Planning Proposal for a new Residential Development

2-22 William Street, Granville

TRAFFIC AND PARKING ASSESSMENT REPORT

9 December 2015

Ref 15644

VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

Document Verification

Location:	2-22 William St, Granville	**Job Number**		15644	
Revision	**Details**	**Prepared**		**Approved**	
Final	Planning Proposal	**By**	**Date**	**By**	**Date**
		TY	13/10/15	CP	9/12/15

1. INTRODUCTION

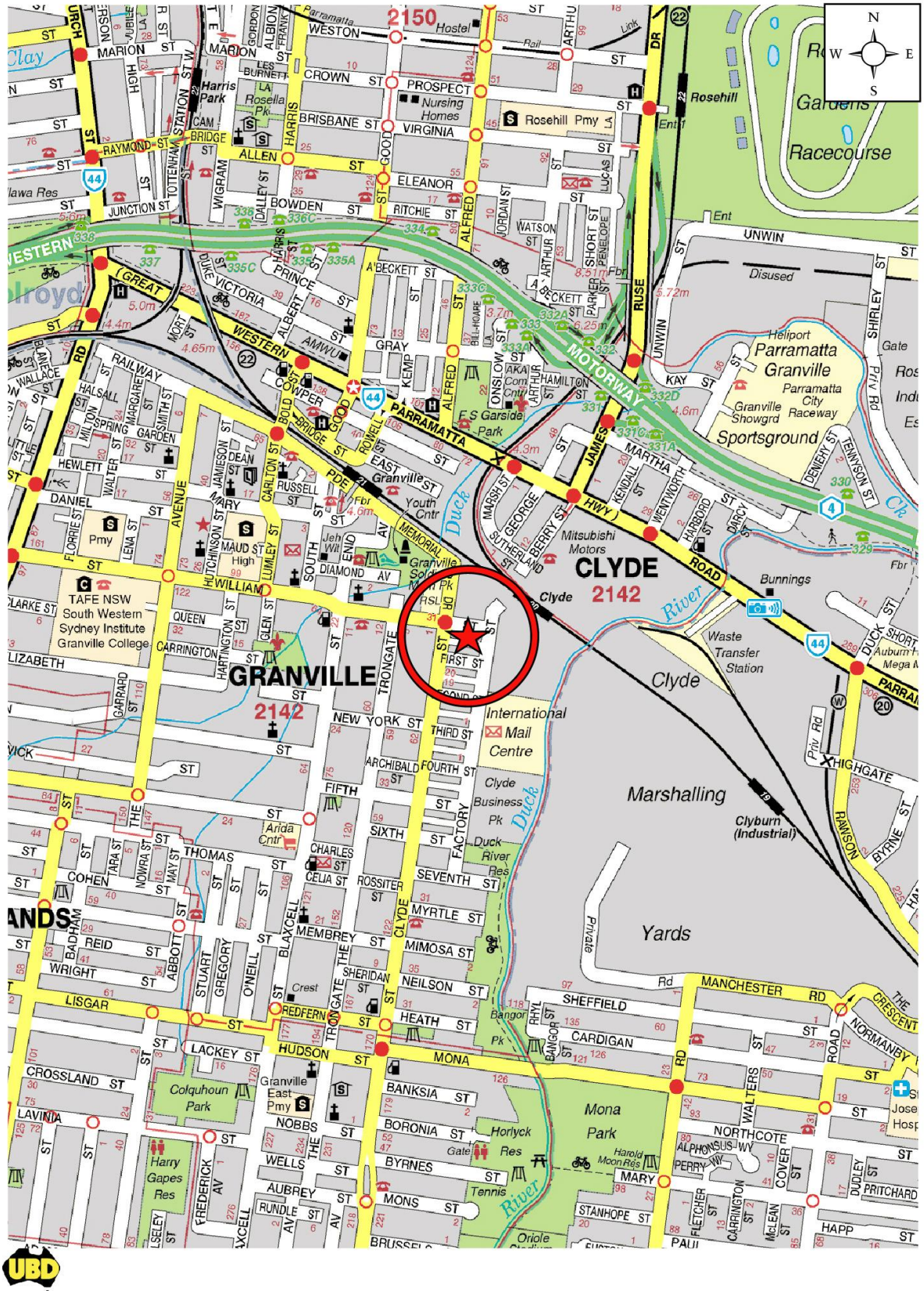
This report has been prepared to accompany a planning proposal to Parramatta City Council for a residential development to be located at 2-22 William Street, Granville (Figures 1 and 2).

The planning proposal seeks to divide the subject site into two sites; No. 2-8 William Street and also No. 10-22 William Street. The planning proposal also involves the demolition of the existing buildings on the site to facilitate the construction of a new residential development, comprising a total of four apartment buildings – i.e. two buildings on both sites.

Off-street parking for the two adjacent sites is to be provided in two respective basement car parking areas. The car parking and vehicular access arrangements will ultimately be designed in accordance with Council's requirements as well as the relevant standards and guidelines.

The purpose of this report is to assess the traffic and parking implications of the planning proposal and to that end this report:

- describes the site and provides details of the planning proposal
- reviews the road network in the vicinity of the site, and the traffic conditions on that road network
- reviews the public transport services available in the vicinity of the site
- estimates the traffic generation potential of the planning proposal, and assigns that traffic generation to the road network serving the site
- assesses the traffic implications of the planning proposal in terms of road network capacity
- assesses the adequacy and suitability of the quantum of off-street car parking provided on the site.



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Traffic and Parking Consultants

LOCATION
FIGURE 1


N
W
E
S
MEMORIAL
AVE
ENID
CK
SUTHERLAND
GEORGE
ST
BERRY
ST
ST
DR
DIAMOND
ST
DUCK
MEMORIAL DR
CLYDE
STATION
WILLIAM
ST
THE TRONGATE
FIRST
ST
ST
ST
SECOND
ST
NEW YORK
ST
FACTORY
THIRD
ST
CLYDE
THE TRONGATE
RIVER
DUCK
ARCHIBALD
ST
FOURTH
ST
Road Closure / Unformed Road
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
SITE
FIGURE 2

2. PROPOSED DEVELOPMENT

Site

The subject site is comprised of seven adjacent allotments, bounded by William Street, Clyde Street, Factory Street and a rear service lane. The site has street frontages approximately 36 metres in length to both Clyde Street &Factory Street and approximately 105 metres to both William Street & the rear service lane. The site occupies an area of approximately 3,700m^2.

No. 2 William Street is currently occupied by an old residential flat building comprised of 6 residential units. An open, unmarked concrete car parking area is provided for residents behind the building, accessed directly via the rear service lane.

Nos 4-10 & 22 William Street are occupied by five residential dwelling houses, each comprised with a vehicle garage accessed directly via the rear service lane.

No. 12 William Street is currently occupied by a factory building with a floor area estimated to be approximately 850m^2. Vehicular access to the site is provided via the rear service lane and also a single driveway in William Street.

Proposed Development

The planning proposal seeks to divide the subject site into two sites and demolish the existing buildings in order to facilitate the construction of two new residential apartment developments.

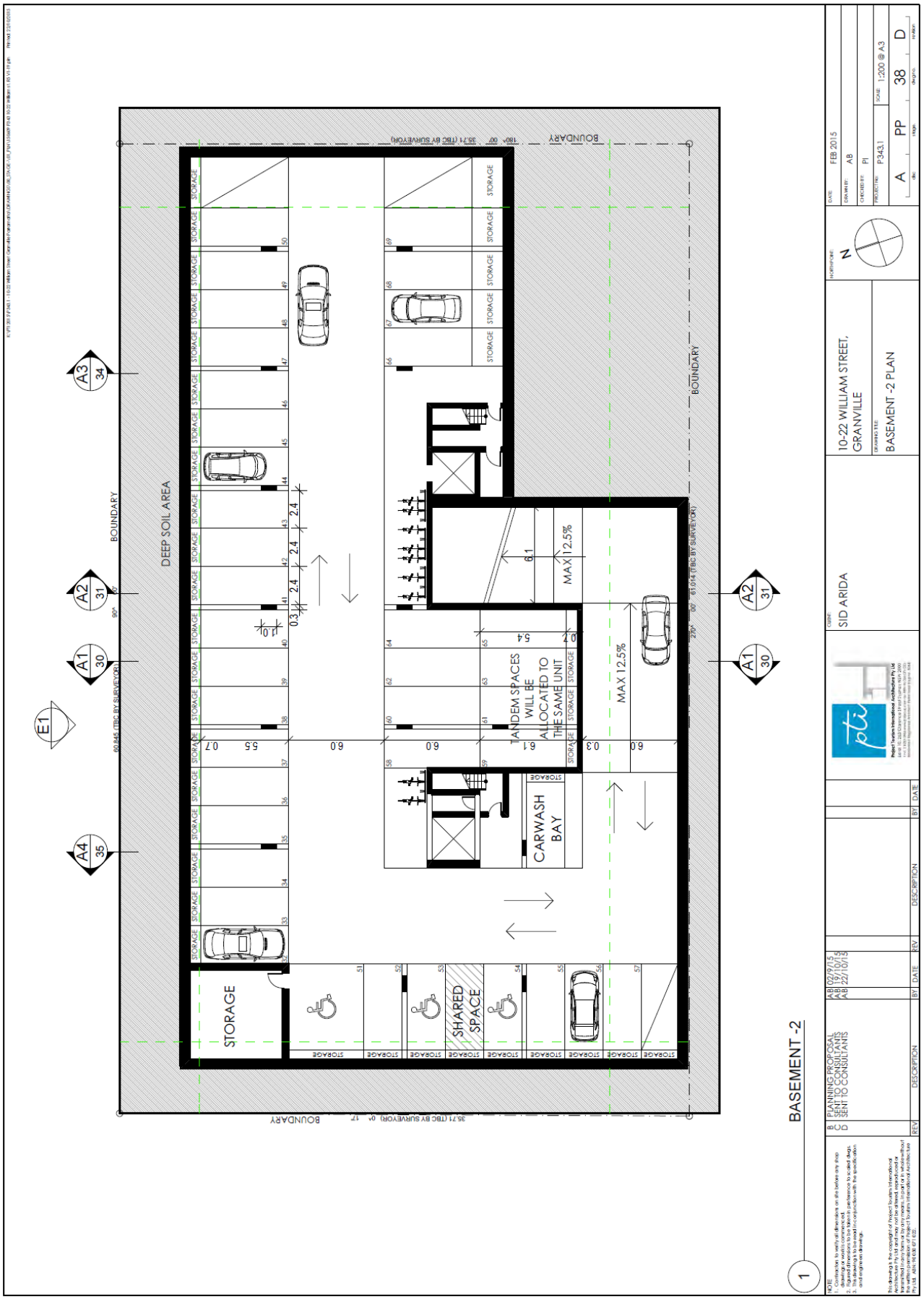
A total of 108 apartments are proposed in four new buildings on the two sites as follows:

