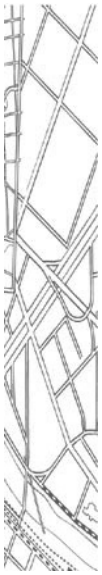

Traffic and Transport Report

Australian Red Cross Blood Service Proposed Development at O'Riordan St, Alexandria Environmental Assessment

7 August 2008

Prepared for

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TRAFFIC AND TRANSPORT CONSULTANTS

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Contents

1. Introduction

Goodman International Limited (Goodman) proposes to develop a new commercial/industrial development at 17 O'Riordan Street, Alexandria, with the Australian Red Cross Blood Service (ARCBS) as its tenant under a long term lease arrangement. The ARCBS' NSW/ACT principal site would be relocated to 17 O'Riordan Street. The proposed building is to be purpose designed and built for ARCBS.

Masson Wilson Twiney Pty Limited (MWT) has been engaged by Goodman to prepare a traffic and transport assessment to accompany the Environmental Assessment for the proposed development. The EA will be lodged with the Department of Planning seeking approval of the proposal under the Major Projects SEPP (Part 3A) planning legislation.

The report is set out as follows:

- Chapter 2 describes the subject site and existing traffic conditions;
- Chapter 3 provides a description of the proposed development and assesses the proposed on-site parking provision and reviews access arrangement;
- Chapter 4 examines the traffic generation and its impacts;
- Chapter 5 addresses the Director-General's requirements for the proposal; and
- Chapter 6 presents the conclusions of the assessment.

This report has been prepared with consideration of the Director-General's requirements issued by the Department of Planning.

2. Existing Conditions

2.1 Site Description

Figure 1 shows the location of the subject site.

It is located at 17 O'Riordan Street, Alexandria, near Johnson Street within the City of Sydney local government area. It is approximately 5km south of the Sydney CBD area, and approximately 260m from Green Square Railway Station. The legal description of the property is Lot 4 of DP794095.

The site is currently occupied by a 6,000 m^2 warehouse for an online discount store selling electronic gadgets. The warehouse building occupies the majority of the land on the southern side of the site. The northern side has a hardstand area for on-site parking. The existing driveway is approximately 10m wide with a central island. All movements to/from O'Riordan Street are permitted.

Land use in the general vicinity of the site is predominately industrial with some hi-tech office use. Some low density residential housing is also located directly opposite the site.

The site has a frontage of about 80m along O'Riordan Street and is situated within the Green Square redevelopment area. The Green Square area is currently undergoing an urban renewal process with much of the previous industrial land being converted into residential, commercial and related uses.

The *South Sydney Local Environmental Plan 1998 (as amended)* (LEP) and the *South Sydney Development Control Plan 1997: Urban Design – Part G Special Precinct No. 9* (Green Square DCP) set out development guidelines and controls for developments occurring within the Green Square area. Under the planning provisions of the LEP, the site is zoned as "10 (d) Mixed Uses". Commercial premises/high tech industrial is a permissible use in a "10 (d) Mixed Uses" zone.

For non-residential developments within 800m of Green Square Station, the Green Square DCP stipulates that on-site parking provision is to be consistent with Council's *Development Control Plan No. 11 – Transport Guidelines for Development* (DCP 11).

2.2 Road Network

The site has good accessibility given that it is located on an arterial road between the CBD and Sydney Airport, and is in close proximity to other arterial roads.

O'Riordan Street is a declared State Road under the control and maintenance of the RTA. It is a four-lane undivided road with clearway restrictions on both sides of the road during the peak periods. The posted speed limit is 60 kph.

Generally, O'Riordan Street permits all accesses to/from the abutting properties and intersecting streets. The only turn ban in the vicinity of the site is at the Collins Street intersection where the right turn from O'Riordan Street south to Collins Street west is banned.

In 2005, O'Riordan Street recorded an annual average daily traffic (AADT) of approximately 22,000 vehicles per day (vpd) (just north of Johnson Street).

2.3 Traffic Flows

Peak hour intersection turning movement flow surveys were conducted at three intersections near the subject site. The surveys were conducted in August 2007 at the following intersections:

- O'Riordan Street-Collins Street;
- O'Riordan Street-Reserve Street; and
- O'Riordan Street-Johnson Street.

In addition, the existing site access was also surveyed.

The surveys were conducted during the morning (7:00am to 9:00am) and evening (4:00pm to 6:00pm) peak periods on a weekday.

The mid block two-way peak hour flows are summarised in **Table 2.1** and intersection turning movement flows are presented in **Figure 2**.

Table 2.1 – Mid Block Two-way Peak Hour Flows

Locations	Morning Peak Hour	Evening Peak Hour
Collins St, East of O'Riordan St	750	775
Johnson St, East of O'Riordan St	62	52
O'Riordan St, North of Collins St	1,920	2,221
O'Riordan St, North of Johnson St	1,747	2,070
Reserve St, East of O'Riordan St	168	164

The two-way peak hour volumes on O'Riordan Street range from 1,750 vehicles per hour (vph) to about 2,200 vph. This is consistent with the AADT volumes reported above.

Collins Street currently carries about 750 vph while both Johnson Street and Reserve Street have minimal traffic – in the order of 200 vph or less.

2.4 Public Transport Network

2.4.1 Rail

As mentioned, the site is located within 260m walking distance from the Green Square Railway Station. Green Square Station is on the Airport and East Hills railway line. This line has direct train services to the City Circle stations, as well as Campbelltown and Macarthur Stations in the south. The line has a high frequency train service, running at approximately five to 10 minute intervals during peak periods. The number of peak period train services at Green Square Railway Station is summarised in **Table 2.2**.

Table 2.2 – Number of Train Services

Peak Periods	Inbound Services	Outbound Services
Morning Peak (6:00am-9:00am)	23	24
Evening Peak (4:00pm-7:00pm)	24	23

Green Square Station interchanges with bus and taxi services.

2.4.2 Bus

Sydney Buses operates a number of high frequency bus services near the site – along Botany Road and Collins Street. These are summarised in **Table 2.3**.

Table 2.3 – Bus Service Summary

Route Number	Service	Type of Service	Frequency Inbound[§]	Frequency Outbound[§]
309	Port Botany to Circular Quay	Daily Full Time Service	12 (21)	28 (10)
L09	Port Botany to Redfern	Weekday Peak Hour Limited Stops	0 (4)	11 (0)
310	East Garden to Circular Quay	Daily Full Time Service	11 (9)	13 (12)
348	Bondi Junction to Alexandria	Weekday Peak Periods	5 (0)[†]	0 (3)[†]
370	Leichhardt to Coogee	Daily Day Time Service	15 (14)[†]	13 (15)[†]

§ – numbers outside of parenthesis denote the number of services in the weekday morning peak period between the hours of 6:00am and 9:00am, and numbers inside parenthesis denote the number of services in the weekday evening peak period between the hours of 4:00pm to 7:00pm

† – inbound is towards Alexandria/Leichhardt

The State Transit Authority (STA) has a strategy to improve buses services through the Green Square re-development area as demand in the area increases. Thus there would be an improving level of public transport in the area over time.

3. The Proposed Development

3.1 The Development

Architectural drawings showing the basement and ground floor levels and the cross sections of the proposed buildings are contained in **Appendix A**.

The proposed development is for a 13,500 m² gross floor area (GFA) commercial/industrial development. It would have four levels plus one basement level for car parking. The proposed building would be purpose designed and built to operate as the ARCBS' NSW/ACT principal site (NAPS).

The ARCBS currently shares an eleven-storey building at 153 Clarence Street, Sydney with the Australian Red Cross Society (ARCS). Facilities at this site have proved inadequate due to space requirement, and some operational functions have been relocated to two other sites.

The proposed NAPS site would be used for blood processing, testing and distribution, tissue typing laboratories, research and development laboratories with some administrative functions. The proposed building would be configured as follows:

- Level 3 – laboratory and administrative uses of approximately 4,000 m²;
- Level 2 – laboratory uses of approximately 4,000 m²;
- Level 1 – plant level with a mezzanine office level of approximately 1,500 m²;
- Ground Level – processing use of approximately 4,500 m² (includes 800 m² of warehousing area to the rear of the building).

The proposed building would accommodate up to 500 staff over three shifts as follows:

- day shift – from 7:00am to 4:00pm with approximately 400 staff;
- night shift – from 4:00pm to 11:00pm with approximately 75 staff; and
- late shift – from 11:00pm to late with approximately 20 staff.

3.2 Parking

On site parking provision for staff and visitors is proposed to be provided in accordance to the Green Square DCP. The Green Square DCP stipulates that for non-residential development located within 800m walking distance of the Green Square Station, on-site parking provision is to be consistent with the requirements set out in

DCP 11. DCP 11 requires parking to be provided at a maximum rate of one space per 125 m^2.

