PEMULWUY PROJECT - THE BLOCK
EVELEIGH, VINE, LOUIS, CAROLINE AND LAWSON STREETS, REDFERN

TRANSPORT AND ACCESSIBILITY IMPACT ASSESSMENT

13 December 2011
Ref: 11026

Prepared by

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Table of Contents

LIST OF ILLUSTRATIONS

1. Introduction

This report has been prepared to accompany a development application to the Minister for Planning for a mixed-use development on the Pemulwuy site in Eveleigh, Vine, Louis, Caroline and Lawson Streets, Redfern (Figures 1 and 2) on land formerly known as "The Block".

The mixed-use development comprises residential, commercial, retail, community and cultural development, open space and landscaping. On 30 June 2009, the Minister for Planning issued Concept Plan Approval No. 06_0101 to the Aboriginal Housing Company (AHC) for the Pemulwuy Project. Since that approval was issued, the project has been reviewed by the AHC to ensure that it meets the needs of the local Aboriginal and Torres Strait Islander community and is economically viable and deliverable. That review resulted in a number of design modifications and refinements to the approved Concept Plan, and it is proposed to lodge an application to modify the approved Concept Plan

For development purposes, the land has been divided into three precincts (Figure 3). Details of the facilities within each of the three precincts are as follows:

Precinct 1 **(P1)**	A total of 62 residential dwellings comprising: Townhouses Sub Total Apartments Sub Total **Total**	 5 x 2-bedroom dwellings 18 x 3-bedroom dwellings 13 x 4-bedroom dwellings 36 dwellings 21 x 2-bedroom apartments 5 x 3-bedroom apartments 26 apartments **62 Dwellings**
Gymnasium/Fitness Centre		890m^2
Retail Floorspace		340m^2
Basement Carparking		115 x parking spaces in private carpark
Precinct 2 **(P2)**	Retail AHC Offices Commercial Childcare Centre	485m^2 240m^2 740m^2 60 children (365m^2)
Precinct 3 **(P3)**	Student Accommodation Manager's Flat Commercial Gallery	14 x 2-bed + 21 x 4-bed + 7 x 6-bed apartments 1 x 1-bed studio 1100m^2 485m^2

The general philosophy of the Pemulwuy development is to open up the area formerly known as "The Block" and provide a better connection to Lawson Street and the Redfern Railway Station. To this end, the existing SHARED ZONE at the southern end of Eveleigh Street will

be retained and reinforced by the proposed development. An outdoor meeting place known as Pemulwuy will be established in the southern section of Eveleigh Street and extending into Caroline Street as a focal point of the development. As part of the strategy, vehicular traffic will be directed towards the northern part of the site with vehicular access for the basement carpark in Precinct 1 to be provided off Vine Street.

While the precise use of the retail/commercial floorspace incorporated in the proposed development is not yet known, it is expected that:

- the retail floorspace in Precinct 1 (340m^2) will comprise convenience shopping, perhaps with a few small cafes/coffee shops. A significant proportion of the retail floorspace in Precinct 2 (485m^2) is expected to accommodate larger restaurants, as well as a smaller cafe and convenience/speciality shop. It is anticipated that the restaurants/cafes in Precinct 2 will also incorporate (footpath) seating to complement the open atmosphere which is sought to be achieved by the proposed development

- the AHC offices will occupy 240m^2 of the commercial floorarea in Precinct 2, while the remaining commercial floorarea in Precincts 2 and 3 will accommodate small businesses and service facilities possibly including medical consulting rooms.

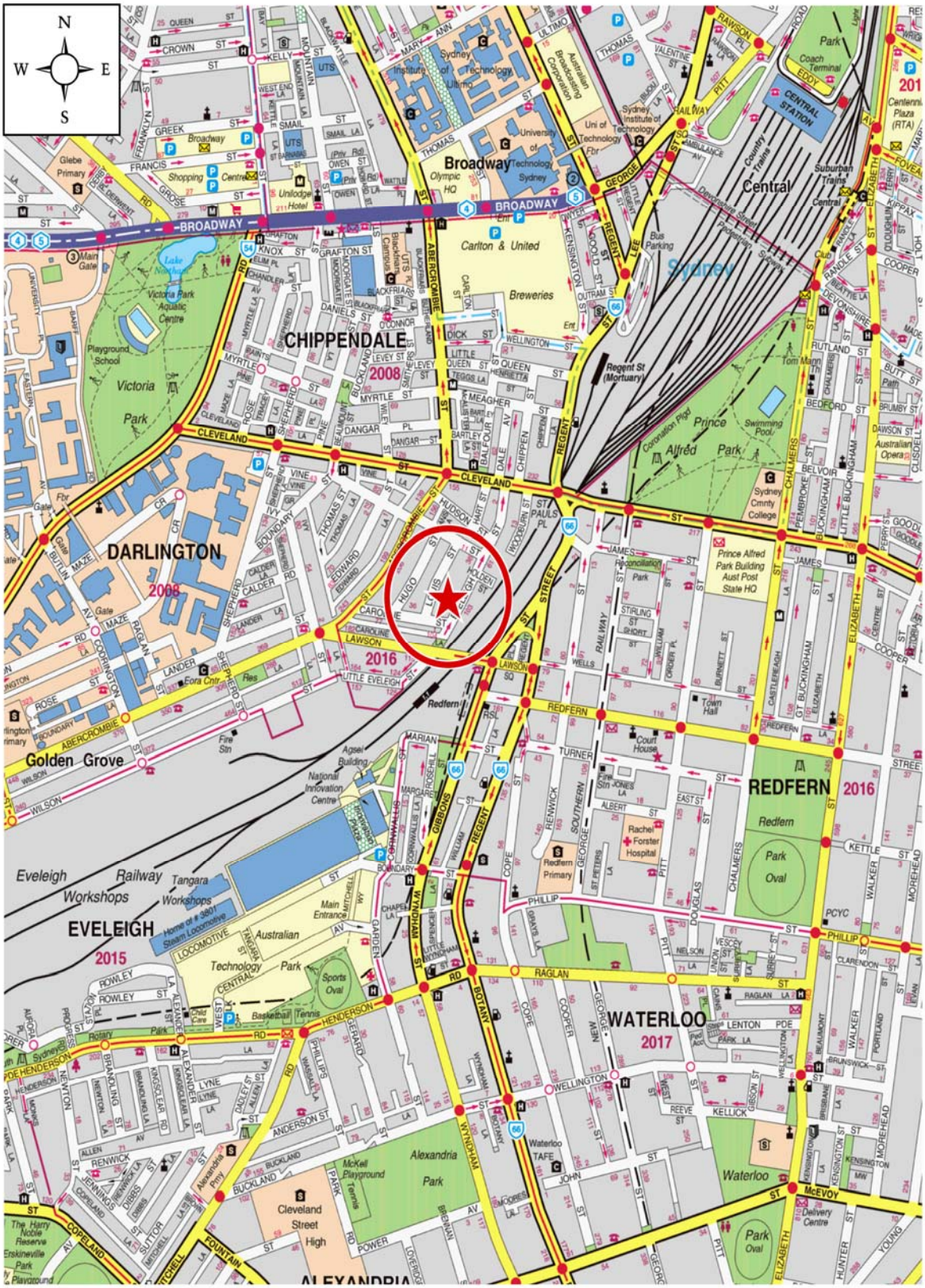
The basement carpark in Precinct 1 is a 115 space private carpark which is intended to accommodate the parking demand generated by residents and the workforce of the proposed development. As noted in the foregoing, vehicular access for the private carpark will be off Vine Street. The strategy is to encourage vehicular traffic generated by the carparks to enter/depart the area via the Vine Street/Abercrombie Street intersection.

Almost all of the on-street parking spaces in the precinct will be retained to serve the Pemulwuy project with 6 kerbside parking spaces on the southern side of Caroline Street adjacent to the childcare centre in Precinct 2 allocated to accommodate child set-down/pick-up activity between 7.00 - 10.00am and 3.00 - 6.00pm on weekdays.

The proposed development also requires closure of the eastern end of Caroline Lane to facilitate development of Precinct 2. However, to minimise traffic conflicts as a consequence of the closure of Caroline Lane, a new section of the lane connecting to Caroline Street is to be constructed adjacent to the proposed closure. This arrangement will maintain continuity

of Caroline Lane which will extend between Abercrombie Street in the west to Caroline Street in the east at a point opposite the alignment of Louis Street.

On 12th August 2011, the Director-General of the Department of Planning issued two specifications (one specification to change the concept approval and the other for the new development) providing detailed requirements for the preparation of the Transport and Accessibility Impact Assessment report, and this report has been prepared to respond to the requirements specified by the Director-General.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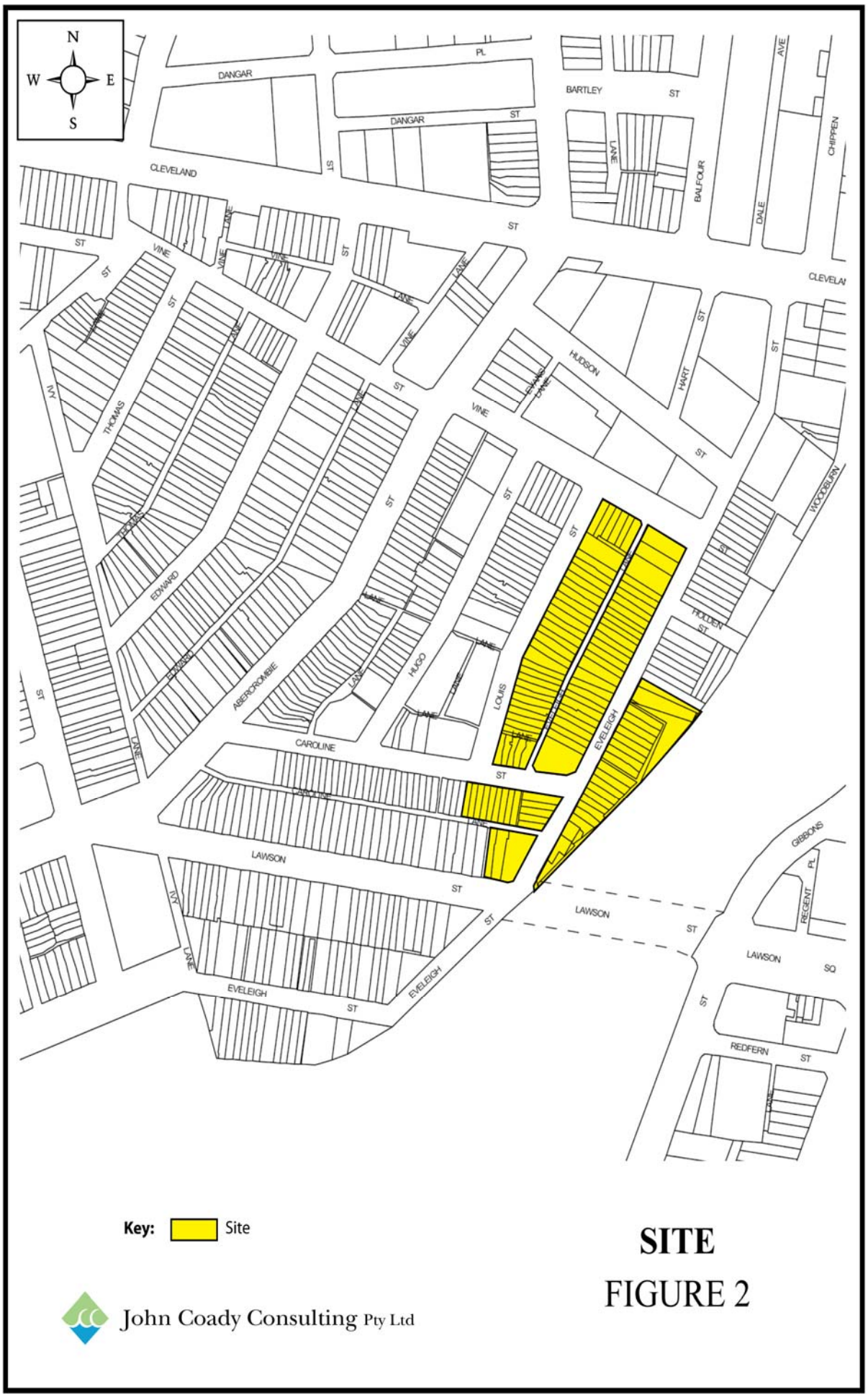
CLEVELAND
LAWSON
REDFERN
PHILLIP
RAGLAN
HENDERSON
WELLINGTON
Central
Sydney
Golden Grove
Victoria Park
Alfred Park
Prince
Alexandria Park
Waterloo
Redfern
Park Oval
Eveleigh Railway Workshops
Tangara Workshops
Australian Technology Park
Carlton & United Breweries
Regent St (Mortuary)
Cleveland Street High
Redfern Primary
Rachel Forster Hospital
Prince Alfred Park Building Aust Post State HQ
Sydney Cmnty College
Town Hall
Court House
Fire Stn
Agsei Building
National Innovation Centre
Sydney Institute of Technology
University of Technology Sydney
Sydney Olympic HQ
Australian Broadcasting Corporation
Coach Terminal
Suburban Trains
Country Trains
Bus Parking
Waterloo TAFE
Delivery Centre
Swimming Pool
Sports Oval
Basketball
Tennis
Child Care
Rotary Park
McKell Playground
Victoria Park Aquatic Centre
Playground School
Glebe Primary
Shopping Centre
Unilodge Hotel
Blackfriars
Eora Cntr
Res
Home of # 3801 Steam Locomotive
Main Entrance
Gate
Fire Stn
RSL
PCYC
Delivery Centre
Key: Site
John Coady Consulting Pty Ltd
LOCATION
FIGURE 1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EDWARD
ABERCROMBIE
HUGO
LOUIS
CAROLINE
EVELEIGH
HOLDEN
WOODBURN
LAWSON
GIBBONS
REGENT
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REDFERN
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Key:
Site
SITE
FIGURE 2
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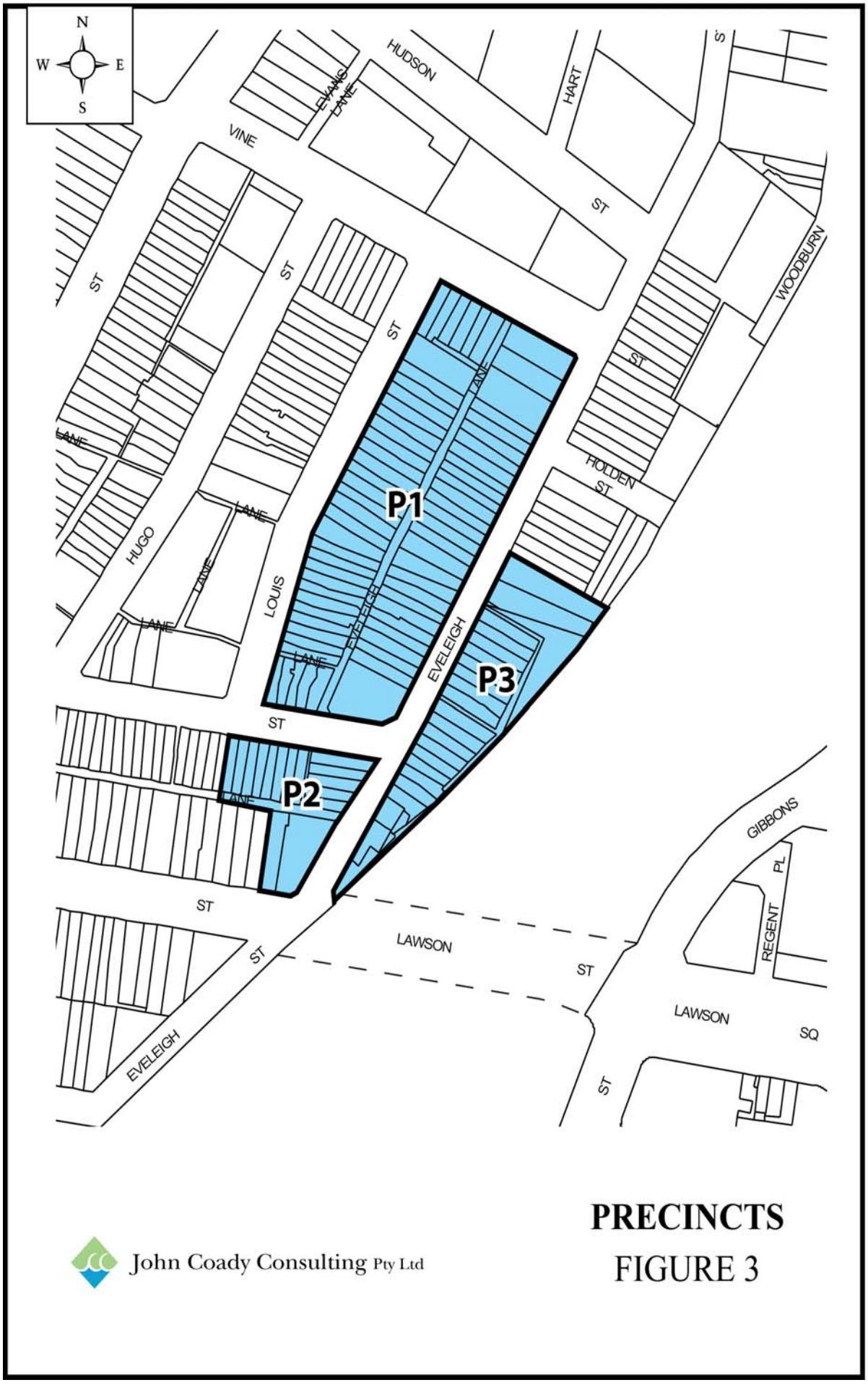

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PRECINCTS

FIGURE 3

2. Public Transport

The Pemulwuy site enjoys excellent access to public transport services in the form of bus routes along nearby Redfern Street, Regent/Gibbons Streets, and Cleveland Street, and train services via Redfern Railway Station located on the opposite side of Lawson Street to the site.