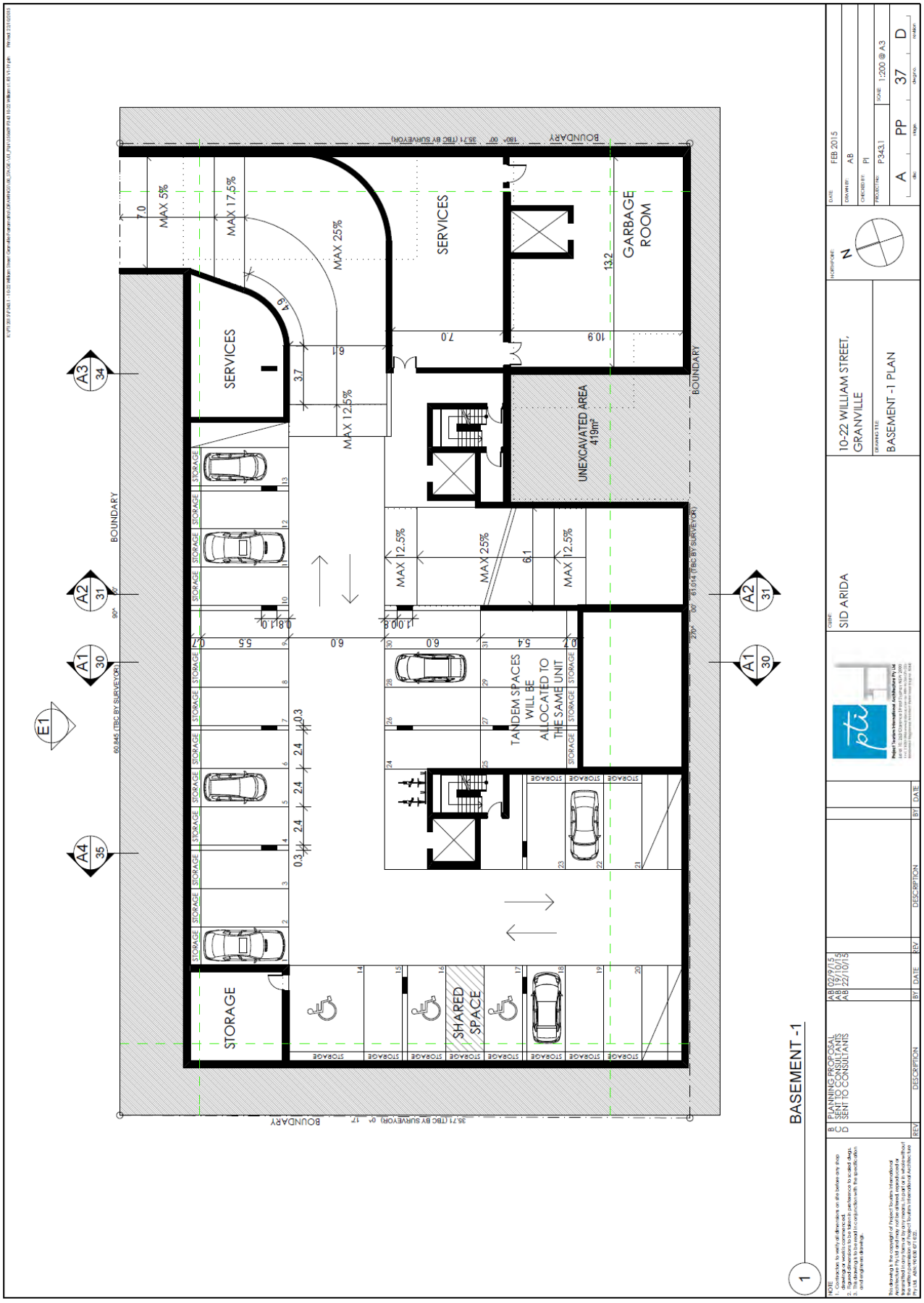
	Site 1 **10-22 William St, Granville**	**Site 2** **2-8 William St, Granville**
1 bedroom apartments:	14	10
2 bedroom apartments:	45	34
3 bedroom apartments:	4	1
TOTAL APARTMENTS:	**63**	**45**

Off-street car parking for both sites is to be provided in separate basement car parking areas, with respective vehicular access driveways located in William Street. The car parking and vehicular access arrangements will ultimately be designed in accordance with Council's requirements as well as the relevant standards and guidelines.

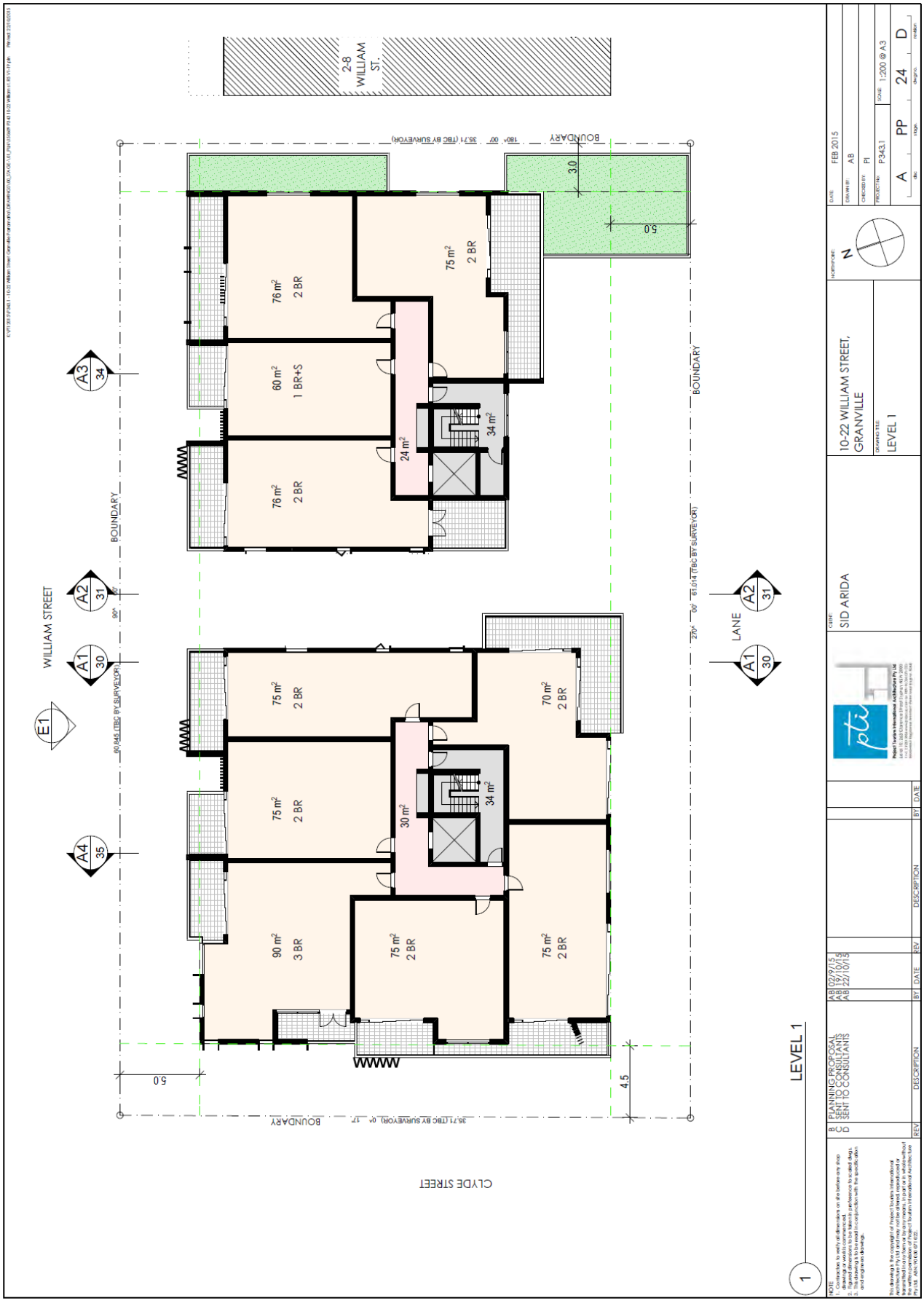
Garbage collection is expected to be collected from the garbage collection room which is located on the ground floor level at the rear of the site fronting the rear service lane.

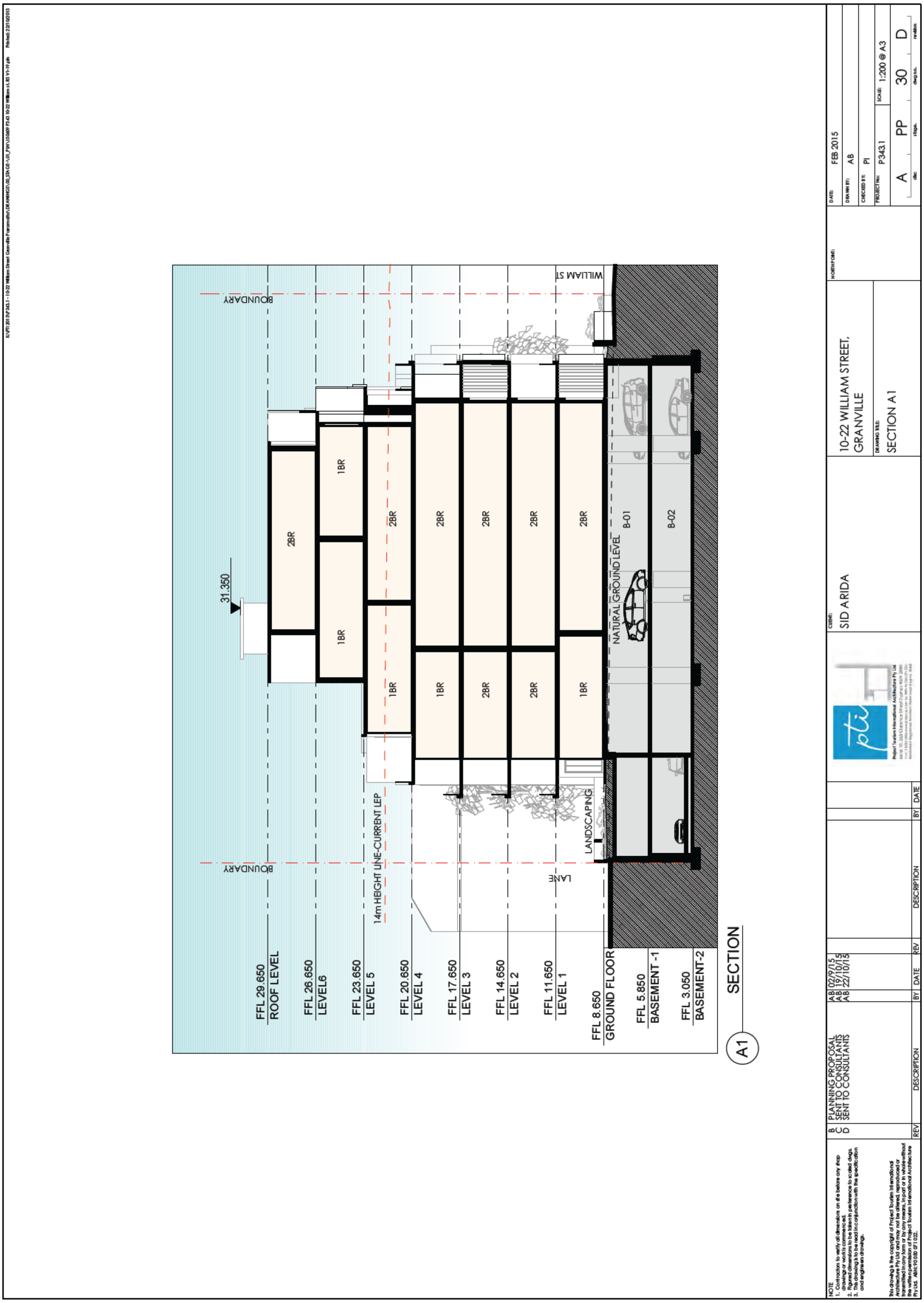
Plans of the proposed development have been prepared by *Project Tourism International Architecture Pty Ltd* and are reproduced in the following pages.