Applying this rate, a maximum of 108 parking spaces would be required. The Green Square DCP also stipulates that 10 per cent of the total parking provision allowed is to be set aside as visitor car parking.

It is proposed to provide a total of 97 spaces (including nine visitor spaces). Thus the proposed on-site parking provision would be consistent with the requirements set out in the Green Square DCP and DCP 11.

Three spaces would are to be provided as accessible parking spaces.

Of the 97 spaces, 13 spaces would be labelled as small spaces.

The internal car parking layout is designed generally in accordance with Australian Standard AS2890.1:2004.

In relation to parking for service vehicles, it is proposed to provide one loading bay accessible by a 19.0m semi-trailer. This would be located on the southern side of the building. An additional 10 spaces would be provided on either side of the building as parking for blood delivery vehicles. The southern side of the building would be used as loading dock during off-peak periods (semi-trailers would only be accessing the site after hours, refer to Section 3.4), while during daytime this area would be used as parking for blood delivery vehicles.

Blood deliveries are predominately made by Hiace vans and/or courier/taxi. There is an urgency related to these deliveries and hence these delivery vehicles need to be parked with a clear entry and exit path unencumbered by parking entry/exit movements.

3.3 Access

In terms of access, it is proposed to provide separate entry and exit driveways for the service vehicles and blood delivery vehicles. The entry driveway would be located at the northern end of the site while the exit driveway would be located at southern side. In this way, the service and blood delivery vehicles would enter the site from the northern driveway and circulate anti-clockwise around the proposed building and exit the site via the southern driveway. Delivery in this manner is integral to the processing operation which would occur inside of the building.

The entry and exit driveways have been designed to accommodate the vehicle swept path made by a 19.0 m semi-trailer. The vehicle swept paths are presented in **Figure 3** to **Figure 6**.

In addition, a separate combined entry/exit ramp is proposed to provide access to the basement car parking area to facilitate separation between operational activities and staff movement.

It is proposed, as per existing situation, that full access to and from site be allowed given that the site receives and despatches various blood products, and other human organs and tissues for which the timely delivery is highly critical.

3.4 Anticipated Truck Movements

Based on existing use at the Clarence Street site, the following truck movements are expected at the O'Riordan Street proposed site:

- blood delivery vehicles – Hiace vans/courier taxi 100 movements per day;
  – say 10 in movements and 10 out movements per peak hour;
- semi-trailers – two refrigerated trucks per week, these generally arrive and depart between 10:00pm and 2:00am and therefore outside of commuter peak periods;
  – one donor mobile unit (DMU) arrives evening after peak period and departs early next morning;
  – one Carter Holt Harvey delivery per fortnight;
- other deliveries – 20 to 30 small trucks per week;
  – say two in and two out per peak hour;
- garbage trucks – three per day (expect to occur outside of peak periods); and
- BOC gas trucks – low, say one delivery per day outside of the peak periods.

From the above, there would be an additional 24 two-way movements per peak hour generated by service and blood delivery vehicles and usually no deliveries by large trucks such as 19.0m semi trailers during the critical peak periods.

3.5 Consultation with RTA

The RTA was consulted during the preparation of this traffic assessment on two separate occasions. The last meeting was held on 21 May 2008. Meeting minutes from this last meeting is contained in **Appendix B**.

4. Traffic Assessment

4.1 Traffic Generation and Distribution

The standard RTA trip generation rate of two vehicle trips per peak hour per 100 m² for commercial development was adopted in a slightly modified form. The trip rate per unit floor area was converted into trip rate per parking space based on RTA's unconstrained parking rate of one space per 40 m² and the constrained DCP parking rate of one space per 125 m² – this is equivalent to 0.8 vehicle trips per hour per parking space.

On this basis, it is estimated the proposed development with 97 on-site parking spaces would generate a total of 78 vph (two-way traffic) during the peak periods. These trips are expected to be distributed 80 per cent inbound and 20 per cent outbound during the morning peak period. During the evening peak period, the reverse would apply.

In addition, there would be an additional 20 trips per hour generated by the blood delivery vehicles and four trips per hour generated by delivery/service vehicles. These are expected to be distributed 50-50 inbound and outbound during both peak periods.

Table 4.1 summarises the expected development traffic for the peak hours.

Table 4.1 – Peak Hour Trip Summary

Trip Type	Morning Peak			Evening Peak		
	In	Out	Two-way	In	Out	Two-way
General Traffic	62	16	78	16	62	78
Blood Delivery	10	10	20	10	10	20
Delivery/Service	2	2	4	2	2	4
Total	**74**	**28**	**102**	**28**	**74**	**102**

It should be noted the existing use on the site generates up to 30 vph during its busier period.

The above development traffic was distributed to the surrounding road network based on existing traffic pattern. The resultant intersection flows are presented in **Figure 7**.

4.2 Intersection Analysis

Intersection analysis was undertaken for nearby intersections using SIDRA. SIDRA estimates the performance of intersection by calculating the level of service and the expected delay that vehicles encounter while travelling through the intersection. SIDRA also calculates the degree of saturation which is the ratio of traffic demand over the available capacity. **Appendix C** provides a detailed description of the intersection measures used to assess the performance of a given intersection.

The intersection analysis was undertaken for both the pre and post development traffic scenarios. The results are discussed below.

4.2.1 Pre Development Scenario

The intersection analysis results for the pre development traffic conditions (using traffic flows shown in **Figure 2**) are presented in **Table 4.2**.

Table 4.2 – Pre Development Condition Analysis Results

Intersection Name	Ints Control Type	Peak Period	DoS	Ave Delays (Sec)	LoS
O'Riordan St-Collins St	Signals	Morning	0.83	31	C
	Signals	Evening	0.84	33	C
O'Riordan St-Reserve St	Priority	Morning	0.46	39	C
	Priority	Evening	0.53	40	C
O'Riordan St-Johnson St	Priority	Morning	0.42	17	B
	Priority	Evening	0.45	20	B

Note: Level of service A provides good intersection operation, level of service F indicates intersection is operating over capacity while level of service D is the minimum desirable long term peak period operating condition. At signalised intersections, the average intersection delay is usually reported as the volume weighted average delay while at priority controlled intersections, the average delay for the worst movement is usually reported.

The analysis results indicate that the intersections assessed currently operate satisfactorily at level of service C or better. These results are consistent with observations made on site.

4.2.2 Post Development Scenario

Intersection analysis was repeated for the post development scenario using intersections flows shown in **Figure 7**. **Table 4.3** presents the results for future conditions.

Table 4.3 – Post Development Condition Analysis Results

Intersection Name	Ints Control Type	Peak Period	DoS	Ave Delays (Sec)	LoS
O'Riordan St-Collins St	Signals	Morning	0.83	32	C
	Signals	Evening	0.85	34	C
O'Riordan St-Reserve St	Priority	Morning	0.48	43	D
	Priority	Evening	0.54	44	D
O'Riordan St-Johnson St	Priority	Morning	0.44	18	B
	Priority	Evening	0.48	20	B

Note: Level of service A provides good intersection operation, level of service F indicates intersection is operating over capacity while level of service D is the minimum desirable long term peak period operating condition. At signalised intersections, the average intersection delay is usually reported as the volume weighted average delay while at priority controlled intersections, the average delay for the worst movement is usually reported.

The analysis indicates that under post development traffic conditions, the three nearby intersections would continue to experience generally satisfactory level of performance similar to existing conditions. Although the Reserve Street intersection is reported to have its level of service change from LoS C to LoS D under future conditions, the delay for the worst movement would only be increased by about four seconds per vehicle, and traffic level would be well below the available capacity.

Analysis indicates that vehicles would be able to turn right and left into the car park and left out of the car park with low to moderate delay. Should a driver chooses to turn right out of the car park in peak periods, delays would be longer. This is a common situation at driveways along O'Riordan Street.

5. Director-General's Requirements

5.1 Summary of Director-General's Requirements

In July 2008, Goodman submitted a preliminary assessment of the proposal to the Department of Planning. In consultation with other government agencies, the Department of Planning has provided the Director-General's requirements (DGR) for consideration in the Environmental Assessment. In relation to traffic and transport requirements, the DGRs have included the followings:

- a detailed transport impact study of the project on the performance and safety of the surrounding transport network (including road, rail and other public transport) and a description of the measures that would be implemented to upgrade and/or maintain this network over time;
- consideration of the potential for reducing the traffic generated by the project;
- an assessment of the potential parking demand of the project; and
- detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.

In addition, the Ministry of Transport and RTA requested that the traffic and transport study also addresses the transport objectives of the State Government strategies including the Metropolitan Strategy, NSW State Plan, Urban Transport Statement and the Sydney City Subregional Strategy.

