	1715 - 1815	1	12	1	2	0	9	4	8	0	1	0	1	39	1730 - 1830	1	13	1	2	0	8	4	10	0	0	0	1	40
PEAK HOUR	0	12	0	0	0	9	5	17	3	5	0	1	52																																																																																																																

Time Period	NORTH						WEST						SOUTH						EAST																																																																																																																																																																
	Tumburra St			Wirreanda Rd			Wirreanda Rd			Tumburra St			Wirreanda Rd			Wirreanda Rd			Tumburra St			Wirreanda Rd																																																																																																																																																													
	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R																																																																																																																																																											
1530 - 1545	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1545 - 1600	0	0	0	0	0	0	0	0	0	0	0	0	0	1600 - 1615	0	0	0	0	0	0	1	0	0	0	0	0	1	1615 - 1630	0	0	1	0	0	0	1	0	0	0	0	0	2	1630 - 1645	0	0	0	0	0	1	0	0	0	0	0	0	1	1645 - 1700	0	0	0	0	0	0	1	0	0	0	0	0	1	1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	0	0	1715 - 1730	0	0	0	0	0	0	0	0	0	0	0	0	0	1730 - 1745	0	0	0	0	0	0	0	0	0	0	0	0	0	1745 - 1800	0	0	0	0	0	0	0	2	0	0	0	0	2	1800 - 1815	0	0	0	0	0	0	1	0	0	0	0	0	1	1815 - 1830	0	1	0	0	0	0	0	0	0	0	0	0	1
Period End	0	2	1	0	0	1	1	5	0	0	0	0	0	0	0	10																																																																																																																																																																			

Peak Period	NORTH						WEST						SOUTH						EAST																																																																																																										
	Tumburra St			Wirreanda Rd			Wirreanda Rd			Tumburra St			Wirreanda Rd			Wirreanda Rd			Tumburra St			Wirreanda Rd																																																																																																							
	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R	L	I	R																																																																																																					
1530 - 1630	0	1	1	0	0	0	0	2	0	2	0	0	0	0	0	4	1645 - 1645	0	0	1	0	1	0	2	0	0	4	1600 - 1700	0	0	1	0	0	1	0	3	0	0	0	0	5	1615 - 1715	0	0	1	0	0	1	0	2	0	0	0	0	4	1630 - 1730	0	0	0	0	0	1	0	1	0	0	0	0	2	1645 - 1745	0	0	0	0	0	0	0	1	0	0	0	0	1	1700 - 1800	0	0	0	0	0	0	0	2	0	0	0	0	2	1715 - 1815	0	0	0	0	0	0	1	2	0	0	0	0	3	1730 - 1830	0	1	0	0	0	0	1	2	0	0	0	0	4
PEAK HOUR	0	1	1	0	0	0	0	2	0	2	0	0	0	0	0	4																																																																																																													



R.O.A.R. DATA

Reliable, Original & Authentic Results
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Client : Varga Traffic Planning
Job No/Name : 4573 INGLESIDE Tumburra St
Day/Date : Wednesday 3rd April 2013

COMBINED	NORTH			WEST			SOUTH			EAST			TOT
	Tumburra St			Wirreanda Rd			Tumburra St			Wirreanda Rd			
	L	I	R	L	I	R	L	I	R	L	I	R	
1530 - 1545	0	3	0	0	0	1	3	3	1	2	0	0	13
1545 - 1600	0	3	0	0	0	6	2	6	0	1	0	1	19
1600 - 1615	0	5	0	0	0	1	2	8	1	0	0	0	17
1615 - 1630	0	2	1	0	0	1	0	3	1	2	0	0	10
1630 - 1645	0	2	0	0	0	1	2	3	0	0	0	0	8
1645 - 1700	0	4	0	0	0	6	2	2	0	1	0	0	15
1700 - 1715	0	7	0	0	0	3	4	1	0	2	0	0	17
1715 - 1730	0	3	0	0	0	2	0	1	0	1	0	0	7
1730 - 1745	0	3	0	1	0	0	2	3	0	0	0	0	9
1745 - 1800	1	2	0	0	0	4	2	5	0	0	0	1	15
1800 - 1815	0	4	1	1	0	3	1	2	0	0	0	0	12
1815 - 1830	0	5	0	0	0	1	0	3	0	0	0	0	9
Period End	1	43	2	2	0	29	20	40	3	9	0	2	151