BOUNDARY
DEEP SOIL AREA
STORAGE
SHARED SPACE
TANDEM SPACES WILL BE ALLOCATED TO THE SAME UNIT
CARWASH BAY
MAX 12.5%
BOUNDARY
BASEMENT -2
10-22 WILLIAM STREET, GRANVILLE
BASEMENT -2 PLAN
SID ARIDA
FEB 2015
1:200 @ A3
P343.1
38
D

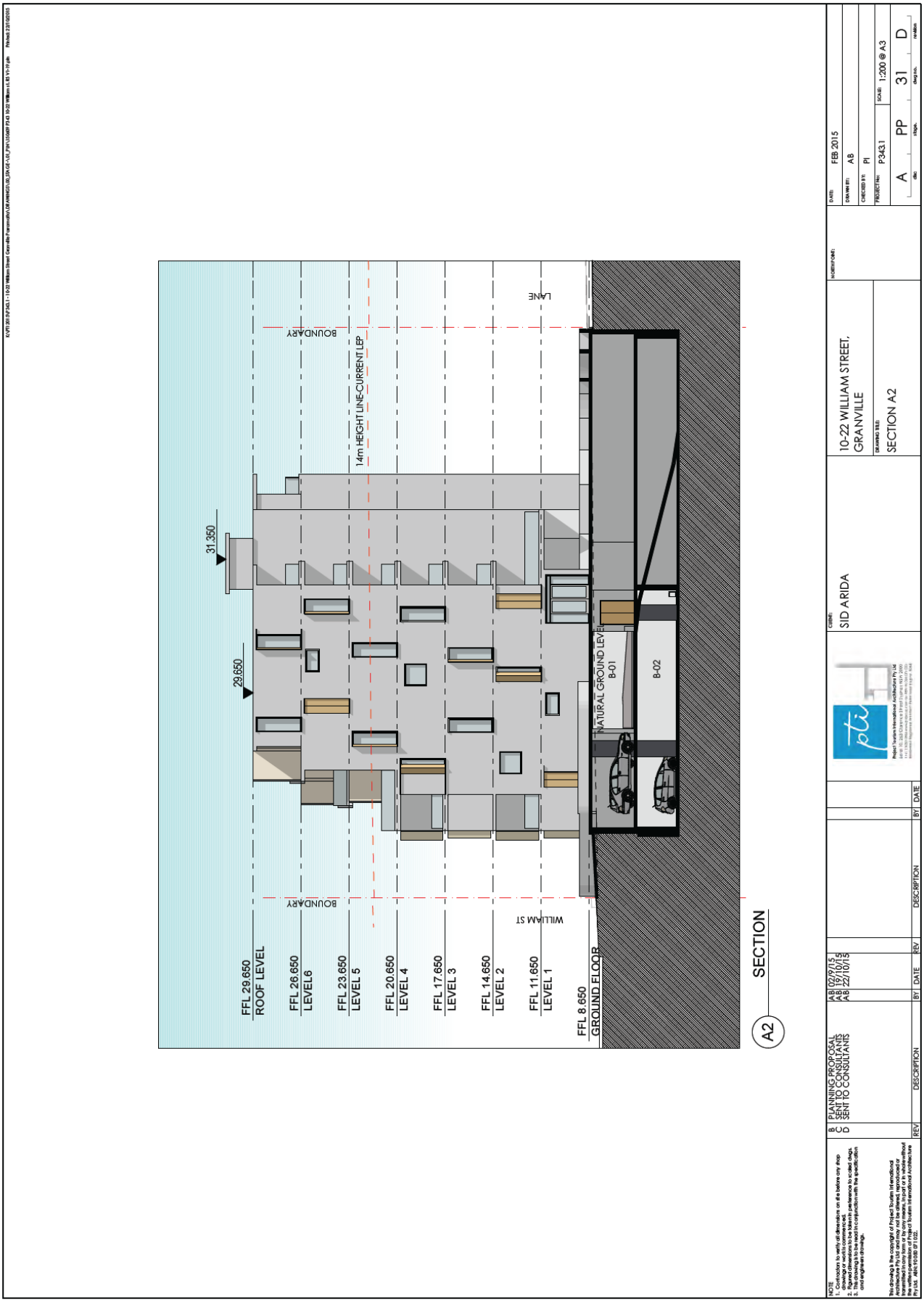

BOUNDARY
SERVICES
MAX 5%
MAX 17.5%
MAX 25%
MAX 12.5%
SERVICES
GARBAGE ROOM
UNEXCAVATED AREA 419m²
STORAGE
SHARED SPACE
TANDEM SPACES WILL BE ALLOCATED TO THE SAME UNIT
BOUNDARY
BOUNDARY
BASEMENT -1
10-22 WILLIAM STREET, GRANVILLE
BASEMENT -1 PLAN
SID ARIDA
FEB 2015
P343.1
1:200 @ A3
A
PP
37
D


2-8 WILLIAM ST.
WILLIAM STREET
CLYDE STREET
LANE
BOUNDARY
MAX 5%
MAX 17.5%
MAX 25%
GARBAGE COLLECTION ROOM
DEEP SOIL LANDSCAPING
SET BACK LINE
78 m² 2 BR
50 m² 1 BR
75 m² 2 BR
30 m²
26 m²
59 m²
57 m² 1 BR
GROUND FLOOR
10-22 WILLIAM STREET, GRANVILLE
SID ARIDA
FEB 2015
P343.1
1:200 @ A3
A
PP
23
D


2-8 WILLIAM ST.
BOUNDARY
WILLIAM STREET
LANE
CLYDE STREET
76 m² 2 BR
75 m² 2 BR
60 m² 1 BR+S
24 m²
34 m²
70 m² 2 BR
30 m²
90 m² 3 BR
5.0
3.0
4.5
A1 30
A2 31
A3 34
A4 35
E1
LEVEL 1
10-22 WILLIAM STREET, GRANVILLE
SID ARIDA
PLANNING PROPOSAL SENT TO CONSULTANTS
SENT TO CONSULTANTS



10-22 WILLIAM STREET, GRANVILLE
SID ARIDA
SECTION A1
SECTION
A1
FFL 29.650 ROOF LEVEL
FFL 26.650 LEVEL6
FFL 23.650 LEVEL 5
FFL 20.650 LEVEL 4
FFL 17.650 LEVEL 3
FFL 14.650 LEVEL 2
FFL 11.650 LEVEL 1
FFL 8.650 GROUND FLOOR
FFL 5.850 BASEMENT -1
FFL 3.050 BASEMENT-2
14m HEIGHT LINE-CURRENT LEP
NATURAL GROUND LEVEL
LANDSCAPING
BOUNDARY
LANE
WILLIAM ST
31.350
B-01
B-02
FEB 2015
AB
PI
P343.1
1:200 @ A3
A
PP
30
D
B PLANNING PROPOSAL
C SENT TO CONSULTANTS AB 19/10/15
D SENT TO CONSULTANTS AB 22/10/15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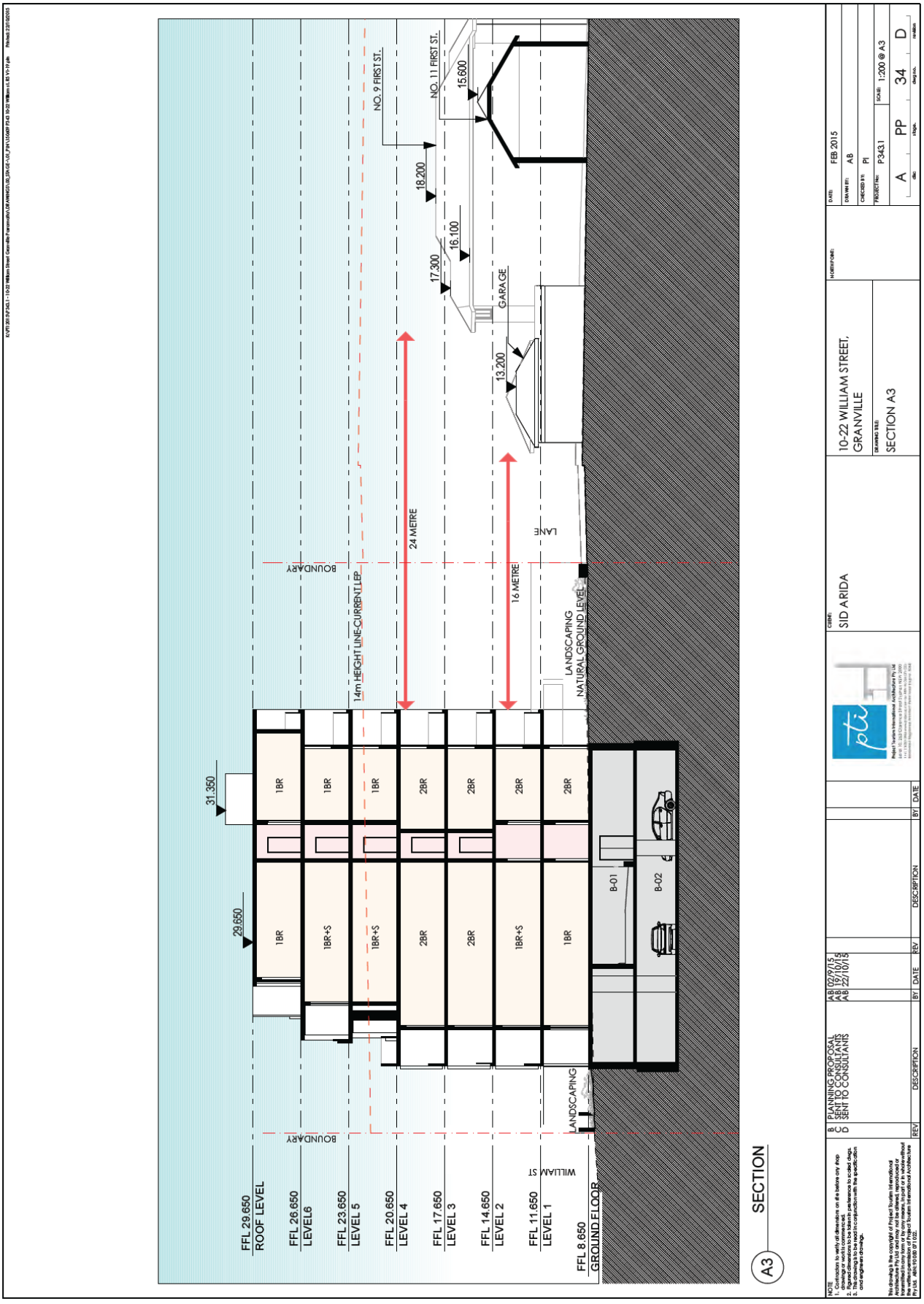
ROOF LEVEL
FFL 26.650
LEVEL6
FFL 23.650
LEVEL 5
FFL 20.650
LEVEL 4
FFL 17.650
LEVEL 3
FFL 14.650
LEVEL 2
FFL 11.650
LEVEL 1
FFL 8.650
GROUND FLOOR
31.350
29.650
BOUNDARY
BOUNDARY
14m HEIGHT LINE-CURRENT LEP
WILLIAM ST
LANE
NATURAL GROUND LEVEL
B-01
B-02
SECTION
A2
SID ARIDA
10-22 WILLIAM STREET,
GRANVILLE
SECTION A2
FEB 2015
AB
PI
P343.1
1:200 @ A3
A
PP
31
D
B PLANNING PROPOSAL AB 02/9/15
C SENT TO CONSULTANTS AB 19/10/15
D SENT TO CONSULTANTS AB 22/10/15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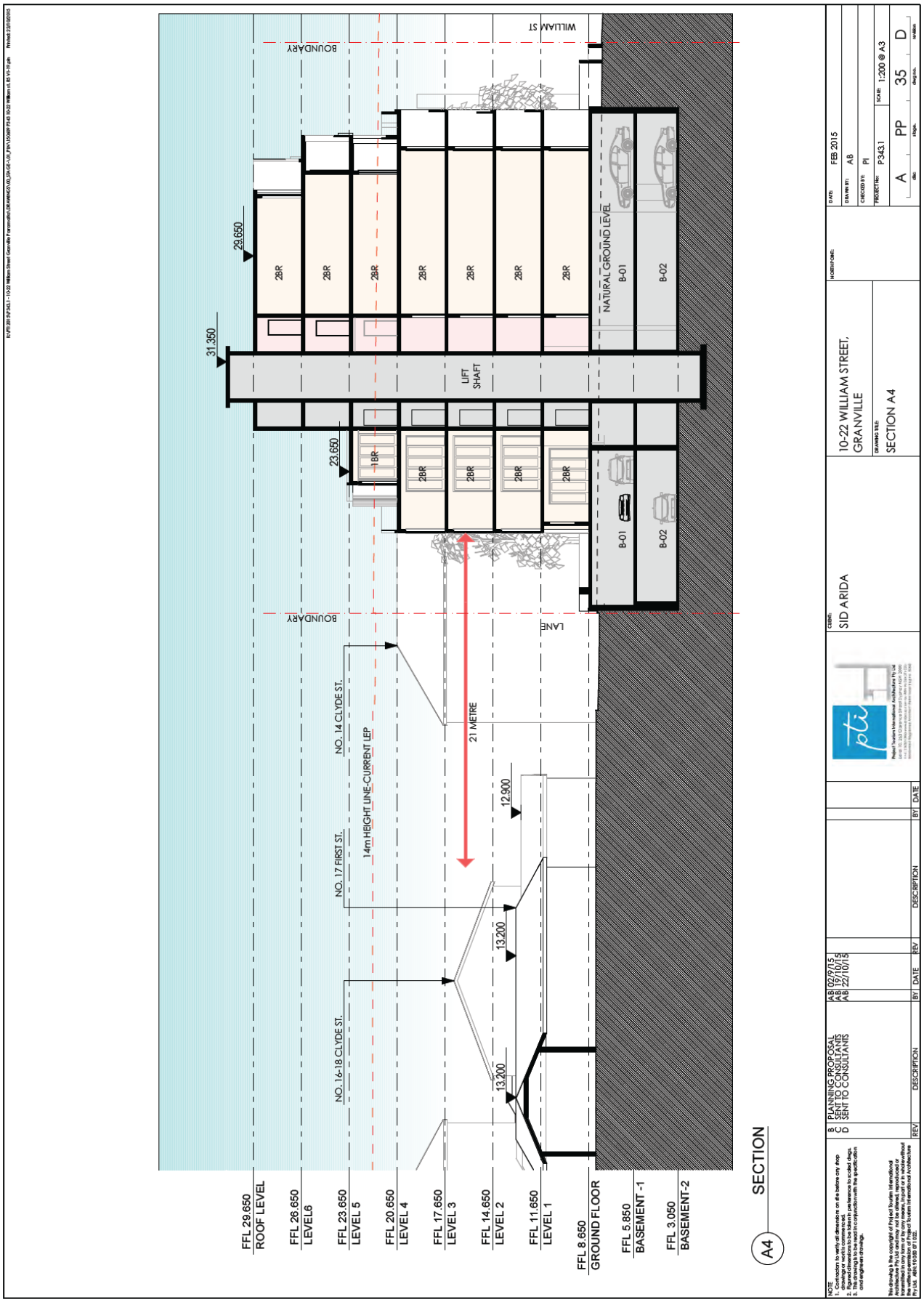
ROOF LEVEL
FFL 26.650
LEVEL6
FFL 23.650
LEVEL 5
FFL 20.650
LEVEL 4
FFL 17.650
LEVEL 3
FFL 14.650
LEVEL 2
FFL 11.650
LEVEL 1
FFL 8.650
GROUND FLOOR
31.350
29.650
1BR
1BR+S
2BR
B-01
B-02
BOUNDARY
14m HEIGHT LINE-CURRENT LEP
24 METRE
16 METRE
LANDSCAPING
NATURAL GROUND LEVEL
WILLIAM ST
LANE
NO. 9 FIRST ST.
NO. 11 FIRST ST.
18.200
17.300
16.100
15.600
13.200
GARAGE
A PLANNING PROPOSAL
B SENT TO CONSULTANTS
C SENT TO CONSULTANTS
AB 02/9/15
AB 19/10/15
AB 22/10/15
CLIENT:
SID ARIDA
10-22 WILLIAM STREET,
GRANVILLE
DRAWING TITLE:
SECTION A3
DATE: FEB 2015
DRAWN BY: AB
CHECKED BY: PI
PROJECT No: P3431
SCALE: 1:200 @ A3
A PP 34 D