The RTA further requested that an assessment of the implications of the proposal for non-car travel modes be included.

City of Sydney Council also requested, amongst various issues, that 19m articulated trucks to use classified roads only.

Each of the above issues is addressed in the section below.

5.2 Responses to DGR and other Requirements

This traffic and transport assessment considers and responds appropriately to the comments and requirements raised by the Department of Planning and other agencies. The requirements and responses are presented in **Table 5.1**.

Table 5.1 – Responses to Requirements

Requirements	Agency	Comments
1. Detailed transport impact study of the project on the performance and safety of the surrounding transport network (including road, rail and other public transport) and a description of the measures that would be implemented to upgrade and/or maintain this network over time.	DoP	This traffic and transport assessment concludes that the proposed development would not create adverse impact on the performance of the surrounding road network and thus additional traffic measures would not be required. As there would not be any adverse impact, it is also concluded that safety aspect would not be altered. It should also be noted that the complex intersections at O'Riordan Street-Botany Road, Bourke Street and Wyndham Street are be reconfigured as part of the re-development of the Green Square Town Centre. Safety aspects will be incorporated in the design.
2. Consideration of the potential for reducing the traffic generated by the project.	DoP	The proposed development is consistent with the objectives of various State Government strategies to reduce reliance on private vehicle usage, while promoting the increase to other mode shares such as public transport, cycling and walking by locating the development near a future major activity centre with good public transport. The proposed development adopts the constrained parking rate imposed by the Green Square DCP of one space per 125m^2 as opposed to the RTA's unconstrained rate of one space per 40m^2. The ARCBS is also committed to reducing the use of the private vehicles. As indicated in the Statement of Commitment prepared by Goodman on behalf of ARCBS, opportunities are being investigated to implement travel demand management initiatives such as provision of a travel guide, flexible work hours, and a car pooling scheme.
3. Assessment of the potential parking demand of the project.	DoP	Based on RTA guidelines, the unconstrained parking required for the proposal would be approximately 340 spaces. However, in accordance with the Green Square DCP and with the traffic generation suppression principles it embodies, it is proposed to provide 97 spaces. This reduction in parking will significantly reduce the traffic generation of the site. Our estimate is that as designed the site would generate 78 vph. Had the unconstrained parking supply been incorporated the traffic generation would have been 270 vph. This outcome appropriately responds to the proximity of the site to the Green Square Station and the need to suppress traffic generation in the area to avoid the need for unnecessary amplification of the road system.

Requirements	Agency	Comments
4. Detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.	DoP	The internal layout and parking arrangement has been designed in accordance with AS2890.1:2004. The architectural plans are provided in **Appendix A.**
5. Objectives and priorities of State Plan, Urban Transport Statement, Metropolitan Strategy and Sydney City Subregional Strategy.	MoT	See detailed response later.
6. Preparation of a car parking strategy including management initiatives such as • "car share" schemes for corporate fleets and be available for use by adjoining businesses and nearby residents • salary packaging and other incentives towards costs of using public transport to access work.	MoT	As indicated in the Statement of Commitment, this will be considered by ARCBS in due course. It is not proposed to operate a corporate car fleet on the site.
7. Travel demand initiatives for employees and visitors: • preparation of a travel access guide • provision of bicycle storage and user facilities • flexible working arrangements.	MoT	As indicated in the Statement of Commitment, these will be incorporated in a travel plan to be prepared by the ARCBS.
8. Assessment of impact of development traffic on the local road network with particular regard to impacts for adjacent key intersections.	MoT	See response under Item 1.
9. Compliance with minimum standards for pedestrian and cycle access.	MoT	The scale of the development is such that it is not able to initiate or undertake substantial changes to the external pedestrian or cycle network on its own. These are appropriately managed at a local government level and in this case would be funded through the Section 94 mechanism that applies in the area. It should also be noted that 2.4m of land from the site along O'Riordan Street frontage will be dedicated to Council for the purposes of widening the footpath.
10. Identification of measures to ensure site frontages allow safe pedestrian and cycle access during construction.	MoT	This will be detailed in the Construction Traffic Management Plan to be prepared post EA approval process.
11. Transport objectives contained in various high-level NSW Government strategies.	RTA	See detailed response later.
12. Daily and peak traffic movements generated by the proposed development and impact on nearby intersections and funding of upgrading or road improvement works. Key intersections to be modelled include: • O'Riordan St and Collins St • O'Riordan St and Johnson St • O'Riordan St and Reserve St.	RTA	It is estimated that the proposed development would generate approximately 390 vpd or 78 vph during the peak periods. Peak period levels of service for nearby key intersections are predicted to be no worse than LoS D under post development conditions, and as such upgrading of the nearby key intersections would not be required.

Requirements	Agency	Comments
13. Plans at 1:250 scale showing the swept paths of articulated vehicles entering and exiting the site as well as manoeuvring through the site are to be provided.	RTA	The entry and exit driveways for service vehicles have been designed using a 19.0m articulated truck. Swept path diagrams are presented in **Figure 3** to **Figure 6** in this report.
14. Proposed number of car parking spaces and compliance with the appropriate parking codes.	RTA	On-site parking provision is compliant with the Green Square DCP.
15. Details of service vehicle movements (including vehicle type and likely arrival and departure times).	RTA	See Section 3.4 of the report.
16. The EA to include an assessment of the implications of the proposed development for non-car travel modes. Potential for implementing a location-specific sustainable travel plan. Provision of facilities to increase the non-car mode share for travel to and from the site.	RTA	In relation to assessment of the implications for non-car travel modes, see later. In relation of implementation of a sustainable travel plan, see responses under Items 6 and 7.
17. Provision of a traffic management plan for demolition and construction activities.	RTA	Provision of such will be provided prior to the issue of the Construction Certificate.
18. Driveways to be set back from side boundaries by 1.0m minimum.	CoS	This aspect is considered as part of the architectural design.
19. 19m trucks to use classified roads	CoS	Trucks accessing the site would use O'Riordan Street, Botany Road, General Holmes Drive and the Eastern Distributor/South Dowling Street. These are all classified roads.
20. Vehicles must enter and exit the site in a forward direction. Swept paths of driveways need to demonstrate that a 19m truck can be accommodated.	CoS	See response under Item 13.

5.3 State Government Strategies and Transport Objectives

The development of Green Square is a key component of the Metropolitan Strategy. Detailed traffic and transport strategies to deal with the transport demands of the Green Square have been developed and adopted. The subject development is compatible with and will benefit from this previous planning.

Below is a summary of the transport objectives contained in the various State Government strategies and a discussion on how the proposed development would contribute towards the objectives.

5.3.1 State Plan

The State Plan outlines a number of priorities in various areas of Government activities. The priorities that directly relate to traffic and transport are:

- S6 – Increasing share of peak hour journeys on a safe and reliable public transport system;
- S7 – Safer roads; and
- E7 – Improve the efficiency of the road network.

Consistent with the Green Square DCP, the development has provided on-site parking at a constrained parking rate. The constrained on-site parking together with the site being in close proximity to Green Square Station and bus services would assist with achieving Priority S6. Further as indicated in **Table 5.1**, the development would not create adverse impact that would affect the efficiency or safety of the surrounding road network.

5.3.2 Urban Transport Statement

The Urban Transport Statement builds on the stated transport objective of increasing peak hour patronage on a safe and reliable public transport system, improving the efficiency of the road network and maintaining transport infrastructure contained in the State Plan, namely Priorities S6 and E7. The Plan contains a number of actions and targets for improving the urban transport system to achieve these priorities.

The subject proposal is supported by these actions which will benefit from these actions and in term help the public transport usage target to be met.

5.3.3 Metropolitan Strategy

The Metropolitan Strategy identifies the "global economic arc" of concentrated jobs and activity stretching from North Sydney to Macquarie Park and the City to Airport and Port Botany, including the wider Green Square renewal area. The Strategy aims to strengthen this global arc in the future by providing sufficient zoned land for business and enterprise in locations with high quality transport access.

The proposed development is consistent with the Metropolitan Strategy in that it would provide up to 500 jobs on the site within easy walking distance to sustainable transport options within the global arc.

5.3.4 Draft Sydney City Subregional Strategy

The Sydney City Subregional Strategy builds on the objectives from the Metropolitan Strategy to provide a framework to guide the City of Sydney Council to increase its capacity for 55,000 new dwellings and 58,000 new outlined jobs in the Metropolitan Strategy. Consistent with the Metropolitan Strategy, Green Square was identified as a place for future growth. Thus the proposed development is also consistent with Sydney City Subregional Strategy.