Details of the bus services are described and shown on the plan reproduced below:

Route 305 Monday to Friday peak hour service between Railway Square, Redfern, Alexandria, Beaconsfield and Mascot (Stamford Plaza Hotel)

Route 308 Daily daytime service between Marrickville Metro, St Peters, Alexandria, Redfern and City - Gresham Street

Route 309 Daily fulltime service between Port Botany, Matraville, Banksmeadow, Botany, Mascot, Green Square, Redfern and City - Circular Quay

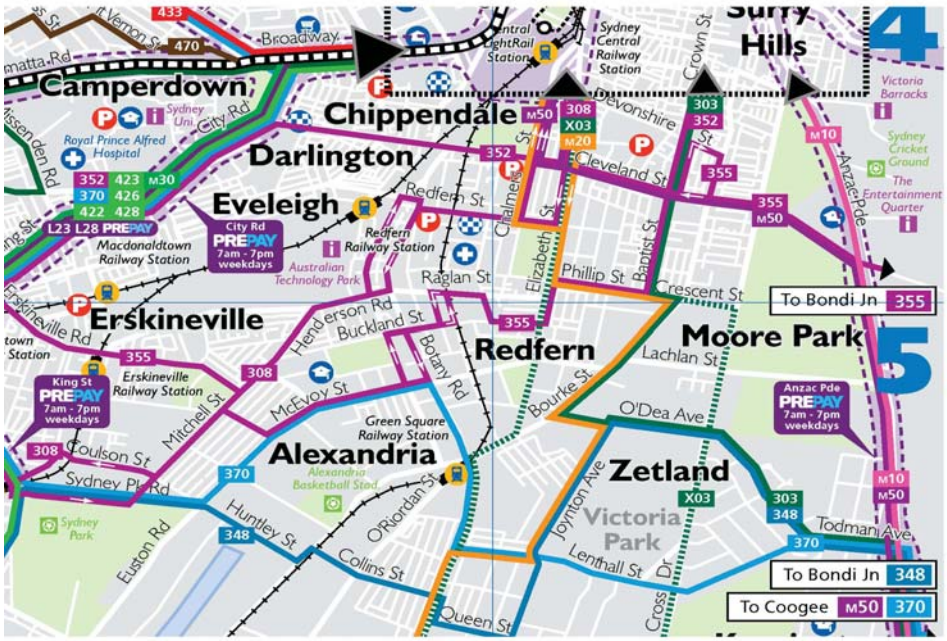
Route L09 Monday to Friday peak hour limited stops service between Port Botany, Banksmeadow, Botany, Mascot, Green Square and Redfern

Route X09 Monday to Friday peak hour express service between Banksmeadow, Botany, Mascot, Redfern and City - Martin Place (AM)/City - Spring Street (PM)

Route 310 Daily fulltime service between Eastgardens, East Botany, Botany, Mascot, Green Square, Redfern and City - Circular Quay

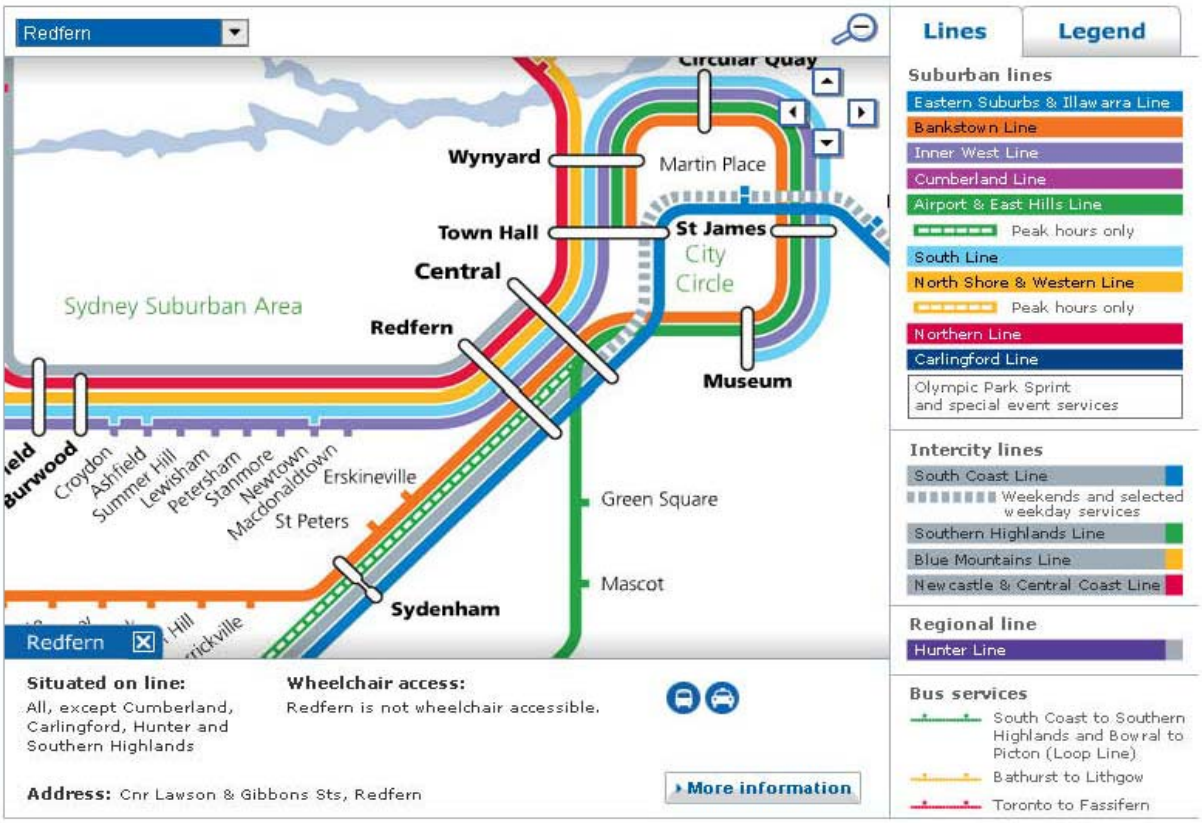
Route X10 Monday to Friday peak hour express service between Eastgardens, East Botany, Botany, Mascot and City - Martin Place (AM)/City - Spring Street (PM)

Route 352 Monday to Friday daytime service between Marrickville Metro, Newtown, Sydney University, Chippendale, Surry Hills, Darlinghurst, Paddington and Bondi Junction.



As indicated by the Railway Network map reproduced below, Redfern Railway Station provides access to the majority of lines on the City Rail Network. It also provides convenient connection to Central Station and the extensive network of inner urban and CountryLink services which operate out of this station.

It is clear that the Pemulwuy site enjoys immediate access to a wide variety of railway destinations with trains running at high frequencies, particularly during the weekday commuter peak periods.



The Pemulwuy site enjoys one of the highest levels of public transport accessibility of any location within the Sydney Metropolitan Area.

3. Pedestrians and Cyclists

Pedestrians

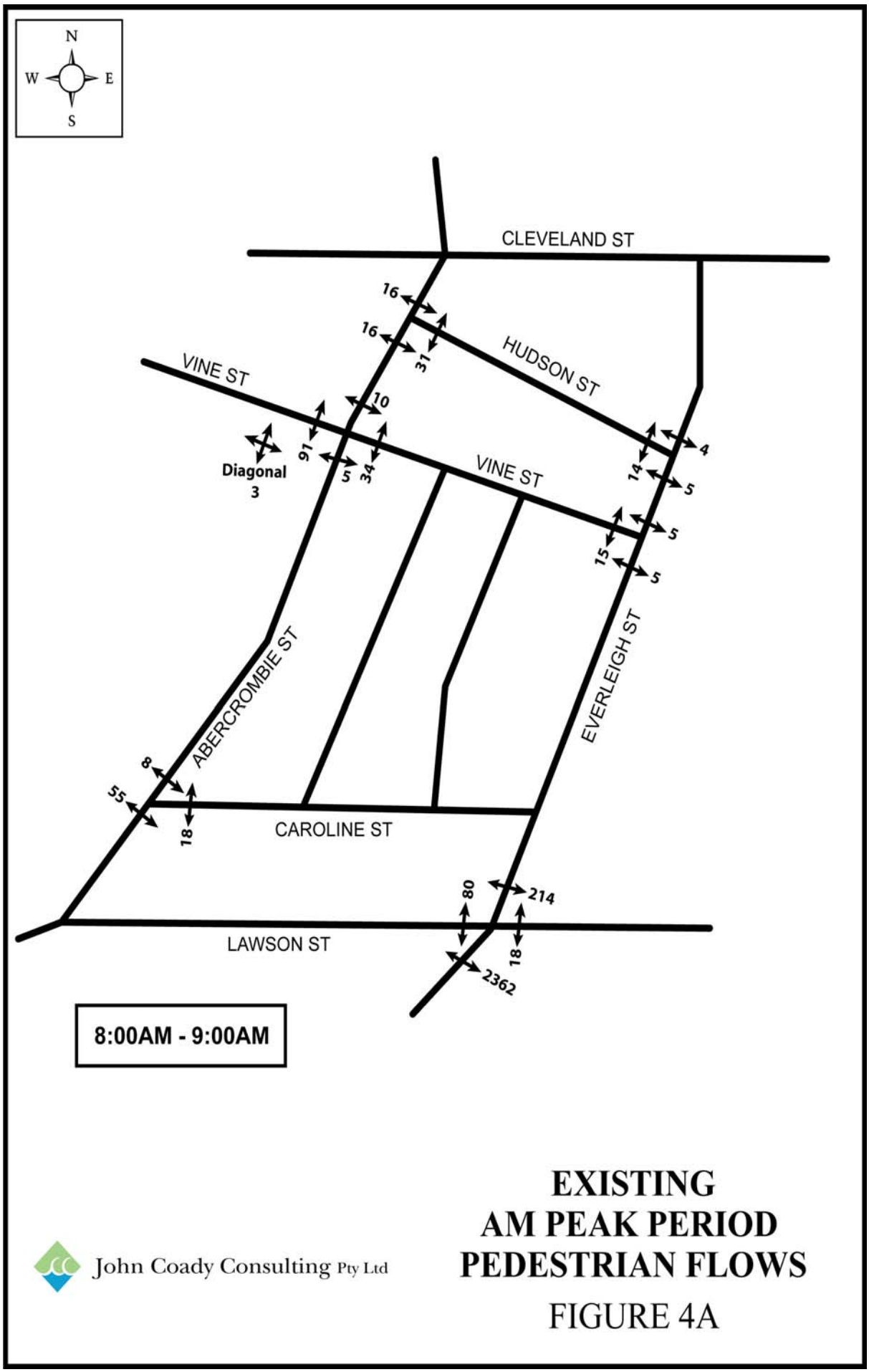
Pedestrian activity in the area is currently accommodated largely on street footpaths, although there are dedicated "SHARED ZONES" in Eveleigh Street (between Lawson and Caroline Streets) and in Vine Street (between Eveleigh Street and Louis Street).

Lawson Street - Wilson Street accommodates heavy pedestrian flows between Redfern Railway Station and Sydney University. Some of that pedestrian activity also filters through the Pemulwuy site.

A count of traffic and pedestrian activity was conducted during the AM and PM commuter peak periods on Thursday, 16th June 2011. Pedestrian activity in and around the Pemulwuy site identified by that survey is shown on Figure 4A - AM peak and Figure 4B - PM peak revealing:

- the heaviest pedestrian activity is along the southern side of Lawson Street where a total pedestrian flow of 2362 persons was recorded during the AM peak (8.00 - 9.00am) and 1900 persons during the PM peak (4.15 - 5.15pm). Pedestrian flows along the northern side of Lawson Street were moderate in comparison with 214 persons recorded during the AM peak hour and 53 during the PM peak hour. About 100 persons crossed Lawson Street in the vicinity of Eveleigh Street during both the AM and PM peak periods

- pedestrian flows were relatively minor on the street network within the precinct bounded by Lawson Street - Eveleigh Street - Cleveland Street - Abercrombie Street with pedestrian flows generally less than 20 persons per hour on most streets during the AM and PM peak periods. Higher pedestrian flows of up to 60 persons per hour during the AM peak and 40 persons per hour during the PM peak were recorded in Caroline Street, most likely reflecting the more intensive existing residential development along that street.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CLEVELAND ST
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VINE ST
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ABERCROMBIE ST
EVERLEIGH ST
CAROLINE ST
LAWSON ST
16
16
31
10
91
5
34
14
4
5
5
15
5
8
55
18
80
214
18
2362
8:00AM - 9:00AM
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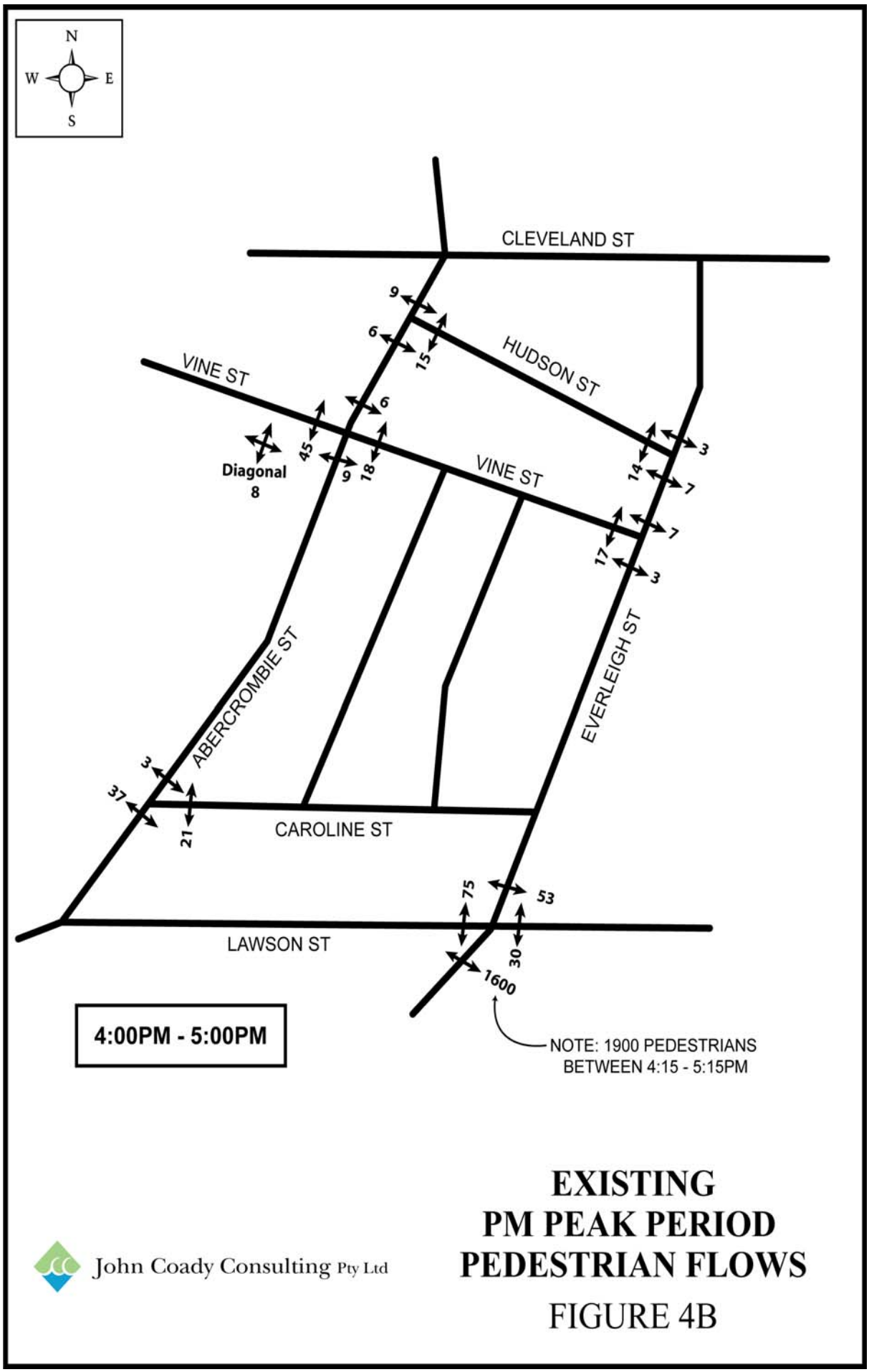
EXISTING
AM PEAK PERIOD
PEDESTRIAN FLOWS
FIGURE 4A


N
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CLEVELAND ST
HUDSON ST
VINE ST
VINE ST
Diagonal
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ABERCROMBIE ST
EVERLEIGH ST
CAROLINE ST
LAWSON ST
9
6
15
6
45
9
18
14
3
7
7
17
3
3
37
21
75
53
30
1600
4:00PM - 5:00PM
NOTE: 1900 PEDESTRIANS
BETWEEN 4:15 - 5:15PM
John Coady Consulting Pty Ltd
EXISTING
PM PEAK PERIOD
PEDESTRIAN FLOWS
FIGURE 4B

An objective of the Pemulwuy project is to provide a high standard of pedestrian amenity and safety on this internal street system, directing pedestrian activity towards the SHARED ZONE at the southern end of Eveleigh Street and then on to Lawson Street and Redfern Railway Station.

