traffic impact assessment

for the redevelopment of the redfern rsl, 157 redfern street, redfern

prepared on behalf of Deicorp by **TRAFFIX** traffic & transport planners
ref: 08 260 v3 June 2009

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contents

1. introduction

TRAFFIX has been commissioned by Deicorp to undertake a traffic impact assessment in support of a development application relating to the redevelopment of the Redfern RSL site at 157 Redfern Street, Redfern. The report follows upon a previous report prepared in support of the Preliminary Environmental Assessment that was prepared separately, which was an application made under Part 3A of the Environmental Planning and Assessment Act, 1979, following authorisation of the Concept Plan by the Minister.

This report documents the findings of our investigations and should be read in the context of the Environmental Assessment (EA) of which this report forms a part. The development is considered of a size and nature that will require formal referral to the RTA as a Part 3A project and under the provisions of SEPP (Infrastructure) 2007. In this regard, preliminary discussions and consultation have been held with the RTA regarding the subject development.

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Assesses the parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions.

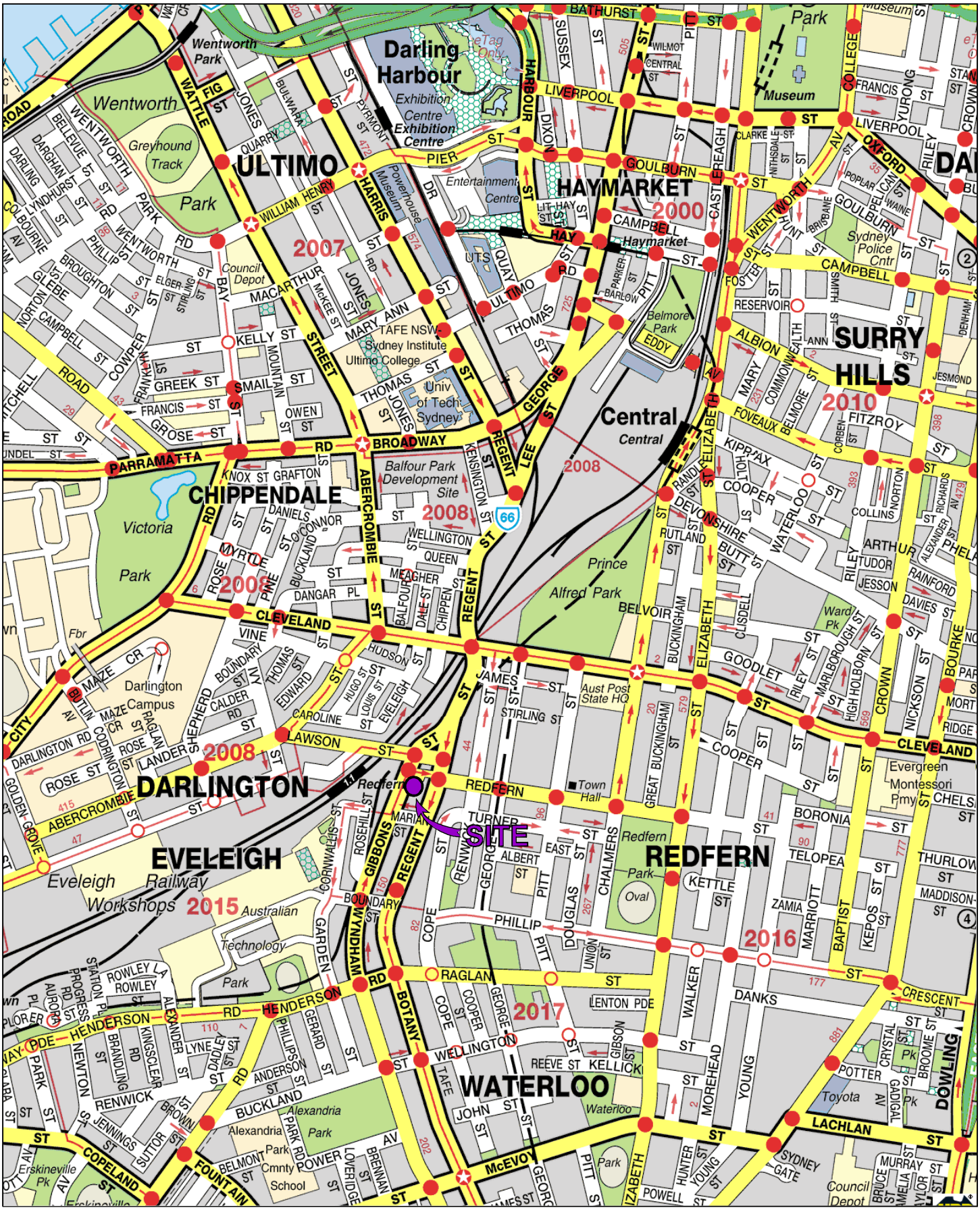
2. location and site

The site is located directly to the east of Redfern train station, on the eastern side of Gibbons Street in Redfern. It is currently occupied by the Redfern RSL Club which is to remain a tenant of the proposed future development. Redfern Police station is located to the north of the site in the TNT Towers.

The site is roughly rectangular in configuration with a total area of 1,647.4m^2. It has a northern frontage of 34.4 metres to Redfern Street and a western frontage of 37.3 metres to Gibbons Street. It has frontages to the south of an existing car park development and William Lane which runs to the site boundary at the southeast corner of the site.

Vehicle access to the site is currently provided via both the Gibbons Street and Redfern Street frontages with loading by service vehicles from William Lane. Pedestrian access is available via Redfern Street only.

A Location Plan is presented in **figure 1**, with a Site Plan presented in **figure 2**. Reference should also be made to the Photographic Record presented in **appendix a**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.



Source: UBD 2008

N

0 500m

impact assessment: redevelopment of redfern RSL club

gibbon and redfern streets, redfern

figure 1

location

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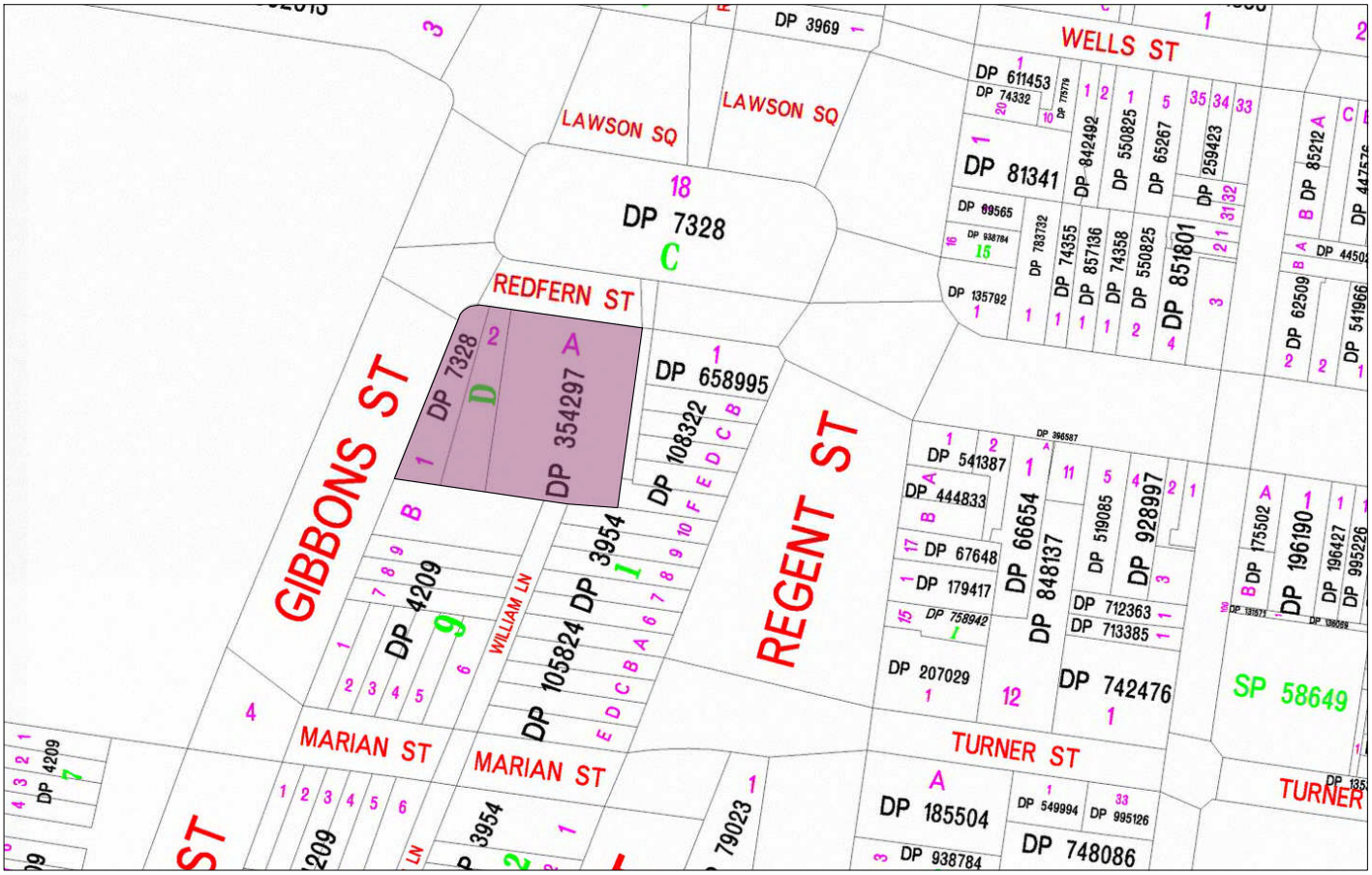

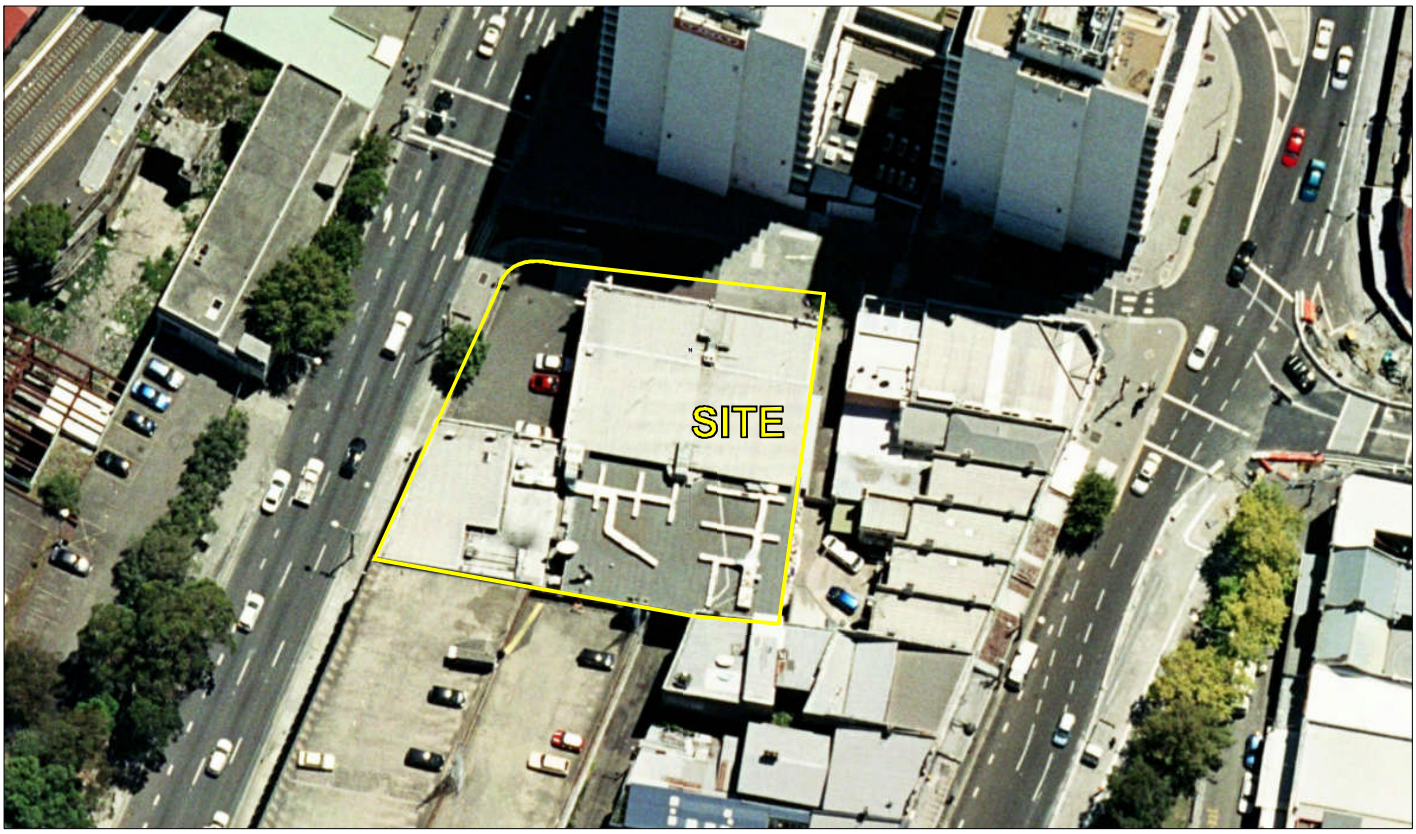

N

cadastre plan
0 1km

aerial photograph: dated january 2007
0 50m

impact assessment: redevelopment of redfern RSL club
gibbon and redfern streets, redfern

figure 2
site

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3. existing traffic conditions

3.1 road hierarchy

The road hierarchy in the vicinity of the site is shown in **figure 3** with the following roads of particular interest:

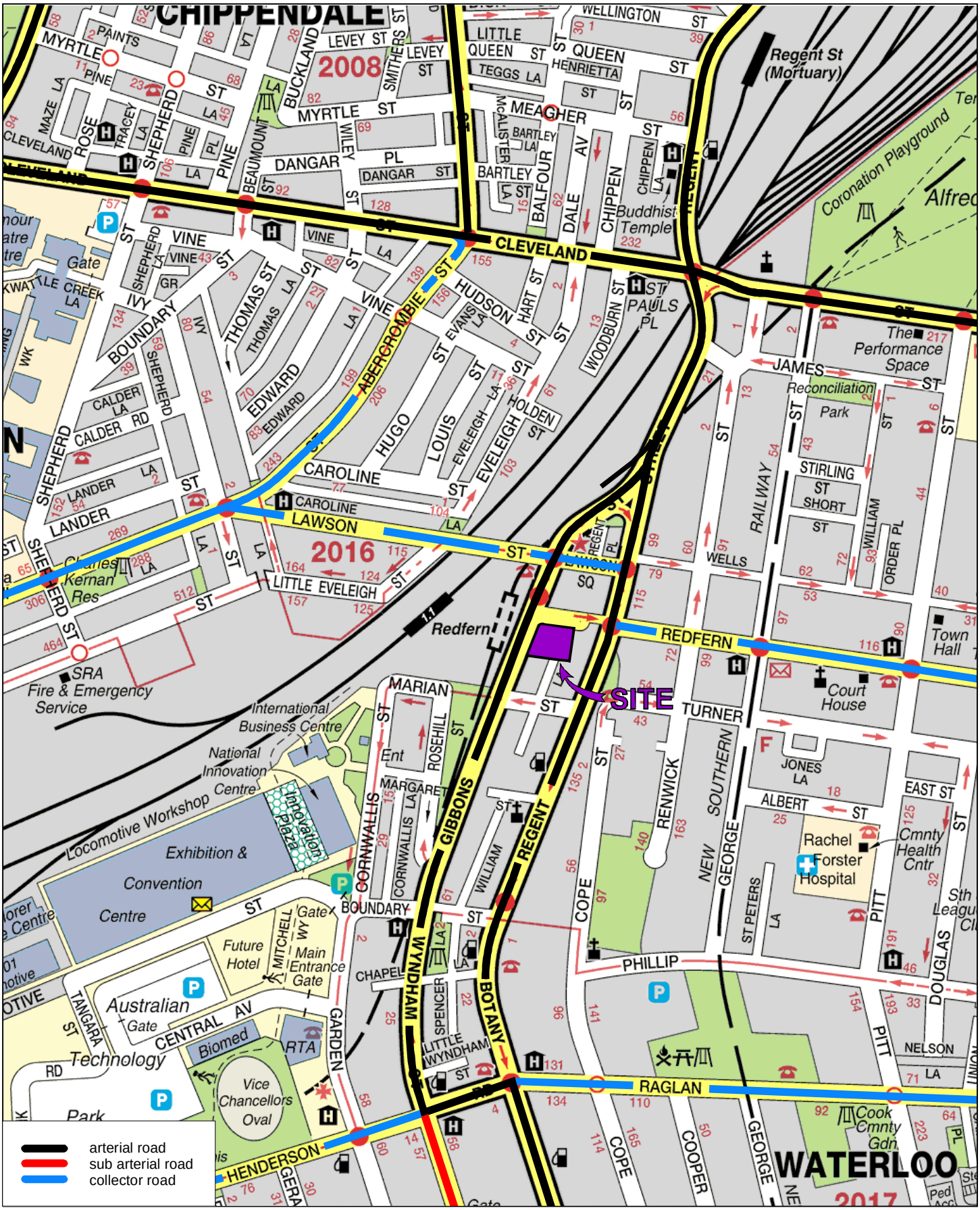
- Gibbons Street: an RTA main road (MR 170) that runs one-way in a south to north direction between Henderson Road and Lawson Street. It forms an extension of Wyndham Street to the south and forms the primary route for northbound vehicles travelling along Botany Road to access the Sydney CBD. It carries approximately 20,000vpd;

- Regent Street: an RTA main road (MR 170) that runs in a north-south direction between George Street and Henderson Road. It forms part of the arterial link between the CBD and Ultimo and the south via Botany Road. It carries approximately 50,000vpd to the south of Cleveland Street;

- Redfern Street: a local road which runs in an east-west direction to the north of the site. It runs one-way eastbound in the immediate vicinity of the site and generally acts as a pedestrian thoroughfare to access the Redfern Railway Station with vehicle access to 'back of house' areas of surrounding buildings. It is estimated at carrying less than 500vpd;

- Lawson Street: a local road that runs in an east-west direction between Abercrombie Road and Gibbons Street. It is known as Lawson Square between Gibbons Street and Regent Street. It carries approximately 5,000vpd;

- Marian Street: a local road that runs one-way westbound between Regent Street and Gibbons Street;



impact assessment: redevelopment of redfern RSL club

gibbon and redfern streets, redfern

figure 3

road hierarchy

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- William Lane: an access laneway that primarily provides rear access to properties with frontages to Regent Street and the RSL loading dock;

It can be seen from **figure 3** that the site is conveniently located with respect to the arterial and local road systems serving the region. It is therefore able to effectively distribute traffic onto the wider road network, minimising traffic impacts.

3.2 general description of road environment

Gibbons Street is constructed with a 12 metre carriageway and carries four (one-way) northbound lanes in the vicinity of the site. It forms a signalised intersection with Lawson Street and Lawson Square to the north of the site. This intersection is coordinated with the intersection of Lawson Square and Regent Street, to the east.

Lawson Square carries two lanes of traffic in either direction. An indented bus bay is provided along the northern side of the road, with angle parking for the police station located on the southern side of Lawson Square. It forms the stem of a signalised T Junction with Regent Street to the east of the site. All eastbound traffic is subject to right turn only restrictions due to the one-way (southbound) nature of the northern approach of Regent Street to this intersection.

Refern Street generally carries a single lane of traffic in either direction to the east of the Regent Street. In the vicinity of the site, it runs one-way (eastbound) between Gibbons Street and Regent Street. This section of Redfern Street, along the northern site frontage, currently operates as more of a shared zone for pedestrians seeking access to the Redfern train station. It is understood that this is sought to be encouraged by Redfern-Waterloo Authority in the future. Redfern Street forms the stem of a T Junction with Regent Street to the east of the site and permits left turn movements only to the slip lane at the intersection of Lawson Square and Regent Street.

Marian Street is constructed with a 7.5 metre carriageway and carries a single lane of traffic one-way (westbound) between Regent Street and Gibbons Street.

William Lane is constructed with a 4.5 metre carriageway and currently operated as a rear access laneway to the properties with frontages to Regent Street and also acts as the access for the RSL loading dock. Due to its narrow width, access to this laneway should be restricted to up to 8.8 metre rigid vehicles.

3.3 public transport

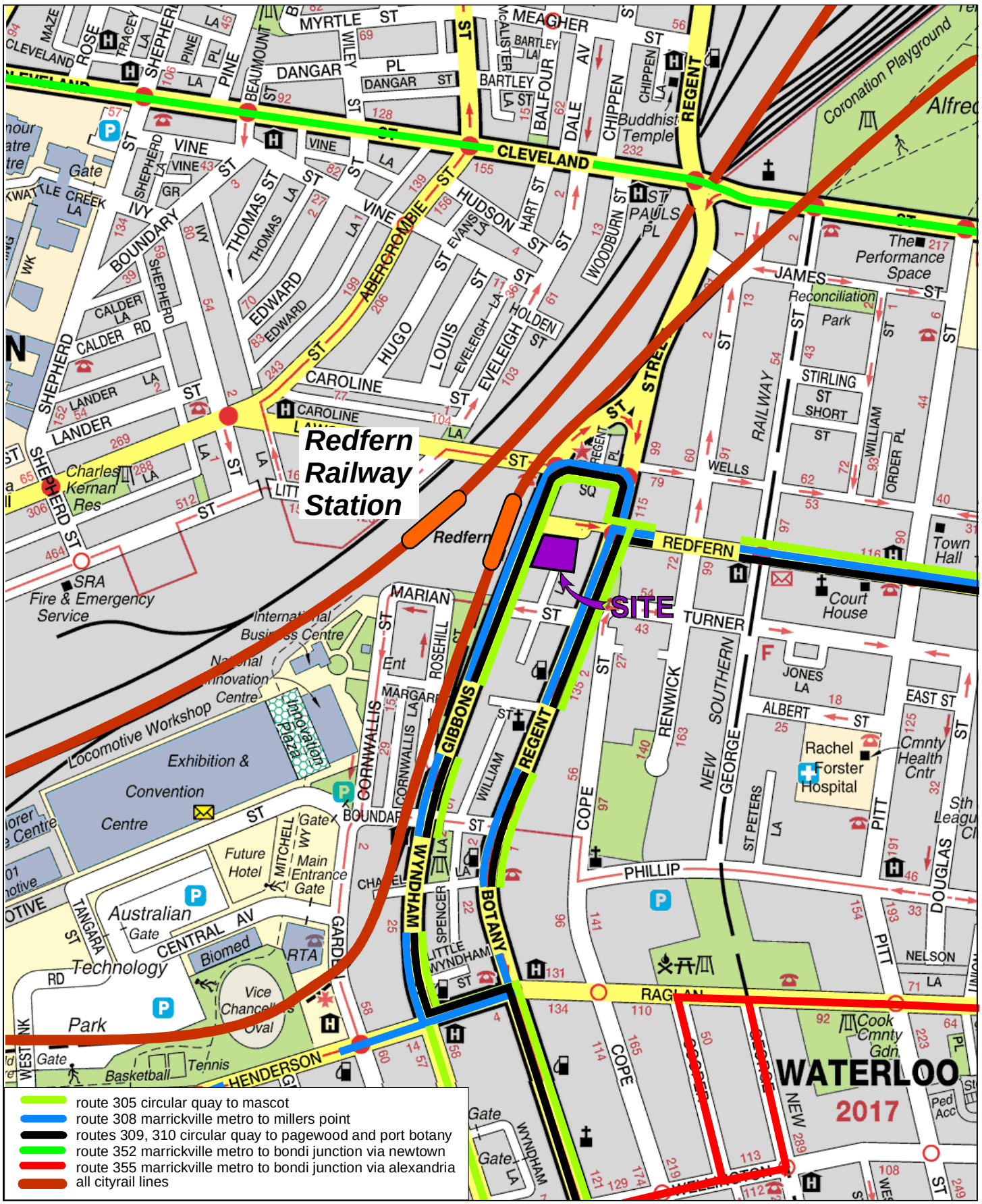
The public transport services operating in the vicinity of the site are shown in **figure 4**. Redfern railway station is located immediately to the west of the site. Furthermore, a significant bus stop, serving a number of routes, is located in Regent Street to the south of Redfern Street. The use of these services by residents, staff and visitors to the site is expected to be significant. Restriction of the number of parking spaces is not considered necessary to encourage this behaviour due the excellent site location and general traffic congestion in the area.

3.4 cycle network

It can be seen from the existing and proposed bicycle network included in **appendix b** that the site is located to take advantage of both future local and regional cycle routes. The use of walking and cycling to/from the site is to be encouraged and in this regard, the development should aim to provide a sufficient amount of cycle facilities such as secure lockers and change rooms for staff.

3.5 existing site generation

The site currently provides a number of parking spaces which are generally used by staff. As such the existing traffic generation during on-street peak periods is expected to be minimal. With 11 on-site parking spaces it is estimated that the peak generation of the site under a worst case scenario would be a maximum of 11 veh/hr.



impact assessment: redevelopment of redfern RSL club

gibbon and redfern streets, redfern

figure 4

transport routes

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3.6 existing intersection performances

For the purposes of the assessment of traffic impacts of this development, surveys were undertaken of critical intersections in the vicinity of the site, being:

- Gibbons Street / Lawson Street / Lawson Square; and
- Regent Street / Lawson Square;

The results of these surveys are provided in **appendix c** which relate to the peak PM peak period. The results of these surveys were analysed using the SIDRA computer program to determine their performance characteristics under existing traffic conditions. The SIDRA model produces a range of outputs, the most useful of which are the Degree of Saturation (DOS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LOS) criteria. These performance measures can be interpreted using the following explanations:

DOS - the DOS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DS approaches 1, it is usual to attempt to keep DS to less than 0.9. When DS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DOS of 0.8 or less.

AVD - the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LOS - this is a comparative measure which provides an indication of the operating performance of an intersection as shown below:

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

A summary of the modelled results are provided below. Reference should also be made to the SIDRA outputs provided in **appendix d** which provide detailed results for individual lanes and approaches.

table 1: existing intersection performance: am and pm peak hour

Intersection Description	Control Type	Period	Degree of Saturation	Intersection Delay	Level of Service
Gibbons St / Lawson St	signals	AM	0.700	24.6	B
		PM	0.510	21.4	B
Regent St / Lawson Sq	signals	AM	0.490	18.0	B
		PM	0.489	16.5	B

The above intersections are coordinated in practice and therefore the cycle times and arrivals types have been adjusted accordingly within the SIDRA models. Scates analysis was considered inappropriate considering the non-typical geometries of the off-set intersection of Regent Street with Lawson Square and Redfern Street.

It can be seen from Table 1 that the intersection operates satisfactorily under the existing 'base case' scenario, with a level of service B during both peak periods and with moderate delays. Nevertheless, it is stressed that the most relevant use of this analysis is to compare the relative change in the performance parameters as a result of the proposed development. This is discussed further in Section 6.