5.4 Implications to Non-Car Travel Modes

As indicated previously, the proposed building would accommodate up to 500 staff over three shifts – the day shift would have up to 400 staff, while the night shift would have approximately 75 staff and the late shift about 20 staff.

It is anticipated that the night and late shifts staff would generally travel by private car.

For the day time shift, the person trips for each travel mode were estimated using existing mode splits obtained from the 2006 census data (available on ABS website) relating to the census area for South Sydney Statistical Area. The data indicates an absentee rate of approximately nine per cent. The mode splits for people that travelled to work are presented in **Table 5.2**.

Table 5.2 – Existing 2006 Mode Splits

Travel Mode	Existing Mode Split
Car, Passenger	6%
Car , Driver	66%
Train	16%
Bus	5%
Others (Motorcycle, Walk, Cycle)	8%
Total	100%

With only 97 staff parking spaces provided, the percentage of day shift staff driving to work would only be about 24 per cent. The proposal would thus result in a dramatic redirection in the proportion of persons driving a car to work than is now generally the case in the area.

6. Summary and Conclusions

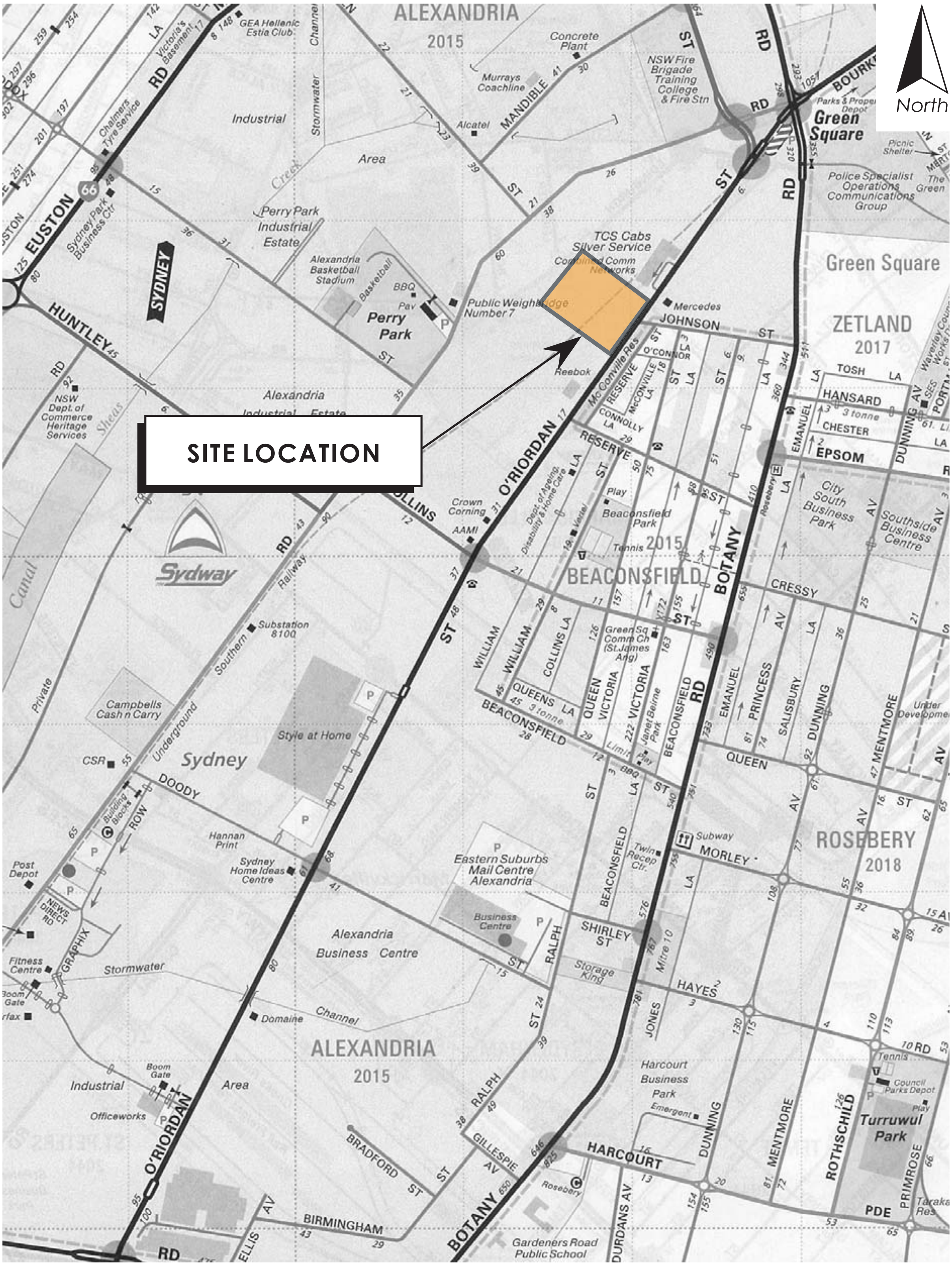
This report has examined the traffic and parking implications of a proposed commercial development at 17 O'Riordan Street, Alexandria. The findings of the investigation are summarised below:

- The proposed development is for a 13,500 m² GFA commercial/industrial development which is to be purpose built for the Australian Red Cross Blood Service.
- The building would have four usable levels plus one basement level for parking.
- Access for service vehicles is provided via separate entry and exit driveways.
- A separate combined entry and exit driveway is proposed for car park access.
- It is proposed to provide 97 parking spaces. This provision is within the limit set by the Green Square DCP and DCP 11.
- The proposed on-site parking provision and internal layout are considered to be satisfactory.
- The proposed development is expected to generate approximately 100 vph (including trucks servicing the site).
- Analysis indicates that the nearby intersections would continue to operate in a manner similar to that which presently applies.

Overall, it is concluded that the design of the traffic arrangement within the site is satisfactory and external traffic impacts would be acceptable.