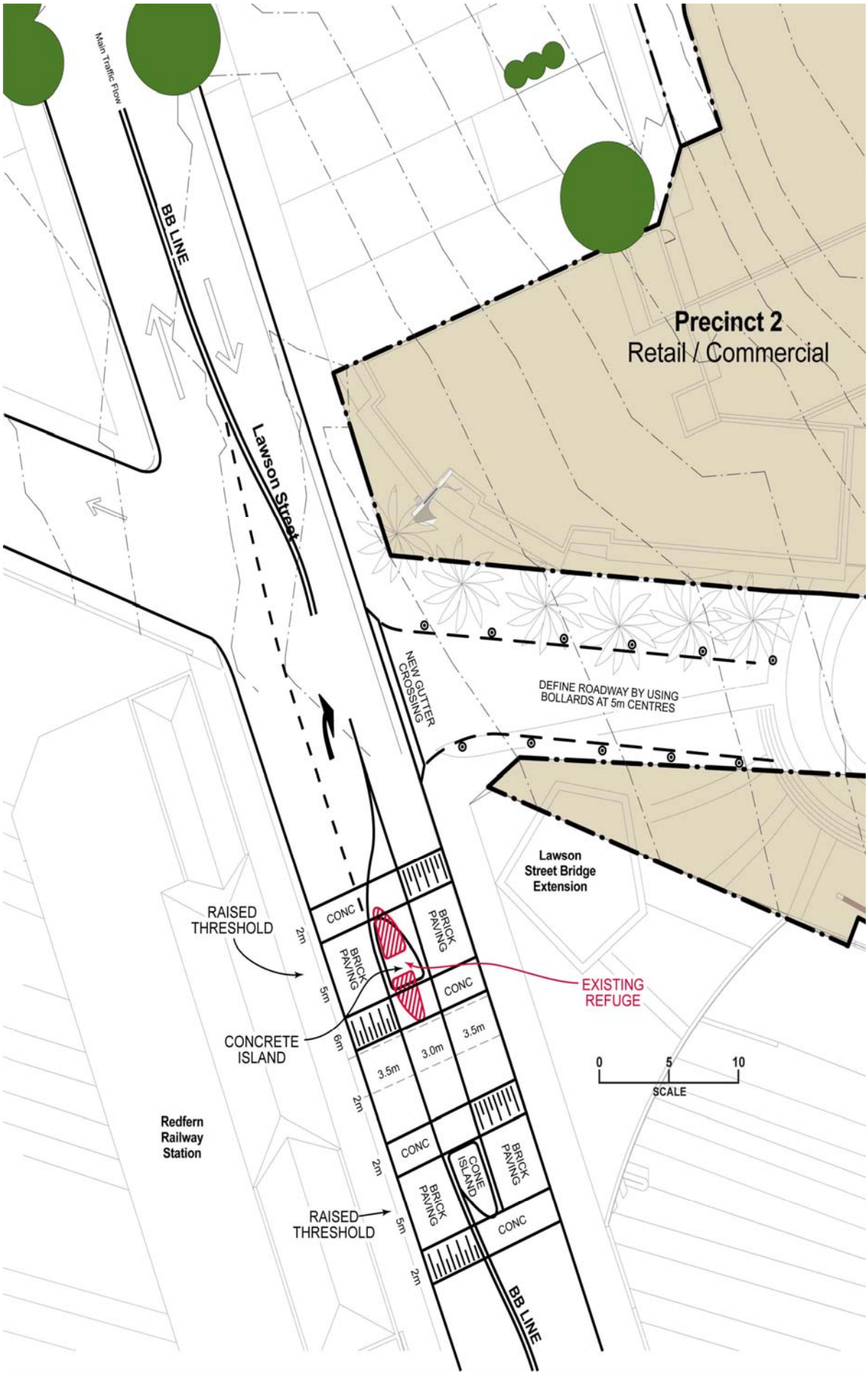
Enhancing the safety and amenity the pedestrian crossing of Lawson Street between Eveleigh Street and Redfern Railway Station is a challenge to be addressed by the proposed development. The existing arrangement comprises a relatively small pedestrian refuge in the centre of Lawson Street. Enhancement options include:

- increasing the capacity of the existing pedestrian refuge - perhaps in conjunction with construction of threshold treatment in Lawson Street over the length of the larger pedestrian refuge. This option could be easily implemented

- installation of a marked foot crossing across Lawson Street between Eveleigh Street and the railway station - this option is probably not feasible because of the detrimental effect it would have on traffic flow in both directions along this section of Lawson Street

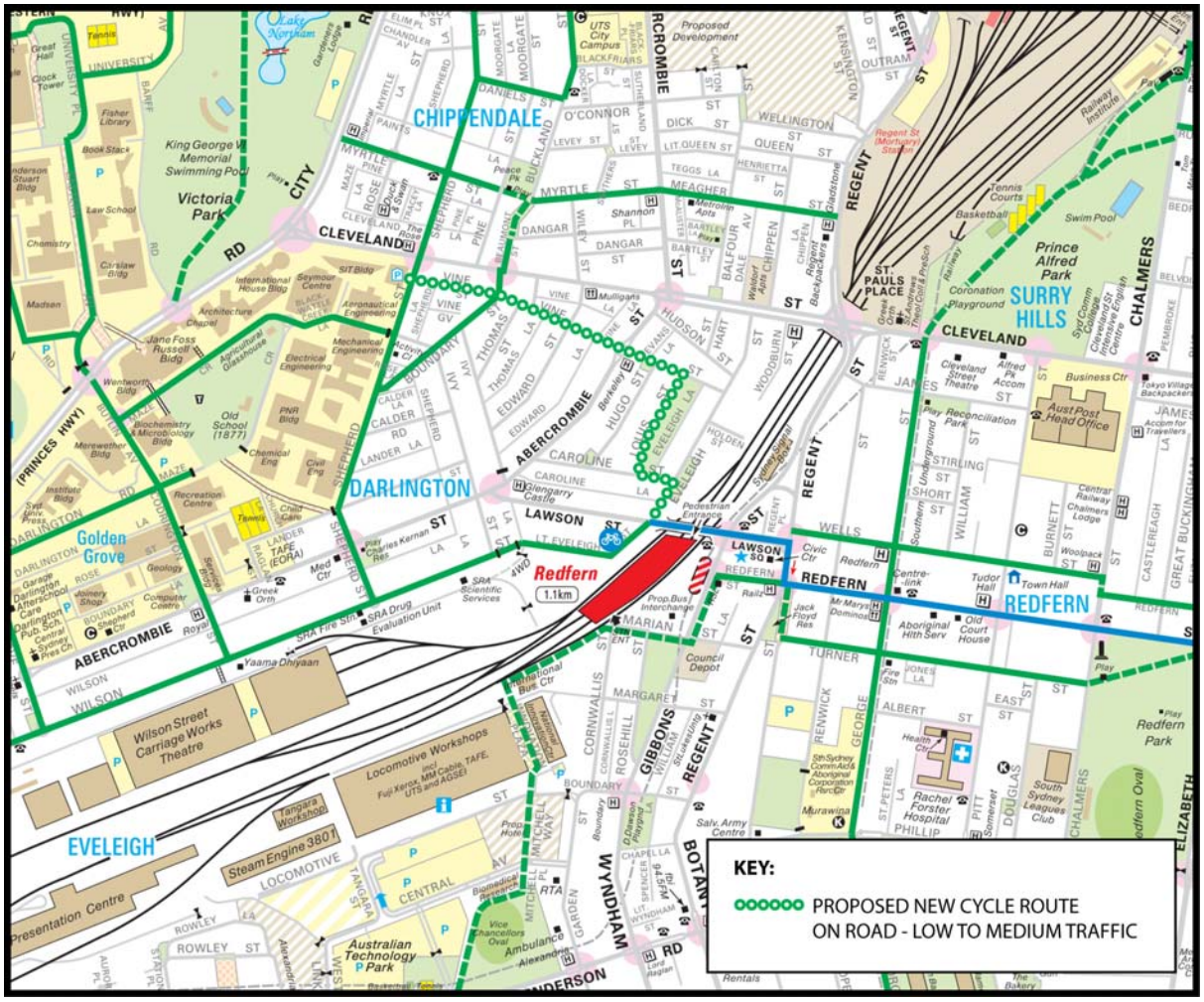
- installation of pedestrian traffic control signals - although viable, this option is probably less attractive to both pedestrians and motorists than the enhanced pedestrian refuge - threshold treatment option.

The strategy adopted by the Pemulwuy project for improving pedestrian connection across Lawson Street between Eveleigh Street and Redfern Railway Station is to implement an enlarged pedestrian refuge in the centre of Lawson Street in conjunction with threshold treatment along the length of the pedestrian refuge. The enlarged pedestrian refuge has been designed to permit provision of an exclusive right-turn bay in Lawson Street on the (westbound) approach to Eveleigh Street in order to minimise delays to westbound traffic flows in Lawson Street through the intersection. A sketch of this proposed enlarged pedestrian refuge in Lawson Street is reproduced in the following pages.


Main Traffic Flow
BB LINE
Lawson Street
Precinct 2
Retail / Commercial
NEW GUTTER CROSSING
DEFINE ROADWAY BY USING BOLLARDS AT 5m CENTRES
Lawson Street Bridge Extension
RAISED THRESHOLD
CONCRETE ISLAND
EXISTING REFUGE
CONC
BRICK PAVING
CONE ISLAND
2m
5m
6m
3.5m
3.0m
0 5 10
SCALE
Redfern Railway Station
RAISED THRESHOLD
BB LINE

Cyclists

As can be observed on the extract below from the City of Sydney Cycling Map featured on the City Council's website, Pemulwuy enjoys convenient access to one of Council's designated bicycle routes which runs along Lawson Street past the site. That bicycle route extends to the east along Redfern Street where the blue line identifies it as a *cycle route on road - heavy traffic*, and along Little Eveleigh Street - Wilson Street to the west where the green line identifies it as a *cycle route on road - low to medium traffic*. The Redfern Street - Lawson Street - Wilson Street east-west cycle route intersects with numerous north-south cycle routes identified on the City of Sydney Cycleway Network. By virtue of its frontage to Lawson Street, Pemulwuy has immediate access to the City's bicycle network.



In order to promote and facilitate bicycle use by residents and the workforce of the Pemulwuy project, it is proposed to establish a *cycle route on road - low to medium traffic* within the precinct bounded by Eveleigh Street - Lawson Street - Abercrombie Street - Cleveland Street. That bicycle route will extend from Lawson Street along Eveleigh Street,

into Caroline Street and Louis Street, and then to/from the west on Vine Street. A bicycle crossing of Lawson Street can be provided in conjunction with the proposed pedestrian treatment so that the Eveleigh Street bicycle route will connect directly into the Council's dedicated Wilson Street - Little Eveleigh Street - Lawson Street - Redfern Street cycle route. A second cycle route along Vine Street between Abercrombie Street and Shepherd Street will be investigated with the City Council to provide a more direct cycle route between the Pemulwuy site and Sydney University. Those proposed cycle routes have been superimposed on the City of Sydney Cycling Map above.

4. Parking

Parking in the precinct bounded by Eveleigh Street - Lawson Street - Abercrombie Street - Cleveland Street is currently restricted to on-street parking, and the existing parking controls on that street system are shown on Figure 5. There is currently a total of 385 on-street parking spaces on these streets (see on-street parking inventory in Appendix A) and almost all of those on-street parking spaces will be retained in the Pemulwuy project. Six of the kerbside parking spaces on the southern side of Caroline Street adjacent to the childcare centre in Precinct 2 will be allocated to accommodate child set-down/pick-up activity between 7.00 - 10.00am and 3.00 - 6.00pm.

South Sydney City Council Development Control Plan No. 11 - Transport Guidelines for Development (1996) specifies the following *guideline rates* in respect of off-street carparking and bicycles which are relevant to the proposed development:

	Carparking	**Bicycles**
Residential Units and Townhouses		
• 1-bedroom units and bedsitters	0.5 spaces : unit	1 space : 3 units
• 2-bedroom units	0.8 spaces : unit	1 space : 3 units
• 3 or more bedroom units	1.2 spaces : unit	1 space : 3 units
• Separate Visitor parking	1 space : 6 units near entrance	1 space : 10 units
Office and Commercial	1 space : 125m^2 GFA, 20% allocated to visitors	1 space : 20 staff minimum
Retail Developments		
• small shops	1 space : 50m^2 GFA	-
Medical Centres & Consulting Rooms	2 : effective full-time doctors	1 : 5 doctors
Cafes and Restaurants	1 space : 50m^2 (1st 100m^2) then 1 space : 18m^2	2 + 1 : 100m^2 over 100m^2
Gymnasiums	3 spaces : 100m^2	1 space : 100m^2
Childcare Centres	1 space : 4 staff plus 1 staff : 8 children for parents drop-off and pick-up (on-street considered)	1 space : 10 staff
Art Galleries	1 space : 200m^2 GFA	1 space : 200m^2 GFA

Application of those *guideline rates* to the proposed development yields a total requirement of 203 off-street parking spaces and 75 bicycle parking spaces, calculated as follows:

Precinct 1	**Carparking**		**Bicycles**	
	Rate	**No. of Spaces**	**Rate**	**No. of Spaces**
Residential				
• 26 x 2-bed	0.8 spaces : unit	20.8 spaces	1 space : 3 units	9 spaces
• 23 x 3-bed	1.2 spaces : unit	27.6 spaces	1 space : 3 units	8 spaces
• 13 x 4+ bed	1.2 spaces : unit	15.6 spaces	1 space : 3 units	4 spaces
Sub Total		*64 spaces*		*21 spaces*
Visitors				
• 62 units	1 space : 6 units	10 spaces	1 space : 10 units	6 spaces
TOTAL RESIDENTIAL		**74 spaces**		**27 spaces**

Gymnasium (890m^2)	3 spaces : 100m^2	26.7 spaces	1 space : 100m^2	9 spaces
Retail (340m^2)	1 space : 50m^2	7 spaces	-	-
TOTAL		**108 spaces**		**36 spaces**
Precinct 2				
Retail Shops (160m^2)	1 space : 50m^2	3.2 spaces	-	-
Retail/Restaurants • (150m^2) • (120m^2) • (55m^2)	 1 space : 50m^2 (1st 100m^2) then 1 space : 18m^2	 4.7 spaces 3.1 spaces 1.5 spaces	 2 + 1 space : 100m^2 over 100m^2	 3 spaces 3 spaces 2 spaces
Commercial (240m^2) Commercial (740m^2)	1 space : 125m^2 (20% visitors)	1.9 spaces 5.9 space	1 space : 20 staff 1 space : 20 staff	1 space 3 spaces
Childcare Centre (60 children)	1 space : 4 staff 1 space : 8 children	3 spaces 8 spaces	1 space : 10 staff	2 spaces
TOTAL PRECINCT 2		**31 spaces**		**14 spaces**
Precinct 3				
Student Accommodation • 1 x 1-bedroom studio • 14 x 2-bedroom units • 21 x 4 -bedroom units • 7 x 6-bedroom units *Sub Total* Visitors 43 units **Total Student Accomm**	 0.5 space : unit 0.8 space : unit 1.2 space : unit 1.2 space : unit 1 space : 6 units	 0.5 space 11.2 spaces 25.2 spaces 8.4 spaces *45 spaces* 7.2 spaces **52 spaces**	 1 space : 3 units 1 space : 3 units 1 space : 3 units 1 space : 3 units 1 space : 10 units	 0.3 spaces 4.7 spaces 7.0 spaces 2.3 spaces *14 spaces* 4 spaces **18 spaces**
Commercial (1100m^2)	1 space : 125m^2 (20% visitors)	8.8 spaces	1 space : 20 staff	4 spaces
Gallery (485m^2)	1 space : 200m^2	3 spaces	1 space : 200m^2	3 spaces
TOTAL PRECINCT 3		**64 spaces**		**25 spaces**
TOTAL		**203 spaces**		**75 spaces**

Clause 3.2.1 - Concessions to Reduce Carparking of *South Sydney City Council Development Control Plan No. 11* sets out a number of criteria used by Council to assess whether reducing the provision of carparking is acceptable. Those criteria which are relevant to the Pemulwuy development include:

- the availability and level of service of public transport - the Pemulwuy site enjoys one of the highest levels of public transport accessibility of any location within the Sydney Metropolitan Area

- the availability of carparking on-street - as noted in the foregoing, there is currently a total of 385 on-street parking spaces in the precinct bounded by Eveleigh Street - Lawson Street - Abercrombie Street - Cleveland Street, and almost all of those on-street parking spaces will be retained in the Pemulwuy project

- the degree of local patronage anticipated, especially for restaurants and cafes - it is anticipated that much of the patronage of the retail/restaurant and commercial

floorspace incorporated in the proposed development will be drawn from the local area, and from people already passing through the local area

- the projected requirements of people occupying the development taking into account social-economic status, age, car ownership levels, life cycle, etc - many of the residents of the residential components of the proposed development are unlikely to drive a car, particularly residents of the student accommodation.