4. description of proposed development

The development generally involves the construction of a multi-level mixed use building which comprises the following key components:

- 84 residential apartments including:
  - 14 one bedroom units;
  - 63 two bedroom units; and
  - 7 three bedroom units;
- 1,660m^2 of commercial office space;
- small ground floor retail tenancies with a combined floor area of 670m^2;
- alternations and additions to the existing RSL Club with an area of 1,470m^2 including a 40m^2 smokers terrace
- new vehicle site access arrangements with ingress via William Lane and egress to Gibbons Street;
- provision of a total 147 off-street parking spaces within multiple basement levels;

The parking and traffic impacts arising from the development are discussed in Sections 5 and 6. Reference should be made to the plans submitted separately to the Department of Planning which are presented at reduced scale in **appendix d.**

5. parking requirements

5.1 RTA guideline parking rates

The Director General's Requirements state that the development should be assessed with regard for the RTA's Guide to Traffic Generating Development. This publication requires nominal parking at the following rates as shown in **table 2**, below.

table 2: rta guideline parking rate & provision

Type	No. / Area	RTA Rates	Spaces Required	Spaces Provided
Residential				
One Bed	14	0.6 / unit	8	
Two Bed	63	0.9 / unit	57	
Three Bed	7	1.4 / unit	10	
Visitor		0.2 / unit	17	
Retail[1]	670m^2	6.1 / 100m^2	41	
Commercial	1,660m^2	1 / 40m^2	42	
RSL[2]	1,470m^2	1 / 20m^2	74	
		Total	249	147

Notes: 1) Generic retail rates used as future tenants haven't been specified at this stage
2) No specific rate given – rate taken from former South Sydney DCP 11 for 'club' use

A comparison of this requirement is provided in **table 3** which demonstrates the parking that would be required under the former South Sydney DCP 11.

table 3: DCP 11 rate & provision

Type	No. / Area	RTA Rates	Spaces Required (max)	Spaces Provided
Residential				
One Bed	14	0.5 / unit	7	
Two Bed	63	0.8 / unit	50	
Three Bed	7	1.2 / unit	8	
Visitor		1 / 6 units	14	
Retail[1]	670m^2	1 / 50m^2	13	
Commercial	1,660m^2	1 / 125m^2	13	
RSL	1,470m^2	1 / 20m^2	74	
		Total	179	147

Notes: 1) 'Small Shops' rate used

A maximum of 179 spaces is permitted under DCP 11 were it to be used for assessment purposes for the subject development.

The total parking provision of 147 spaces is considerably lower than that specified by the RTA's Guide which is recognised to represent un-restrained conditions. Due to the site's superior accessibility to public transport, particularly Redfern Railway Station, located opposite the site, on the western side of Gibbons Street. The proposed provision results in an effective reduction in parking of approximately 40% and 20% from that nominally required by the RTA Guideline and Council's DCP 11, respectively. In addition, Council's DCP 11 assumes some moderate availability of public transport services and hence the further reduced parking provision is expected to increase the utilisation of the available existing and future services.

5.2 disabled parking

The development provides a total of 8 disabled parking spaces which equates to approximately 5 percent of the total provision. This allowance is considered a significant provision and almost doubles the recommended number required under DCP 11.

All disabled parking requires a minimum clear width of 3.2 metres and a clearance height of 2.5 metres within the space in accordance with AS 2890. Furthermore, all areas traversed by vehicles accessing these spaces require a minimum height of 2.3 metres.

5.3 bicycle facilities

The development provides a number of bicycle racks (Basement 1) and bicycle rooms (Basements 3 & 4) within the basement carpark levels. DCP 11 requires bicycle facilities be provided at a rate of 1 per 20 staff for commercial uses, which results in a total requirement of approximately 13 bicycle spaces for the retail (1 space), commercial (4 space) and residential visitor (8 space) components of the development. An additional 28 bicycle spaces are required for residents component of the development resulting in a combined requirement of 41 bicycle spaces.

These spaces should be provided in order to encourage the use of alternate transport modes by both staff and residents. As such, it is expected that a minimum requirement will form a suitable condition of consent.

5.4 car wash

A single car wash bay is provided in Basement Level 5 as required by DCP 11. This space has an effective width of 3.15 metres due to the location of the wall adjacent the space. This is considered appropriate.

5.5 servicing

As stated in Section 3, due to the geometry of William Lane servicing will be restricted to vehicles up to 8.8 metre rigid vehicles. The RSL currently operates using 8 metre rigid trucks and this arrangement is to continue in the future with minimal impact on the future operations. It is expected that the RSL will require up to 5 truck movements per day. A private garbage contractor, with suitably sized vehicles, will be required for all garbage collection.

A single truck loading area is provided on the basement level for shared use by all service vehicles and can accommodate an MRV and SRV simultaneously. It is expected that only a single truck would occupy the loading area at any one time due to the low volumes of service vehicles accessing the site. Although supportable it is considered best practice for building management to implement a loading dock management plan to ensure that:

- All deliveries are to occur outside peak periods;
- At no stage shall a commercial vehicle queue on-site or on surrounding streets. They will be required to leave the site and return at an appropriately rescheduled time;
- The delivery schedule allows some time to be allocated to service by removalist vehicles in the event that they are required on an infrequent basis by residents;

Accordingly the loading areas will operate safely and efficiently at all times with no impact on future tenants or the external road network. All areas traversed to access the loading and service areas will require a minimum height clearance of 4.5 metres in accordance with AS 2890.2.

6. traffic impacts

6.1 trip generation

6.1.1 residential

The RTA's Guide to Traffic Generating Developments recommends adoption of a traffic generation rate of 0.29 trips per unit for high density residential flat buildings. Application of this rate to the proposed 84 units results in a peak generation of 24 trips per hour (5in, 19out) during the AM peak period, with these flows reversed during the PM peak period.

6.1.2 commercial

The development provides a total commercial floor area of 1,660m^2 which is subject to a traffic generation rate of 2 trips per 100m^2 of floor area under the RTA's Guide to Traffic Generating Developments. This results in a traffic generation of 33 trips per hour during peak periods. However, this assumes an unrestrained parking situation which is not to be provided under the DGR's. Therefore a reduced traffic generation of 27 vehicles per hour (24in, 3out) is expected during the AM peak with these flows reversed during the PM peak. This equates to a reduction of approximately 20% which is considered appropriate for a commercial office use within such close proximity to public transport.

6.1.3 retail

Similarly, the retail component would be expected to generate in the order of 82 trips per hour on a Thursday peak period assuming a peak hour generation of 12.3 trips per 100m^2 under the RTA's Guide for an unconstrained situation. The majority of retail customers are expected to come from 'passing trade' due to the proximity of the site to Redfern station. Therefore, it is expected that parking within the basement will not be available for retail customer parking and therefore all retail traffic will be associated with staff arrivals and departures. In this regard, the traffic associated with the retail component is expected to be less than 15 vehicles per hour during the AM and PM peak periods.

6.1.4 RSL club

The RSL club will not result in any significant traffic volumes during the AM peak period. Furthermore, the majority of parking allocated to the RSL will be for staff and member parking. This acknowledges that the majority of club patrons will use the available public transport to access the site. Furthermore, it is expected that the majority of staff will arrive outside of peak periods i.e. around midday when the traffic associated with other uses will be reduced. In this regard, the RSL is expected to generate up to a maximum of 30 vehicles (20in, 10out) per hour during the PM peak period.

6.1.5 combined generation

The above results in a total of 66 (40in, 22out) and 96 (42in, 54out) trips per hour during the AM and PM peak periods, respectively.

6.2 trip distribution

These trips will be distributed as shown in the table provided in **appendix e** which are based on 'Car Driver' travel mode frequencies from the 2006 journey-to-work data (JTW) and takes into consideration the surrounding local and arterial road network with respect to the various origin/destination statistical sub-division (SSD). This data has been further extrapolated within the Sydney South statistical local area (SLA) to account for various Transport Data Centre travel zones (TZ's) trips.

6.3 peak period Intersection performances

The relative impact of these additional trips is indicated by the future performance of surrounding intersections as indicated by **table 4** below.

table 4: existing intersection performance: am and pm peak hour

Intersection Description	Control Type	Period	Degree of Saturation	Intersection Delay	Level of Service
Gibbons St / Lawson St	signals	AM	0.704	24.7	B
		PM	0.515	20.8	B
Regent St / Lawson Sq	signals	AM	0.496	18.1	B
		PM	0.503	17.0	B

It can be seen from above that the critical surrounding intersections will continue to operate well during both peak periods. Furthermore, it is demonstrated that the development will result in minimal increases to average delays.

In summary, the traffic associated by the development can be readily accommodated by the surrounding road network.

7. access & internal design aspects

7.1 access

Entry to the site is proposed via an entry only access extension of Williams Lane. The access will be entry only due to the relatively narrow width of William Lane which is insufficient to accommodate two-way flow for the expected volumes associated with the development and those of adjoining properties. The northern end of William Lane primarily serves the subject site, and the proposed access will have minimal impact on other road users.

All egress from the site will be onto Gibbons Street via a 3.4 metre driveway in the vicinity of the southern site boundary. Additional width should be provided at the kerb so that cars can exit using the closest traffic lane and service vehicles can use the second lane closest to the site.

Vehicle queues regularly extend past the Gibbons Street site frontage due to the signalised intersections along Gibbons Street to the north. The provision of a 'Do Not Obstruct Driveway' or similar sign and linemarking will aid vehicles exiting the site.

Appropriate visual splays at the site boundary for pedestrians are provided at the site access to Gibbons Street and have been designed in accordance with AS2890.1. Furthermore, sight distances to oncoming vehicles along Gibbon Street is also adequate.

It should be noted that Redfern Street generally acts as a pedestrian 'shared zone' with some moderate usage by service vehicles of the TNT Towers. As such, the distribution of additional traffic onto this section of road is not considered appropriate where an alternative, such as that proposed, exists. For this reason the proposed access location is considered the optimal arrangement for the development.

7.2 internal design

The internal design generally satisfies the requirements of AS 2890 and incorporates the following:

- Parking spaces are generally 2.4 metres in width with a space length of 5.4 metres which satisfies the requirements of AS 2890.1 for a class 1A user. This parking is considered appropriate considering that the majority of parking is for residents and staff;
- A number of parking spaces require an additional width of 300mm due to the proximity of adjacent walls and other obstructions including Spaces 1.17 & 2.17;
- Aisle widths are a minimum of 6.0 metres in width which will provide an improved amenity above that of Class 1A user;
- Internal ramps have a width of 5.5 metres which complies with AS 2890.1 for two-way flow. The ramps should be 'splayed' as much as possible to provide an improved amenity. These ramps have a maximum gradient of 1:8 (12.5%) which also satisfies AS 2890.1;
- The plans currently show a gradient of 1:14 (7.2%) which exceeds that permitted for MRV access. However, this can be amended within construction documentation to a grade of 1:16 (6.25%) without significantly affecting the current plans and can be conditioned;
- Reference should be made to the swept paths provided in **appendix g** which demonstrate access and manoeuvrability within the site. Regular passing opportunities are provided within circulation aisles so that any occasion where continuous two-way flow cannot be accommodated will be acceptable having regard for the moderate traffic generation which equates to less than 2 vehicle movements (in/out combined) per minute;

In summary, the internal design of the carpark is considered acceptable and any minor non-compliance can be readily conditioned.

8. conclusions

In summary:

- The development is located with good access to public transport. In this regard, the site is a prime opportunity to provide high density mixed use development. Redfern Street currently provides pedestrian access to Redfern station and therefore the site is well placed to take advantage of passing trade and reduce the reliance of car oriented journeys;
- The development provides a total of 147 parking spaces which is significantly less than that nominally required under the RTA"s Guide to Traffic Generating Development and Council's DCP 11 which require 249 and 179 spaces, respectively as per the requirements of the DGR's;
- The availability of public transport services and the restrictive nature of parking are expected to result in a relatively high mode share to public transport from all trips associated with the development;
- A traffic generation (two-way combined) of 61 veh/hr and 93 veh/hr is expected during the AM and PM peak periods, respectively. The impact of these additional trips will be minimal and can be readily accommodated by the surrounding road network;
- Access and internal design generally satisfies the requirements of AS 2890 and will operate satisfactorily. Any minor inconsistencies can readily be conditioned without significantly impacting on the overall design of the development;
- A loading management plan will be required to ensure that loading and servicing vehicle movements are appropriately coordinated and will not significantly impact on other users;

It is therefore concluded that the proposed development is supportable on traffic planning grounds and the proposed development will operate satisfactorily.

appendix a

photographic record

View looking northeast across Gibbons Street at the western site frontage.

View looking north from Marian Street along William Lane towards the proposed site entry.

View looking west along Marian Street from Regent Street.

View looking east along Lawson Street at its intersection with Regent Street .

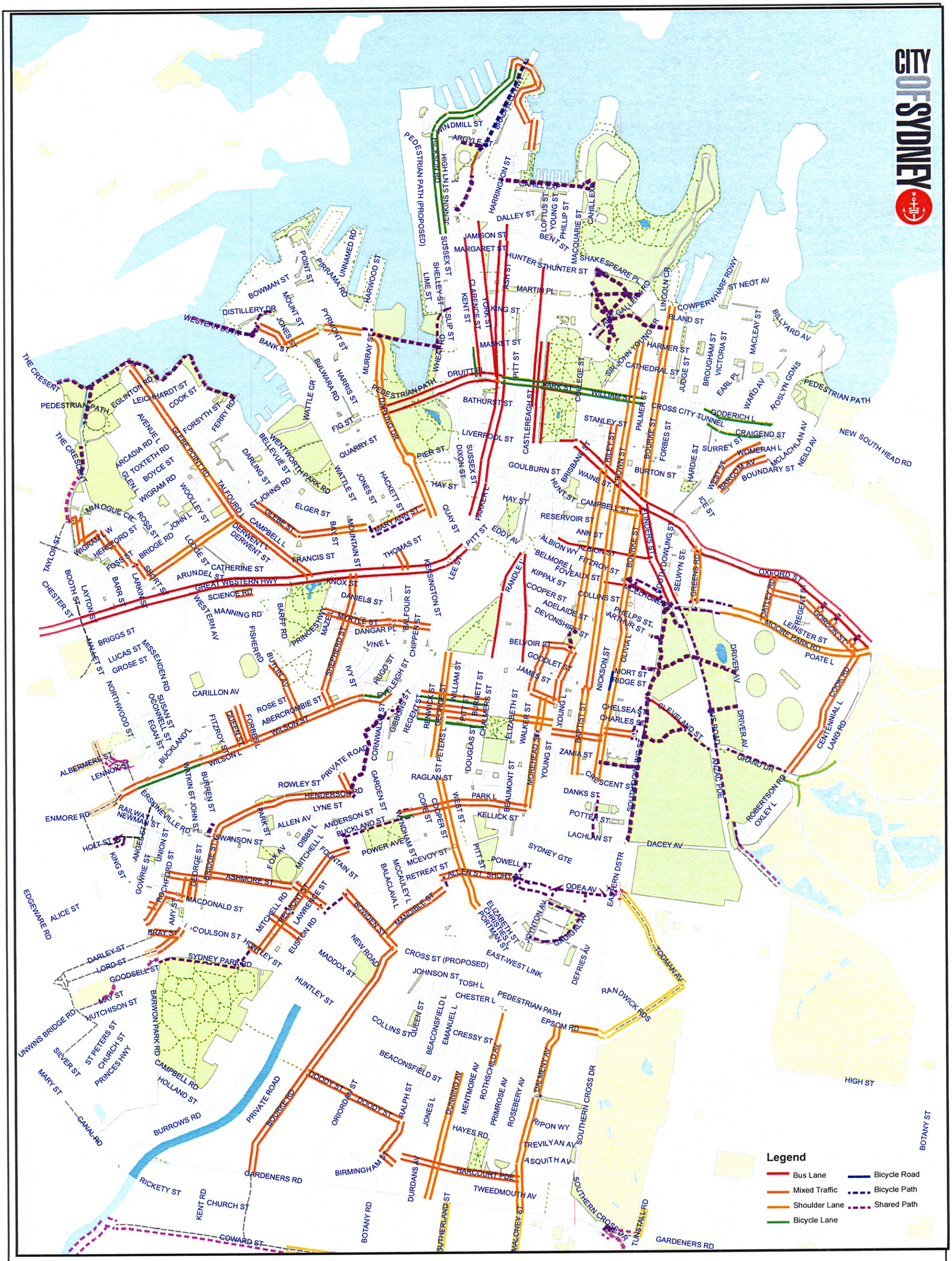
View looking east at the current site access to Gibbons Street.