WILLIAM ST
BOUNDARY
LANE
29.650
31.350
23.650
12.900
13.200
13.200
28R
18R
LIFT SHAFT
NATURAL GROUND LEVEL
B-01
B-02
NO. 14 CLYDE ST.
NO. 17 FIRST ST.
NO. 16-18 CLYDE ST.
14m HEIGHT LINE-CURRENT LEP
21 METRE
FFL 29.650 ROOF LEVEL
FFL 26.650 LEVEL6
FFL 23.650 LEVEL 5
FFL 20.650 LEVEL 4
FFL 17.650 LEVEL 3
FFL 14.650 LEVEL 2
FFL 11.650 LEVEL 1
FFL 8.650 GROUND FLOOR
FFL 5.850 BASEMENT -1
FFL 3.050 BASEMENT-2
A4 SECTION
PLANNING PROPOSAL
ISSUED TO CONSULTANTS
SENT TO CONSULTANTS
02/9/15
19/10/15
22/10/15
CLIENT: SID ARIDA
10-22 WILLIAM STREET, GRANVILLE
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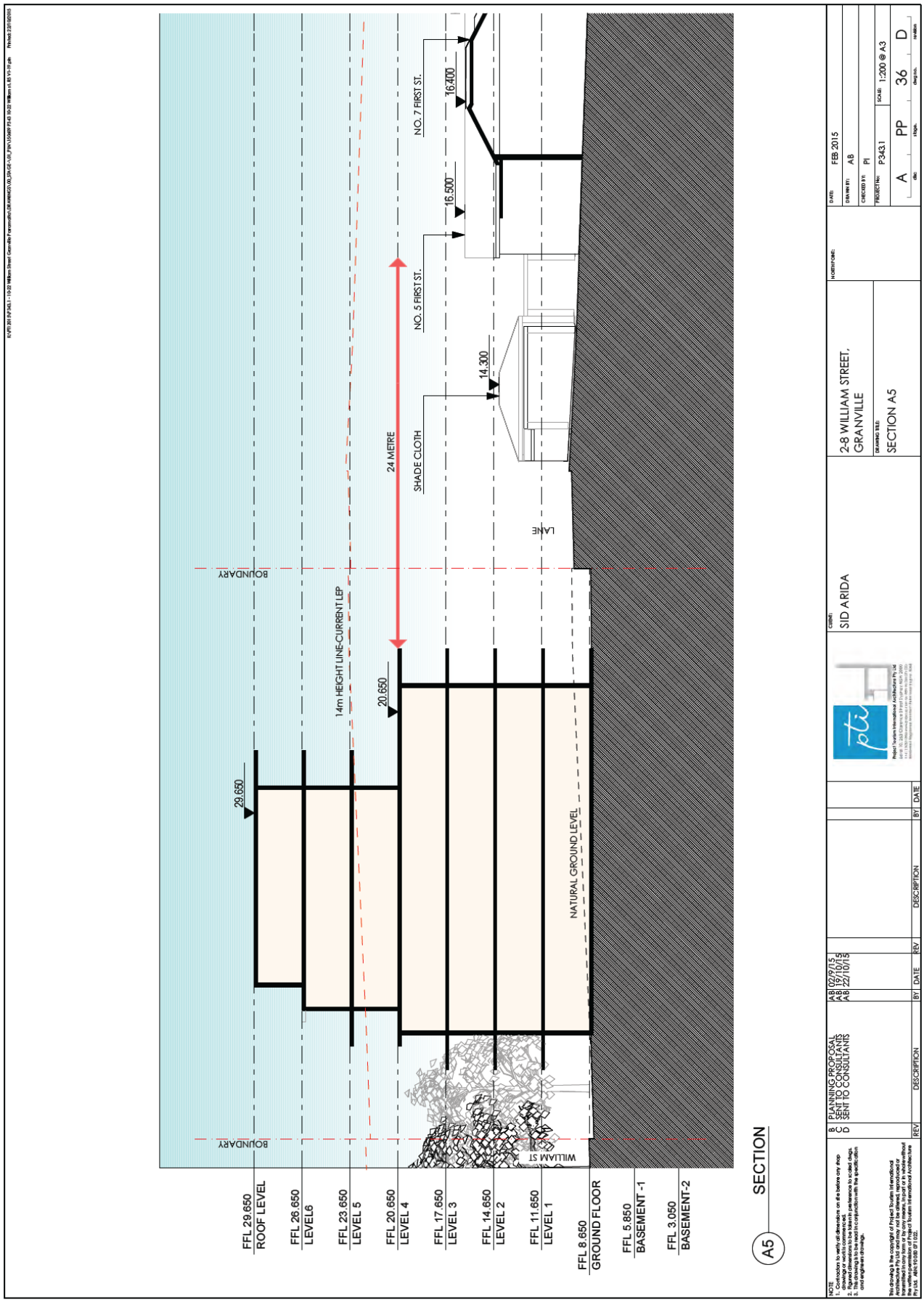
A PP 35 D


FFL 29.650
ROOF LEVEL
FFL 26.650
LEVEL6
FFL 23.650
LEVEL 5
FFL 20.650
LEVEL 4
FFL 17.650
LEVEL 3
FFL 14.650
LEVEL 2
FFL 11.650
LEVEL 1
FFL 8.650
GROUND FLOOR
FFL 5.850
BASEMENT -1
FFL 3.050
BASEMENT-2
29.650
20.650
14.300
16.500
16.400
14m HEIGHT LINE-CURRENT LEP
24 METRE
SHADE CLOTH
NO. 5 FIRST ST.
NO. 7 FIRST ST.
BOUNDARY
BOUNDARY
LANE
WILLIAM ST
NATURAL GROUND LEVEL
SECTION
A5
SID ARIDA
2-8 WILLIAM STREET, GRANVILLE
SECTION A5
FEB 2015
AB
PI
P343.1
1:200 @ A3
A
PP
36
D
B. PLANNING PROPOSAL AB 02/9/15
C. SENT TO CONSULTANTS AB 19/10/15
D. SENT TO CONSULTANTS AB 22/10/15

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.

Parramatta Road is classified by the RMS as a *State Road* and provides the key east-west road link in the area, linking Sydney CBD and Granville. It typically carries two traffic lanes in each direction in the vicinity of the site, with opposing traffic flows separated by a central median island. Kerbside parking is generally prohibited along both sides of the road.

Bold Street, Railway Parade, Memorial Drive and Clyde Street are classified by the RMS as *Regional Roads* which provide the key north-south road link in the area, linking Parramatta Road to Rawson Road/Wellington Road/Ferndell Street. The route typically carries one traffic lane in each direction in the vicinity of the site, with kerbside parking generally permitted along both sides of these roads.

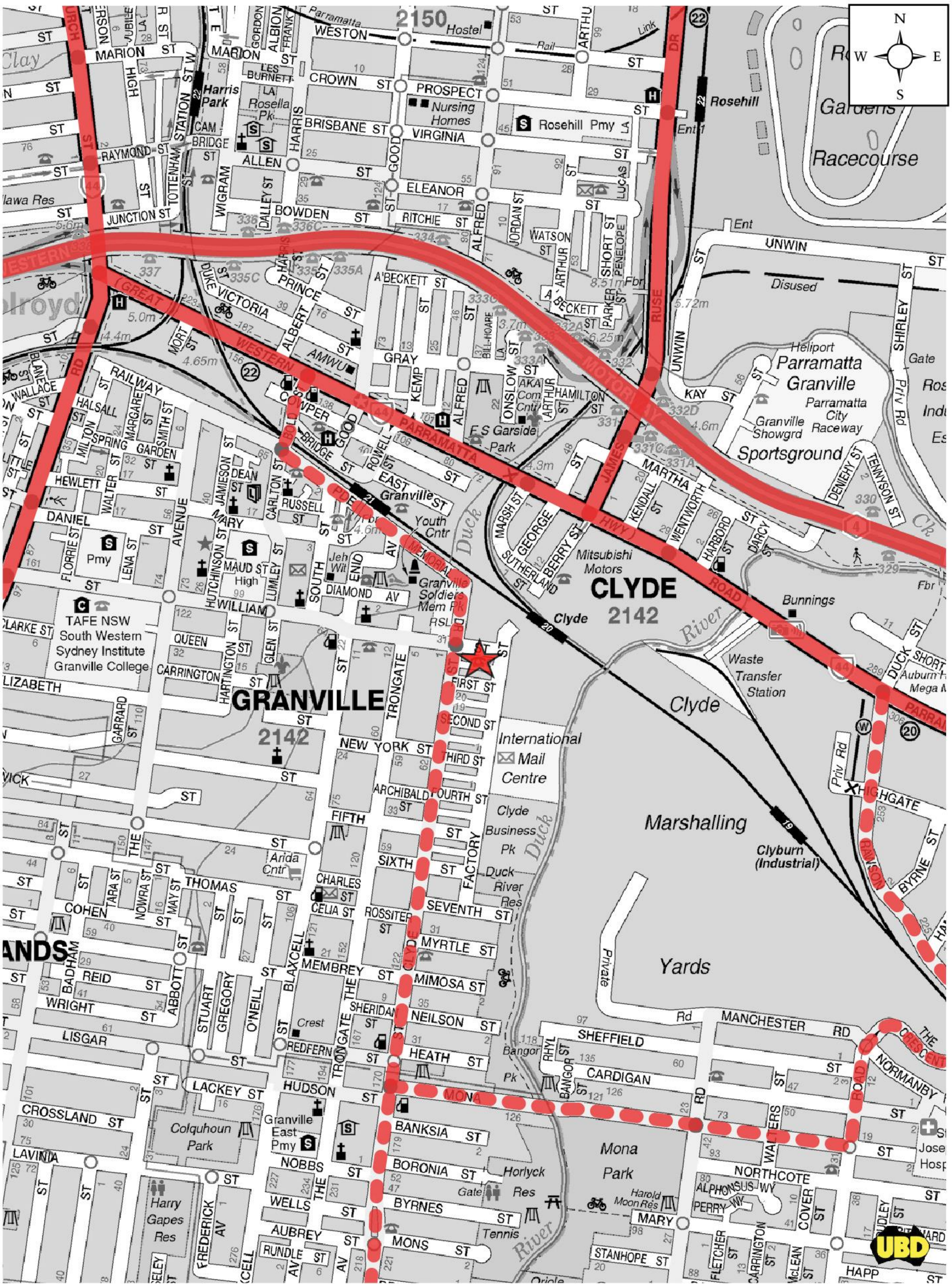
William Street and Factory Street are local, unclassified roads which are primarily used to provide vehicular and pedestrian access to frontage properties. Kerbside parking is generally permitted along both sides of both roads.