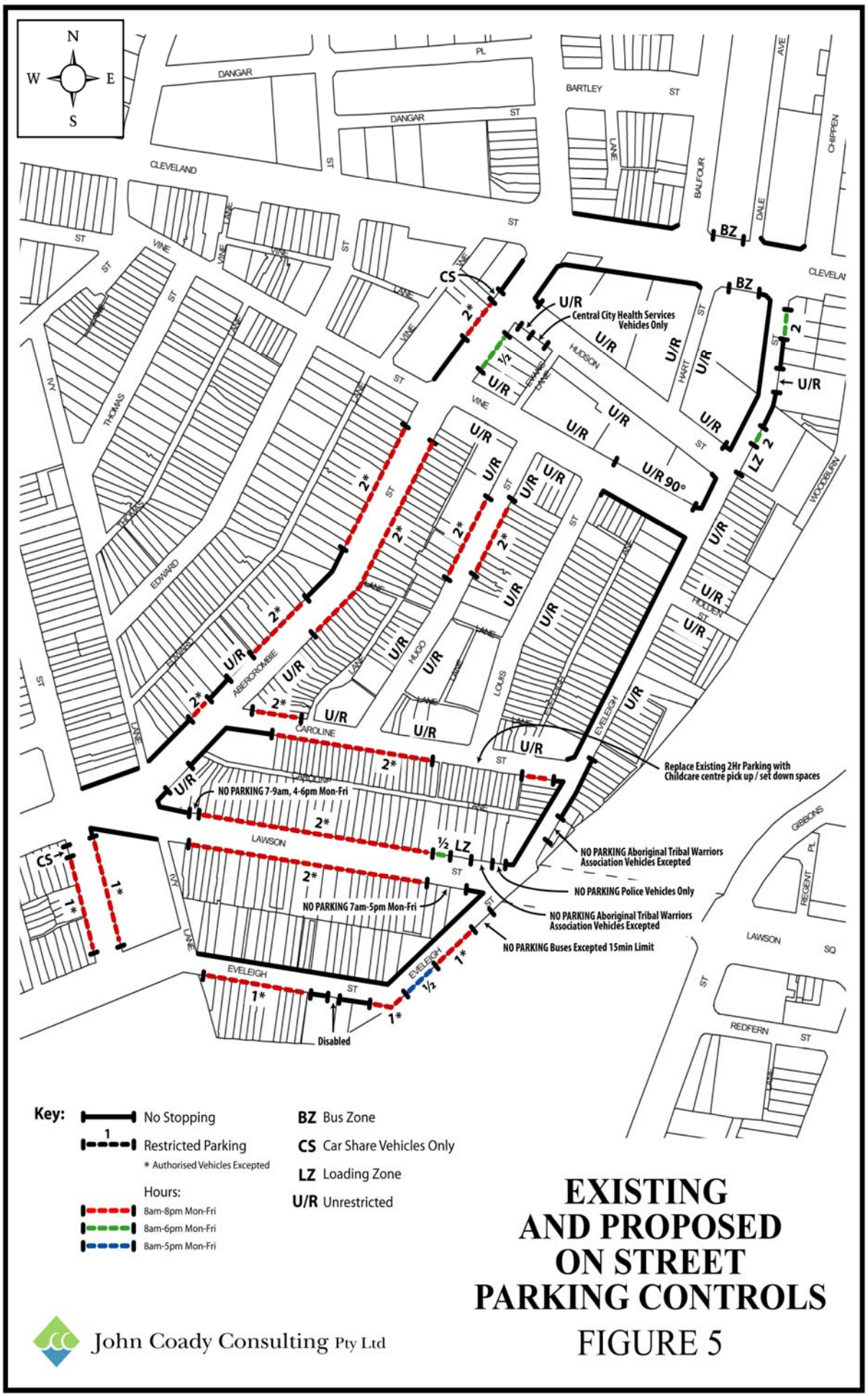
In addition, it is anticipated that many of the residents and workforce who will live and work in the Pemulwuy project will travel by bicycle, further reducing reliance on the private car for transport. In this respect, the Pemulwuy site is conveniently located in respect of the existing cycle routes which serve and pass through the area, and it is proposed to provide a cycle route through the Pemulwuy project to facilitate bicycle travel by residents and the workforce.

Consistent with State Government and City of Sydney Council policy it is proposed to provide limited off-street parking for residents and the workforce of the Pemulwuy development only as follows:

Resident Parking		
• Townhouses and Apartments	-	70 spaces
• Student Accommodation	-	3 spaces
Retail	-	16 spaces
Commercial	-	13 spaces
Gymnasium	-	6 spaces
Childcare Centre	-	4 spaces
Gallery	-	3 spaces
Total	-	**115 spaces**

This off-street parking will be provided in a private basement carpark in Precinct 1. Plans of the basement carpark and its access arrangements are included in Appendix B along with a letter from Michael Logan of Terraffic Pty Ltd certifying that the carpark layout and access arrangements comply with relevant design standards contained in *AS/NZS 2890.1:2004*.

In the circumstances, it is considered that the proposed provision of 115 parking spaces in a private carpark on the basement level of Precinct 1 is adequate to serve the Pemulwuy project such that it can be concluded that the proposed development has no unacceptable parking implications.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DANGAR
CLEVELAND
BARTLEY
BALFOUR
DALE
CHIPPEN
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BZ
U/R
Central City Health Services Vehicles Only
HUDSON
HART
U/R 90°
LZ
WOODBURN
THOMAS
EDWARD
ABERCROMBIE
CAROLINE
HUGO
LOUIS
EVELEIGH
HOLDEN
LAWSON
NO PARKING 7-9am, 4-6pm Mon-Fri
NO PARKING 7am-5pm Mon-Fri
Replace Existing 2Hr Parking with Childcare centre pick up / set down spaces
NO PARKING Aboriginal Tribal Warriors Association Vehicles Excepted
NO PARKING Police Vehicles Only
NO PARKING Buses Excepted 15min Limit
Disabled
GIBBONS
REGENT
REDFERN
LAWSON SQ
Key:
No Stopping
Restricted Parking
* Authorised Vehicles Excepted
Hours:
8am-8pm Mon-Fri
8am-6pm Mon-Fri
8am-5pm Mon-Fri
BZ Bus Zone
CS Car Share Vehicles Only
LZ Loading Zone
U/R Unrestricted
John Coady Consulting Pty Ltd
EXISTING AND PROPOSED ON STREET PARKING CONTROLS
FIGURE 5

5. Traffic

Existing Road Network

The classifications assigned to the road network serving the site by the RTA are shown on Figure 6. As can be observed, Pemulwuy enjoys convenient access to the higher order road network which serves and passes through the Redfern area in the form of the State Road system comprising Cleveland Street, Regent Street and Gibbons Street. While neither Lawson nor Abercrombie Street form part of the classified road network, they perform an important collector road function for the area. The existing traffic controls on the road network within and serving the Pemulwuy site are shown on Figure 7.

Existing Traffic Conditions

Information on existing traffic conditions on the road network serving the site is available in terms of annual average daily traffic volume data (AADT) compiled by the RTA, and intersection counts conducted on the road network within and serving Pemulwuy conducted as part of the preparation of this report.

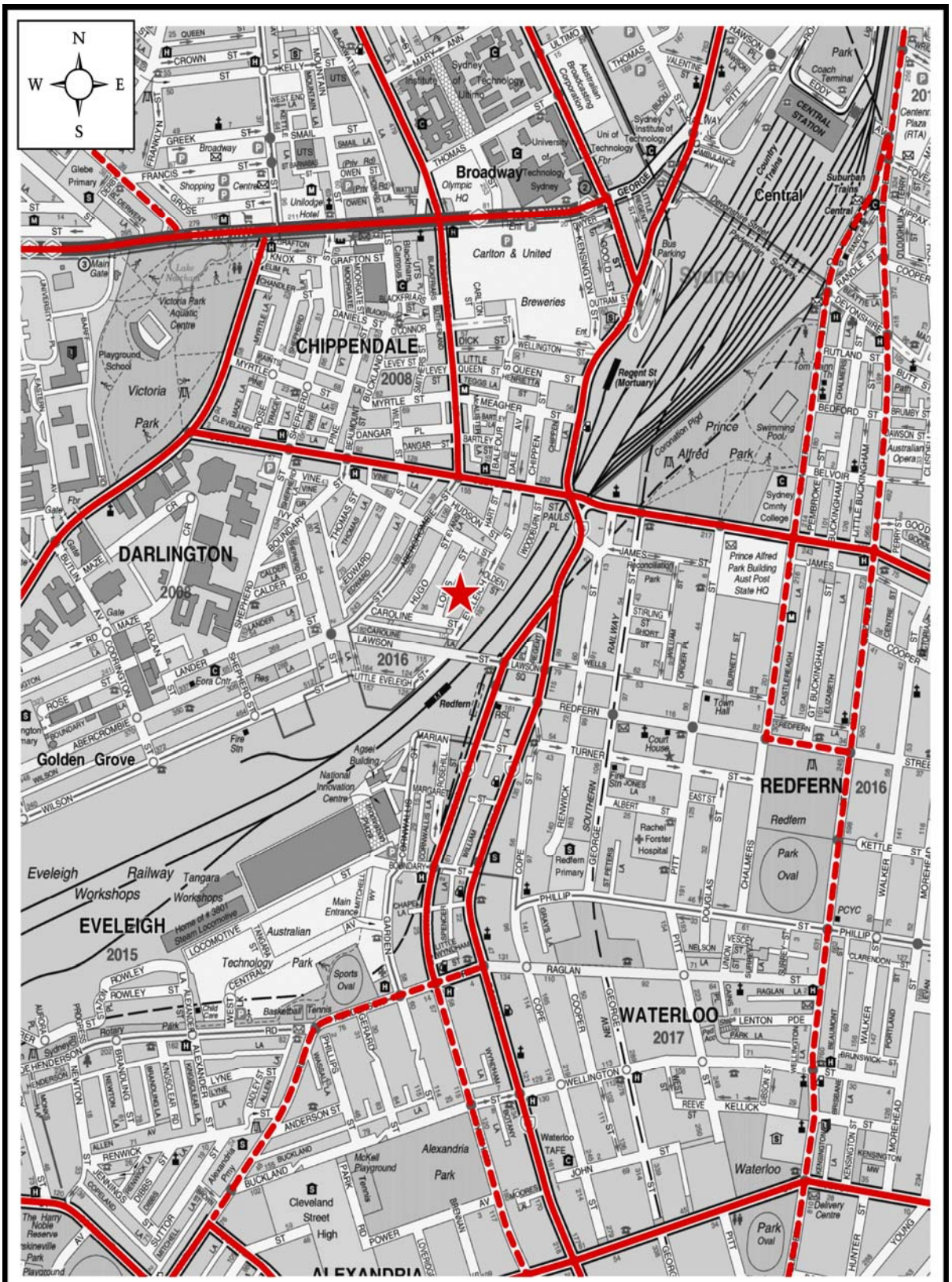
The 2005 AADT traffic volumes compiled by the RTA on the road network serving the site are shown on Figure 6.

A series of intersection counts were conducted between 7.00 - 9.00am and 4.00 - 6.00pm on Thursday, 16th June 2011. The intersections counted were:

Eveleigh Street/Lawson Street	Abercrombie Street/Caroline Street
Eveleigh Street/Caroline Street*	Abercrombie Street/Vine Street
Eveleigh Street/Vine Street	Abercrombie Street/Hudson Street
Eveleigh Street/Hudson Street	Caroline Street/Louis Street*
Eveleigh Street/Cleveland Street	

**These intersection counts were conducted on Thursday 20 October 2011*

The weekday AM and PM peak traffic flows on the road network within and serving Pemulwuy are summarised on Figure 8A for the AM peak period and Figure 8B for the PM peak period.



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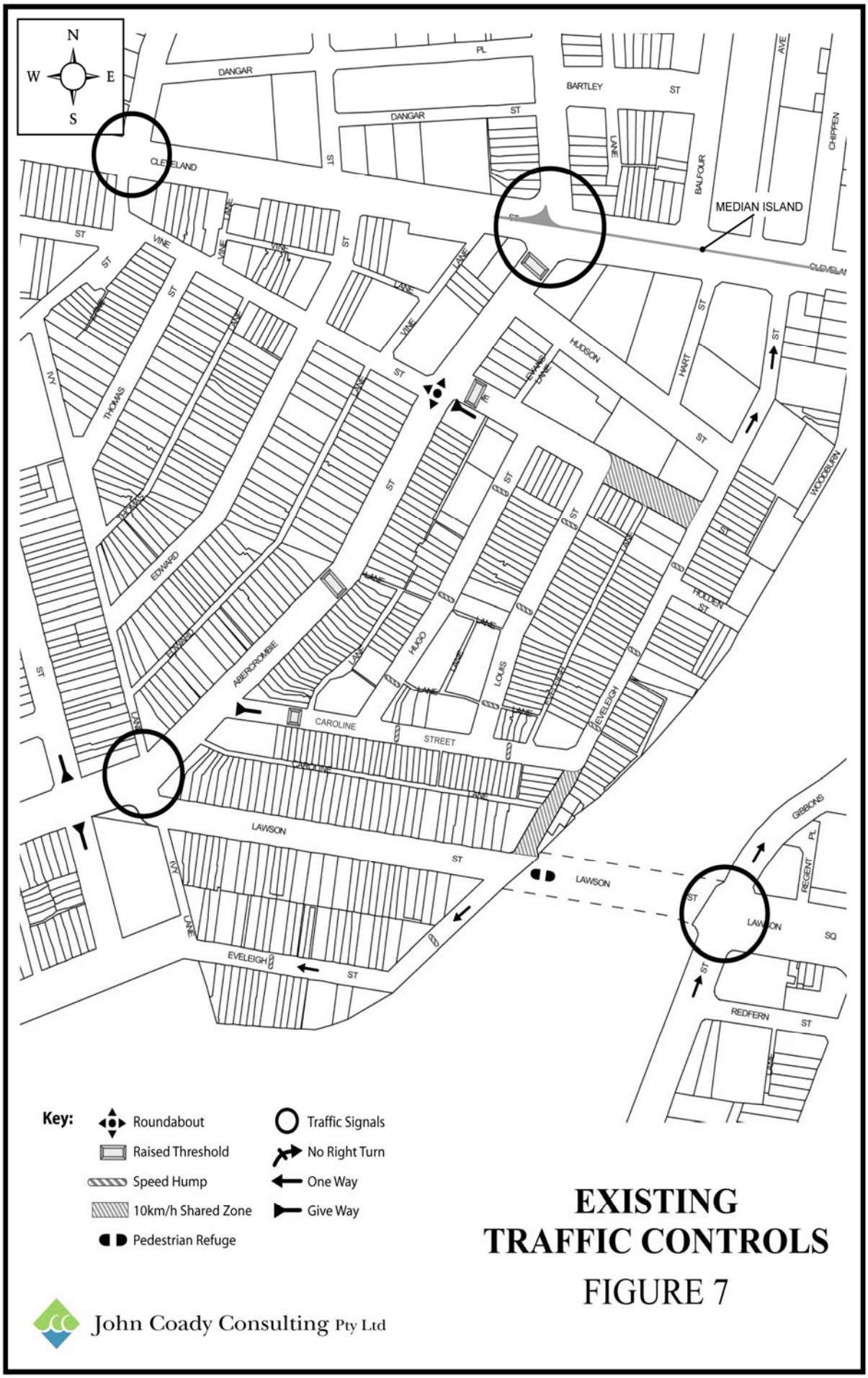
ROAD HIERARCHY