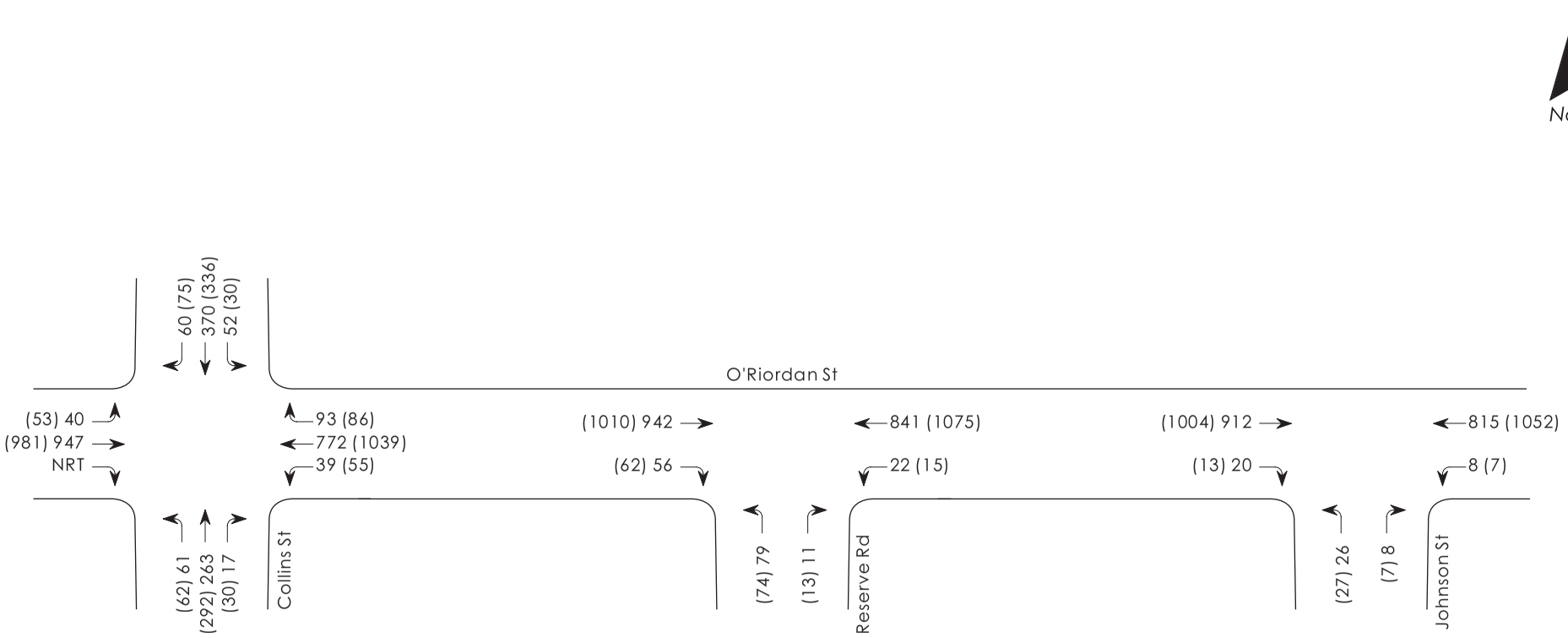
SITE LOCATION

ARCBS PROPOSED DEVELOPMENT AT O'RIORDAN ST, ALEXANDRIA



EXISTING PEAK HOUR INTERSECTION FLOWS

ARCBS PROPOSED DEVELOPMENT AT O'RIORDAN ST, ALEXANDRIA



Key

5: AM Peak

(5): PM Peak

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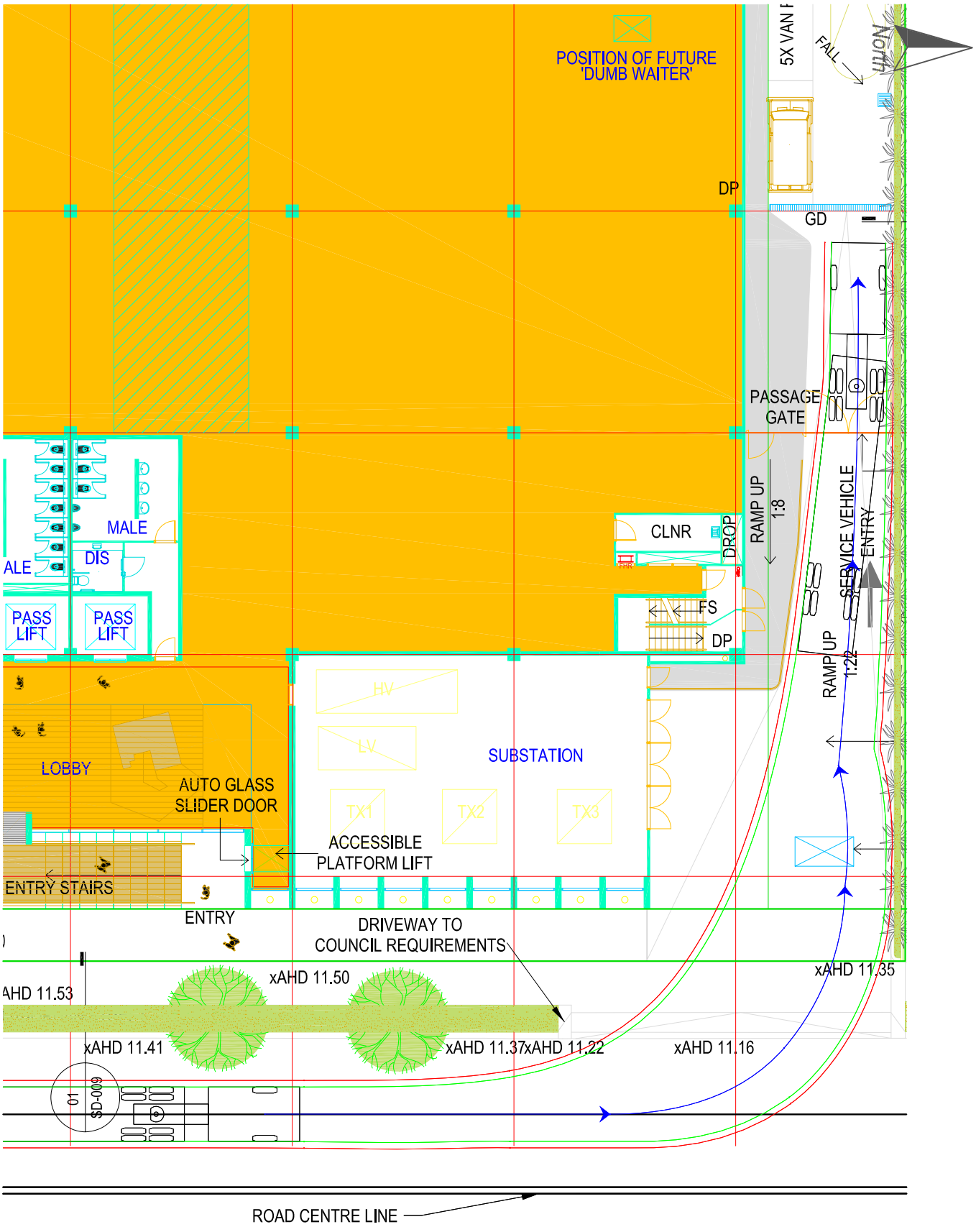
Figure 2