View looking east along the northern site frontage, from Gibbons Street, which provides an appreciation of the pedestrian activity along this length of Redfern Street.

appendix b

existing & future cycle network

CITY OF SYDNEY



Legend

- Bus Lane
- Mixed Traffic
- Shoulder Lane
- Bicycle Lane
- Bicycle Road
- Bicycle Path
- Shared Path

Cycle Strategy and Action Plan 2007-2017
Existing cycle network

250 0 250 250 500 Meters

Prepared By: gmccabe
Printing Date: July 23, 2007
Scale 1:30,000 @ A4

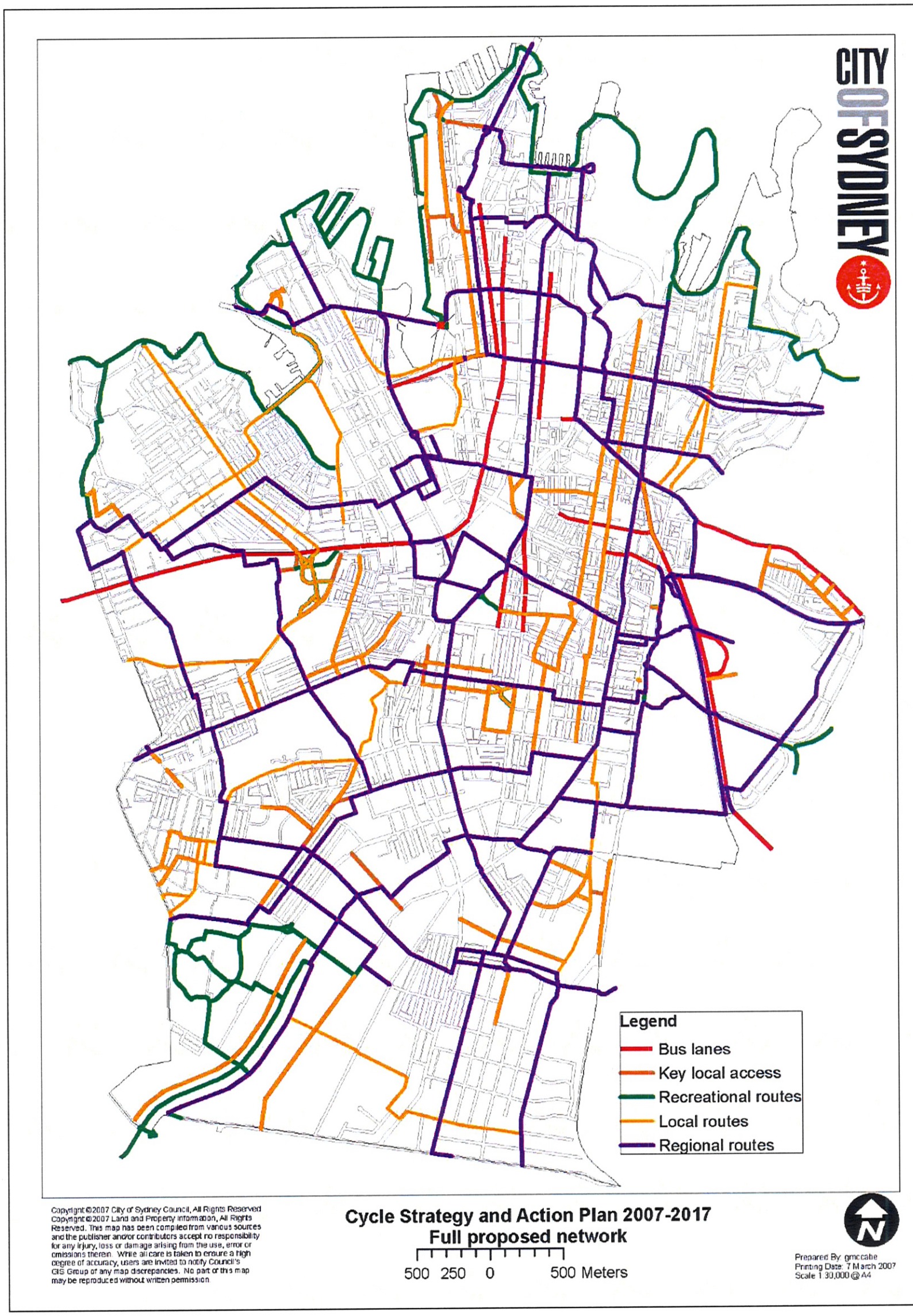


Figure 19 Full proposed bicycle network

appendix c

sidra outputs – existing scenario

SIDRA INTERSECTION

Movement Summary

Regent St & Lawson Sq

Existing - AM

Signalised - Fixed time **Cycle Time = 120 seconds**

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Regent St (south)										
1	L	340	4.1	0.188	5.7	LOS B#	7#	0.00	0.53	33.2
Approach		**340**	**4.1**	**0.188**	**5.7**	**LOS B**		**0.00**	**0.53**	**33.2**
Regent St (north)										
8	T	1576	5.3	0.485	15.9	LOS B	137	0.63	0.57	41.8
9	R	62	3.2	0.181	19.6	LOS B	17	0.46	0.72	37.9
Approach		**1638**	**5.2**	**0.485**	**16.0**	**LOS B**	**137**	**0.63**	**0.57**	**41.6**
Lawson Sq (west)										
12	R	560	8.0	0.490	31.4	LOS C	88	0.66	0.79	29.5
Approach		**560**	**8.0**	**0.491**	**31.4**	**LOS C**	**88**	**0.66**	**0.79**	**29.5**
All Vehicles		**2538**	**5.7**	**0.490**	**18.0**	**LOS B**	**137**	**0.55**	**0.62**	**37.5**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
P5	79	33.0	LOS D	0	0.74	0.74
P7	79	14.5	LOS B	0	0.49	0.49
All Peds	**158**	**23.8**	**LOS B**	**0**	**0.62**	**0.62**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

Regent St & Lawson Sq

Existing - PM

Signalised - Fixed time **Cycle Time = 120 seconds**

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Regent St (south)										
1	L	378	1.9	0.206	5.6	LOS B#	8#	0.00	0.53	33.2
Approach		**378**	**1.9**	**0.206**	**5.6**	**LOS B**		**0.00**	**0.53**	**33.2**
Regent St (north)										
8	T	1719	4.0	0.489	13.3	LOS A	137	0.59	0.53	43.9
9	R	129	2.3	0.345	17.7	LOS B	30	0.44	0.73	39.2
Approach		**1848**	**3.8**	**0.489**	**13.6**	**LOS A**	**137**	**0.58**	**0.55**	**43.6**
Lawson Sq (west)										
12	R	485	6.4	0.483	35.9	LOS C	84	0.73	0.79	27.8
Approach		**486**	**6.4**	**0.483**	**35.9**	**LOS C**	**84**	**0.73**	**0.79**	**27.8**
All Vehicles		**2712**	**4.0**	**0.489**	**16.5**	**LOS B**	**137**	**0.53**	**0.59**	**38.7**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
P5	79	36.8	LOS D	0	0.78	0.78
P7	79	12.1	LOS B	0	0.45	0.45
All Peds	**158**	**24.5**	**LOS B**	**0**	**0.62**	**0.62**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

Gibbons St & Lawson Sq

Existing - AM

Signalised - Fixed time **Cycle Time = 120 seconds**

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Gibbons St (south)										
SL	L	118	1.7	0.115	20.7	LOS B	32	0.50	0.73	37.1
ST	T	2003	4.1	0.691	20.2	LOS B	219	0.78	0.71	38.6
SR	R	161	26.1	0.692	28.8	LOS C	219	0.78	0.86	32.8
Approach		**2282**	**5.6**	**0.691**	**20.9**	**LOS B**	**219**	**0.76**	**0.72**	**38.0**
Lawson Sq (east)										
ET	T	251	7.6	0.395	12.2	LOS A	51	0.38	0.32	38.6
ER	R	124	3.2	0.683	24.1	LOS B	38	0.54	0.75	32.7
Approach		**375**	**6.1**	**0.683**	**16.1**	**LOS B**	**51**	**0.43**	**0.46**	**36.3**
Lawson St (west)										
WL	L	54	9.4	0.700	57.7	LOS E	111	0.99	0.86	21.8
WT	T	400	1.8	0.700	49.6	LOS D	111	0.97	0.84	22.7
Approach		**453**	**2.6**	**0.700**	**50.5**	**LOS D**	**111**	**0.97**	**0.84**	**22.6**
All Vehicles		**3110**	**5.2**	**0.700**	**24.6**	**LOS B**	**219**	**0.75**	**0.71**	**34.5**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
PS	1263	31.5	LOS D	3	0.73	0.73
PE	105	15.5	LOS B	0	0.51	0.51
PN	105	44.2	LOS E	0	0.86	0.86
PW	105	14.5	LOS B	0	0.49	0.49
All Peds	**1578**	**30.2**	**LOS C**	**3**	**0.70**	**0.70**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

SIDRA INTERSECTION

Movement Summary

Gibbons St & Lawson Sq

Existing - PM

Signalised - Fixed time **Cycle Time = 120 seconds**

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Gibbons St (south)										
SL	L	115	2.6	0.111	20.2	LOS B	31	0.49	0.73	37.5
ST	T	1501	1.5	0.509	16.8	LOS B	144	0.66	0.59	41.1
SR	R	147	17.0	0.510	25.0	LOS B	143	0.66	0.82	34.7
Approach		**1763**	**2.8**	**0.509**	**17.7**	**LOS B**	**144**	**0.65**	**0.62**	**40.2**
Lawson Sq (east)										
ET	T	228	2.6	0.357	12.1	LOS A	43	0.36	0.31	38.6
ER	R	95	1.1	0.476	23.2	LOS B	23	0.41	0.71	33.1
Approach		**323**	**2.2**	**0.476**	**15.4**	**LOS B**	**43**	**0.38**	**0.43**	**36.8**
Lawson St (west)										
WL	L	36	0.0	0.495	56.1	LOS D	75	0.95	0.81	22.1
WT	T	269	1.5	0.495	48.5	LOS D	75	0.94	0.76	23.0
Approach		**305**	**1.3**	**0.495**	**49.4**	**LOS D**	**75**	**0.94**	**0.77**	**22.9**
All Vehicles		**2391**	**2.6**	**0.510**	**21.4**	**LOS B**	**144**	**0.65**	**0.61**	**36.4**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
PS	1263	32.3	LOS D	3	0.73	0.73
PE	105	15.0	LOS B	0	0.50	0.50
PN	105	45.9	LOS E	0	0.88	0.88
PW	105	14.0	LOS B	0	0.48	0.48
All Peds	**1578**	**30.8**	**LOS C**	**3**	**0.71**	**0.71**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Curtis Traffic Surveys

Pedestrians crossing Gibbons St

Job: 090504tx

Day, date: Tue 5 May 09

Location: Redfern St & Gibbons St

Weather: Fine

Client: Traffix

Time Period	From west side of Gibbons St, north of station entrance			From station entrance			From west side of Gibbons St, south of station entrance			From east side of Gibbons St, north of Redfern St		From Redfern St			From east side of Gibbons St, south of Redfern St			Totals	
	to east side, north of Redfern St	to Redfern St	to east side, south of Redfern St	to east side, north of Redfern St	to Redfern St	to east side, south of Redfern St	to east side, north of Redfern St	to Redfern St	to east side, south of Redfern St	to west side, north of station	to station	to westt side, south of station	to west side, north of station	to station	to westt side, south of station	to west side, north of station	to station	to westt side, south of station	east bound	west bound
16:00 to 16:15	0	1	0	4	71	2	0	0	0	0	5	0	0	1	0	0	0	0	78	6
16:15 to 16:30	0	1	0	9	69	0	0	0	0	0	6	0	0	0	0	0	0	0	79	6
16:30 to 16:45	0	0	0	5	116	3	0	0	0	0	22	0	0	0	0	0	0	0	124	22
16:45 to 17:00	0	7	0	2	100	1	0	0	0	0	20	0	0	0	0	0	0	0	110	20
17:00 to 17:15	0	2	0	1	115	3	0	0	0	0	6	0	0	0	0	0	0	0	121	6
17:15 to 17:30	0	2	0	2	158	10	0	0	0	0	14	0	0	0	0	0	0	0	172	14
17:30 to 17:45	0	0	0	1	105	3	0	0	0	0	28	0	0	0	0	0	0	0	109	28
17:45 to 18:00	0	0	0	5	158	4	0	0	0	0	8	0	0	0	0	0	1	0	167	9
Totals	0	13	0	29	892	26	0	0	0	0	109	0	0	1	0	0	1	0	960	111

