

**THE PEMULWUY PROJECT  
REDFERN**

***Traffic and Transport  
Impact Study***

October 2007

Reference 06320

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## EXECUTIVE SUMMARY

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*The Pemulwuy Project is a significant cultural and community project prepared by the Aboriginal Housing Company. The Pemulwuy Project which incorporates much of the land bounded by Vine Street, Louis Street, Lawson Street and the railway corridor involves a mix of residential, commercial and community based facilities.*

*The site's close proximity to both high frequency bus and rail services together with a constrained supply of parking will encourage a high level of use of ecologically sustainable transport modes such as walking, cycling and public transport, by residents, workers and visitors.*

*This assessment has established that:*

- \* the traffic generated by the proposed landuses will be quite minor and readily accommodated on the surrounding road networks*
- \* the constrained on-site parking supply will be adequate whilst any occasional overflow parking demand can be readily accommodated within the site's internal roads*
- \* mid-block pedestrian activated traffic signals should be installed on Lawson Street in the vicinity of Eveleigh Street to enhance the safety of pedestrians walking between the site and Redfern Station.*

# 1. INTRODUCTION

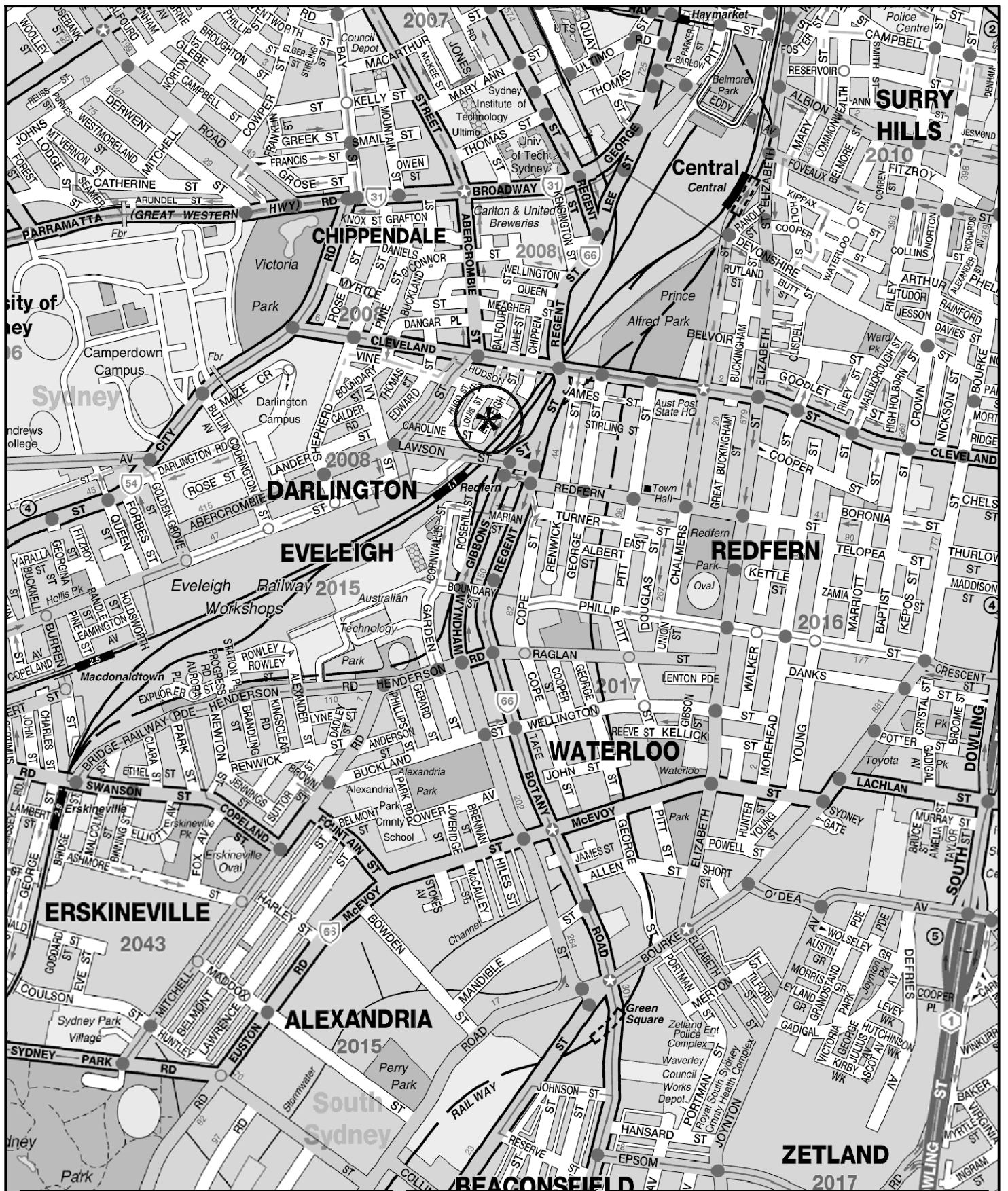
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This report has been prepared for the Aboriginal Housing Company as part of an Environmental Assessment of a Concept Application Scheme for the Pemulwuy project at Redfern.