The rear service lane behind the site connects between Clyde Street and Factory Street, and is used primarily to provide rear pedestrian and vehicular access to properties fronting William Street (i.e. the subject site) and First Street. Kerbside parking is not formally restricted, though access to existing properties are required to be maintained at all times.

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 50 km/h SPEED LIMIT which applies to William Street, Clyde Street, Factory Street and all other local roads in the area


N
S
E
W
2150
Rosehill Gardens Racecourse
GRANVILLE
2142
CLYDE
2142
Clyde
Marshalling
Yards
International Mail Centre
Clyde Business Pk
Duck River
Mona Park
Granville Parramatta City Raceway
Sportsground
Mitsubishi Motors
Bunnings
Waste Transfer Station
Clyburn (Industrial)
TAFE NSW South Western Sydney Institute Granville College
Colquhoun Park
Harry Gapes Res
Parramatta Granville
Heliport
UNWIN
PARRAMATTA RD
GREAT WESTERN HWY
JAMES RUSE DR
CLYDE ST
MONA ST
FIRST ST
SECOND ST
THIRD ST
FOURTH ST
FIFTH
SIXTH
SEVENTH ST
MANCHESTER RD
SHEFFIELD
CARDIGAN
UBD

Key:

State Road

Regional Road

VARGA TRAFFIC PLANNING Pty Ltd

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ROAD HIERARCHY

FIGURE 3


N
W
E
S
MEMORIAL
AVE
ENID
CK
SUTHERLAND
GEORGE
ST
BERRY
DR
DIAMOND ST
DUCK
MEMORIAL DR
CLYDE STATION
WILLIAM
50
THE TRONGATE
FIRST ST
SECOND ST
NEW YORK ST
FACTORY
THIRD ST
CLYDE
ARCHIBALD ST
FOURTH ST
RIVER
DUCK
Key:
Give Way Sign
Traffic Signal
One-Way
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
EXISTING TRAFFIC CONTROLS
FIGURE 4

- TRAFFIC SIGNALS in William Street where it intersects with Clyde Street/Memorial Drive, with all turning movements permitted.

Existing Public Transport Services

The existing public transport services available to the site are illustrated on Figure 5.

The subject site is conveniently located within 150 metres walking distance (approx. 2 minutes) to the Clyde Railway Station. Clyde Station is a major railway interchange that services the T1 North Shore, Northern & Western Line, T2 Airport, Inner West & South Line and T6 Carlingford Line which operates between Carlingford, Richmond, Macarthur, Campbelltown, Liverpool, Emu Plains and Sydney CBD.

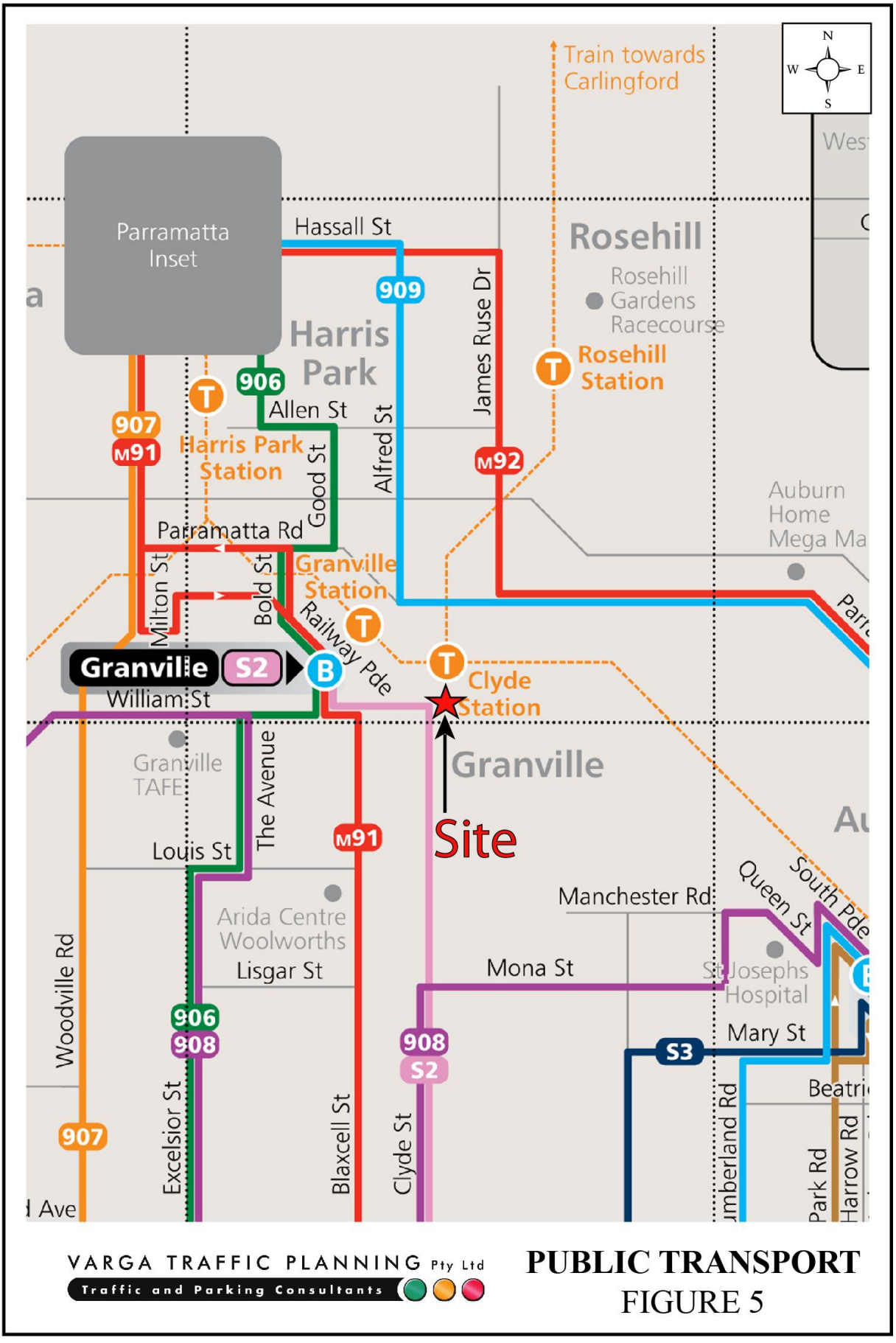
Furthermore, bus stops are located along both sides of Blaxcell Street, approximately 400m walking distance from the site, which are serviced by the high-frequency intra-regional *Metrobus M91* service between Parramatta and Hurstville. The *M91* service operates seven days per week with weekday services every 15 minutes (every 10 minutes during the morning and afternoon peak) and weekend services every 20 minutes.

On the above basis, it is considered that the site is well served by existing public transport services.

Existing Traffic Conditions

An indication of the existing traffic conditions on the road network in the vicinity of the site is provided by peak hour traffic surveys undertaken as part of this planning proposal traffic study. The traffic surveys were undertaken in William Street where it intersects with Clyde Street/Memorial Drive on Thursday 8th October, 2015. The results of the traffic surveys are reproduced in full in Appendix A and reveal that:

- two-way traffic flows in William Street, past the site frontage, are typically in the order of 150 vehicles per hour (vph) during peak periods



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PUBLIC TRANSPORT
FIGURE 5

- two-way traffic flows in William Street west of Clyde Street are typically in the order of 360 vph during peak periods

- two-way traffic flows in Memorial Drive are typically in the order of 800 vph during peak periods

- two-way traffic flows in Clyde Street are typically in the order of 1,050 vph during peak periods.

Projected Traffic Generation

An indication of the traffic generation potential of the planning proposal is provided by reference to the Roads and Maritime Services publication *Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation (October 2002).*

The RMS *Guidelines* are based on extensive surveys of a wide range of land uses and nominates the following traffic generation rates which are applicable to the planning proposal:

> **High Density Residential Flat Buildings in Sub-Regional Centres**
> 0.29 peak hour vehicle trips/dwelling

The RMS *Guidelines* also make the following observation in respect of high density residential flat buildings:

> **Definition**
> A *high density residential flat building* refers to a building containing 20 or more dwellings. This does not include aged or disabled persons housing. *High density residential flat buildings* are usually more than 5 levels, have basement level car parking and are located in close proximity to public transport services. The building may contain a component of commercial use.
>
> **Factors**
> The above rates include visitors, staff, service/delivery and on-street movements such as taxis and pick-up/set-down activities.

Application of the above traffic generation rates to the 108 residential apartments outlined in the planning proposal yields a traffic generation potential of approximately 31 peak hour vehicle trips.

That projected future level of traffic generation potential should however, be offset or *discounted* by the volume of traffic which could reasonably be expected to be generated by the existing uses of the site, in order to determine the *nett increase (or decrease)* in traffic generation potential of the site.

Application of the traffic generation rates nominated in the RMS *Guidelines* to the existing buildings on the site yields a traffic generation potential of approximately 17 peak hour vehicle trips as set out below:

	Existing Landuse	**RMS Traffic Generation Rate**	**Traffic Generation Potential**
No. 2 William St	6 × residential units	0.85 vph/dwelling	5.1 vehicle trips
No. 4-10 & 22 William St	5 × residential dwellings	0.6 vph/dwelling	3.0 vehicle trips
No. 12 William St	Factory (~850m^2)	1.0 vph/100m^2 GFA	8.5 vehicle trips

TOTAL: 16.6 peak hour vehicle trips

Accordingly, it is likely that the planning proposal will result in a *nett increase* in the traffic generation potential of the site of approximately 15 peak hour vehicle trips as set out below:

Projected Nett Increase in Peak Hour Traffic Generation Potential of the site as a consequence of the development proposal

Projected Future Traffic Generation Potential:	31.3 vehicle trips
Less Existing Traffic Generation Potential:	-16.6 vehicle trips
NETT INCREASE IN TRAFFIC GENERATION POTENTIAL:	**14.7 vehicle trips**

For the purposes of this assessment however, it has been assumed that *all* of the projected future traffic flows of 31 peak hour vehicle trips will be new or *additional* to the existing traffic flows currently using the adjacent road network.

That projected increase in the traffic generation potential of the site as a consequence of the planning proposal is minimal, consistent with the Council's zoning objectives of the subject

site and will clearly not have any unacceptable traffic implications in terms of road network capacity, as is demonstrated by the following section of this report.

Traffic Implications - Road Network Capacity

The traffic implications of development/planning proposals primarily concern the effects that any *additional* traffic flows may have on the operational performance of the nearby road network. Those effects can be assessed using the SIDRA program which is widely used by the RMS and many LGA's for this purpose. Criteria for evaluating the results of SIDRA analysis are reproduced in the following pages.

The results of the SIDRA analysis of the William Street, Clyde Street and Memorial Drive intersection is summarised in Table 3.1 below, revealing that:

- the intersection currently operates at *Level of Service "B"* under the existing traffic demands with total average vehicle delays in the order of 21 seconds/vehicle

- under the projected future traffic demands expected to be generated by the planning proposal, the intersection is expected to continue to operate at *Level of Service "B",* with increases in average vehicle delays of ***less than*** 1 second/vehicle.

In the circumstances, it is clear that the planning proposal will not have any unacceptable traffic implications in terms of road network capacity.