Curtis Traffic Surveys

Vehicle queue southern leg of Gibbons St at Lawso

Job: 090504tx

Day, date: Tue 5 May 09

Location: Redfern St & Gibbons St

Weather: Fine

Client: Traffix

Vehicles queued at end of red phase
all lanes aggregated

Time Period						
16:00 to 16:15	9	9	12	7	15	12
16:15 to 16:30	10	12	11	15	14	15
16:30 to 16:45	16	17	12	16	15	24
16:45 to 17:00	12	12	8	16	23	18
17:00 to 17:15	15	19	22	25	24	27
17:15 to 17:30	25	30	25	45	43	49 (queue went south of Boundary St in left through
17:30 to 17:45	45	36	19	22	18	14
17:45 to 18:00	20	26	24	30	19	11

Curtis Traffic Surveys

Turning movement count

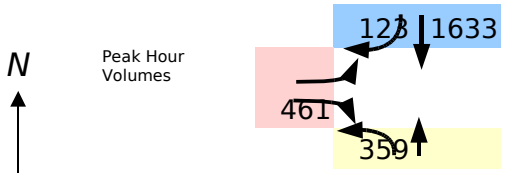
Job: 090504tx

Day, date: Tue 5 May 09

Location: Lawson Square & Regent St

Weather: Fine

Client: Traffix



Time Period	From Regent St north: Through Light Vehicles	From Regent St north: Through Heavy Vehicles	From Regent St north: Right Light Vehicles	From Regent St north: Right Heavy Vehicles	From Lawson Square: Right Light Vehicles	From Lawson Square: Right Heavy Vehicles	From Redfern St via Regent St sth: Left Light Vehicles	From Redfern St via Regent St sth: Left Heavy Vehicles	Total vehicle movements	
16:00 to 16:15	253	15	19	1	74	3	51	1	417	
16:15 to 16:30	218	14	17	0	58	5	45	1	358	
16:30 to 16:45	313	12	22	0	99	8	56	0	510	
16:45 to 17:00	395	16	27	2	90	6	84	1	621	
17:00 to 17:15	314	14	22	2	102	9	76	2	541	
17:15 to 17:30	383	16	30	0	120	7	103	2	661	
17:30 to 17:45	421	17	37	0	108	8	77	2	670	
17:45 to 18:00	450	18	31	1	102	5	96	1	704	Peak
Hourly Summary	2747	122	205	6	753	51	588	10		
16:00 to 17:00	1179	57	85	3	321	22	236	3	1906	
16:15 to 17:15	1240	56	88	4	349	28	261	4	2030	
16:30 to 17:30	1405	58	101	4	411	30	319	5	2333	
16:45 to 17:45	1513	63	116	4	420	30	340	7	2493	
17:00 to 18:00	1568	65	120	3	432	29	352	7	2576	Peak Hour

Curtis Traffic Surveys

Turning movement count

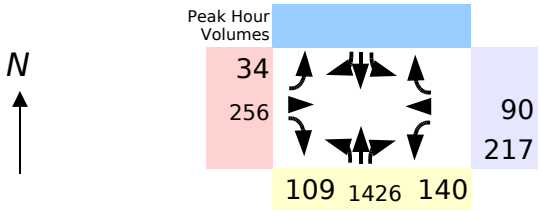
Job: 090504tx

Day, date: Tue 5 May 09

Location: Lawson St & Gibbons St

Weather: Fine

Client: Traffix



Time Period	From Gibbons St north						From Lawson St west						From Gibbons St south						From Lawson Square east						Total vehicle movements	
	Left		Through		Right		Left		Through		Right		Left		Through		Right		Left		Through		Right			
	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles		
16:00 to 16:15							8	0	52	0			9	0	251	10	31	5	35	1	9	0			411	
16:15 to 16:30							10	0	54	0			12	1	262	8	32	4	42	2	10	0			437	
16:30 to 16:45							14	0	66	1			17	1	284	14	42	12	51	3	12	0			517	
16:45 to 17:00							11	0	54	1			27	2	333	6	31	6	56	3	19	0			549	
17:00 to 17:15							6	0	59	1			25	1	362	8	31	5	69	2	23	0			592	Peak
17:15 to 17:30							8	0	83	0			22	0	321	5	33	2	47	1	26	1			549	
17:30 to 17:45							9	0	56	2			32	0	389	2	21	11	39	0	21	0			582	
17:45 to 18:00							15	0	49	0			30	0	315	3	29	3	64	1	27	0			536	
Hourly Summary							81	0	473	5			174	5	2517	56	250	48	403	13	147	1				
16:00 to 17:00							43	0	226	2			65	4	1130	38	136	27	184	9	50	0			1914	
16:15 to 17:15							41	0	233	3			81	5	1241	36	136	27	218	10	64	0			2095	
16:30 to 17:30							39	0	262	3			91	4	1300	33	137	25	223	9	80	1			2207	
16:45 to 17:45							34	0	252	4			106	3	1405	21	116	24	211	6	89	1			2272	Peak Hour
17:00 to 18:00							38	0	247	3			109	1	1387	18	114	21	219	4	97	1			2259	

Curtis Traffic Surveys

Pedestrians crossing Gibbons St

Job: 090504tx

Day, date: Tue 5 May 09

Location: Lawson Square & Regent St

Weather: Fine

Client: Traffix

Time Period	From west side of Gibbons St, north of station entrance			From station entrance			From west side of Gibbons St, south of station entrance			From east side of Gibbons St, north of Redfern St			From Redfern St			From east side of Gibbons St, south of Redfern St			Totals	
	to east side, north of Redfern St	to Redfern St	to east side, south of Redfern St	to east side, north of Redfern St	to Redfern St	to east side, south of Redfern St	to east side, north of Redfern St	to Redfern St	to east side, south of Redfern St	to west side, north of station	to station	to westt side, south of station	to west side, north of station	to station	to westt side, south of station	to west side, north of station	to station	to westt side, south of station	east bound	west bound
07:00 to 07:15	0	0	0	1	214	0	1	1	0	0	1	0	0	54	1	0	0	0	217	56
07:15 to 07:30	0	0	0	0	191	0	0	0	0	0	4	0	0	58	0	0	0	0	191	62
07:30 to 07:45	0	0	0	0	182	0	0	0	0	0	2	0	0	82	0	0	0	0	182	84
07:45 to 08:00	0	0	0	7	172	0	0	0	0	0	1	0	1	107	0	0	2	0	179	111
08:00 to 08:15	0	0	0	31	190	0	0	1	0	0	3	0	1	97	0	2	0	0	222	103
08:15 to 08:30	0	0	0	22	161	0	0	0	0	0	3	0	5	105	0	0	1	0	183	114
08:30 to 08:45	0	3	0	24	235	0	0	0	0	0	2	0	6	117	4	0	2	0	262	131
08:45 to 09:00	0	0	0	60	152	1	1	0	0	0	0	0	2	95	0	0	0	0	214	97
Totals	0	3	0	145	1497	1	2	2	0	0	16	0	15	715	5	2	5	0	1650	758

Curtis Traffic Surveys

Vehicle queue southern leg of Gibbons St at Lav

Job: 090504tx

Day, date: Tue 5 May 09

Location: Lawson St & Gibbons St

Weather: Fine

Client: Traffix

Vehicles queued at end of red phase
all lanes aggregated

Time Period						
07:00 to 07:15	3	16	19	21	14	
07:15 to 07:30	9	19	16	22	18	25
07:30 to 07:45	20	18	22	24	29	22
07:45 to 08:00	14	20	18	13	17	16
08:00 to 08:15	22	23	6	22	26	35
08:15 to 08:30	37	40	41	35	31	36
08:30 to 08:45	28	29	30	26	28	36
08:45 to 09:00	26	20	17	21	22	26

Curtis Traffic Surveys

Turning movement count

Job: 090504tx

Day, date: Tue 5 May 09

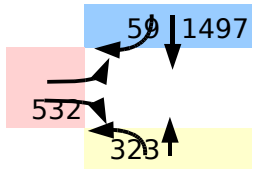
Location: Lawson Square & Regent St

Weather: Rain

Client: Traffix

N

Peak Hour Volumes



Time Period	From Regent St north: Through Light Vehicles	From Regent St north: Through Heavy Vehicles	From Regent St north: Right Light Vehicles	From Regent St north: Right Heavy Vehicles	From Lawson Square: Right Light Vehicles	From Lawson Square: Right Heavy Vehicles	From Redfern St via Regent St sth: Left Light Vehicles	From Redfern St via Regent St sth: Left Heavy Vehicles	Total vehicle movements	
07:00 to 07:15	361	25	11	1	75	6	27	2	508	
07:15 to 07:30	334	16	14	2	78	9	31	1	485	
07:30 to 07:45	298	40	19	3	95	11	52	2	520	
07:45 to 08:00	312	11	9	0	98	6	59	5	500	
08:00 to 08:15	372	23	10	1	101	10	78	3	598	
08:15 to 08:30	388	26	19	1	125	10	72	3	644	Peak
08:30 to 08:45	318	12	11	0	137	8	86	2	574	
08:45 to 09:00	340	18	17	0	126	15	74	5	595	
Hourly Summary	2723	171	110	8	835	75	479	23		
07:00 to 08:00	1305	92	53	6	346	32	169	10	2013	
07:15 to 08:15	1316	90	52	6	372	36	220	11	2103	
07:30 to 08:30	1370	100	57	5	419	37	261	13	2262	
07:45 to 08:45	1390	72	49	2	461	34	295	13	2316	
08:00 to 09:00	1418	79	57	2	489	43	310	13	2411	Peak Hour

Curtis Traffic Surveys

Turning movement count

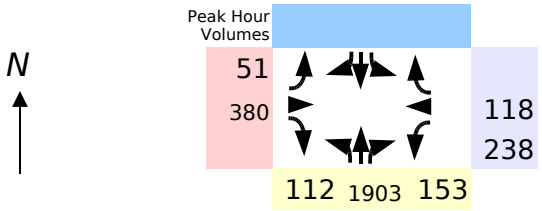
Job: 090504tx

Day, date: Tue 5 May 09

Location: Lawson St & Gibbons St

Weather: Rain

Client: Traffix



Time Period	From Gibbons St north						From Lawson St west						From Gibbons St south						From Lawson Square east						Total vehicle movements	
	Left		Through		Right		Left		Through		Right		Left		Through		Right		Left		Through		Right			
	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles		
07:00 to 07:15							7	0	40	1			19	1	205	12	16	3	22	0	10	0			336	
07:15 to 07:30							7	0	35	0			9	0	314	19	22	6	13	0	15	0			440	
07:30 to 07:45							8	1	55	1			12	0	371	15	26	5	33	1	25	2			555	
07:45 to 08:00							14	0	63	1			19	0	373	9	31	3	40	0	37	2			592	
08:00 to 08:15							8	0	80	2			12	0	424	18	26	11	46	2	27	1			657	
08:15 to 08:30							6	3	102	2			26	0	492	18	27	10	39	3	33	1			762	
08:30 to 08:45							20	2	93	3			40	2	507	19	31	10	54	1	41	1			824	Peak
08:45 to 09:00							12	0	98	0			32	0	401	24	29	9	81	12	13	1			712	
Hourly Summary							82	6	566	10			169	3	3087	134	208	57	328	19	201	8				
07:00 to 08:00							36	1	193	3			59	1	1263	55	95	17	108	1	87	4			1923	
07:15 to 08:15							37	1	233	4			52	0	1482	61	105	25	132	3	104	5			2244	
07:30 to 08:30							36	4	300	6			69	0	1660	60	110	29	158	6	122	6			2566	
07:45 to 08:45							48	5	338	8			97	2	1796	64	115	34	179	6	138	5			2835	
08:00 to 09:00							46	5	373	7			110	2	1824	79	113	40	220	18	114	4			2955	Peak Hour

appendix d

reduced plans

Redfern Street

Refer To Landscape Architects Details For Public Domain Works

KB. 31.403

KB. 30.670

Site Boundary

KB. 31.600

Footpath Finishes To Landscape Architects Details TS01

Colonnade

3m Setback

Access Hatches To Substation Chamber Below

Retail Entry

Retail Entry

GF01

Retail Entry For Corner Units

GF01

Retail Unit 05 RL. 31.200

Retail Unit 04 RL. 31.700

Retail Unit 03

Retail Unit 02

Retail Unit 01 RL. 31.700

Retail Entry For Corner Units

KB. 30.140

Retail Unit 06 RL. 31.200

RL. 31.200

Escalator to RSL

Laneway

SC01 31.180 FE

31.100

FE

SC04b

Retail Unit 07 RL. 30.000

Kitchen Exhaust

Proposed Retail Tenancy Division

4850

Retail Entry

300

1200

3350

30.780

FE

KB. 29.610

Landscaping Zone To Landscape Architects Details

Retail Entry

Retail Unit 08 RL. 29.720

Provision For WC Facilities Below Escalator

GF01

GF01

Proposed Retail Tenancy Division

RSL & Commercial Entry

Provision For WC Facilities

Kitchen Exhaust

K+REx

CEx

Retail Unit 09

Building Manager

RL. 31.200

SC04a

KB. 29.180

Retail Unit 10 RL. 29.450

Driveway To Basement

D.WC

CSp

Lift To RSL, Office Levels

Gibbons Street

Fire Control Room

LC01

LC02

LC03

Site Boundary

01 DA200

Footpath Finishes To Landscape Architects Details TS01

Residential Foyer

TS10

GF02

Lifts To Residential Levels

LC04 Goods Lift

Main Residential Entry

Letter Boxes

RL. 29.040

Void to Loading Dock Refer To DA094

Fire Exit Door In Roller Shutter

Vehicle Exit

Main Vehicular Exit

RS2

Secure Exit

RL. 28.900

3600

Ramp 1:14

RL. 28.500

Site Boundary

PP

Fire Hydrant Booster Valves

KB. 28.470

28.550

SC05

Williams Lane

02 DA200

Multi-Storey Carpark

General Notes:

Architectural Drawings To Be Read In Conjunction With All Other Consultants Detailed Drawings, Reports And Specifications.