COMBINED	NORTH			WEST			SOUTH			EAST			TOTAL
	Tumburra St			Wirreanda Rd			Tumburra St			Wirreanda Rd			
	L	I	R	L	I	R	L	I	R	L	I	R	
Peak Period	0	13	1	0	0	9	7	20	3	5	0	1	59
1530 - 1600	0	12	1	0	0	9	6	20	2	3	0	1	54
1545 - 1645	0	13	1	0	0	9	6	16	2	3	0	0	50
1600 - 1700	0	15	1	0	0	11	8	9	1	5	0	0	50
1615 - 1715	0	16	0	0	0	12	8	7	0	4	0	0	47
1630 - 1730	0	17	0	1	0	11	8	7	0	4	0	0	48
1645 - 1745	1	15	0	1	0	9	8	10	0	3	0	1	48
1700 - 1800	1	12	1	2	0	9	5	11	0	1	0	1	43
1715 - 1815	1	14	1	2	0	8	5	13	0	0	0	1	45
1730 - 1830	1	14	1	2	0	8	5	13	0	0	0	1	45
PEAK HOUR	0	13	1	0	0	9	7	20	3	5	0	1	59



R.O.A.R DATA

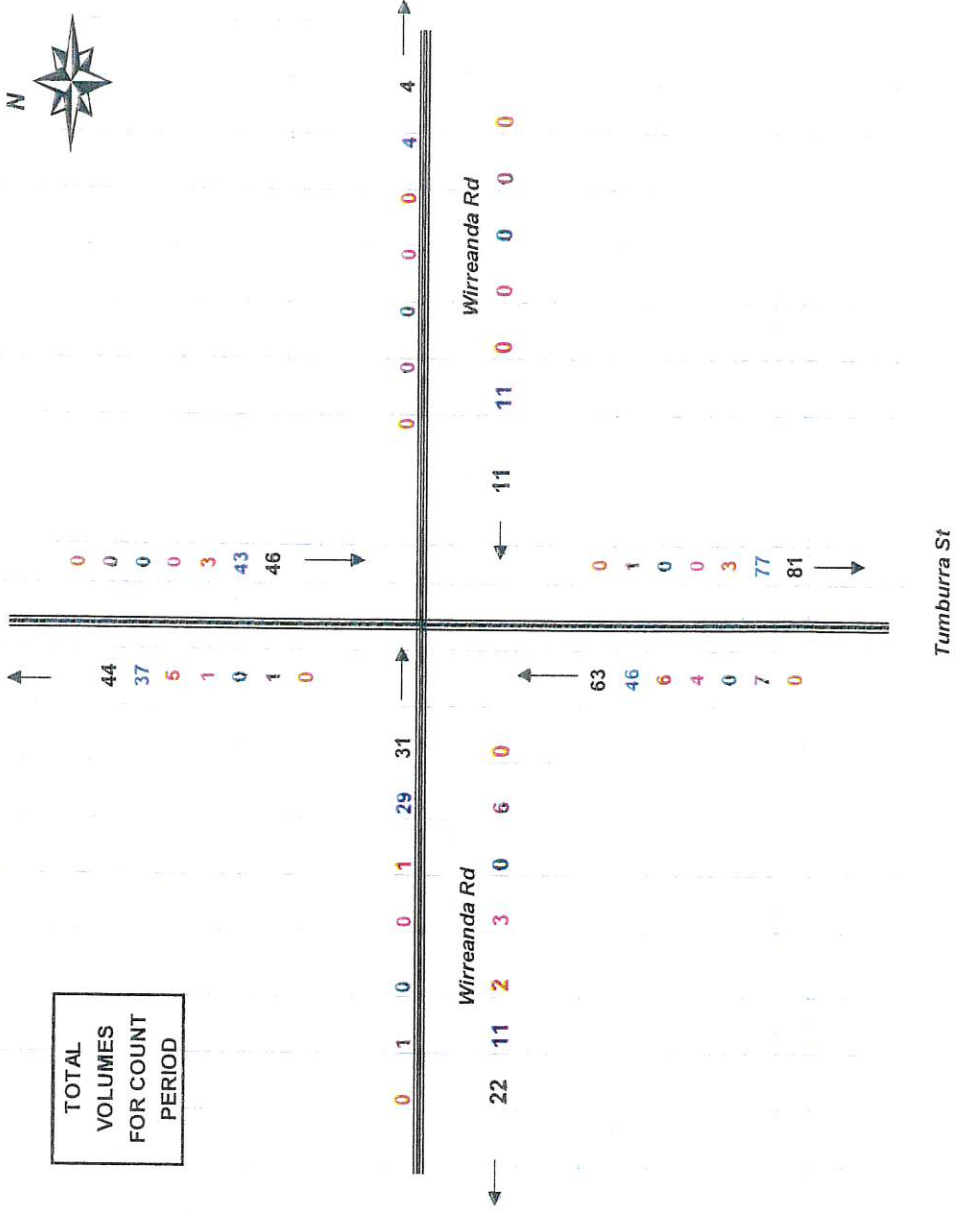
Reliable, Original & Authentic Results

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

Client : Varga Traffic Planning

Job No/Name : 4573 INGLESIDE Tumburra St

Day/Date : Wednesday 3rd April 2013





R.O.A.R DATA

Reliable, Original & Authentic Results