FIGURE 6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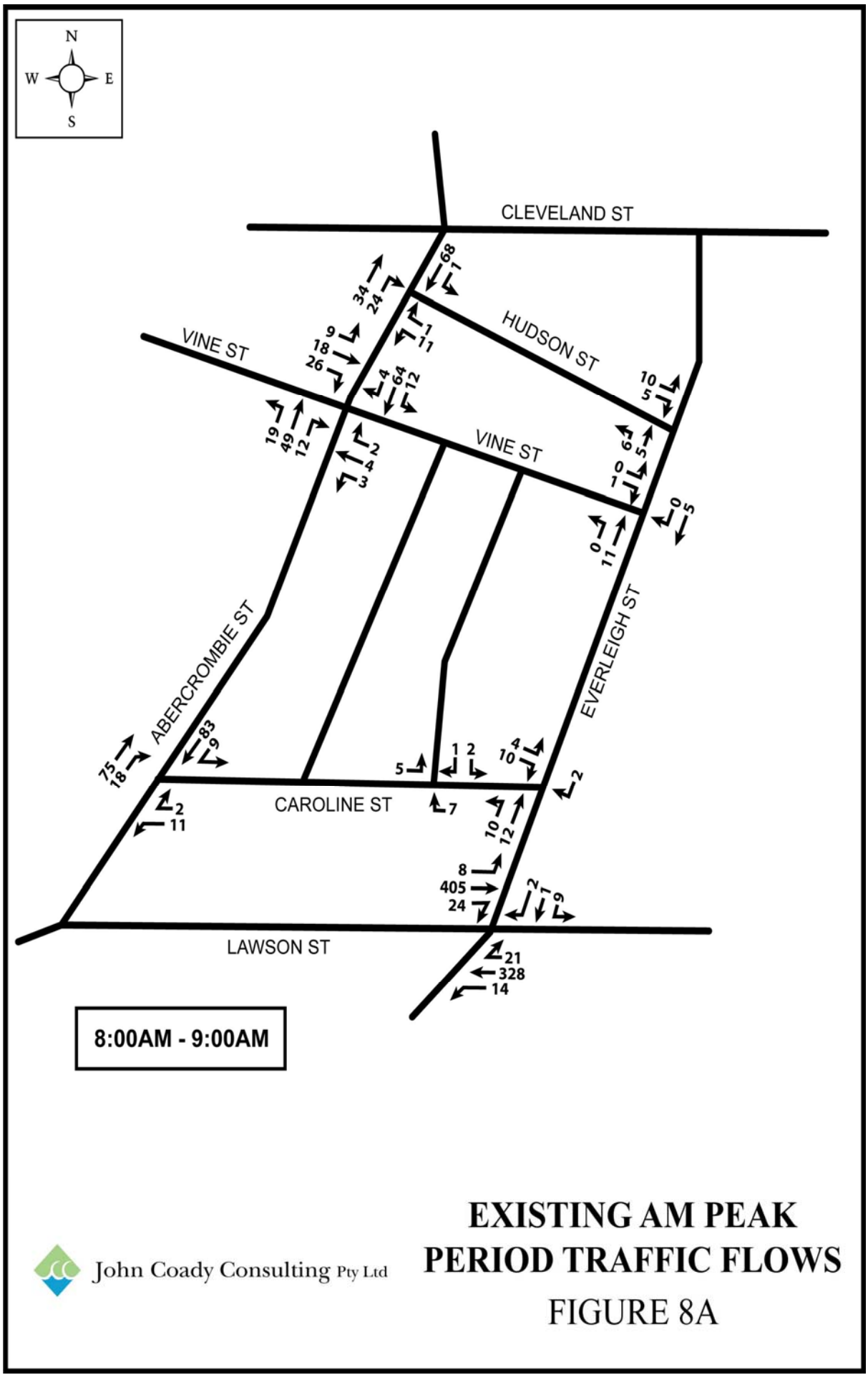
PL
DANGAR
ST
BARTLEY
ST
AVE
CHIPPEN
LANE
BALFOUR
MEDIAN ISLAND
CLEVELAND
ST
VINE
LANE
HUDSON
HART
WOODBURN
THOMAS
IVY
EDWARD
ABERCROMBIE
HUGO
LOUIS
CAROLINE
STREET
HOLDEN
REVELEIGH
LAWSON
EVELEIGH
GIBBONS
REGENT
PL
SQ
REDFERN
Key:
Roundabout
Raised Threshold
Speed Hump
10km/h Shared Zone
Pedestrian Refuge
Traffic Signals
No Right Turn
One Way
Give Way
EXISTING
TRAFFIC CONTROLS
FIGURE 7
John Coady Consulting Pty Ltd



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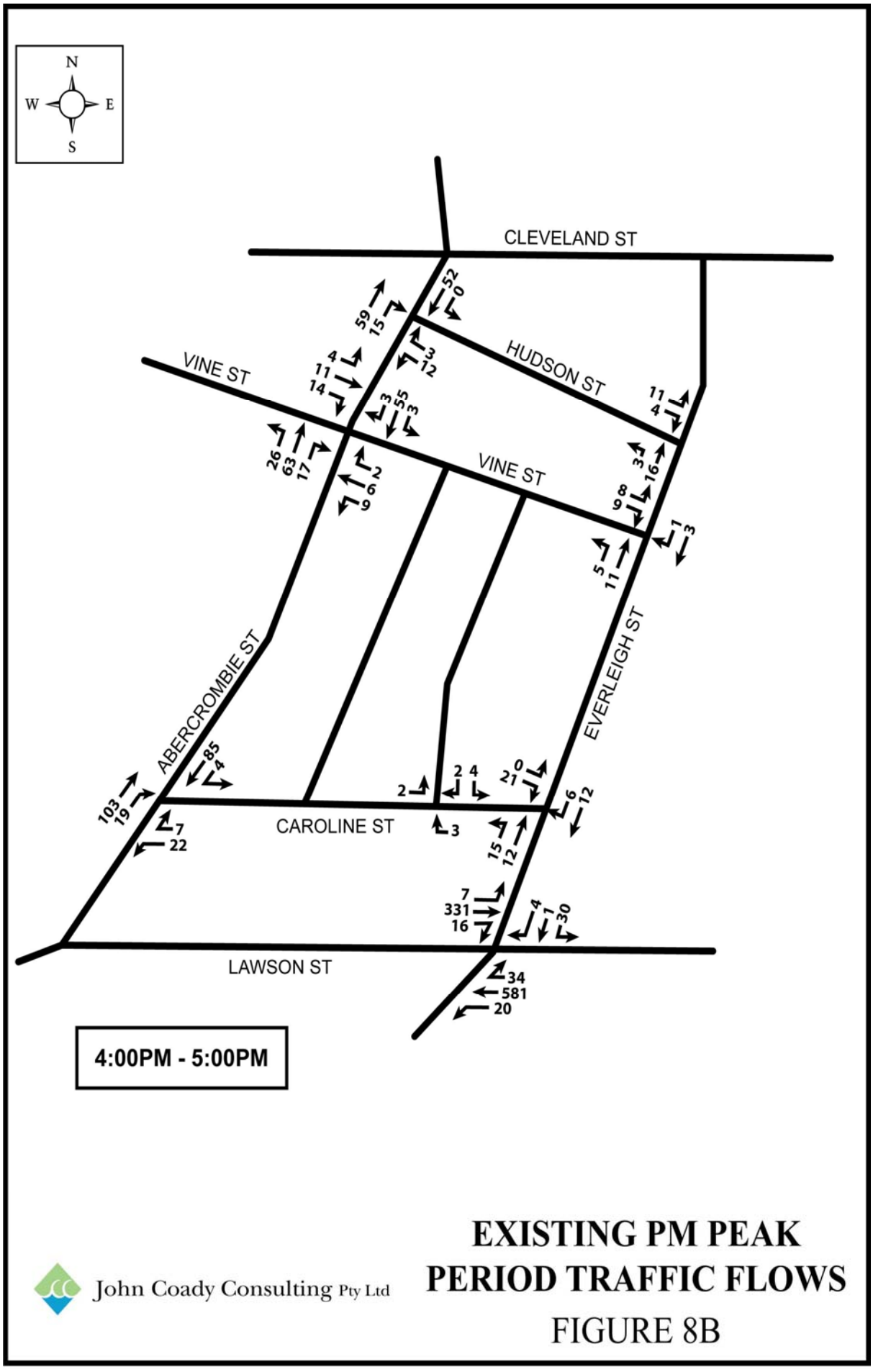
EXISTING AM PEAK PERIOD TRAFFIC FLOWS

FIGURE 8A



John Coady Consulting Pty Ltd

EXISTING PM PEAK PERIOD TRAFFIC FLOWS

FIGURE 8B

Projected Traffic Generation Potential

An indication of the weekday AM and PM peak period traffic generation potential of the various components of the Pemulwuy project is provided by the typical traffic generation rates specified by the RTA Guidelines[1] for those different forms of development as follows:

Residential

The RTA Guidelines specify the following typical traffic generation rates for medium density residential development as follows:

Medium Density Residential Development		
Smaller Units and Flats (up to 2 bedrooms)		
Daily Vehicle Trips	=	4.5 per dwelling
Weekday Peak Hour Vehicle Trips	=	0.4-0.5 per dwelling
Larger Units and Townhouses (3 or more bedrooms)		
Daily Vehicle Trips	=	5.0-6.5 per dwelling
Weekday Peak Hour Vehicle Trips	=	0.5-0.65 per dwelling
High Density Residential Development		
Metropolitan Regional (CBD) Centres		
Daily Vehicle Trips	=	Not available
Peak Hour Vehicle Trips	=	0.4 trips per unit
Metropolitan Sub-Regional Centres		
Daily Vehicle Trips	=	Not Available
Peak Hour Vehicle Trips	=	0.29 trips per unit

For the purposes of this assessment, the typical weekday peak hour traffic generation rate specified by the RTA Guidelines for high density residential development (0.24 vtph per dwelling) has been adopted because:

- its excellent public transport accessibility, the environment in which Pemulwuy is located effectively replicates CBD conditions

- the typical traffic generation rates for residential development specified by the RTA Guidelines are based on an off-street parking provision which is some 25 - 50% higher than the parking requirement specified by Council's DCP.

[1] *RTA "Guide to Traffic Generating Developments. Section 3 - Landuse Traffic Generation" October 2002*

Application of that typical traffic generation rate to the residential and student accommodation components of the proposed development yields a weekday peak period traffic generation potential of 25 vtph.

Gymnasium

The typical weekday peak period traffic generation rate specified by the RTA Guidelines for gymnasiums in Metropolitan Regional (CBD) Centres (3 vtph per 100m^2 GFA) has been adopted for the gymnasium incorporated in the Pemulwuy project. Application of that rate to the floorarea of the gymnasium (890m^2) yields a weekday peak period traffic generation potential of 30 vtph for that facility.

Retail

The RTA Guidelines contain information on the traffic generation characteristics of *shopping centres* which were derived from surveys of predominantly major shopping centres in the Sydney Metropolitan Area and throughout NSW. On the basis of those survey results, models for predicting the traffic generation potential of individual components of shopping centre developments, including department stores, supermarkets and speciality shops, were produced. Those models indicate that speciality shops in large shopping centres have a weekday evening peak period traffic generation potential of 4.5 - 5.6 vtph per 100m^2 GLA. Because of the relatively minor nature of the retail floorspace incorporated in the Pemulwuy project, its high level of public transport accessibility, and the likelihood that it will serve predominantly the local population, a weekday PM peak period traffic generation potential of 4 vtph per 100m^2 GLA has been adopted for the retail floorspace incorporated in the proposed development. During the AM peak period a lower rate of 2 vtph per 100m^2 has been adopted. Those traffic generation rates are also appropriate for that retail floorspace which is expected to be used as a café or a restaurant. Application of those rates to the retail floorspace in the Pemulwuy project (825m^2) yields a weekday PM peak period traffic generation of 40 vtph, and a weekday AM peak period traffic generation of 20 vtph, for that retail floorspace.

Commercial

The RTA Guidelines specify a weekday peak period traffic generation potential of 2vtph per 100m^2 GFA of commercial floorspace. However, that traffic generation rate is based on a parking requirement of 1 space : 40m^2, while the parking for the commercial office floorspace incorporated in the Pemulwuy project is 1 space : 125m^2. In the circumstances, a reduced weekday peak period traffic generation potential of 1 vtph per 100m^2 GFA has been adopted for the commercial office floorarea (2080m^2) in the Pemulwuy project yielding a weekday peak period traffic generation potential of 20 vtph for that office floorspace.

Childcare Centre

The RTA Guidelines specify a typical traffic generation potential for long daycare childcare centres of 0.8 vtph per child during the AM peak period and 0.7 vtph per child during the PM peak period. Application of those requirements to the childcare centre incorporated in the Pemulwuy project (60 children) yields a weekday peak period traffic generation potential of 40 - 50 vtph.

Gallery

It can be reasonably anticipated that the weekday peak period traffic generation potential of the gallery incorporated in the Pemulwuy project will be negligible, largely restricted to workforce traffic. For the purposes of this assessment, a nominal weekday peak period traffic generation potential of 5 vtph has been adopted.

Total

The total weekday AM and PM peak period traffic generation potential of the Pemulwuy project is summarised on the table below yielding the following total weekday peak period traffic generation potential:

AM	150 vtph
PM	160 vtph

		Traffic Generation Potential	
		Rate	**No.**
Residential ▪ Affordable Housing ▪ Student Accommodation	 62 dwellings 43 apartments	 0.24 vtph per unit 0.24 vtph per unit	 15 vtph 10 vtph
Gymnasium	890m^2	3 vtph per 100m^2	30 vtph
Retail Shops/Restaurants	825m^2	AM - 2 vtph per 100m^2 PM - 4 vtph per 100m^2	20 vtph 40 vtph
Commercial Floorarea	2080m^2	1 vtph per 100m^2	20 vtph
Childcare Centre	60 children	AM - 0.8 vtph per child PM - 0.7 vtph per child	50 vtph 40 vtph
Gallery	485m^2	Nominal	5 vtph
TOTAL			**AM - 150 vtph** **PM - 160 vtph**

For the purposes of this assessment, the following arrival/departure rates have been adopted for the traffic generation potential of the various components of the Pemulwuy project.

	AM Peak Period		PM Peak Period	
	In	**Out**	**In**	**Out**
Residential	5	20	20	5
Gymnasium	15	15	15	15
Retail Shops/Restaurants	10	10	20	20
Commercial	20	-	-	20
Childcare Centre	25	25	20	20
Gallery	5	-	-	5
TOTAL	**80**	**70**	**75**	**85**

There is no reliable way to assign the traffic generation potential of the proposed development to the road network serving the site. However, as noted in the Introduction to this report, it is intended to focus traffic activity generated by the proposed development to the northern part of the site, and in line with that strategy the vehicular access for the private and public carparks is off Vine Street. It is intended that the majority of traffic generated by the proposed development will approach/depart via the Vine Street/Abercrombie Street and it is proposed to use traffic calming and streetscape initiatives in the western end of Vine Street (between Eveleigh Street and the carpark access) to encourage the preferred access route. However, because of the location of the childcare centre adjacent to the Lawson Street/Eveleigh Street intersection and the provision of child set-down/pick-up parking spaces on the southern side of Caroline Street adjacent to the intersection with Eveleigh Street it is inevitable that some of the traffic involved in child set-down/pick-up activity will approach those parking spaces via the Lawson Street/Eveleigh Street intersection.

The assignment of the projected traffic generation potential of the proposed development to the road network serving the site, adopted for the purposes of this assessment, is shown on Figure 9A for the AM peak period and Figure 9B for the PM peak period.

It should be recognised that this assignment overstates the actual, additional traffic demand on the road network serving the Pemulwuy development because the development eliminates some former and existing development on the site including:

- some 21 residential dwellings, many of which have already been demolished
- existing office floorspace such as that currently occupied by the AHC
- the existing gymnasium in Vine Street.