All Levels Indicated Taken To Australian Height Datum (AHD)

Refer To WD 900 & Abbreviations Schedule For Proposed Finishes

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GRAHAM P. JAGO REGISTRATION No. NSW - 4925 / VIC - 6128
PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RWA Issue	27.04.09
C	Co-ordination Issue	15.05.09
D	Consultant Issue	29.05.09
E	Issue For Client Sign Off	19.06.09

Proposed Mixed Use Development - 157 Redfern Street REDFERN

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DATE	Feb 2009
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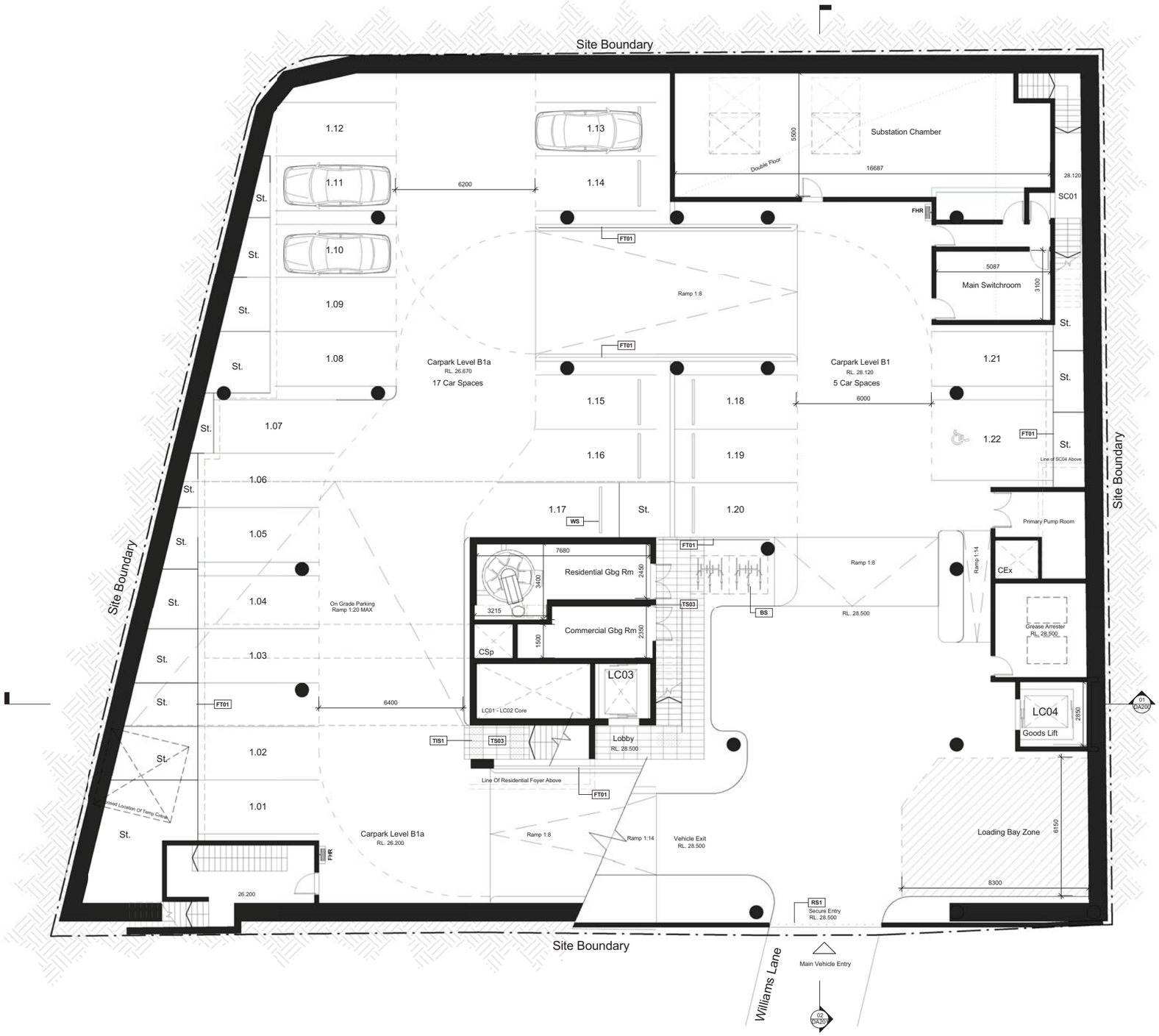

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Proposed Mixed Use Development - 157 Redfern Street REDFERN

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JOB No.	DEI00308
DATE	Feb 2009
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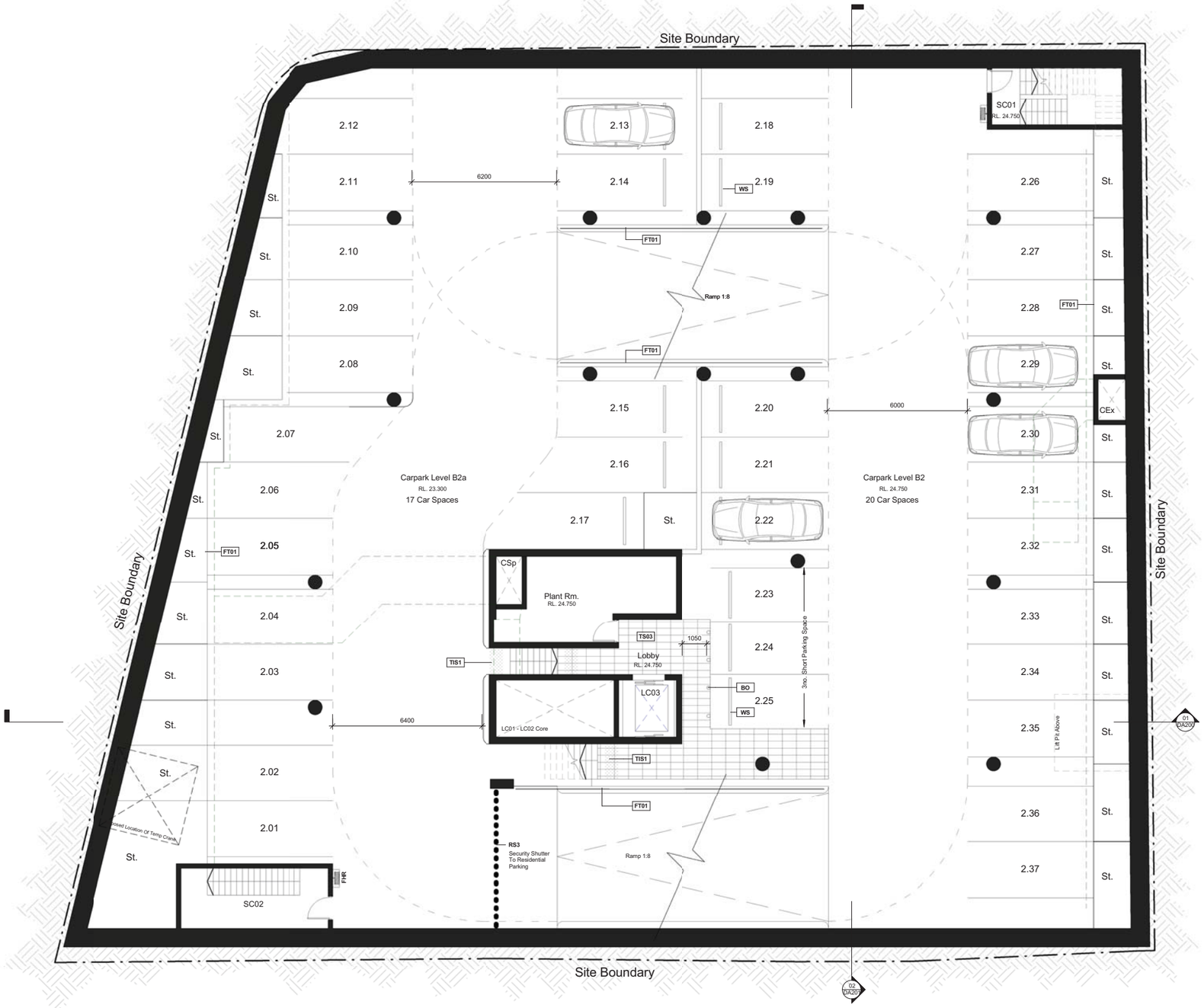
DWG No.	DA094 E



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D	Consultant Issue	29.05.09
E	Issue For Client Sign Off	19.06.09

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Proposed Mixed Use Development - 157 Redfern Street REDFERN

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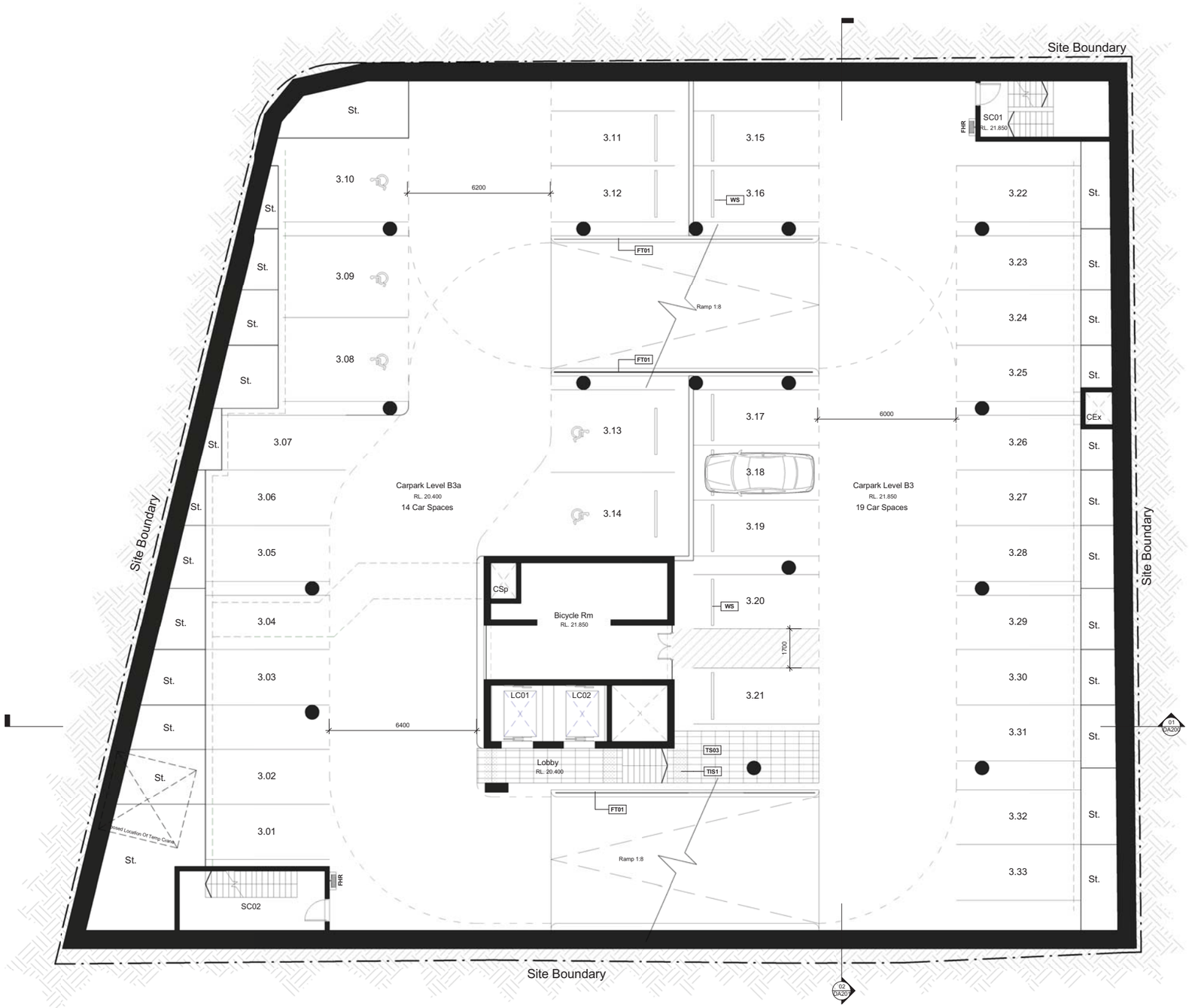

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D	Consultant Issue	29.05.09
E	Issue For Client Sign Off	19.06.09