TABLE 3.1 - RESULTS OF SIDRA ANALYSIS OF WILLIAM STREET, CLYDE STREET & MEMORIAL DRIVE

Key Indicators		Existing Traffic Demand		Projected Development Traffic Demand	
		AM	**PM**	**AM**	**PM**
Level of Service		B	B	B	B
Degree of Saturation		0.318	0.320	0.326	0.326
Average Vehicle Delay (secs/veh)					
Clyde Street (south)	L	18.0	17.0	18.6	17.1
	T	14.8	14.6	15.3	14.6
	R	20.2	20.3	20.7	20.3
William Street (east)	L	62.2	50.5	57.4	49.5
	T	58.9	47.0	54.6	46.2
	R	64.0	53.0	59.8	52.2
Memorial Drive (north)	L	17.8	17.8	18.3	17.8
	T	15.2	15.6	15.7	15.8
	R	19.7	20.7	20.3	20.8
William Street (west)	L	32.1	31.8	31.4	32.0
	T	27.7	27.2	27.0	27.4
	R	35.0	35.5	34.4	35.6
TOTAL AVERAGE VEHICLE DELAY		**20.8**	**21.5**	**21.8**	**21.6**
		WIL_CLYX		WIL_CLYP	

Criteria for Interpreting Results of Sidra 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.*

4. PARKING IMPLICATIONS

Existing Kerbside Parking Restrictions

The existing kerbside parking restrictions which apply to the road network in the vicinity of the site are illustrated on Figure 6 and comprise:

- NO STOPPING restrictions in the vicinity of the Clyde Street/Memorial Drive/William Street intersection

- NO PARKING restrictions along both sides of Memorial Drive

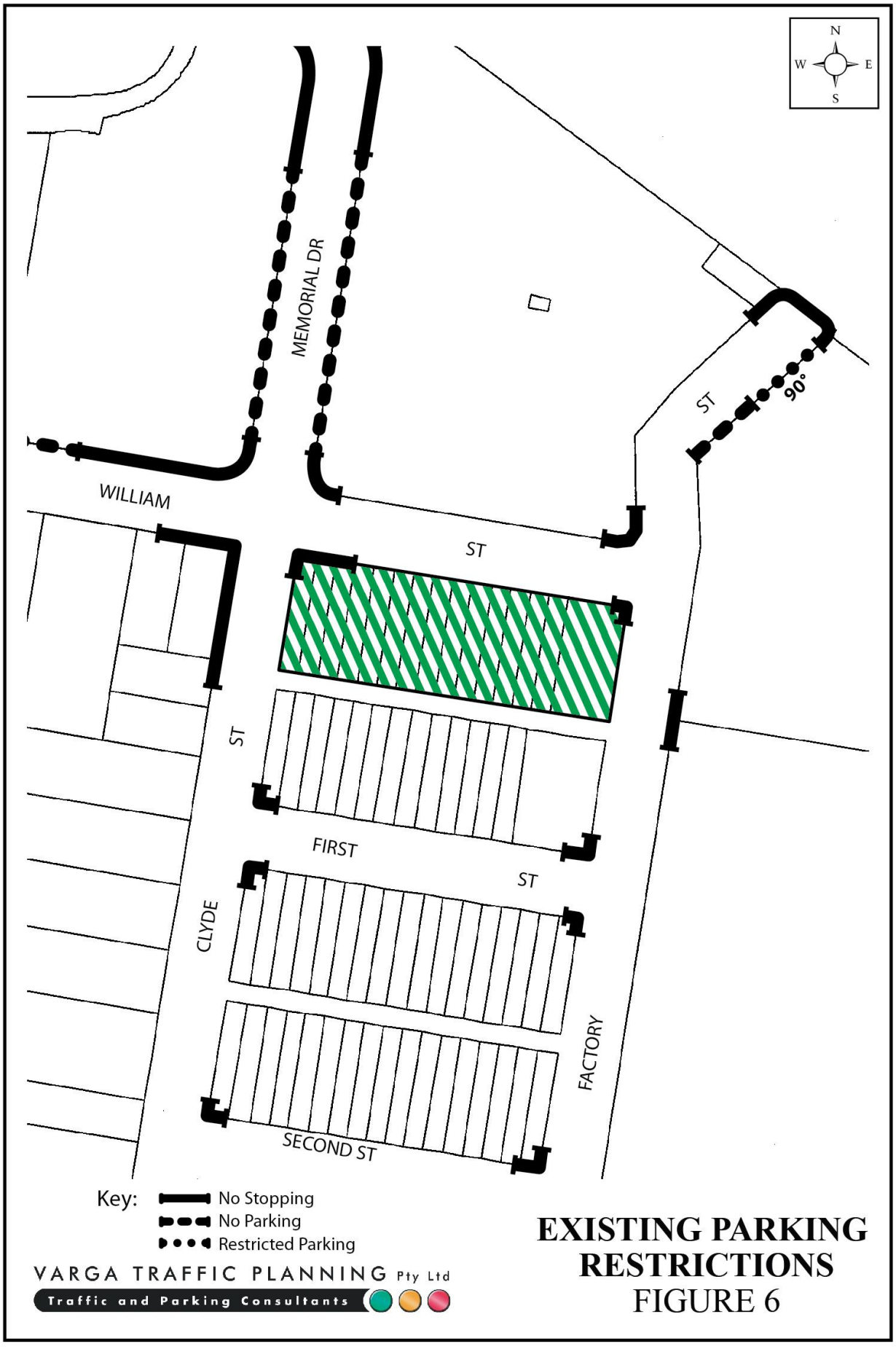
- generally UNRESTRICTED kerbside along all four site frontages and elsewhere throughout the local area.

Off-Street Car Parking Provisions

The off-street car parking requirements applicable to the planning proposal are specified in *State Environmental Planning Policy No 65 – Design Quality of Residential Flat Development (Amendment No 3), 2015* in the following terms:

> **30 Standards that cannot be used to refuse development consent or modification of development consent**
>
> (1) If an application for the modification of a development consent or a development application for the carrying out of development to which this Policy applies satisfies the following design criteria, the consent authority must not refuse the application because of those matters:
>
> a) if the car parking for the building will be equal to, or greater than, the recommended minimum amount of car parking specified in Part 3J of the Apartment Design Guide.

Reference is therefore made to the *Apartment Design Guide 2015, Section 3J – Bicycle and Car Parking* document which nominates the following car parking requirements applicable to residential developments located within 800 metres of a railway station in the Sydney metropolitan area:


N
W
E
S
MEMORIAL DR
WILLIAM
ST
ST
90°
ST
FIRST
ST
CLYDE
FACTORY
SECOND ST
Key:
No Stopping
No Parking
Restricted Parking
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
EXISTING PARKING RESTRICTIONS
FIGURE 6

Objective 3J-1

Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas

For development in the following locations:

- on sites that are within 800 metres of a railway station or light rail stop in the Sydney Metropolitan Area; or
- on land zoned, and sites within 400 metres of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre

the minimum car parking requirements for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less.

The car parking needs for a development must be provided off street.

Given the subject site is located within 150 metres of the Clyde Railway Station, comparison needs to be drawn between the off-street car parking requirements for residential flat buildings outlined in the *Parramatta DCP 2011* and also the RMS *Guidelines* to determine the *lesser* requirement. The relevant car parking rates outlined in those documents are reproduced below:

Parramatta DCP 2011 - Residential Flat Buildings (within 400m of a railway station)

1 space per 1 or 2 bedroom unit
1.2 spaces per 3 bedroom unit
2 spaces per 4 bedroom unit
Plus 0.25 space per dwelling for visitor parking
A car wash bay which may also be a visitor space

RMS Guidelines – High Density Residential Flat Buildings in Sub-Regional Centres

0.6 spaces per 1 bedroom unit
0.9 spaces per 2 bedroom unit
1.4 spaces per 3 bedroom unit
1 space per 5 units for visitor parking

Application of the above car parking requirements to the development proposal yields a minimum off-street car parking requirement of 67 and 47 spaces for Sites 1 and 2 respectively, as set out below:

Site 1: 10-22 William Street, Granville

	Parramatta DCP 2011	RMS Guidelines
Residents:	63.8 spaces	54.5 spaces
Visitors:	15.8 spaces	12.6 spaces
Total:	79.6 spaces	67.1 spaces
Lesser Car parking Requirement: 67.1 spaces		

Site 2: 2-8 William Street, Granville

	Parramatta DCP 2011	RMS Guidelines
Residents:	45.2 spaces	38.0 spaces
Visitors:	11.3 spaces	9.0 spaces
Total:	56.5 spaces	47.0 spaces
Lesser Car parking Requirement: 47.0 spaces		

That projected future car parking requirement will ultimately be satisfied in two separate basement car parking areas proposed on the site.

The geometric design layout of the future car parking facilities will also ultimately be designed to comply with the relevant requirements specified in the Standards Australia publication *Parking Facilities Part 1 - Off-Street Car Parking AS2890.1* and *Parking Facilities Part 6 - Off-Street Parking for People with Disabilities AS2890.6*.

Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- the planning proposal is expected to have a traffic generation potential of approximately 31 peak hour vehicle trips (for both sites combined) and is consistent with the zoning objectives of the site

- there is adequate capacity in the surrounding road network to cater for the traffic generated by the development

- preliminary concept plans, which have been prepared for the purposes of this planning proposal indicate the required number of car parking spaces and bicycle parking spaces can ultimately be provided on the site and in accordance with the relevant standards and guidelines, subject to the number of basement levels being excavated

- garbage collection is expected to be collected from the garbage collection room which is located on the ground floor level at the rear of the site fronting the rear service lane.

It is therefore concluded that the planning proposal will not have any unacceptable traffic, parking or servicing implications.

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 : 5796 GRANVILLE Clyde St
Day/Date : Thursday 8th October 2015

Lights

	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0645	5	44	5	2	10	34	15	90	0	0	2	3	**210**
0645 - 0700	12	43	1	1	13	29	16	94	2	1	1	1	**214**
0700 - 0715	13	73	2	0	7	15	20	92	2	1	1	2	**228**
0715 - 0730	8	73	0	4	9	31	19	124	2	0	4	5	**279**
0730 - 0745	5	82	0	2	3	21	24	127	0	0	5	4	**273**
0745 - 0800	5	50	0	8	15	35	24	102	2	0	2	7	**250**
0800 - 0815	15	74	4	2	10	36	29	103	3	0	3	5	**284**
0815 - 0830	14	74	1	4	8	38	27	102	0	0	5	9	**282**
0830 - 0845	17	41	4	7	7	37	50	92	3	1	6	2	**267**
0845 - 0900	11	69	1	4	4	58	57	91	0	1	6	4	**306**
0900 - 0915	13	52	4	3	5	40	55	82	3	0	6	4	**267**
0915 - 0930	5	51	0	7	2	30	30	73	1	0	3	4	**206**
Period End	**123**	**726**	**22**	**44**	**93**	**404**	**366**	**1172**	**18**	**4**	**44**	**50**	**3066**

Lights

	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Peak Time	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0730	38	233	8	7	39	109	70	400	6	2	8	11	**931**
0645 - 0745	38	271	3	7	32	96	79	437	6	2	11	12	**994**
0700 - 0800	31	278	2	14	34	102	87	445	6	1	12	18	**1030**
0715 - 0815	33	279	4	16	37	123	96	456	7	0	14	21	**1086**
0730 - 0830	39	280	5	16	36	130	104	434	5	0	15	25	**1089**
0745 - 0845	51	239	9	21	40	146	130	399	8	1	16	23	**1083**
0800 - 0900	57	258	10	17	29	169	163	388	6	2	20	20	**1139**
0815 - 0915	55	236	10	18	24	173	189	367	6	2	23	19	**1122**
0830 - 0930	46	213	9	21	18	165	192	338	7	2	21	14	**1046**
PEAK HOUR	**57**	**258**	**10**	**17**	**29**	**169**	**163**	**388**	**6**	**2**	**20**	**20**	**1139**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0645	0	3	0	0	0	0	0	7	0	0	0	0	**10**
0645 - 0700	3	4	1	0	0	0	0	1	0	1	0	1	**11**
0700 - 0715	0	1	0	0	0	0	0	2	1	1	0	1	**6**
0715 - 0730	1	8	0	0	0	0	0	1	1	1	0	1	**13**
0730 - 0745	0	3	0	0	0	1	1	1	0	1	0	0	**7**
0745 - 0800	0	4	0	0	0	0	0	3	1	0	0	0	**8**
0800 - 0815	0	0	0	0	0	0	0	5	0	0	0	0	**5**
0815 - 0830	0	3	0	0	0	1	0	2	1	0	0	0	**7**
0830 - 0845	2	2	0	0	0	0	1	3	1	0	0	0	**9**
0845 - 0900	0	2	0	0	1	0	0	1	1	1	0	1	**7**
0900 - 0915	0	4	0	0	0	1	1	2	0	2	0	0	**10**
0915 - 0930	0	3	0	0	0	2	0	3	3	1	0	0	**12**
Period End	**6**	**37**	**1**	**0**	**1**	**5**	**3**	**31**	**9**	**8**	**0**	**4**	**105**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0730	4	16	1	0	0	0	0	11	2	3	0	3	**40**
0645 - 0745	4	16	1	0	0	1	1	5	2	4	0	3	**37**
0700 - 0800	1	16	0	0	0	1	1	7	3	3	0	2	**34**
0715 - 0815	1	15	0	0	0	1	1	10	2	2	0	1	**33**
0730 - 0830	0	10	0	0	0	2	1	11	2	1	0	0	**27**
0745 - 0845	2	9	0	0	0	1	1	13	3	0	0	0	**29**
0800 - 0900	2	7	0	0	1	1	1	11	3	1	0	1	**28**
0815 - 0915	2	11	0	0	1	2	2	8	3	3	0	1	**33**
0830 - 0930	2	11	0	0	1	3	2	9	5	4	0	1	**38**
PEAK HOUR	**2**	**7**	**0**	**0**	**1**	**1**	**1**	**11**	**3**	**1**	**0**	**1**	**28**