Traffic Implications - Road Network Capacity

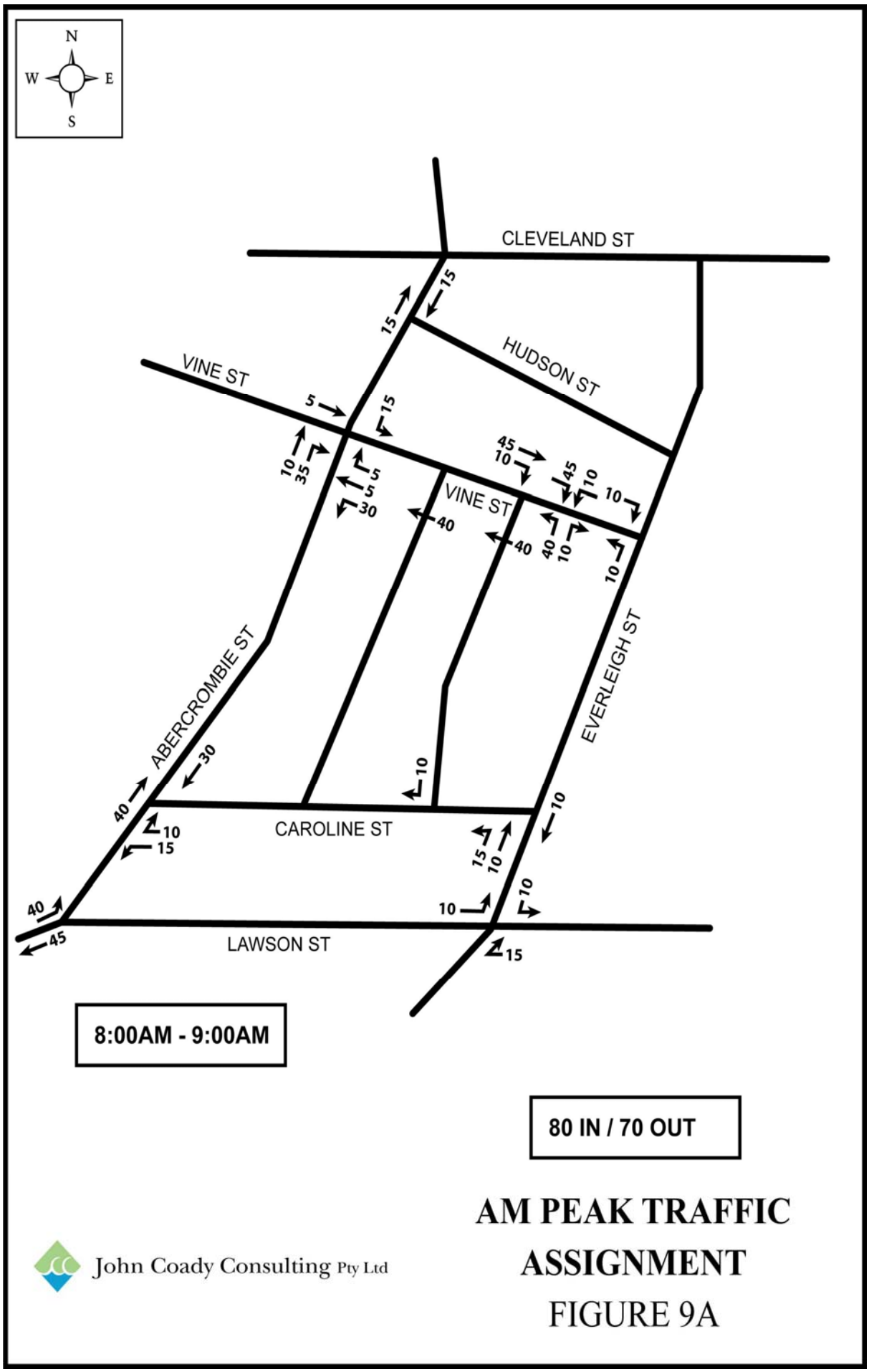
As indicated, the majority of the traffic generated by the proposed development will approach/depart via the Vine Street/Abercrombie Street intersection, and it is recommended that the roundabout which controls the southern arm of that offset intersection (ie the intersection of Abercrombie Street [west]) be relocated to control the northern arm of the intersection (ie the intersection of Abercrombie Street with Vine Street [east]) because:

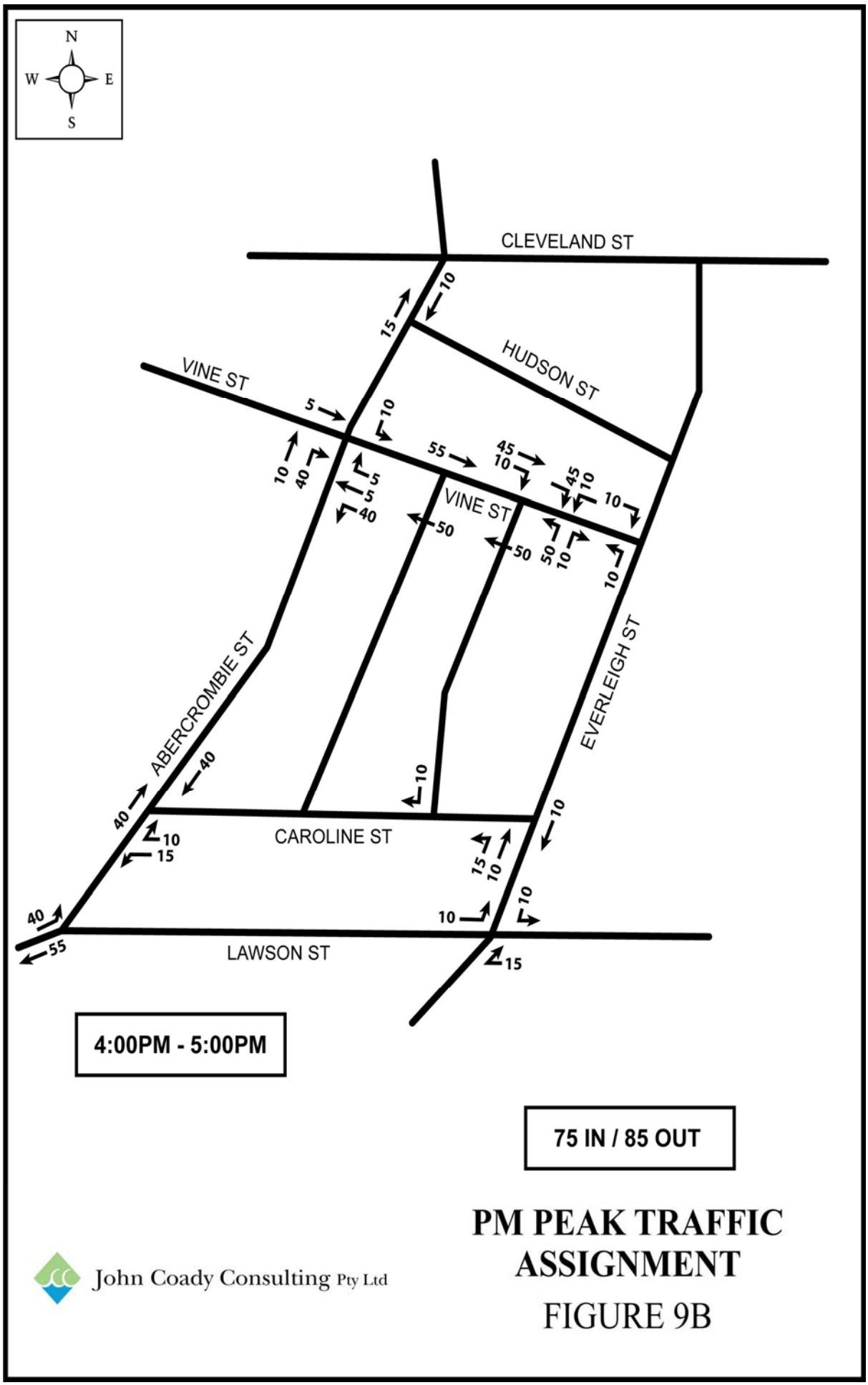
- the projected post-development traffic demand on the northern intersection is significantly greater than the traffic demand on the southern intersection

- relocation of the roundabout will assist the strategy for traffic generated by the carpark incorporated in the Pemulwuy development to approach/depart the area via the Abercrombie Street/Vine Street intersection.

A copy of the survey plan of the existing intersection arrangements which locate the existing roundabout on the alignment of Vine Street on the western side of Abercrombie Street is reproduced in the following pages along with a concept plan of the recommended intersection arrangement which locates the roundabout on the alignment of Vine Street on the eastern side of Abercrombie Street.

The main traffic implications of the proposed development in terms of road network capacity concern the effect of the additional traffic generated by the proposed development on the operating performance of the Vine Street/Abercrombie Street and Lawson Street/Eveleigh Street intersections. These effects can be assessed using the SIDRA traffic model and criteria for interpreting the results of SIDRA analysis are set out on the schedule reproduced in Appendix C.


N
W
E
S
CLEVELAND ST
HUDSON ST
VINE ST
VINE ST
ABERCROMBIE ST
EVERLEIGH ST
CAROLINE ST
LAWSON ST
8:00AM - 9:00AM
80 IN / 70 OUT
AM PEAK TRAFFIC ASSIGNMENT
FIGURE 9A
John Coady Consulting Pty Ltd


N
W
E
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CLEVELAND ST
HUDSON ST
VINE ST
VINE ST
CAROLINE ST
LAWSON ST
ABERCROMBIE ST
EVERLEIGH ST
4:00PM - 5:00PM
75 IN / 85 OUT
PM PEAK TRAFFIC ASSIGNMENT
FIGURE 9B
John Coady Consulting Pty Ltd

The results of the SIDRA analysis of the operating performance of the Vine Street/Abercrombie Street and Lawson Street/Eveleigh Street intersections during the weekday AM and PM peak period under projected post-development demand are presented in Appendix C revealing that both intersections perform satisfactorily under projected post-development traffic demand. In the circumstances, it can be concluded that the proposed development has no unacceptable traffic effect in terms of road network capacity.

Traffic-Environmental Effect

A comparison of existing and projected AM and PM peak period two-way traffic flows on those roads which are expected to accommodate the traffic generated by the proposed development is set out below.

	Existing Traffic Demand		**Projected Post-Development Traffic Demand**	
	AM	**PM**	**AM**	**PM**
Vine Street				
▪ Eveleigh Street - Carpark Access	1	22	21	42
▪ Louis Street - Abercrombie Street	51	48	146	153
Louis Street				
▪ Vine Street - Louis Street	15	11	25	21
Caroline Street				
▪ Eveleigh Street - Louis Street	26	42	41	57
▪ Louis Street - Abercrombie Street	40	52	65	77
Eveleigh Street				
▪ Lawson Street - Caroline Street	41	76	76	111
▪ Caroline Street - Vine Street	17	28	37	48

The RTA Guidelines[2] specify the following *environmental capacity* performance standards for residential streets:

	Environmental Goal	**Maximum**
Local Street	200 vtph	300 vtph
Collector Road	300 vtph	500 vtph

As can be observed:

- the projected post-development traffic demand does not exceed the RTA's *Environmental Goal* on any street

[2] *RTA "Guide to Traffic Generating Developments. Section 4 - Interpretation of Traffic Impacts" December 1993*

- the increased traffic demand on most streets as a consequence of the proposed development is relatively minor

- while the increased traffic demand in Vine Street is significant, the projected post-development traffic demand remains below the RTA's *Environmental Goal* for a local residential street.

In the circumstances, it can be concluded that the proposal has no unacceptable traffic-related environmental effect.

Proposed Closure of Caroline Lane

As noted in the foregoing, the proposed development requires closure of the eastern end of Caroline Lane to facilitate development of Precinct 2. In conjunction with that proposed closure, a new section of the lane connecting to Caroline Street at a point opposite the alignment of Louis Street is to be constructed adjacent to the proposed closure. This arrangement, which is shown on the plan prepared by Nordon Jago (Dwg No. 0DA.013B) reproduced in the following pages, shows:

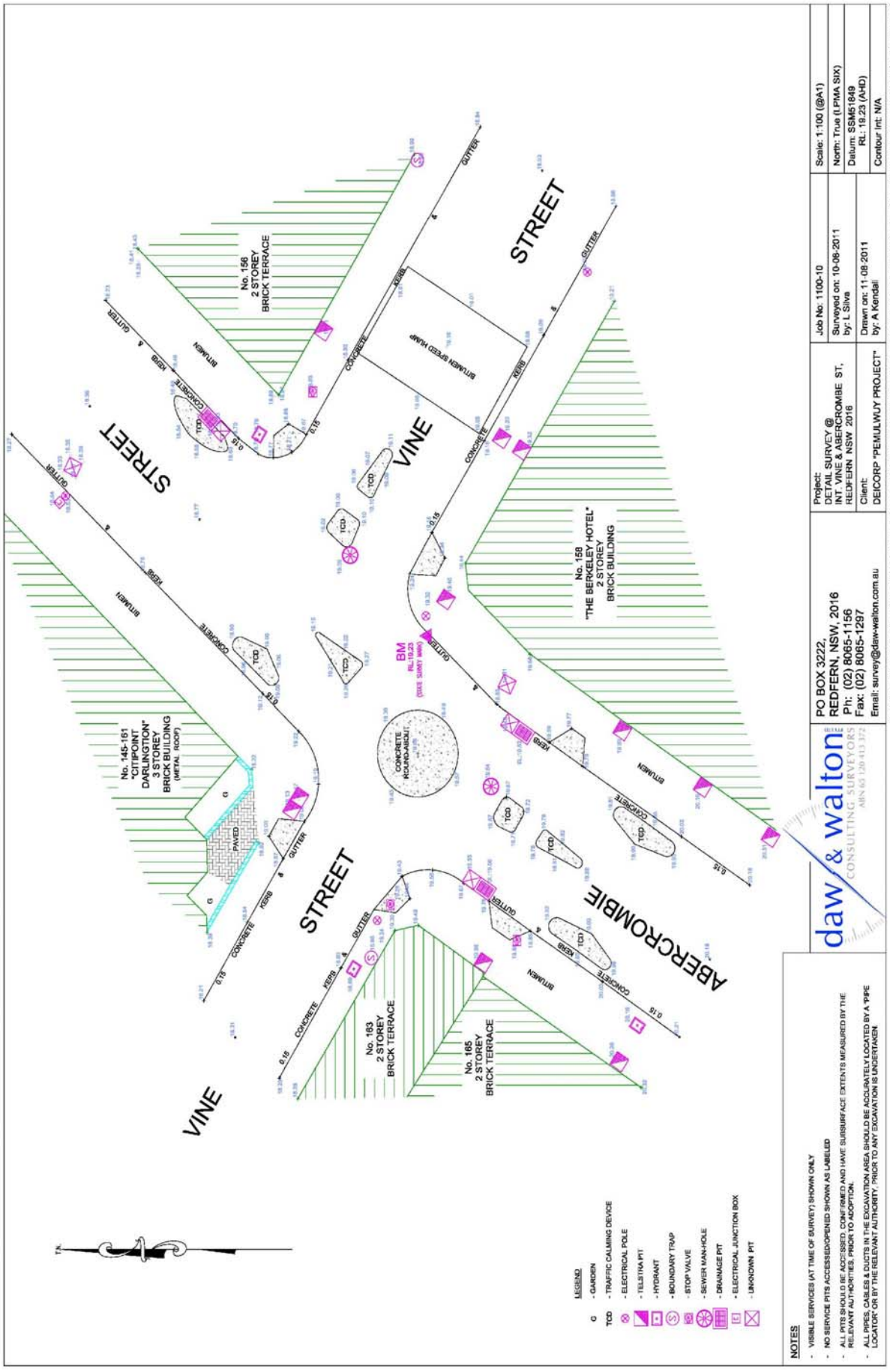
- the part of Caroline Lane which is proposed for closure

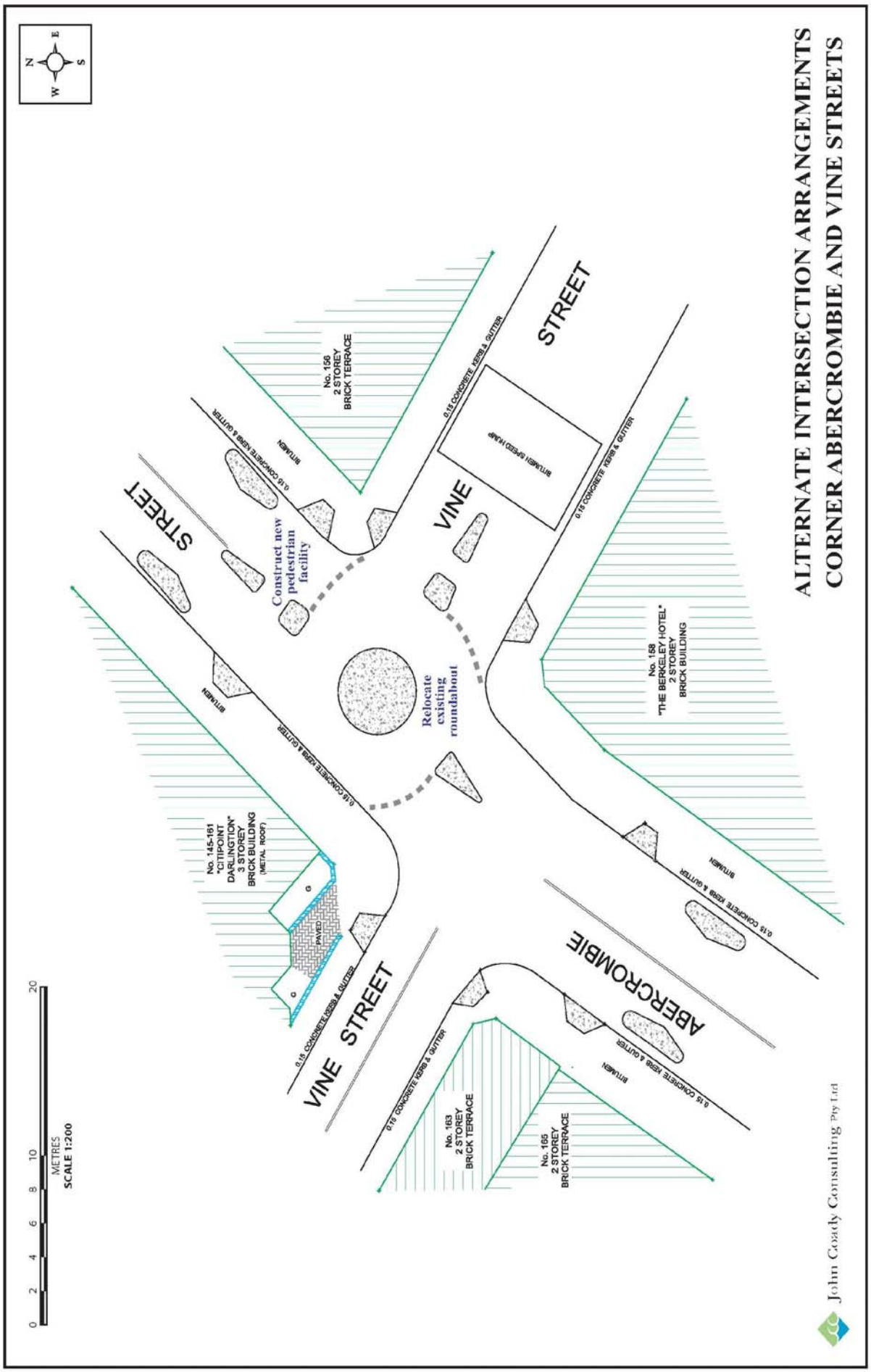
- how the continuity of Caroline Lane is to be maintained following the closure by the new connection to Caroline Street

- the turning path of the B99 vehicle 5.2m long through the T-junction intersection in Caroline Lane created by the new section of the lane. That turning path template demonstrates that the largest cars likely to use the lane can satisfactorily travel along Caroline Lane in its new configuration following the proposed closure.