Proposed Mixed Use Development - 157 Redfern Street REDFERN

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DATE	Feb 2009
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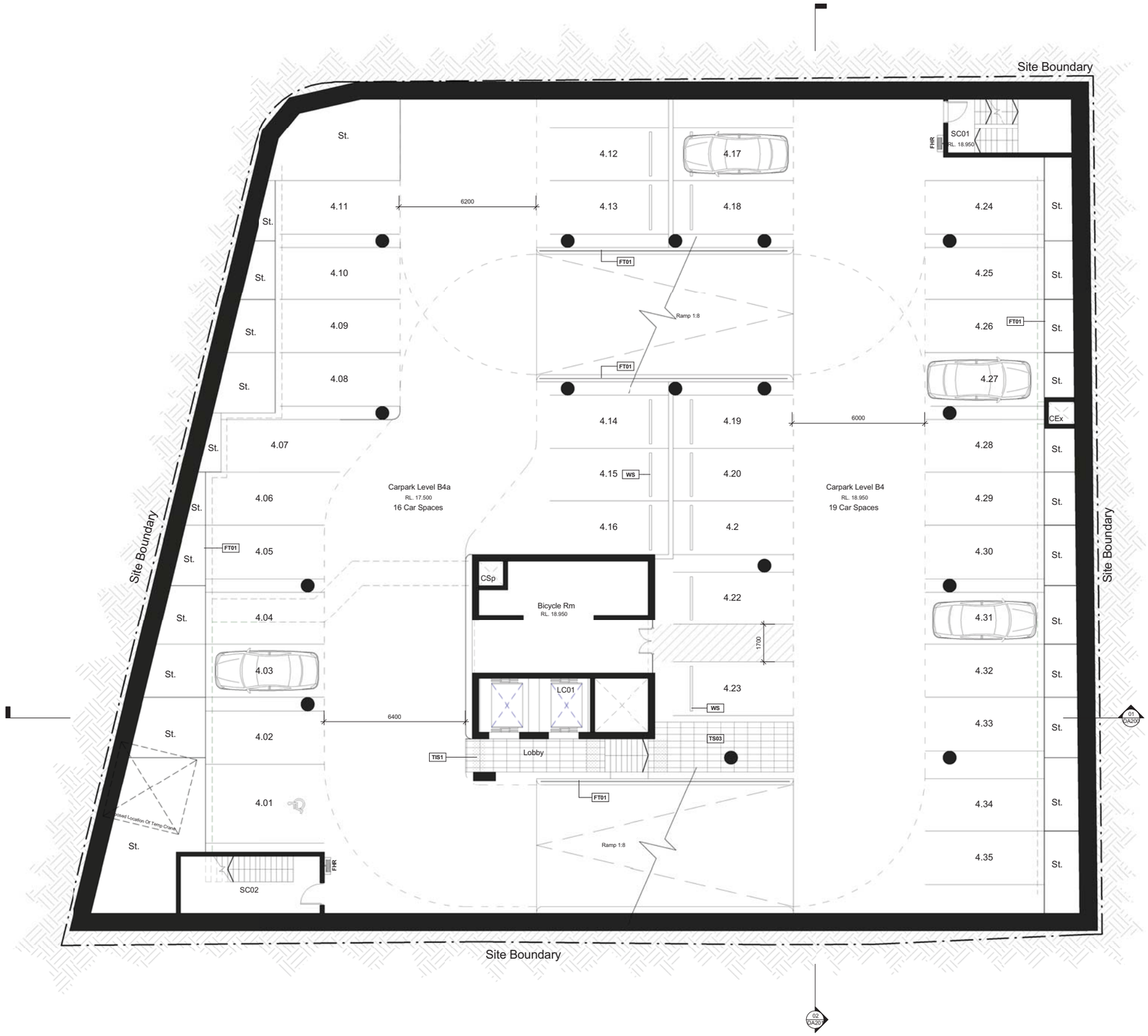
DWG No.	DA092 E



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D	Consultant Issue	29.05.09
E	Issue For Client Sign Off	19.06.09

Proposed Mixed Use Development - 157 Redfern Street REDFERN

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DATE	Feb 2009
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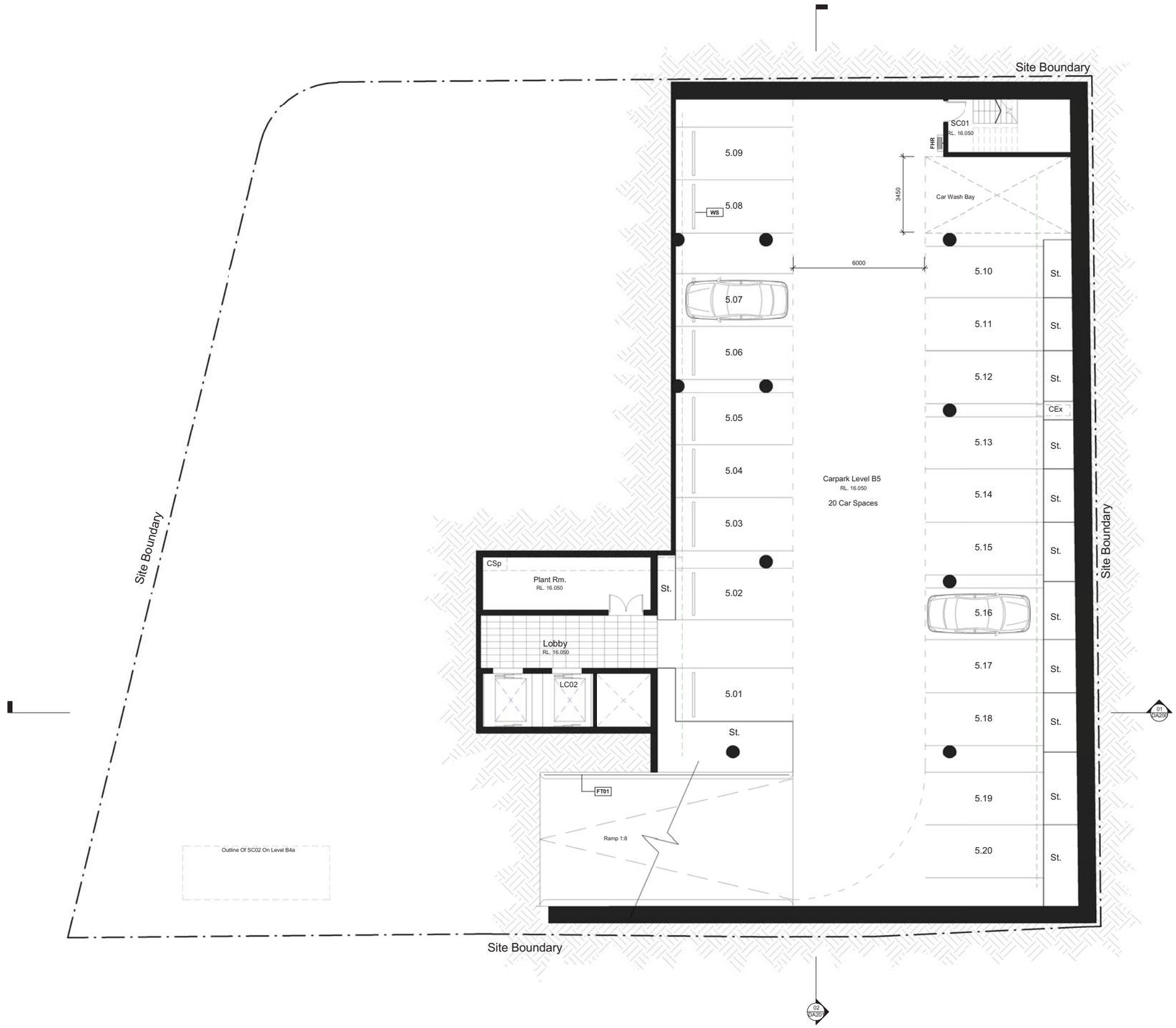

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Development Application

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D	Consultant Issue	29.05.09
E	Issue For Client Sign Off	19.06.09

Preliminary Draft Issue
For Client Approval (19.06.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\MR\DEI00308_DA Model_MR LOCAL_090615.rvt
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JOB No.	DEI00308
DATE	Feb 2009
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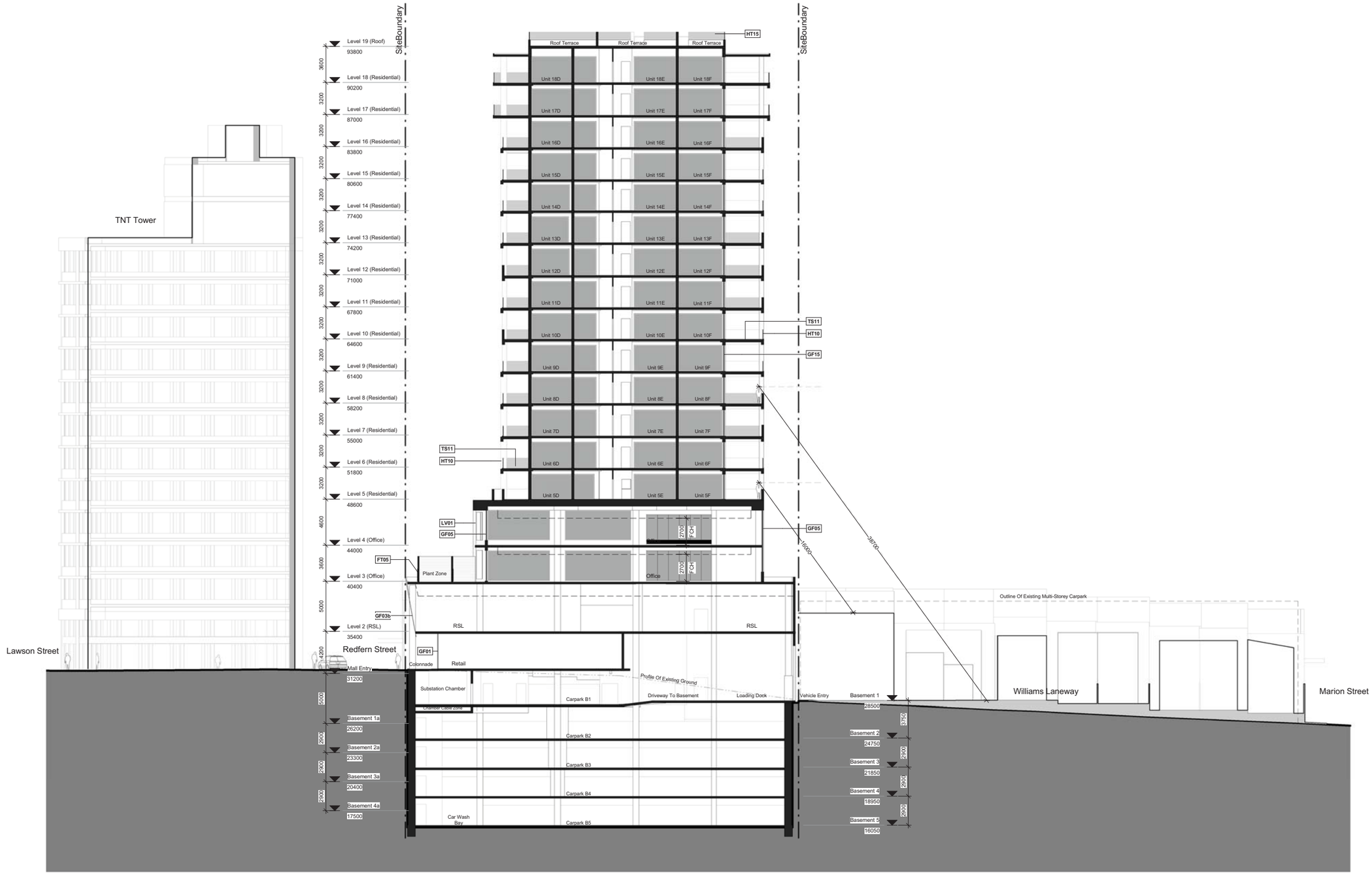
DWG No.	DA090 E



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Development Application

REV	DESCRIPTION	DATE
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B	Co-ordination Issue	15.05.09
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Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\MR\DEI00308_DA Model_MR LOCAL~090615.rvt
TITLE	Section 02

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 200
DWG No.	DA201 D

appendix e

journey-to-work data

Origin Destination Data
2006

Car Driver to/from TZ 0258

SSD Name	SSD	Volume From TZ 258	Volume to TZ 258
Inner Sydney (Excluding South Sydney SLA) (N)	5	84	27
Inner Sydney (South Sydney SLA 7205) (see below)		19	49
Eastern Suburbs (N)	10	3	1
St George-Sutherland (S)	15	0	0
Canterbury-Bankstown (N)	20	0	0
Fairfield - Liverplool (S)	25	0	0
Outer South Western Sydney (S)	30	0	0
Inner Western Sydney (N)	35	0	6
Central Western Sydney (N)	40	0	0
Outer Western Sydney (N)	45	0	0
Blacktown (N)	53	0	0
Lower Northern Sydney (N)	55	0	3
Central Northern Sydney (N)	60	0	3
Northern Beaches (N)	65	0	0
Undefined		12	1
subtotal		118	90
total		**118**	**90**

South Sydney (SLA 7205)			
FROM (TZ)	**TO (TZ)**	**FREQ**	**DIR from TZ 0258**
0253	0258	3	W
0257	0258	2	W
0258	0258	3	na
0259	0258	3	E
0260	0258	8	**S**
0261	0258	6	E
0262	0258	7	E
0269	0258	3	S
0271	0258	4	50%E & 50%S
0276	0258	3	S
0278	0258	3	S
0285	0258	1	S
0291	0258	3	S
	TOTAL	49	

South Sydney (SLA 7205)			
FROM (TZ)	**TO (TZ)**	**FREQ**	**DIR from TZ 0258**
0258	0255	3	W
0258	0258	3	na
0258	0262	3	E
0258	0272	4	S
0258	0288	3	S
0258	0291	3	S
	TOTAL	19	

		AM		**PM**	
TRIP DISTRIBUTIONS ON LOCAL NETWORK		*IN*	*OUT*	*IN*	*OUT*
RESIDENTIAL					
North	82%	4	16	16	4
East	6%	0	1	1	0
South	9%	0	2	2	0
West	3%	0	1	1	0
Total	100%	5	19	19	5
COMMERCIAL/RETAIL		*IN*	*OUT*	*IN*	*OUT*
North	45%	16	1	10	22
East	20%	7	1	5	10
South	26%	9	1	6	13
West	6%	2	0	1	3
Total	97%	35	3	23	49

	COMBINED			
	AM		*PM*	
North	**20**	**17**	**26**	**26**
East	**7**	**2**	**6**	**10**
South	**10**	**3**	**8**	**13**
West	**2**	**1**	**2**	**3**
Total	39	22	41	52

appendix f

sidra outputs – future scenario

SIDRA INTERSECTION

Movement Summary

Regent St & Lawson Sq

Future - AM (existing plus development)