Filename: 073495di02.ai

Date: 26 JUNE 2008

19.0M SEMI TRAILER IN

ARCBS PROPOSED DEVELOPMENT, O'RIORDAN ST, ALEXANDRIA



Scale: 1:250@A4

MASSON | WILSON | TWINEY
TRAFFIC AND TRANSPORT CONSULTANTS

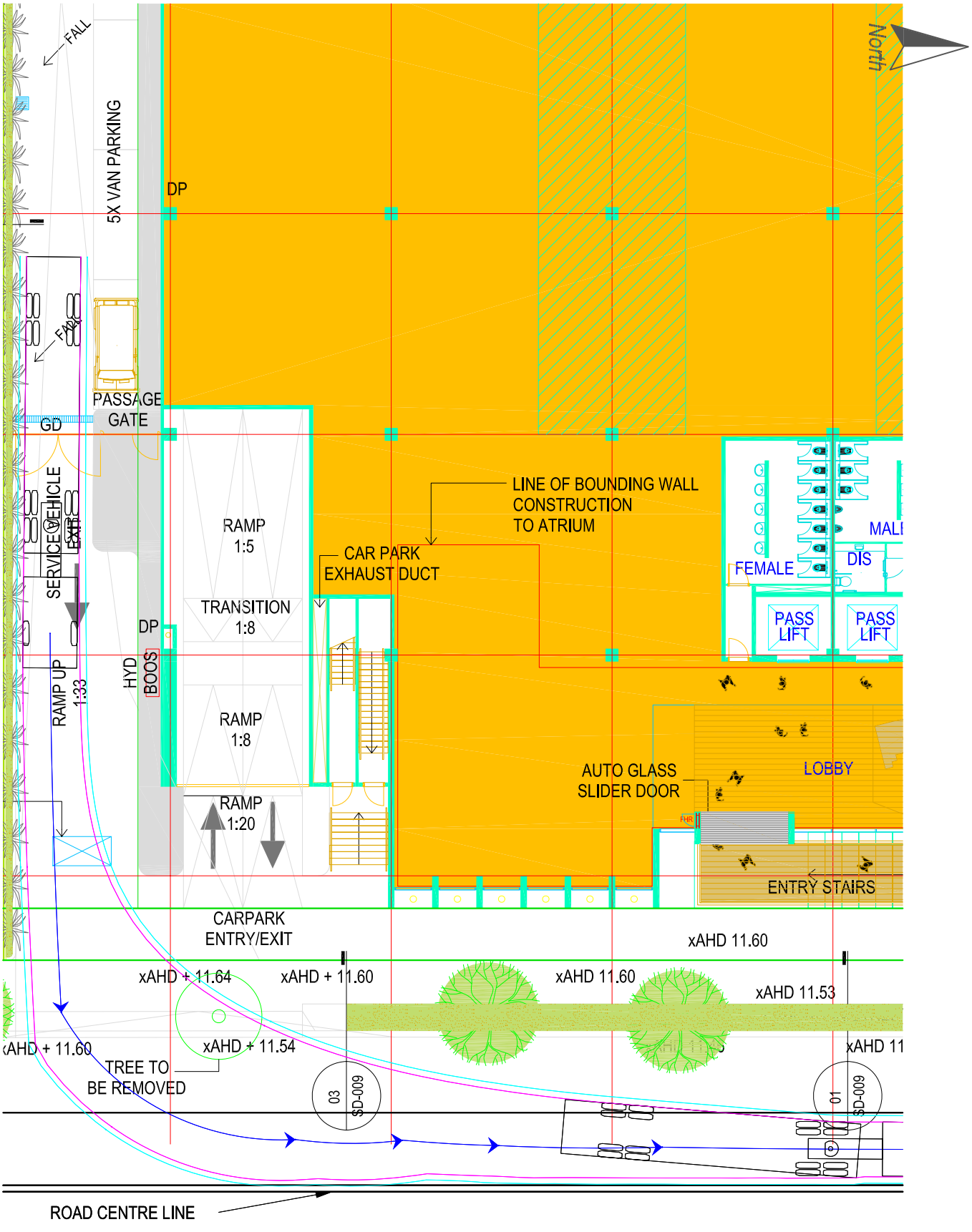
Filename: 073495da12

Figure 3

Date: 7 AUGUST 2008

19.0M SEMI TRAILER OUT

ARCBS PROPOSED DEVELOPMENT, O'RIORDAN ST, ALEXANDRIA



Scale: 1:250@A4

MASSON | WILSON | TWINEY
TRAFFIC AND TRANSPORT CONSULTANTS

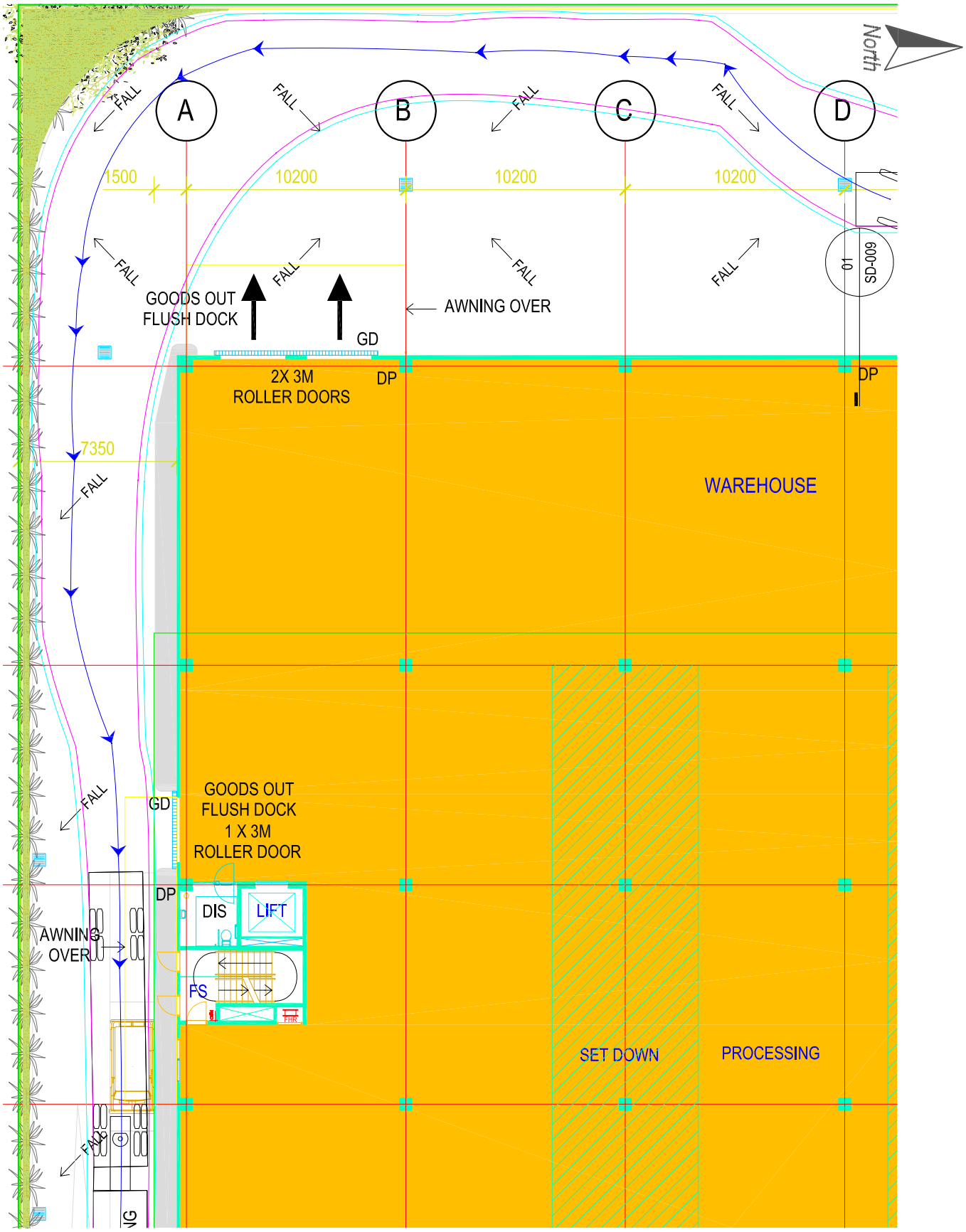
Filename: 073495da12

Figure 4

Date: 7 AUGUST 2008

19.0M SEMI TRAILER ENTERING LOADING BAY

ARCBS PROPOSED DEVELOPMENT, O'RIORDAN ST, ALEXANDRIA



Scale: 1:250@A4