Combined

	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0645	5	47	5	2	10	34	15	97	0	0	2	3	**220**
0645 - 0700	15	47	2	1	13	29	16	95	2	2	1	2	**225**
0700 - 0715	13	74	2	0	7	15	20	94	3	2	1	3	**234**
0715 - 0730	9	81	0	4	9	31	19	125	3	1	4	6	**292**
0730 - 0745	5	85	0	2	3	22	25	128	0	1	5	4	**280**
0745 - 0800	5	54	0	8	15	35	24	105	3	0	2	7	**258**
0800 - 0815	15	74	4	2	10	36	29	108	3	0	3	5	**289**
0815 - 0830	14	77	1	4	8	39	27	104	1	0	5	9	**289**
0830 - 0845	19	43	4	7	7	37	51	95	4	1	6	2	**276**
0845 - 0900	11	71	1	4	5	58	57	92	1	2	6	5	**313**
0900 - 0915	13	56	4	3	5	41	56	84	3	2	6	4	**277**
0915 - 0930	5	54	0	7	2	32	30	76	4	1	3	4	**218**
Period End	**129**	**763**	**23**	**44**	**94**	**409**	**369**	**1203**	**27**	**12**	**44**	**54**	**3171**

Combined

	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0730	42	249	9	7	39	109	70	411	8	5	8	14	**971**
0645 - 0745	42	287	4	7	32	97	80	442	8	6	11	15	**1031**
0700 - 0800	32	294	2	14	34	103	88	452	9	4	12	20	**1064**
0715 - 0815	34	294	4	16	37	124	97	466	9	2	14	22	**1119**
0730 - 0830	39	290	5	16	36	132	105	445	7	1	15	25	**1116**
0745 - 0845	53	248	9	21	40	147	131	412	11	1	16	23	**1112**
0800 - 0900	59	265	10	17	30	170	164	399	9	3	20	21	**1167**
0815 - 0915	57	247	10	18	25	175	191	375	9	5	23	20	**1155**
0830 - 0930	48	224	9	21	19	168	194	347	12	6	21	15	**1084**
PEAK HOUR	**59**	**265**	**10**	**17**	**30**	**170**	**164**	**399**	**9**	**3**	**20**	**21**	**1167**

R.O.A.R DATA

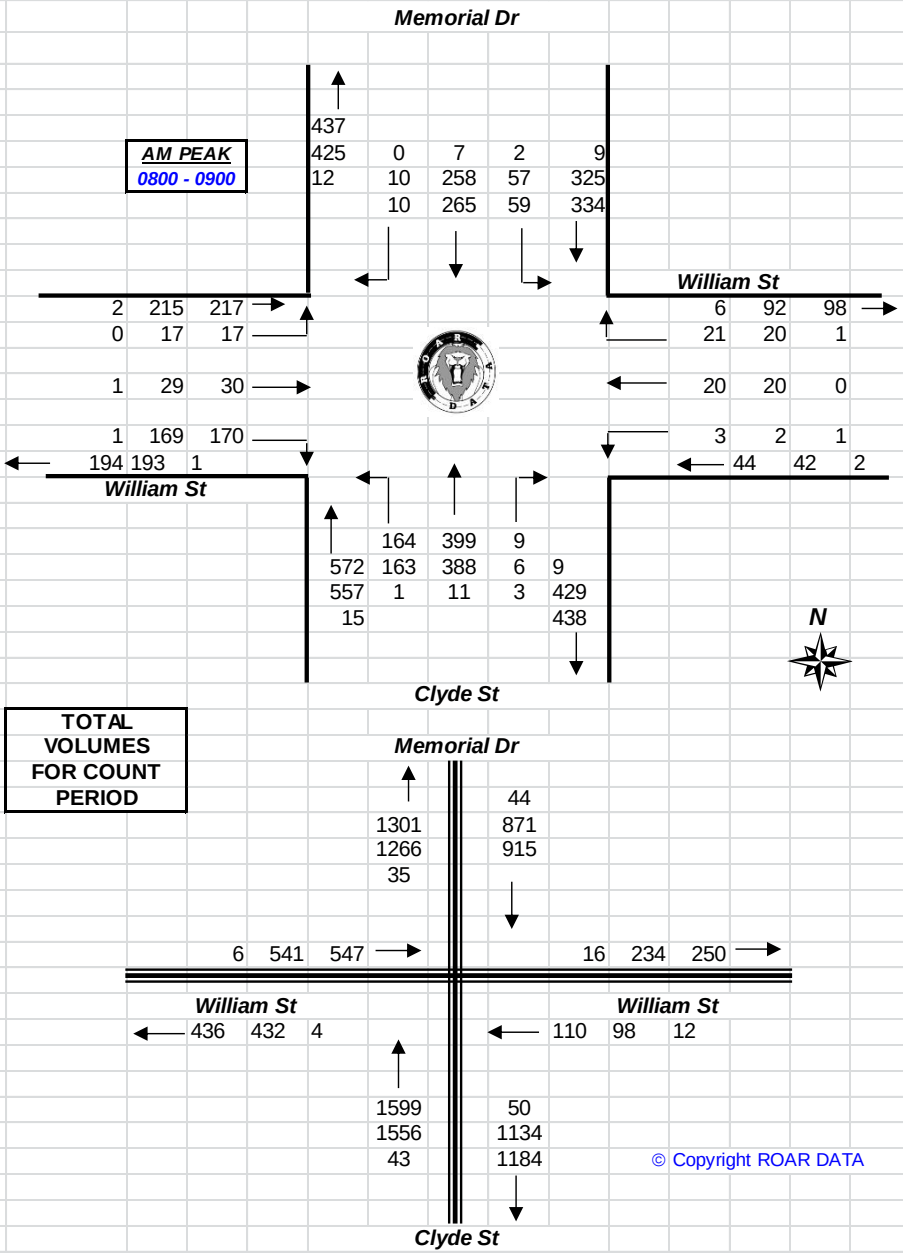
Reliable, Original & Authentic Results

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

Client : Varga Traffic Planning
Job No/Name : 5796 GRANVILLE Clyde St
Day/Date : Thursday 8th October 2015

Peds	NORTH	WEST	SOUTH	EAST	
	Memorial Dr	*William St*	*Clyde St*	*William St*	
Time Per	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**TOT**
0630 - 0645	0	3	3	0	**6**
0645 - 0700	0	0	1	3	**4**
0700 - 0715	3	2	0	0	**5**
0715 - 0730	1	1	1	3	**6**
0730 - 0745	2	1	0	6	**9**
0745 - 0800	1	1	7	7	**16**
0800 - 0815	2	1	2	5	**10**
0815 - 0830	1	3	0	5	**9**
0830 - 0845	0	1	0	1	**2**
0845 - 0900	2	1	4	2	**9**
0900 - 0915	1	2	1	0	**4**
0915 - 0930	1	2	3	2	**8**
Period End	**14**	**18**	**22**	**34**	**88**

Peds	NORTH	WEST	SOUTH	EAST	
	Memorial Dr	*William St*	*Clyde St*	*William St*	
Peak Per	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**TOT**
0630 - 0730	4	6	5	6	**21**
0645 - 0745	6	4	2	12	**24**
0700 - 0800	7	5	8	16	**36**
0715 - 0815	6	4	10	21	**41**
0730 - 0830	6	6	9	23	**44**
0745 - 0845	4	6	9	18	**37**
0800 - 0900	5	6	6	13	**30**
0815 - 0915	4	7	5	8	**24**
0830 - 0930	4	6	8	5	**23**
PEAK HR	**5**	**6**	**6**	**13**	**30**



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 : 5796 GRANVILLE Clyde St
Day/Date : Thursday 8th October 2015

Lights	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1545	5	89	7	1	7	37	31	96	0	1	16	32	**322**
1545 - 1600	6	91	7	1	2	32	45	80	0	0	4	18	**286**
1600 - 1615	3	77	5	2	5	38	45	97	1	1	10	15	**299**
1615 - 1630	2	81	4	5	4	39	58	107	1	1	3	8	**313**
1630 - 1645	1	77	6	2	2	43	47	70	0	0	5	11	**264**
1645 - 1700	1	86	2	5	3	34	45	89	1	0	5	7	**278**
1700 - 1715	1	87	3	3	3	31	55	100	0	0	11	24	**318**
1715 - 1730	1	79	8	6	0	38	56	107	0	0	5	16	**316**
1730 - 1745	4	89	4	6	3	41	41	97	0	1	6	12	**304**
1745 - 1800	3	82	7	5	4	47	46	80	0	2	10	15	**301**
1800 - 1815	10	59	4	1	2	40	48	101	0	1	11	18	**295**
1815 - 1830	4	79	3	4	1	28	45	83	0	2	6	12	**267**
Period End	**41**	**976**	**60**	**41**	**36**	**448**	**562**	**1107**	**3**	**9**	**92**	**188**	**3563**

Lights	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Peak Time	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1630	16	338	23	9	18	146	179	380	2	3	33	73	**1220**
1545 - 1645	12	326	22	10	13	152	195	354	2	2	22	52	**1162**
1600 - 1700	7	321	17	14	14	154	195	363	3	2	23	41	**1154**
1615 - 1715	5	331	15	15	12	147	205	366	2	1	24	50	**1173**
1630 - 1730	4	329	19	16	8	146	203	366	1	0	26	58	**1176**
1645 - 1745	7	341	17	20	9	144	197	393	1	1	27	59	**1216**
1700 - 1800	9	337	22	20	10	157	198	384	0	3	32	67	**1239**
1715 - 1815	18	309	23	18	9	166	191	385	0	4	32	61	**1216**
1730 - 1830	21	309	18	16	10	156	180	361	0	6	33	57	**1167**
PEAK HOUR	**9**	**337**	**22**	**20**	**10**	**157**	**198**	**384**	**0**	**3**	**32**	**67**	**1239**

Heavies	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1545	0	2	0	0	0	0	0	0	1	0	0	0	**3**
1545 - 1600	1	0	0	0	0	0	0	0	1	1	0	0	**3**
1600 - 1615	0	1	0	0	0	0	0	1	1	0	0	0	**3**
1615 - 1630	0	1	0	0	0	0	0	0	0	1	0	0	**2**
1630 - 1645	2	0	0	0	0	0	0	0	0	0	0	0	**2**
1645 - 1700	0	0	0	0	0	0	0	1	1	0	0	0	**2**
1700 - 1715	0	0	0	0	0	0	0	0	0	1	0	0	**1**
1715 - 1730	0	1	0	0	0	0	0	1	0	0	0	0	**2**
1730 - 1745	0	0	0	0	0	0	1	0	1	0	0	0	**2**
1745 - 1800	0	0	0	0	0	0	0	0	2	1	0	0	**3**
1800 - 1815	0	0	0	0	0	0	0	0	1	0	1	0	**2**
1815 - 1830	0	4	0	0	0	0	0	1	1	0	0	0	**6**
Period End	**3**	**9**	**0**	**0**	**0**	**0**	**1**	**4**	**9**	**4**	**1**	**0**	**31**