Signalised - Fixed time **Cycle Time = 120 seconds**

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Regent St (south)										
1	L	340	4.1	0.188	5.7	LOS B#	7#	0.00	0.53	33.2
Approach		**340**	**4.1**	**0.188**	**5.7**	**LOS B**		**0.00**	**0.53**	**33.2**
Regent St (north)										
8	T	1597	5.2	0.491	16.0	LOS B	139	0.64	0.57	41.7
9	R	62	3.2	0.181	19.6	LOS B	17	0.46	0.72	37.9
Approach		**1659**	**5.1**	**0.491**	**16.1**	**LOS B**	**139**	**0.63**	**0.58**	**41.5**
Lawson Sq (west)										
12	R	567	7.9	0.496	31.4	LOS C	90	0.67	0.79	29.5
Approach		**567**	**7.9**	**0.496**	**31.4**	**LOS C**	**90**	**0.67**	**0.79**	**29.5**
All Vehicles		**2566**	**5.6**	**0.496**	**18.1**	**LOS B**	**139**	**0.56**	**0.62**	**37.5**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
P5	79	33.0	LOS D	0	0.74	0.74
P7	79	14.5	LOS B	0	0.49	0.49
All Peds	**158**	**23.8**	**LOS B**	**0**	**0.62**	**0.62**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

Regent St & Lawson Sq

Future - PM (existing plus development)

Signalised - Fixed time **Cycle Time = 120 seconds**

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Regent St (south)										
1	L	378	1.9	0.206	5.6	LOS B#	8#	0.00	0.53	33.2
Approach		**378**	**1.9**	**0.206**	**5.6**	**LOS B**		**0.00**	**0.53**	**33.2**
Regent St (north)										
8	T	1746	3.9	0.503	14.0	LOS A	142	0.61	0.55	43.3
9	R	129	2.3	0.351	18.2	LOS B	31	0.45	0.73	38.8
Approach		**1875**	**3.8**	**0.503**	**14.3**	**LOS A**	**142**	**0.60**	**0.56**	**43.0**
Lawson Sq (west)										
12	R	512	6.1	0.493	35.0	LOS C	87	0.72	0.79	28.1
Approach		**512**	**6.1**	**0.493**	**35.0**	**LOS C**	**87**	**0.72**	**0.79**	**28.1**
All Vehicles		**2765**	**3.9**	**0.503**	**17.0**	**LOS B**	**142**	**0.54**	**0.60**	**38.4**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
P5	79	36.0	LOS D	0	0.77	0.77
P7	79	12.6	LOS B	0	0.46	0.46
All Peds	**158**	**24.3**	**LOS B**	**0**	**0.62**	**0.62**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA INTERSECTION

Movement Summary

Gibbons St & Lawson Sq

Future - AM (existing plus development)

Signalised - Fixed time **Cycle Time = 120 seconds**

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Gibbons St (south)										
SL	L	119	1.7	0.116	20.7	LOS B	32	0.50	0.73	37.1
ST	T	2021	4.1	0.698	20.4	LOS B	223	0.78	0.72	38.5
SR	R	166	25.3	0.698	28.9	LOS C	222	0.78	0.86	32.7
Approach		**2306**	**5.5**	**0.698**	**21.0**	**LOS B**	**223**	**0.77**	**0.73**	**37.9**
Lawson Sq (east)										
ET	T	251	7.6	0.395	12.2	LOS A	51	0.38	0.32	38.6
ER	R	124	3.2	0.683	24.1	LOS B	38	0.54	0.75	32.7
Approach		**375**	**6.1**	**0.683**	**16.1**	**LOS B**	**51**	**0.43**	**0.46**	**36.3**
Lawson St (west)										
WL	L	54	9.4	0.704	57.8	LOS E	112	0.99	0.86	21.8
WT	T	402	1.7	0.703	49.7	LOS D	112	0.97	0.84	22.7
Approach		**455**	**2.6**	**0.703**	**50.6**	**LOS D**	**112**	**0.97**	**0.84**	**22.6**
All Vehicles		**3136**	**5.2**	**0.704**	**24.7**	**LOS B**	**223**	**0.76**	**0.71**	**34.5**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
PS	1263	31.5	LOS D	3	0.73	0.73
PE	105	15.5	LOS B	0	0.51	0.51
PN	105	44.2	LOS E	0	0.86	0.86
PW	105	14.5	LOS B	0	0.49	0.49
All Peds	**1578**	**30.2**	**LOS C**	**3**	**0.70**	**0.70**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

SIDRA INTERSECTION

Movement Summary

Gibbons St & Lawson Sq

Future - PM (existing plus development)

Signalised - Fixed time **Cycle Time = 120 seconds**

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Gibbons St (south)										
SL	L	118	2.5	0.111	19.2	LOS B	30	0.47	0.73	38.1
ST	T	1528	1.4	0.510	15.7	LOS B	144	0.64	0.58	41.9
SR	R	172	14.6	0.510	23.9	LOS B	143	0.64	0.82	35.3
Approach		**1817**	**2.8**	**0.510**	**16.7**	**LOS B**	**144**	**0.63**	**0.61**	**41.0**
Lawson Sq (east)										
ET	T	228	2.6	0.376	12.5	LOS A	44	0.37	0.31	38.4
ER	R	95	1.1	0.515	23.4	LOS B	24	0.43	0.71	33.0
Approach		**323**	**2.2**	**0.515**	**15.7**	**LOS B**	**44**	**0.39**	**0.43**	**36.6**
Lawson St (west)										
WL	L	36	0.0	0.514	57.1	LOS E	75	0.96	0.81	21.8
WT	T	272	1.5	0.514	49.6	LOS D	75	0.95	0.77	22.7
Approach		**307**	**1.3**	**0.514**	**50.5**	**LOS D**	**75**	**0.95**	**0.78**	**22.6**
All Vehicles		**2447**	**2.5**	**0.515**	**20.8**	**LOS B**	**144**	**0.64**	**0.61**	**36.8**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
PS	1263	33.8	LOS D	3	0.75	0.75
PE	105	14.0	LOS B	0	0.48	0.48
PN	105	46.8	LOS E	0	0.88	0.88
PW	105	13.1	LOS B	0	0.47	0.47
All Peds	**1578**	**31.9**	**LOS C**	**3**	**0.72**	**0.72**

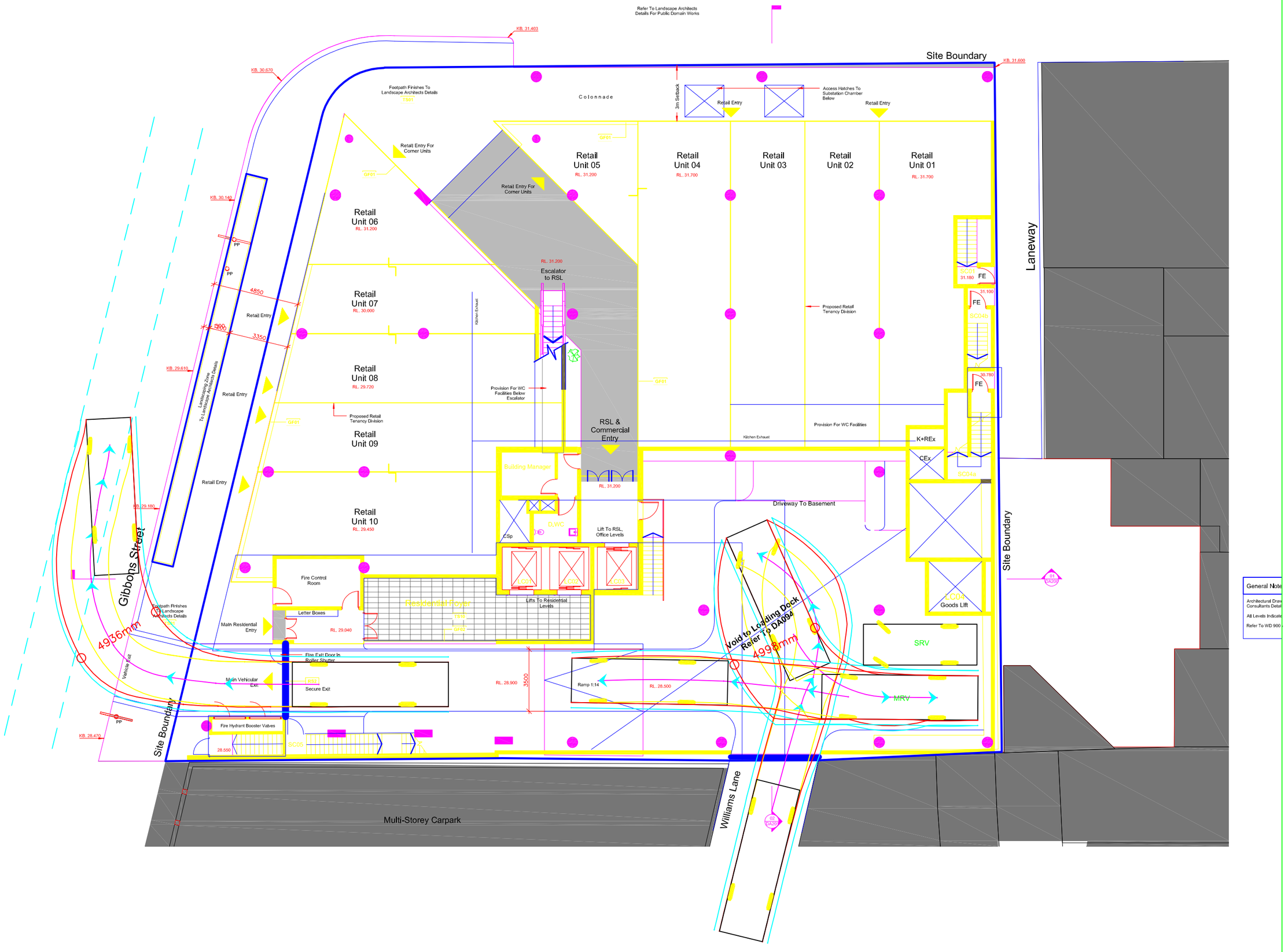
Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

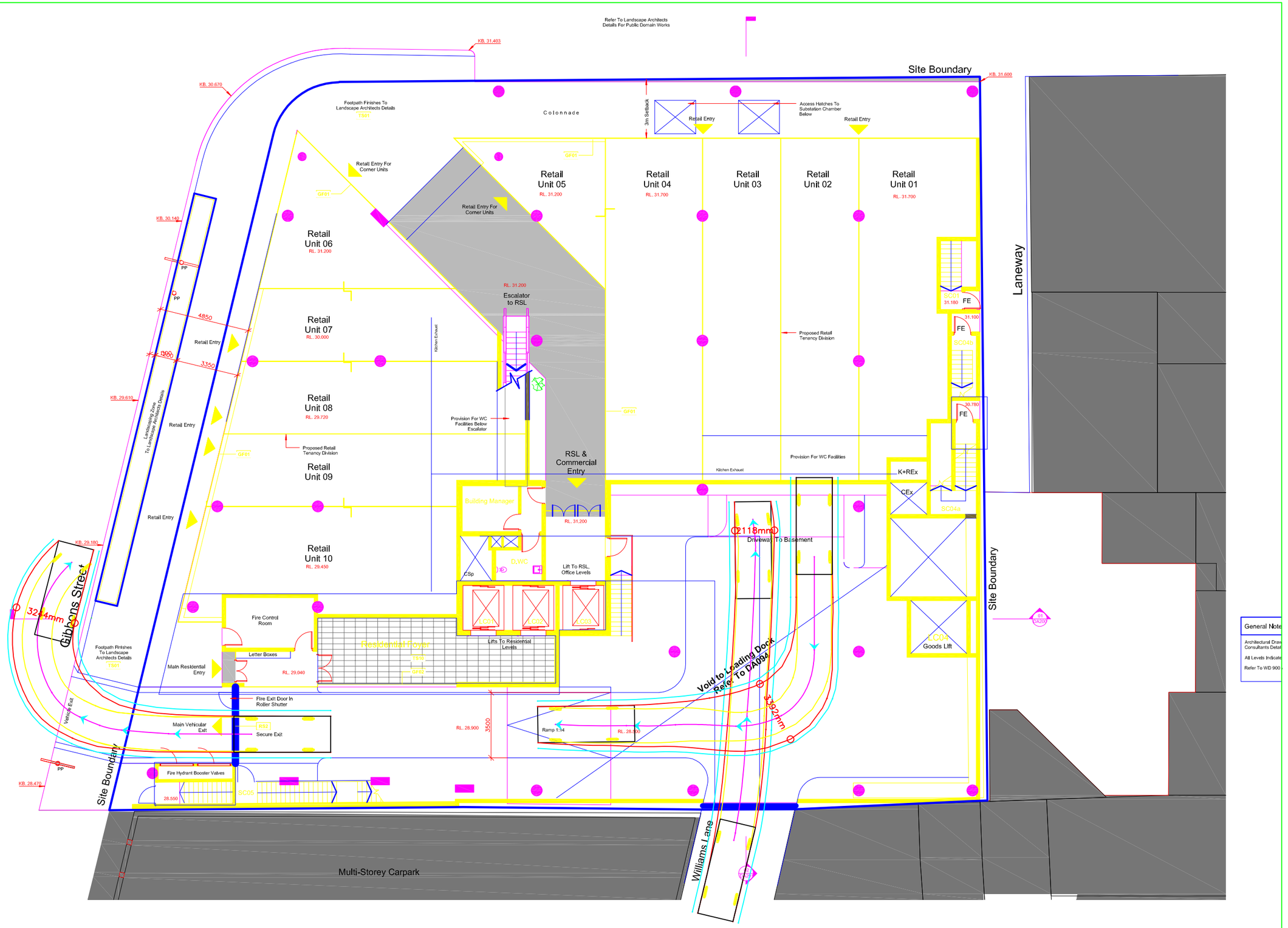
appendix g

swept path analysis

Swept Path - Plot 1
MRV Truck Access
Prepared by TRAFFIX
24 June 2009
Scale ~ 1:200 @A3



Swept Path - Plot 2
B99 Car Access
Prepared by TRAFFIX
24 June 2009
Scale ~ 1:200 @A3



Swept Path - Plot 2
Internal Car Circulation
Prepared by TRAFFIX
24 June 2009
Scale ~ 1:200 @A3