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

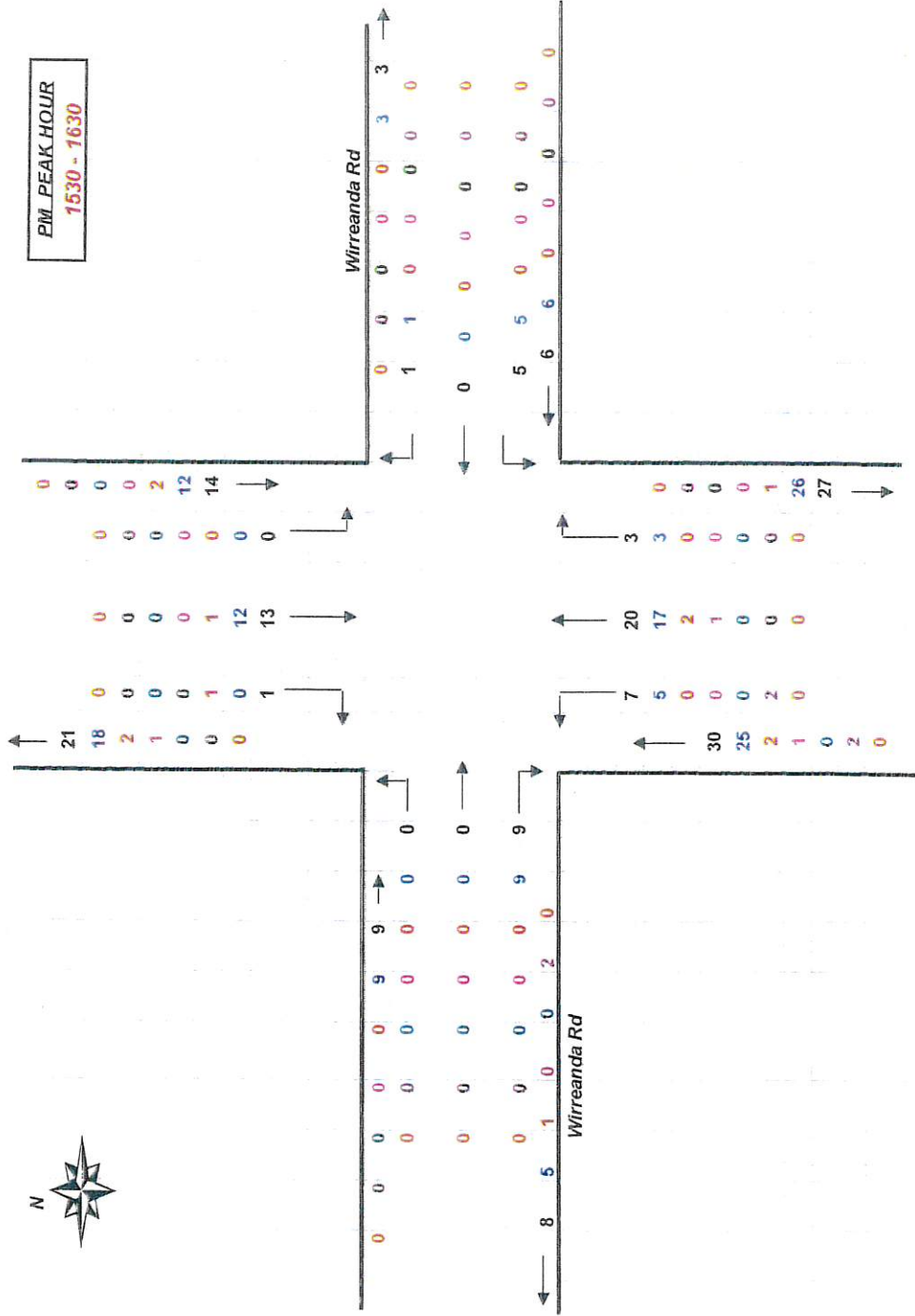
Client : Varga Traffic Planning

Job No/Name : 4573 INGLESIDE Tumburra St

Day/Date : Wednesday 3rd April 2013



Tumburra St



Tumburra St



R.O.A.R. DATA

Reliable, Original & Authentic Results
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Client : Varga Traffic Planning
Job No/Name : 4573 INGLESIDE Tumburra St
Day/Date : Wednesday 3rd April 2013



Intersection Layout

Obtained via satellite
May be incorrect

AM PEAK HOUR
0645 - 0745

Combined figures only



Wirreander Rd

Tumburra St

Driveway

Tumburra St



	AM	PM	L	T	R
AM	1	0	0	0	0
PM	0	0	0	0	9
	10	9			

	R	T	L	AM	PM
AM	3	16	0	0	0
PM	1	13	0	0	0
	4	29	0	0	0

	R	T	L	AM	PM
AM	1	0	0	0	0
PM	0	0	0	5	2
	1	0	0	5	2

	PM	AM	L	T	R
AM	7	20	9	17	3
PM	9	17	1	1	1
	16	37	10	18	4

PM PEAK HOUR
1530 - 1630



Weather >>>