Heavies	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1630	1	4	0	0	0	0	0	1	3	2	0	0	**11**
1545 - 1645	3	2	0	0	0	0	0	1	2	2	0	0	**10**
1600 - 1700	2	2	0	0	0	0	0	2	2	1	0	0	**9**
1615 - 1715	2	1	0	0	0	0	0	1	1	2	0	0	**7**
1630 - 1730	2	1	0	0	0	0	0	2	1	1	0	0	**7**
1645 - 1745	0	1	0	0	0	0	1	2	2	1	0	0	**7**
1700 - 1800	0	1	0	0	0	0	1	1	3	2	0	0	**8**
1715 - 1815	0	1	0	0	0	0	1	1	4	1	1	0	**9**
1730 - 1830	0	4	0	0	0	0	1	1	5	1	1	0	**13**
PEAK HOUR	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**3**	**2**	**0**	**0**	**8**

Combined	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1545	5	91	7	1	7	37	31	96	1	1	16	32	**325**
1545 - 1600	7	91	7	1	2	32	45	80	1	1	4	18	**289**
1600 - 1615	3	78	5	2	5	38	45	98	2	1	10	15	**302**
1615 - 1630	2	82	4	5	4	39	58	107	1	2	3	8	**315**
1630 - 1645	3	77	6	2	2	43	47	70	0	0	5	11	**266**
1645 - 1700	1	86	2	5	3	34	45	90	2	0	5	7	**280**
1700 - 1715	1	87	3	3	3	31	55	100	0	1	11	24	**319**
1715 - 1730	1	80	8	6	0	38	56	108	0	0	5	16	**318**
1730 - 1745	4	89	4	6	3	41	42	97	1	1	6	12	**306**
1745 - 1800	3	82	7	5	4	47	46	80	2	3	10	15	**304**
1800 - 1815	10	59	4	1	2	40	48	101	1	1	12	18	**297**
1815 - 1830	4	83	3	4	1	28	45	84	1	2	6	12	**273**
Period End	**44**	**985**	**60**	**41**	**36**	**448**	**563**	**1111**	**12**	**13**	**93**	**188**	**3594**

Combined	NORTH			WEST			SOUTH			EAST			
	Memorial Dr			*William St*			*Clyde St*			*William St*			
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1630	17	342	23	9	18	146	179	381	5	5	33	73	**1231**
1545 - 1645	15	328	22	10	13	152	195	355	4	4	22	52	**1172**
1600 - 1700	9	323	17	14	14	154	195	365	5	3	23	41	**1163**
1615 - 1715	7	332	15	15	12	147	205	367	3	3	24	50	**1180**
1630 - 1730	6	330	19	16	8	146	203	368	2	1	26	58	**1183**
1645 - 1745	7	342	17	20	9	144	198	395	3	2	27	59	**1223**
1700 - 1800	9	338	22	20	10	157	199	385	3	5	32	67	**1247**
1715 - 1815	18	310	23	18	9	166	192	386	4	5	33	61	**1225**
1730 - 1830	21	313	18	16	10	156	181	362	5	7	34	57	**1180**
PEAK HOUR	**9**	**338**	**22**	**20**	**10**	**157**	**199**	**385**	**3**	**5**	**32**	**67**	**1247**

R.O.A.R DATA

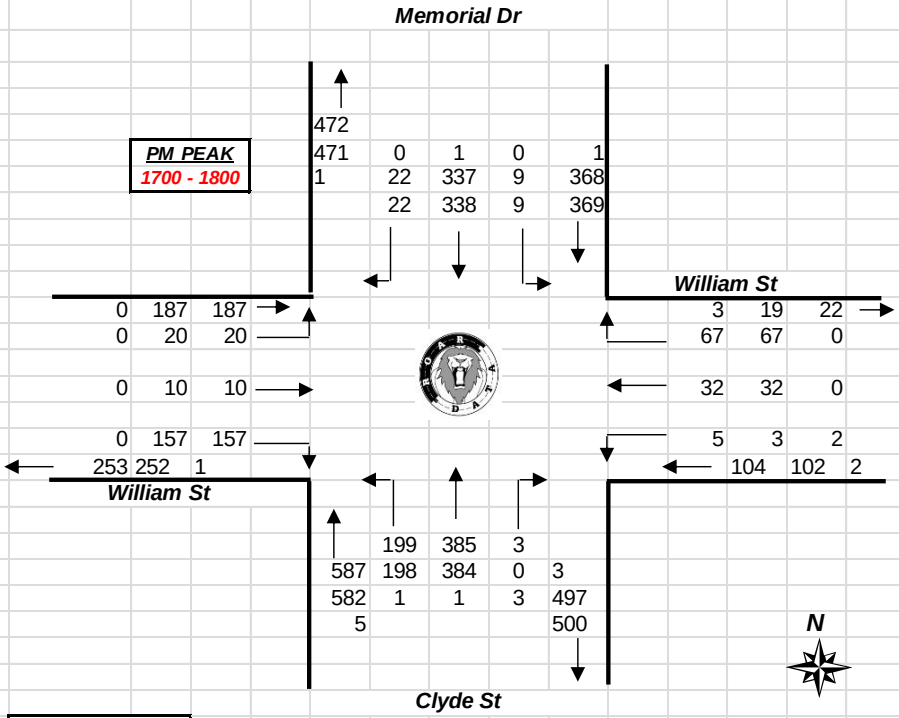
Reliable, Original & Authentic Results

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

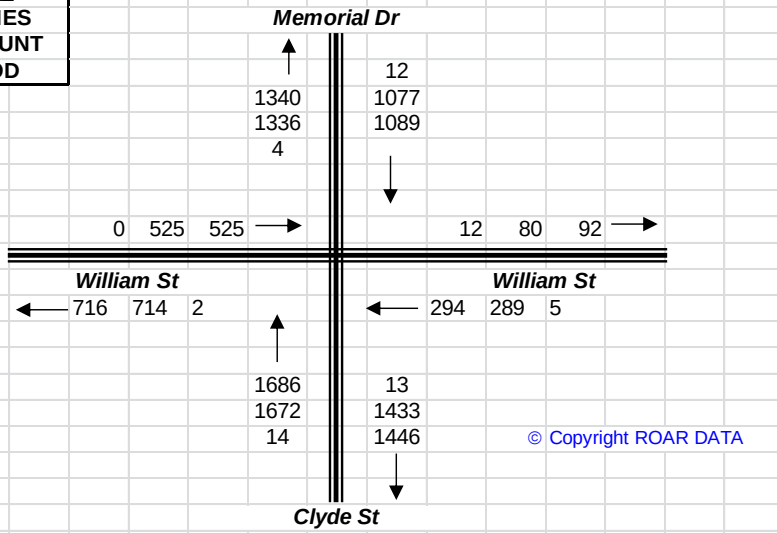
Client	: Varga Traffic Planning
Job No/Name	: 5796 GRANVILLE Clyde St
Day/Date	: Thursday 8th October 2015

Peds	NORTH	WEST	SOUTH	EAST	
	Memorial Dr	*William St*	*Clyde St*	*William St*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1530 - 1545	1	4	1	7	13
1545 - 1600	0	5	5	3	13
1600 - 1615	11	5	3	11	30
1615 - 1630	0	4	2	4	10
1630 - 1645	0	1	2	2	5
1645 - 1700	0	2	10	3	15
1700 - 1715	1	2	6	6	15
1715 - 1730	0	14	2	5	21
1730 - 1745	2	4	1	3	10
1745 - 1800	2	1	2	2	7
1800 - 1815	4	4	3	1	12
1815 - 1830	0	7	6	3	16
Period End	**21**	**53**	**43**	**50**	**167**

Peds	NORTH	WEST	SOUTH	EAST	
	Memorial Dr	*William St*	*Clyde St*	*William St*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1530 - 1630	12	18	11	25	66
1545 - 1645	11	15	12	20	58
1600 - 1700	11	12	17	20	60
1615 - 1715	1	9	20	15	45
1630 - 1730	1	19	20	16	56
1645 - 1745	3	22	19	17	61
1700 - 1800	5	21	11	16	53
1715 - 1815	8	23	8	11	50
1730 - 1830	8	16	12	9	45
PEAK HR	**5**	**21**	**11**	**16**	**53**



TOTAL VOLUMES FOR COUNT PERIOD



1 2 3

R.O.A.R. DATA

Reliable, Original & Authentic Results

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

Client	: Varga Traffic Planning
Job No/Name	: 5796 GRANVILLE Clyde St
Day/Date	: Thursday 8th October 2015

Intersection Details

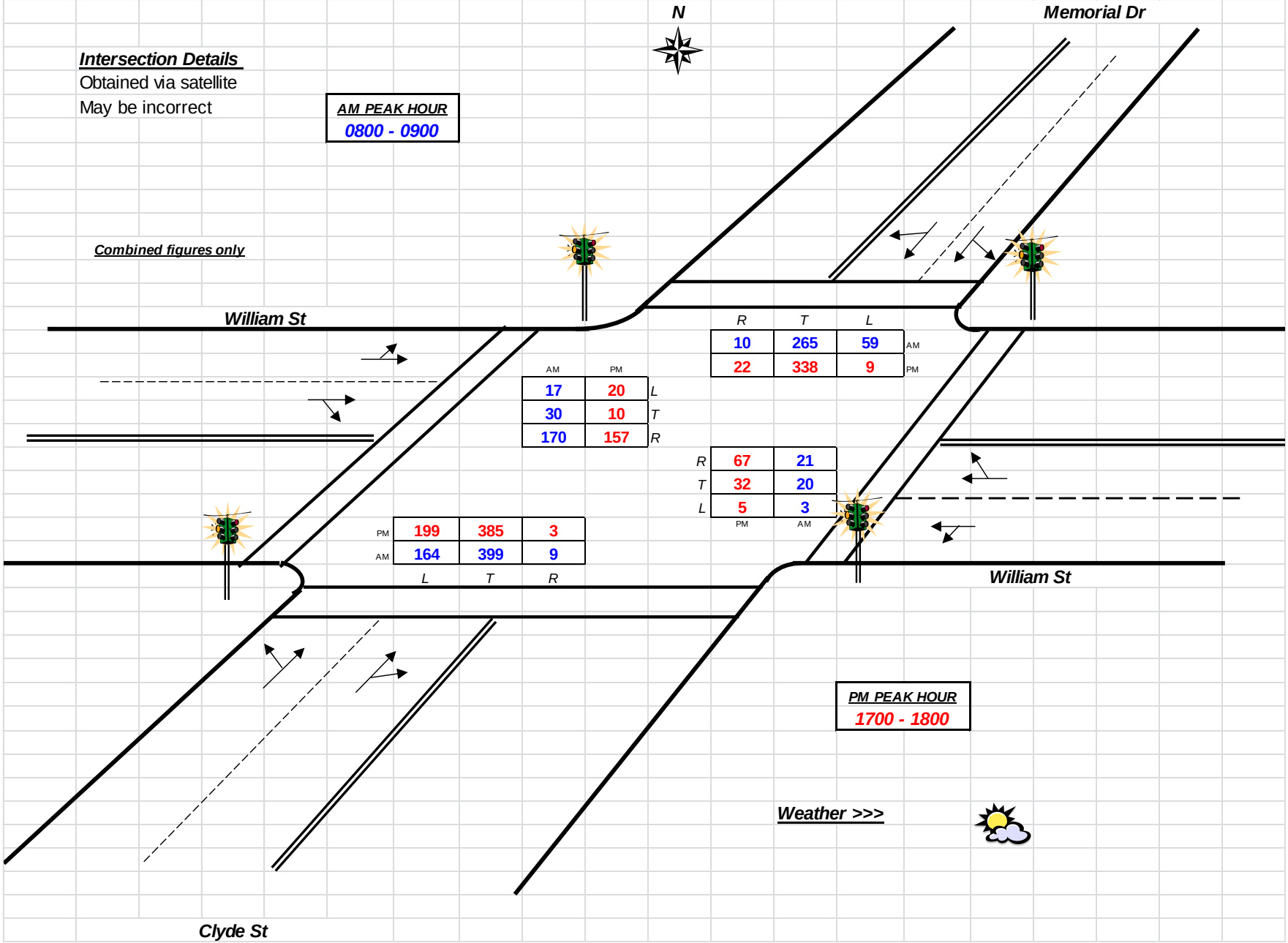
Obtained via satellite

May be incorrect

AM PEAK HOUR

0800 - 0900

Combined figures only



PM PEAK HOUR

1700 - 1800

Weather >>>