The existing and projected post-development traffic flows on Caroline Lane and on Caroline Street are relatively minor such that the new configuration of the eastern end of Caroline Lane following the proposed closure will have no unacceptable traffic implications.


Vine Street
Louis Street
Eveleigh Street
Precinct 1
Site Area Precinct 1 = 6776m²
Eveleigh Lane
Precinct 3
Site Area Precinct 3 = 2386m²
Railway Corridor
Redfern Community Centre
Existing Public Open Space
Caroline Street
Caroline Lane
Site Area Precinct 2 - 1300m²
Precinct 2
Lawson Street
Redfern Railway Station
Detail - B99
Permulwuy Project, Mixed Use Development, REDFERN
Laneways
0DA013 B
Design Application
NORDON · JAGO ARCHITECTS
Legend - Laneways
Existing Laneway
Caroline Street
DP 33204
Caroline Lane Closure


No. 156
2 STOREY
BRICK TERRACE
No. 158
"THE BERKELEY HOTEL"
2 STOREY
BRICK BUILDING
No. 145-161
"CITIPOINT
DARLINGTON"
3 STOREY
BRICK BUILDING
(METAL ROOF)
No. 163
2 STOREY
BRICK TERRACE
No. 165
2 STOREY
BRICK TERRACE
VINE
STREET
ABERCROMBIE
BM
RL:19.23
CONCRETE ROUNDABOUT
BRUSHEN SPEED HUMP
PAVED
KERB
GUTTER
CONCRETE
TCD
0.15
LEGEND
G - GARDEN
TCD - TRAFFIC CALMING DEVICE
- ELECTRICAL POLE
- TELSTRA PIT
- HYDRANT
- BOUNDARY TRAP
- STOP VALVE
- SEWER MAN-HOLE
- DRAINAGE PIT
- ELECTRICAL JUNCTION BOX
- UNKNOWN PIT
NOTES
- VISIBLE SERVICES (AT TIME OF SURVEY) SHOWN ONLY
- NO SERVICE PITS ACCESSED/OPENED SHOWN AS LABELED
- ALL PITS SHOULD BE ACCESSED, CONFIRMED AND HAVE SUBSURFACE EXTENTS MEASURED BY THE RELEVANT AUTHORITIES, PRIOR TO ADOPTION.
- ALL PIPES, CABLES & DUCTS IN THE EXCAVATION AREA SHOULD BE ACCURATELY LOCATED BY A "PIPE LOCATOR" OR BY THE RELEVANT AUTHORITY, PRIOR TO ANY EXCAVATION IS UNDERTAKEN.
daw & walton
CONSULTING SURVEYORS
ABN 60 120 413 372
PO BOX 3222,
REDFERN, NSW, 2016
Ph: (02) 8065-1156
Fax: (02) 8065-1297
Email: survey@daw-walton.com.au
Project:
DETAIL SURVEY @
INT. VINE & ABERCROMBIE ST,
REDFERN NSW 2016
Client:
DEICORP "PEMULWUY PROJECT"
Job No: 1100-10
Surveyed on: 10-08-2011
by: L Silva
Drawn on: 11-08-2011
by: A Kendall
Scale: 1:100 (@A1)
North: True (LPMA SIX)
Datum: SSM51849
RL: 19.23 (AHD)
Contour Int: N/A
Copyright the intellectual property contained within this plan is the exclusive property of Daw & Walton Pty Ltd and may not be used, copied or reproduced wholly or in part without the fair consent of Daw & Walton Pty Ltd. ABN 60 120 413 372


ALTERNATE INTERSECTION ARRANGEMENTS
CORNER ABERCROMBIE AND VINE STREETS
John Coady Consulting Pty Ltd
N
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0 2 4 6 8 10 20
METRES
SCALE 1:200
VINE STREET
STREET
ABERCROMBIE
Construct new pedestrian facility
Relocate existing roundabout
BITUMEN SPEED HUMP
0.15 CONCRETE KERB & GUTTER
BITUMEN
PAVED
No. 145-161 "CITIPOINT DARLINGTION" 3 STOREY BRICK BUILDING (METAL ROOF)
No. 156 2 STOREY BRICK TERRACE
No. 158 "THE BERKELEY HOTEL" 2 STOREY BRICK BUILDING
No. 163 2 STOREY BRICK TERRACE
No. 165 2 STOREY BRICK TERRACE

6. Home and Workplace Travel Plans

The Director-General's specification requires preparation of sustainable *Travel Plan* for the residents and workforce on the Pemulwuy site. Those Plans are set out in the following.

1. HOME TRAVEL PLAN

Provide Information on Public Transport Services

The Pemulwuy site enjoys one of the highest levels of public transport accessibility of any location within the Sydney Metropolitan Area in the form of railway services via Redfern Railway Station and bus services which run along nearby Redfern Street, Regent/Gibbons Streets, and Cleveland Street. A *Public Transport Package* will form part of the *Travel Plan*. The package will include:

Train Service

- a copy of the Sydney Rail Network map showing the extent of the rail service
- a plan showing the suburban railway lines which stop at Redfern Railway Station, similar to the extract from the Sydney Railway Network Map reproduced in Chapter 2 of this report
- details of current train timetables for Redfern Railway Station
- a map showing the shortest and safest pedestrian route between various parts of the Pemulwuy site and Redfern Railway Station

Bus Services

- details of conveniently accessible bus services including:
    - service number
    - origin/destination
    - travel route along streets around the site
    - nearest bus stop

- bus service timetables
- a map showing the shortest and safest pedestrian route between the Pemulwuy site and the nearest bus stops.

Bicycle Access

The *Travel Plan* will include a *Bicycle Travel Package* which will identify:

- the location of designated bicycle parking spaces in the proposed development for residents and their visitors

- a map showing cycleways conveniently accessible to Pemulwuy, and demonstrating how those cycleways connect with regional bicycle routes

- a map showing the most convenient and safest bicycle routes connecting Pemulwuy with important public facilities including Redfern Shopping Centre, Sydney University, University of Technology, Prince Alfred Park, Royal Prince Alfred Hospital, and Sydney CBD Bicycle Network.

Pedestrian Access

The *Travel Plan* will contain a *Pedestrian Travel Package* which will provide information on the most convenient and safest pedestrian routes connecting the site with important public facilities including a map showing the most convenient and safest bicycle routes connecting Pemulwuy with important public facilities including Redfern Shopping Centre, Sydney University, University of Technology, Prince Alfred Park, Royal Prince Alfred Hospital, and Sydney CBD Bicycle Network.

Implementation

Just prior to the initial occupation of the residential components of Pemulwuy, the "generic" *Travel Plan* will be converted to a *Travel Plan* specific for residents of the proposed development with the inclusion of relevant information, train, and bus timetables, illustrations showing the shortest and most convenient routes between the site and the full range of destinations encompassed by the Plan, etc.

Hard copies of the *Travel Plan* will be produced for distribution to new tenants of the development.

A website will also be established for Pemulwuy, and the *Travel Plan* will be included on that website. The AHC will be responsible for updating the *Travel Plan* on, at least, an annual basis.

2. WORKPLACE TRAVEL PLAN

Workplace Travel Plans are typically promoted and operated by businesses which occupy buildings in an area. In circumstances where the ultimate tenant of the retail/commercial floorspace proposed for the development site is not known at this stage, the preparation of a *Workplace Travel Plan* for those proposed buildings cannot be specific. The *Workplace Travel Plan* for the retail/commercial tenancies is more appropriately prepared when the occupier of the building is known.

Notwithstanding, in order to provide guidance for the preparation of a *Workplace Travel Plan* for the Pemulwuy workforce, the following "generic" *Workplace Travel Plan* is proposed:

Provide information on public transport services

The Pemulwuy site enjoys one of the highest levels of public transport accessibility of any location within the Sydney Metropolitan Area in the form of railway services via Redfern Railway Station and bus services which run along nearby Redfern Street, Regent/Gibbons Streets, and Cleveland Street. A *Public Transport Package* will form part of the *Travel Plan*. The package will include:

Train Service

- a copy of the Sydney Rail Network map showing the extent of the rail service

- a plan showing the suburban railway lines which stop at Redfern Railway Station, similar to the extract from the Sydney Railway Network Map reproduced in Chapter 2 of this report

- details of current train timetables for Redfern Railway Station

- a map showing the shortest and safest pedestrian route between various parts of the Pemulwuy site and Redfern Railway Station

Bus Services

- details of conveniently accessible bus services including:

    - service number
    - origin/destination
    - travel route along streets around the site
    - nearest bus stop
    - bus service timetables
    - a map showing the shortest and safest pedestrian route between the Pemulwuy site and the nearest bus stops.

Bicycle Access

The *Travel Plan* will include a *Bicycle Travel Package* which will identify:

- the location of designated bicycle parking spaces in the proposed development for the workforce and their visitors

- a map showing cycleways conveniently accessible to Pemulwuy, and demonstrating how those cycleways connect with regional bicycle routes

- a map showing the most convenient and safest bicycle routes connecting Pemulwuy with important public facilities including Redfern Shopping Centre, Sydney University, University of Technology, Prince Alfred Park, Royal Prince Alfred Hospital, and Sydney CBD Bicycle Network.

Pedestrian Access

The *Travel Plan* will contain a *Pedestrian Travel Package* which will provide information on the most convenient and safest pedestrian routes connecting the site with important public facilities including:

- a map showing the most convenient and safest bicycle routes connecting Pemulwuy with important public facilities including Redfern Shopping Centre, Sydney University, University of Technology, Prince Alfred Park, Royal Prince Alfred Hospital, and Sydney CBD Bicycle Network.

Parking

Consideration will be given to establishing a car pooling scheme for the Pemulwuy workforce. The car pooling scheme will:

- distribute promotional material to the workforce encouraging participation in a car pooling scheme to operate from the site

- provide a service to match home locations and/or travel routes of applicants to participate in the car pooling scheme

- assist "matched" applicants to form a car pool while providing advice on appropriate, co-operative travel arrangements.

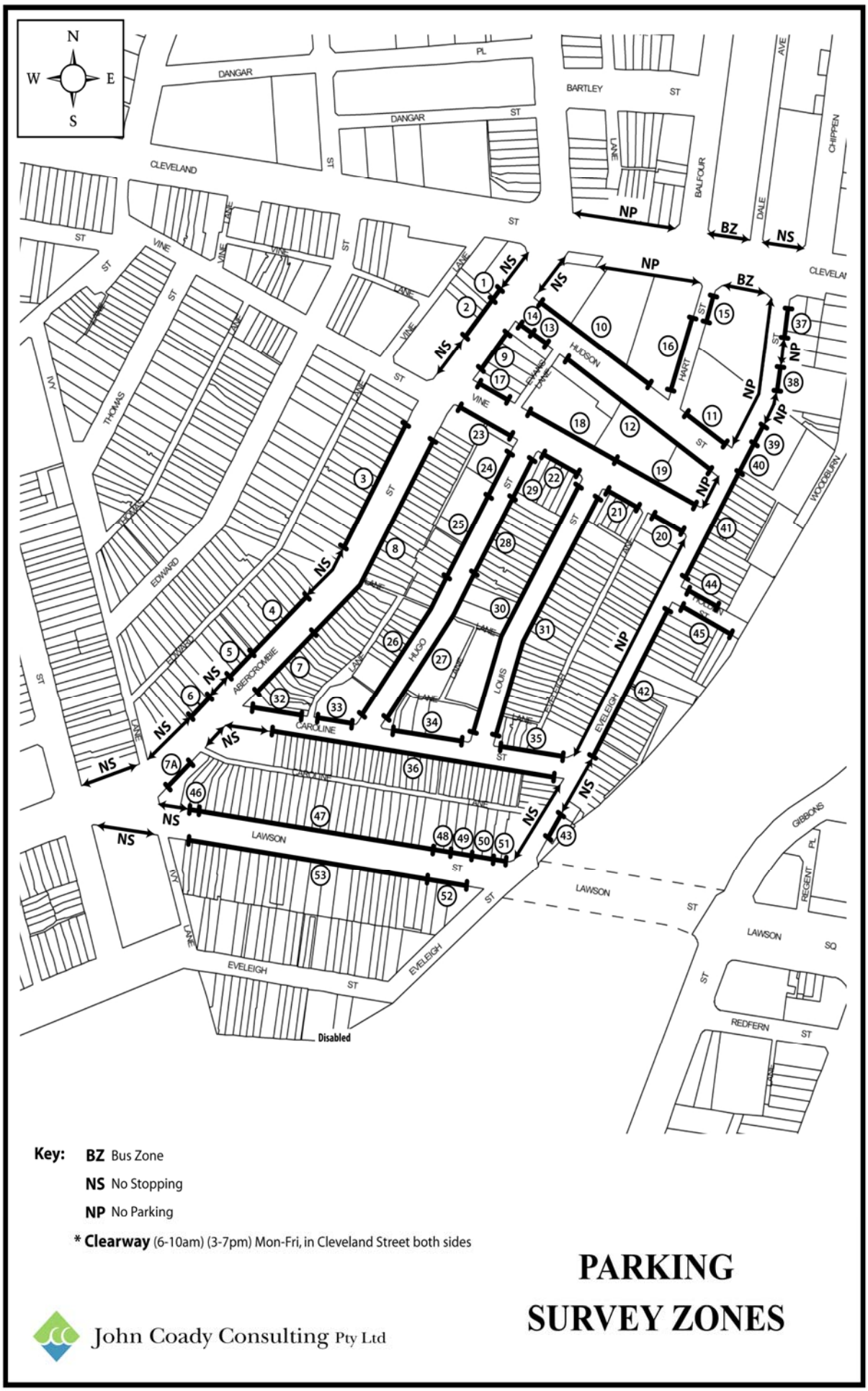
Work practices and incentives

Depending on the particular requirements of businesses which establish at Pemulwuy, consideration will be given to providing the workforce with flexible working arrangements such as:

- where practicable, to permit members of the workforce to choose flexible start/finish times within established time parameters

- where individual choice of start/finish times is impracticable, stagger the fixed start/fixed times at different parts of the business.