MASSON | WILSON | TWINEY
TRAFFIC AND TRANSPORT CONSULTANTS

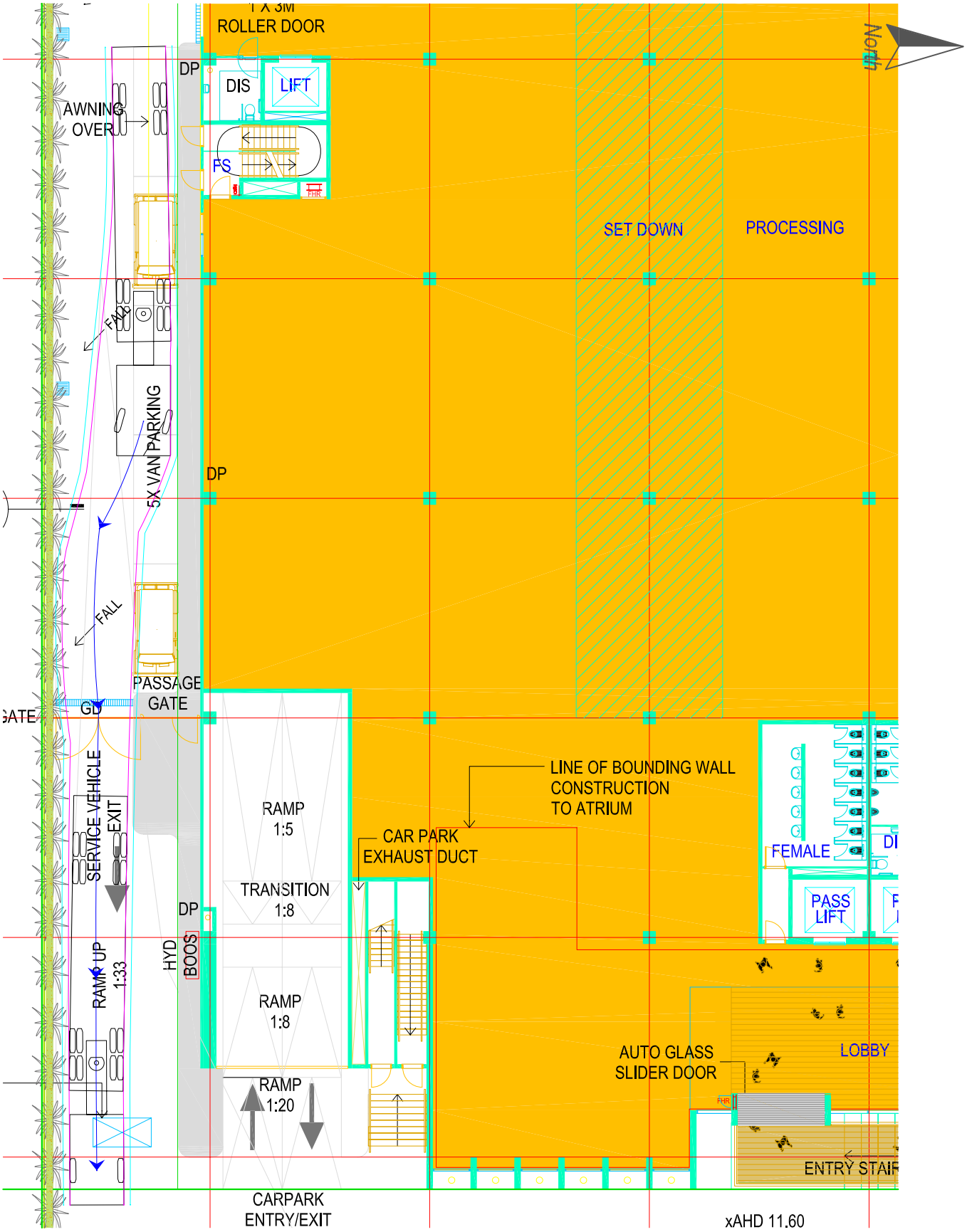
Filename: 073495da12

Figure 5

Date: 7 AUGUST 2008

19.0M SEMI LEAVING LOADING BAY

ARCBS PROPOSED DEVELOPMENT, O'RIORDAN ST, ALEXANDRIA



Scale: 1:250@A4

MASSON | WILSON | TWINEY
TRAFFIC AND TRANSPORT CONSULTANTS

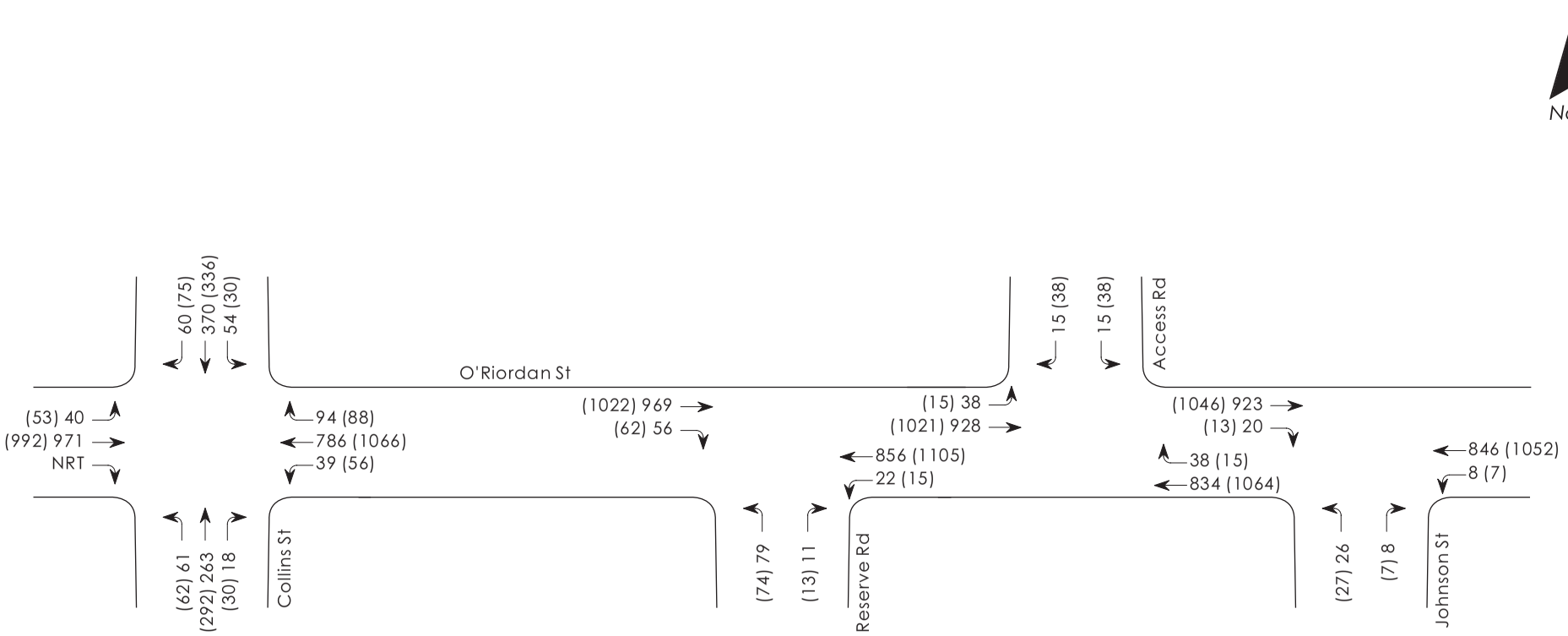
Filename: 073495da12

Figure 6

Date: 7 AUGUST 2008

POST DEVELOPMENT PEAK HOUR INTERSECTION FLOWS

ARCBS PROPOSED DEVELOPMENT AT O'RIORDAN ST, ALEXANDRIA



Key

5: AM Peak

(5): PM Peak

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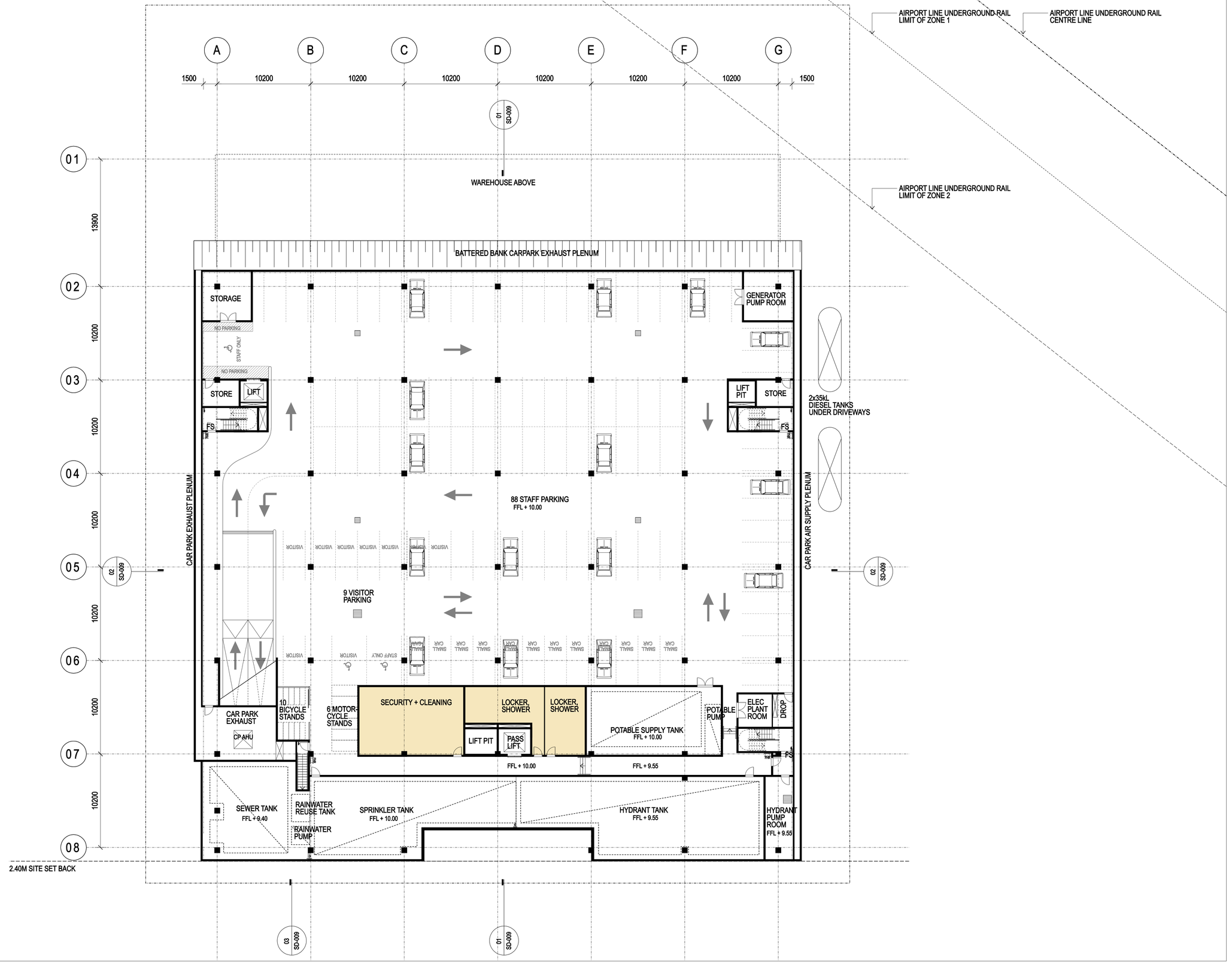
Figure 7