Appendix A
On-Street Parking Inventory



Key: **BZ** Bus Zone

NS No Stopping

NP No Parking

* **Clearway** (6-10am) (3-7pm) Mon-Fri, in Cleveland Street both sides

PARKING SURVEY ZONES

John Coady Consulting Pty Ltd

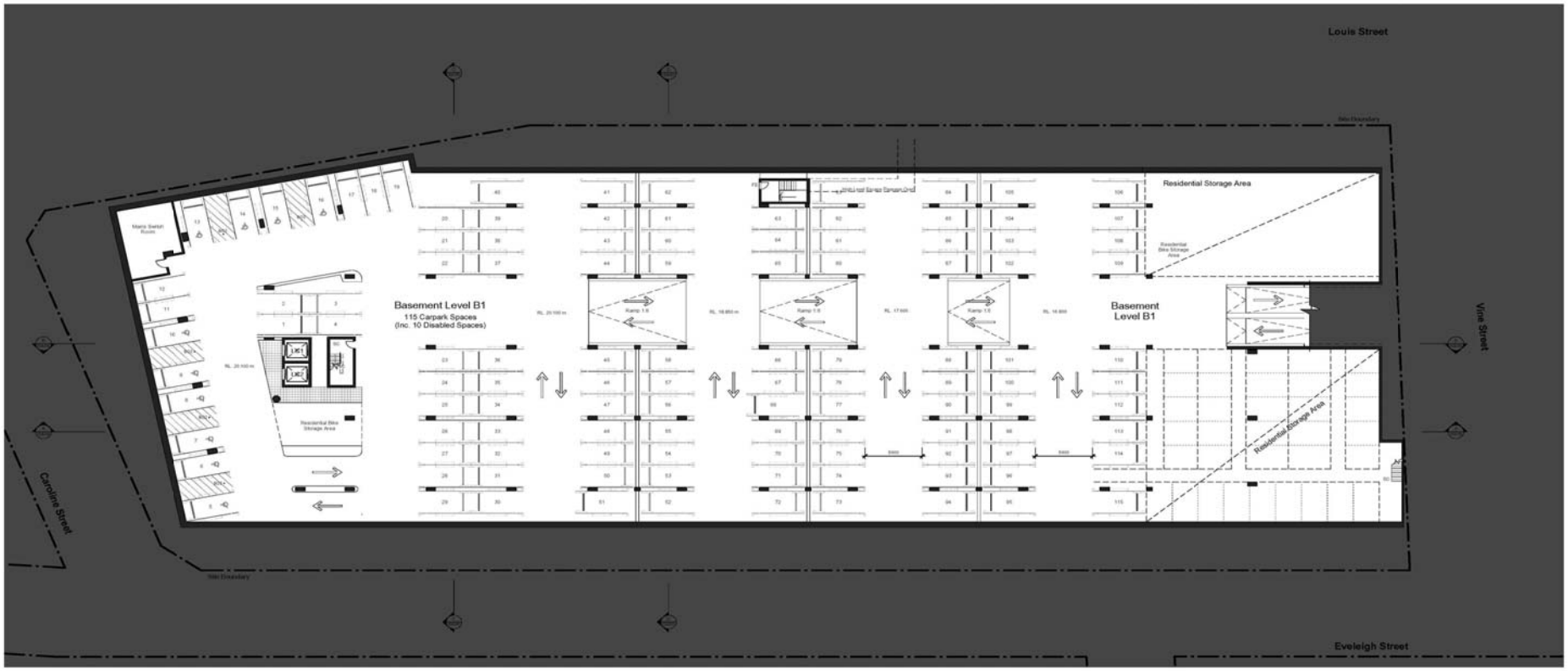
R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

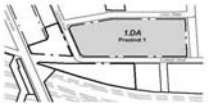
Zone	Location	Restriction	Cap
1	Abercrombie St West / Side	NO Parking (Authorized Car Share Veh. Excepted)	1
2	Abercrombie St West / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	3
3	Abercrombie St West / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	12
4	Abercrombie St West / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	8
5	Abercrombie St West / Side	Unrestricted	2
6	Abercrombie St West / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	4
7a	Abercrombie St East / Side	Unrestricted	2
7	Abercrombie St East / Side	Unrestricted	8
8	Abercrombie St East / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	20
9	Abercrombie St East / Side	1/2P (8.30am - 6pm) Mon - Fri	3
10	Hudson St North / Side	Unrestricted	12
11	Hudson St North / Side	Unrestricted	5
12	Hudson St South / Side	Unrestricted	15
13	Hudson St South / Side	NO Stopping (10am - 5pm) Mon - Fri Central City Health Services Veh. Excepted	1
14	Hudson St South / Side	Unrestricted	2
15	Hart St East / Side	Unrestricted	1
16	Hart St West / Side	Unrestricted	6
17	Vine St North / Side	Unrestricted	5
18	Vine St North / Side	Unrestricted	8
19	Vine St North / Side	Unrestricted (angle 90^0)	13
20	Vine St South / Side	Unrestricted	3
21	Vine St South / Side	Unrestricted	3
22	Vine St South / Side	Unrestricted	5
23	Vine St South / Side	Unrestricted	5
24	Hugo St West / Side	Unrestricted	5
25	Hugo St West / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	7
26	Hugo St West / Side	Unrestricted	14
27	Hugo St East / Side	Unrestricted	15
28	Hugo St East / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	6
29	Hugo St East / Side	Unrestricted	4
30	Louis St West / Side	Unrestricted	20
31	Louis St East / Side	Unrestricted	24
32	Caroline St North / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	4
33	Caroline St North / Side	Unrestricted	3
34	Caroline St North / Side	Unrestricted	6
35	Caroline St North / Side	Unrestricted	6
36	Caroline St South / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	25
37	Eveleigh St East / Side	2P (8.30am - 6pm) Mon - Fri	2
38	Eveleigh St East / Side	Unrestricted	3
39	Eveleigh St East / Side	2P (8.30am - 6pm) Mon - Fri	2
40	Eveleigh St East / Side	Loading Zone (8.30am - 5.15pm) Mon - Fri	2
Sub-Total Vehicles			295

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

Zone	Location	Restriction	Cap
41	Eveleigh St East / Side	Unrestricted	**10**
42	Eveleigh St East / Side	Unrestricted	**14**
43	Eveleigh St East / Side	NO Parking (Aboriginal Housing Company Veh. Excepted) angle 90^0	**3**
44	Holden St North / Side	Unrestricted	**2**
45	Holden St South / Side	Unrestricted	**4**
46	Lawson St North / Side	NO Parking (7am - 9am ; 4pm - 6pm) Mon - Fri	**1**
47	Lawson St North / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	**23**
48	Lawson St North / Side	1/2P (8.30am - 6pm) Mon - Fri	**1**
49	Lawson St North / Side	Loading Zone (8.30 am - 6pm) Mon - Fri	**2**
50	Lawson St North / Side	NO Parking (Aboriginal Tribal Warriors Association Veh. Excepted)	**2**
51	Lawson St North / Side	NO Parking (Police Veh. Only)	**1**
52	Lawson St South / Side	NO Parking (8am - 5pm) Mon - Fri	**3**
53	Lawson St South / Side	2P (8am - 8pm) Mon - Fri Permit Holder Excepted (Area 32)	**24**
Sub-Total Vehicles			**90**
TOTAL VEHICLES			**385**

Appendix B
Basement Carpark Plans and Compliance Letter





NORDON · JAGO ARCHITECTS

CNR PARRAMATTA RD & JOHNSTON ST. - PO BOX 254 - ANNANDALE - NSW 2038 - T 02 9517 2822 F 02 9517 2833
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 GRAHAM P. JAGO REGISTRATION No. NSW - 4926

Development Application

Rev	Description	Date
A	Draft Development Summary Issue	10.02.11
B	Preliminary DA Issue For Review	11.02.11
C	Preliminary DA Issue For Review	20.02.11
D	Development Application Issue	09.05.11

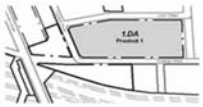
Preliminary Draft Issue [Rev. D] - 09.12.11

Scale Bar 1:200

Precinct 1 - Pemulwuy Project, Mixed Use Development, REDFERN

TITLE: Basement Level B1

JOB No.	DB00210
DATE	Oct 2010
SCALE	A1 @ 1 : 200
DWG No.	1DA091 D



NORDON · JAGO ARCHITECTS

Development Application

Rev	Description	Date
A	Concept Development Application Issue	10.08.11
B	Preliminary DA Issue For Review	03.09.11
C	Preliminary DA Issue For Review	20.09.11
D	Development Application Issue	09.12.11

Preliminary Draft Issue [Rev. D] - 09.12.11

Precinct 1 - Pemulwuy Project, Mixed Use Development, REDFERN

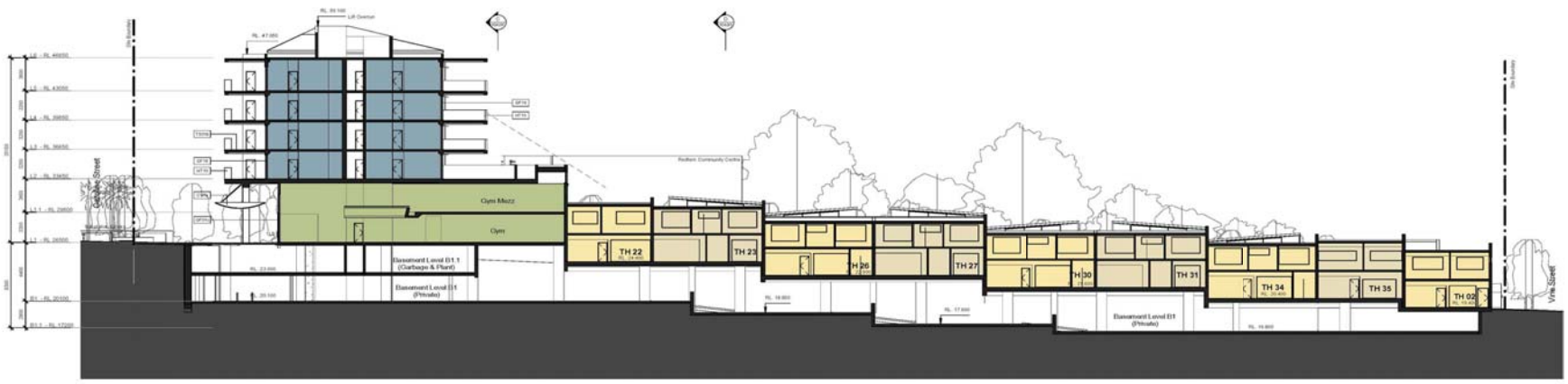
TITLE: Plan Level 01 - Townhouses

JOB No: DE009215

DATE: Oct 2010

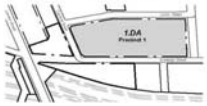
SCALE: A1 @ 1 : 200

DWG No: 1DA100 D



A Section
1 : 200

B Section
1 : 200



NORDON · JAGO ARCHITECTS

CNR PARRAMATTA RD & JOHNSTON ST - PO BOX 254 - ANNANDALE - NSW 2038 - T 02 9517 2022 F 02 9517 2033
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 GRAHAM P. JAGO REGISTRATION No. NSW - 4936

Development Application

Rev	Description	Date
A	Preliminary DA Issue For Review	31.08.11
B	Preliminary DA Issue For Review	28.09.11
C	Development Application Issue	09.12.11

Preliminary Draft Issue [Rev. C] - 09.12.11

0m 2m 4m 6m 8m 10m 20m
Scale Bar - 1:200

Precinct 1 - Pemulwuy Project, Mixed Use Development, REDFERN

TITLE: Section A & B

JOB No. DE09210
DATE Oct 2010
SCALE A1 @ 1 : 200
DWG No. 1DA200 C

Terraffic Pty Ltd

Traffic and Parking Consultants

ABN 83 078 415 871

13 December 2011
Ref: 11064

DeiCorp Constructions P/L
Shop 5/140-152 New Canterbury Rd
Petersham NSW 2049

Attention: Adam Pinto

Dear Adam,

PEMULWUY PROJECT, REDFERN
CAR PARK AND ACCESS COMPLIANCE REPORT

As requested, I have assessed the following architectural plans prepared by Nordon Jago Architects for compliance with the Australian Standard AS/NZS2890.1-2004 and AS/NZS2890.6-2009:

Drawing No.1DA091D	Basement Level B1	Revision D	Dated 14/12/2011
Drawing No.1DA100D	Plan Level 01-Townhouses	Revision D	Dated 14/12/2011
Drawing No.1DA200C	Section A & B	Revision C	Dated 14/12/2011

I can confirm that the car parking areas and access ramps have been designed to satisfy the following requirements of the Australian Standard AS/NZS2890.1:2004 – *"Off-street car parking"*:

- *Class 1A* long-stay parking spaces have a minimum length of 5.4m and width of 2.4m
- An additional 0.3m has been provided for spaces adjacent to a wall or obstruction
- 1.0m wide dead-end aisle extensions have been provided
- The access/manoeuvring aisles satisfy the minimum requirement of 5.8m
- Pavement cross-falls at parking spaces do not exceed 5% (1 in 20) in any direction
- Columns have been located in accordance with Clause 5.2 of the Standard
- The first 6m of the access ramp from the property boundary does not exceed 5% (1 in 20)
- Maximum ramp grades do not exceed 20% (1 in 5)
- Ramp transitions do not exceed 12.5% (1 in 8) over a distance of 2.0m
- The single lane entry and exit ramps comprise a 3.0m roadway and 2 x 300mm wide kerbs

- The dual width access ramps connecting parking levels exceed the minimum width of 6.1m wall to wall
- A minimum headroom clearance of 2.2m has been provided throughout the basement carpark
- Pedestrian sight lines in accordance with Figure 3.3 of the Standard have been provided at the property boundary to enhance pedestrian safety

The disabled parking spaces have also been designed in accordance with the Australian Standard AS/NZS2890.6:2009 – *"Off-street parking for people with disabilities"* as follows:

- A 5.4m long x 2.4m wide dedicated *(non-shared)* parking space (Clause 2.2)
- An adjacent *shared* area that is also 5.4m long x 2.4m wide (Clause 2.2)
- A 2.4m long x 2.4m wide *shared* area that is located within the access aisle (not marked) (Clause 2.2)
- A minimum headroom of 2.5m above the disabled spaces (Clause 2.4)
- Pavement cross-falls in disabled spaces do not exceed 2.5% (1 in 40) in any direction (Clause 2.3)

Should you require any further information, please do not hesitate to contact Michael Logan on 9570 5200 during business hours.

Yours faithfully

Michael Logan
Director
Terraffic Pty Ltd

Appendix C
Results of SIDRA Analysis

MOVEMENT SUMMARY

Site: Abercrombie - Vine (east) AM Prop

Abercrombie Street and Vine Street (east)
Proposed AM Peak - roundabout control
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Abercrombie Street											
2	T	68	2.0	0.096	5.8	LOS A	0.7	5.0	0.06	0.51	43.7
3	R	75	0.0	0.096	8.9	LOS A	0.7	5.0	0.06	0.75	41.2
Approach		143	1.0	0.096	7.4	LOS A	0.7	5.0	0.06	0.64	42.3
East: Vine Street (east)											
4	L	52	0.0	0.052	7.3	LOS A	0.4	2.5	0.24	0.59	42.1
6	R	7	0.0	0.052	9.3	LOS A	0.4	2.5	0.24	0.66	40.7
Approach		59	0.0	0.052	7.6	LOS A	0.4	2.5	0.24	0.60	41.9
North: Abercrombie Street											
7	L	27	0.0	0.083	7.4	LOS A	0.6	4.1	0.25	0.63	42.2
8	T	68	2.0	0.083	6.3	LOS A	0.6	4.1	0.25	0.52	42.9
Approach		95	1.4	0.083	6.6	LOS A	0.6	4.1	0.25	0.55	42.7
All Vehicles		297	0.9	0.096	7.2	LOS A	0.7	5.0	0.16	0.60	42.4

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: Abercrombie - Vine (east) PM Prop

Abercrombie Street and Vine Street (east)
Proposed PM Peak - roundabout control
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Abercrombie Street											
2	T	77	2.0	0.096	2.3	LOS A	0.6	4.2	0.05	0.22	47.0
3	R	73	0.0	0.097	8.7	LOS A	0.6	4.2	0.05	0.78	41.9
Approach		150	1.0	0.097	5.5	LOS A	0.6	4.2	0.05	0.49	44.2
East: Vine Street (east)											
4	L	60	0.0	0.054	3.6	LOS A	0.3	2.2	0.18	0.35	45.2
6	R	7	0.0	0.054	9.0	LOS A	0.3	2.2	0.18	0.74	41.7
Approach		67	0.0	0.054	4.1	LOS A	0.3	2.2	0.18	0.39	44.8
North: Abercrombie Street											
7	L	18	0.0	0.062	3.7	LOS A	0.4	2.5	0.20	0.39	45.3
8	T	58	2.0	0.062	2.7	LOS A	0.4	2.5	0.20	0.28	46.0
Approach		76	1.5	0.062	2.9	LOS A	0.4	2.5	0.20	0.31	45.8
All Vehicles		293	0.9	0.097	4.5	LOS A	0.6	4.2	0.12	0.42	44.7

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: Abercrombie - Vine (west)
AM Prop

Abercrombie Street and Vine Street (west)
Proposed AM Peak - sign control
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Abercrombie Street											
1	L	19	0.0	0.068	6.4	LOS A	0.0	0.0	0.00	0.86	43.3
2	T	111	2.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		130	1.7	0.068	0.9	LOS A	0.0	0.0	0.00	0.13	48.9
North: Abercrombie Street											
8	T	107	2.0	0.064	0.4	LOS A	0.4	3.1	0.25	0.00	46.9
9	R	13	0.0	0.064	7.0	LOS A	0.4	3.1	0.25	0.81	43.0
Approach		120	1.8	0.064	1.1	LOS A	0.4	3.1	0.25	0.09	46.4
West: Vine Street (west)											
10	L	32	0.0	0.058	7.3	LOS A	0.3	1.8	0.26	0.57	42.3
12	R	26	0.0	0.058	7.5	LOS A	0.3	1.8	0.26	0.64	42.3
Approach		58	0.0	0.058	7.3	LOS A	0.3	1.8	0.26	0.61	42.3
All Vehicles		308	1.4	0.068	2.2	NA	0.4	3.1	0.14	0.20	46.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Abercrombie - Vine (west)
PM Prop

Abercrombie Street and Vine Street (west)
Proposed PM Peak - sign control
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Abercrombie Street											
1	L	26	0.0	0.082	6.4	LOS A	0.0	0.0	0.00	0.85	43.3
2	T	130	2.0	0.082	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		156	1.7	0.082	1.1	LOS A	0.0	0.0	0.00	0.14	48.7
North: Abercrombie Street											
8	T	104	2.0	0.063	0.5	LOS A	0.4	3.1	0.27	0.00	46.6
9	R	14	0.0	0.063	7.1	LOS A	0.4	3.1	0.27	0.80	43.0
Approach		118	1.8	0.063	1.3	LOS A	0.4	3.1	0.27	0.10	46.1
West: Vine Street (west)											
10	L	20	0.0	0.035	7.3	LOS A	0.2	1.1	0.27	0.58	42.3
12	R	14	0.0	0.035	7.5	LOS A	0.2	1.1	0.27	0.64	42.2
Approach		34	0.0	0.035	7.4	LOS A	0.2	1.1	0.27	0.60	42.3
All Vehicles		308	1.5	0.082	1.8	NA	0.4	3.1	0.13	0.17	46.9

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.