Filename: 073495di03.ai

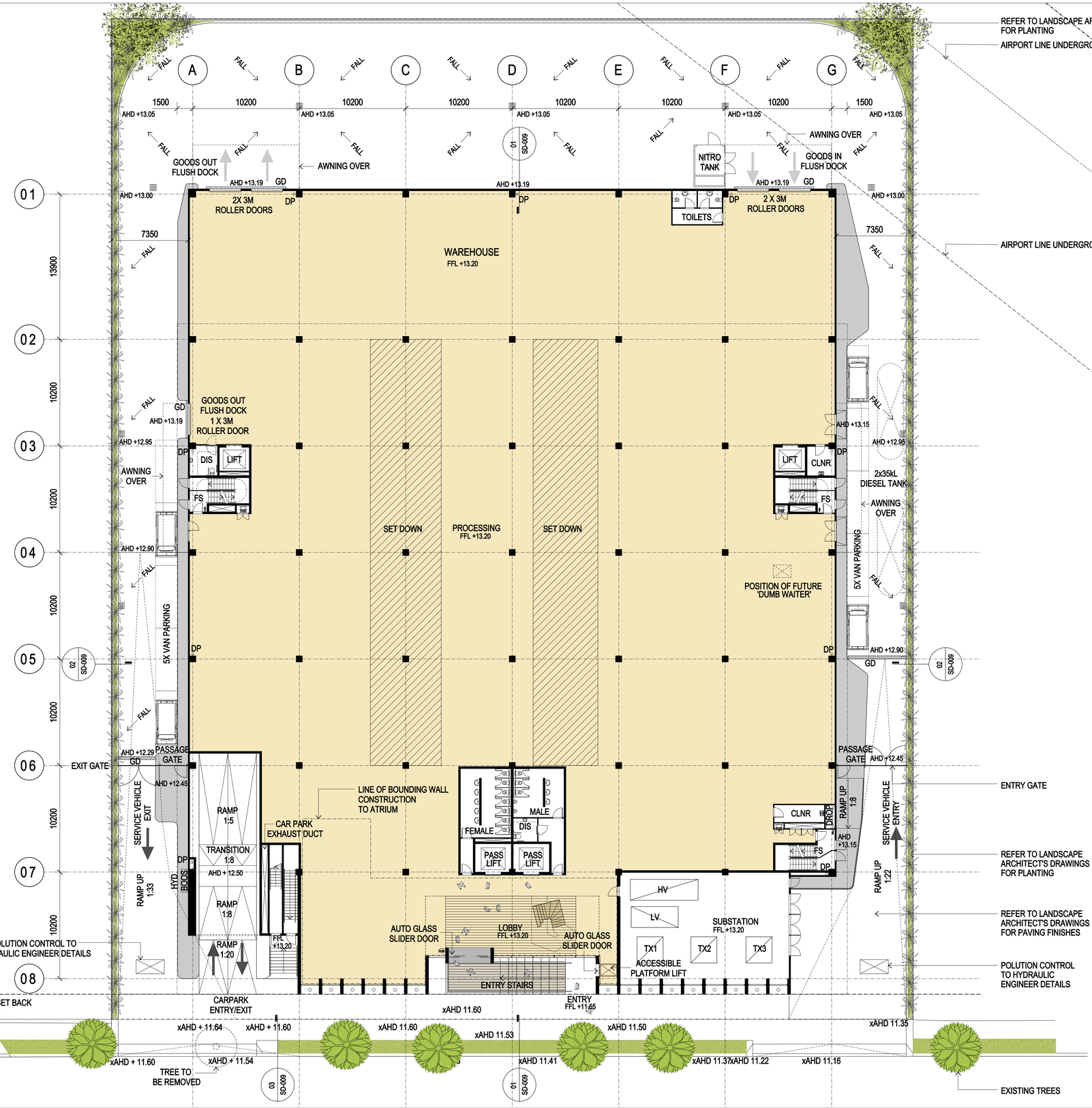
Date: 26 JUNE 2008

Appendix A – Architectural Plans



BVN BlighVollerNieldArchitecture

CLIENT	PROJECT	NORTH	GRAPHIC SCALE	SCALE	DRAWING	DRAWING NO	DATE	ISSUE
GOODMAN	AUSTRALIAN RED CROSS BLOOD SERVICE		0 4000 10000	1:200 at A1	FLOOR PLAN - BASEMENT	DA-D-001	06.08.08	A



BVN BlighVollerNieldArchitecture

CLIENT	PROJECT	NORTH	GRAPHIC SCALE	SCALE	DRAWING	DRAWING NO	DATE	ISSUE
GOODMAN	AUSTRALIAN RED CROSS BLOOD SERVICE		0 4000 10000	1:200 at A1	FLOOR PLAN - GROUND LEVEL	DA-D-002	06.08.08	A

Appendix B – Consultation with RTA

MASSON | WILSON | TWINEY
TRAFFIC AND TRANSPORT CONSULTANTS

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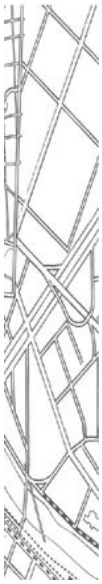
info@mwttraffic.com.au • www.mwttraffic.com.au



Minutes of Meeting

Meeting:	Australian Red Cross Blood Service Proposed Development at O'Riordan Street, Alexandria – RTA Meeting
Project:	073495 – 17 O'Riordan Street, Alexandria
Date of Meeting:	21 May 2008
Time of Meeting:	3:00PM
Location:	RTA Parramatta Office
Attendance:	Garry Kenney (GK) RTA Richard Seddon (RS) Goodman Andrea Fink (AF) BVN Gero Heimann (GM) BVN Michael Lee (ML) MWT

Distribution: All Attendees

Item No.	Description	Action
1.	RS began the meeting by providing background information to the development as follows: • Goodman has secured Australian Red Cross Blood Service (ARCBS) as the tenant • 13,400 m² GFA office/biomedical research and testing facility • three levels (and one mechanical plant level) plus one basement car parking level • access for trucks via two separate driveways – northern driveway provides entry to while southern driveway provides exit from the read loading area • access for the basement car park is via a combined entry/exit driveway located adjacent to the truck exit driveway • full access is required for all vehicle types and movements • on-site parking and other transport requirements would be provided as per South Sydney DCP 11 (RS indicated that ARCBS accepts parking constraints as provided in DCP 11).	Noted
2.	ML continued by explaining that the level of development has been scaled down since the previous meeting with the RTA which also means the previous traffic generation estimate would also be reduced to about 85 vph.	Noted

Item No.	Description	Action
3.	ML continued by indicating that the proposed development is anticipated to generate approximately two 19.0m articulated truck movements per week and these would occur well outside of the commuter peak periods (typically arrive 3:00am and leave by 10:00am). Deliveries by smaller trucks/courier vans would be approximately 30 movements in and 30 movements out per day.	Noted
4.	GK has not raised any initial objection to having full access to the site, but indicated that the traffic report will be required to provide substantiated evident in support of this, in particularly for articulated vehicles. However, GK indicated concern for other vehicles attempting to overtake semi-trailers while it accesses the site. ML indicated the semi-trailers straddle two lanes while turning which is acceptable.	Noted
5.	GK queried about whether a 900mm median is feasible within existing road reserve. ML responded that it is not possible to install median along O'Riordan Street, and it would be safety hazard for both pedestrians and vehicular traffic. It could also impact on right turning traffic to/from Johnson Street. GK agreed.	Noted
6.	GK also indicated that the traffic report will required to provide swept path diagrams at 1:250 scale showing articulated vehicles accessing the site.	Noted
7.	GK queried about any proposed road widening along O'Riordan Street. RS responded that the LEP&DCP does not indicate any proposal to widen O'Riordan Street, other than 2.4m setback and pedestrian dedication which the proposed design has incorporated. GK will check RTA database.	Noted
8.	ML pointed out that previously RTA requested for intersection analysis to be conducted at the Wyndham Road and Botany Road intersections. ML questioned the benefits of this given that these intersections are remote from the subject site. GK agreed.	Noted
9.	GK indicated that he has no objection to MWT assessing the development as described.	Noted
10.	RS indicated there has been initial consultation with City of Sydney. Generally CoS is supportive of the proposal, and that they have not raised any issues in relation to traffic and transport. GK will liaise with CoS traffic engineer for follow up feedback. RS also indicated that potentially, the proposed development could be assessed under Part 3A Major Project SEPP provisions.	Noted
11.	Meeting closed at 4:05pm.	Noted

Appendix C – Intersection Assessment Criteria

Intersection Performance Measures

SIDRA Intersection (SIDRA) calculates intersection performance measures such as the degree of saturation, average delay that vehicles encounter and the level of service. SIDRA provides analysis of the operating conditions which can be compared to the performance criteria set out in **Table B1**.

Table B1 – Level of Service Criteria

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

Adapted from RTA Guide to Traffic Generating Developments, 2002.

Degree of saturation (DoS) is defined as the ratio of demand flow to capacity. As it approaches 1.0, extensive queues and delays could be expected. For DoS greater than 1.0, a small increment in traffic volumes would result in an exponential increase in delays and queue length. For a satisfactory situation, the DoS should be less than the nominated practical degree of saturation which is usually 0.9. The intersection DoS is based on the movement with the highest ratio for all types of intersection.

Level of service (LoS) is one of the basic performance parameters used to describe the operation of an intersection. The levels of service range from A (indicating good intersection operation) to F (indicating over saturated conditions with long delays and queues). At signalised and roundabout intersections, the LoS criteria are related to average intersection delay (seconds per vehicle). At priority controlled intersections, the LoS is based on the average delay (seconds per vehicle) for the worst movement.

Delay is the difference between interrupted and uninterrupted travel times through the intersection and is measured in seconds per vehicle. The delays include queued vehicles decelerating and accelerating to and/or from stop, as well as delays experienced by all vehicles negotiating the intersection. At signalised and roundabout intersections, the average intersection delay is usually reported and is taken as the weighted average delay by summing the product of the individual movement traffic volume and its corresponding calculated delays and dividing by the total traffic volume at the intersection. At priority controlled intersections, the average delay for the worse movement is usually reported.