The cultural and community project encompasses the proposed redevelopment of a consolidated site of some 10,000m<sup>2</sup> generally bounded by Louis Street, Vine Street, Lawson Street and the Railway Line at Redfern (Figure 1). The area has been subject to dilapidation for many years and the proposed redevelopment scheme involves a mixture of uses including:

- Residential
- medical
- cultural
- commercial
- retail
- health and fitness

The Director General of the Department of Planning in consenting to the preparation of a Concept Scheme established a number of requirements including Traffic Impact. The purpose of this report is to respond to those requirements.



LEGEND



LOCATION

FIG 1

## 2. SITE, CONTEXT AND EXISTING/FORMER USE

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The development area covered by the Pemulwuy Project involves an area of some 10,000m<sup>2</sup> which crosses over a number of roadways. The site, which is shown in context on the diagram overleaf, is generally bounded by Louis Street in the west, Vine Street in the north, Lawson Street in the south and the Railway Line to the east.

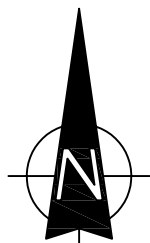
The site is located adjacent to Redfern Railway Station and is surrounded by a mixture of older style and new residential and commercial development. A retail 'strip' runs along the Regent Street – Botany Road route to the east while the large University of Sydney campus is located to the west.

The site was largely the subject of terrace style housing in the past occupied by people from the aboriginal community and there were a considerably larger number of dwellings within the site than what exists today. Many of the former buildings have been demolished while there is a relatively new community centre on the western side of Louis Street. The Aboriginal Housing Company (AHC) occupies a building on the corner of Caroline Street and Eveleigh Street which formerly operated as a Hotel. Also located in the development area is a well used gym which is situated on the south-west corner of Eveleigh Street and Vine Street.





LEGEND



SITE

FIG 2

### 3. PROPOSED DEVELOPMENT SCHEME

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It is proposed to demolish a number of the remaining structures on the site and clear/excavate as necessary to provide for the new buildings. Eveleigh Lane will be closed to provide private open space for the residences being constructed in the block generally bounded by Louis Street, Vine Street, Eveleigh Street and Caroline Street.

The proposed development will comprise:

- 62 residential dwellings	
- Health and Fitness Centre (gym)	1,048m <sup>2</sup>
- Public Art Gallery	1,480m <sup>2</sup>
- Elders Community Centre	185m <sup>2</sup>
- Commercial areas	6,040m <sup>2</sup>
- Retail areas	575m <sup>2</sup>
- Respite and Health Centre	440m <sup>2</sup> (20 beds)

The 62 residential dwellings comprise of a mix of 2, 3 and 4 bedroom townhouses. The new Health and Fitness Centre on the corner of Caroline Street and Louis Street replaces an existing facility which is located in Vine Street between Eveleigh Street and Eveleigh Lane.

The Public Art Gallery will display and sell art works by indigenous people and will occupy the lower levels of the commercial building which is proposed on the eastern side of Eveleigh Street.

The Elders Community Centre will occupy a refurbished building on the south-east corner of Vine Street and Louis Street whilst the proposed Respite and Health Centre is to be located within a new building on the southern side of Caroline Street. The Respite facility will incorporate up to 20 beds and provide accommodation for



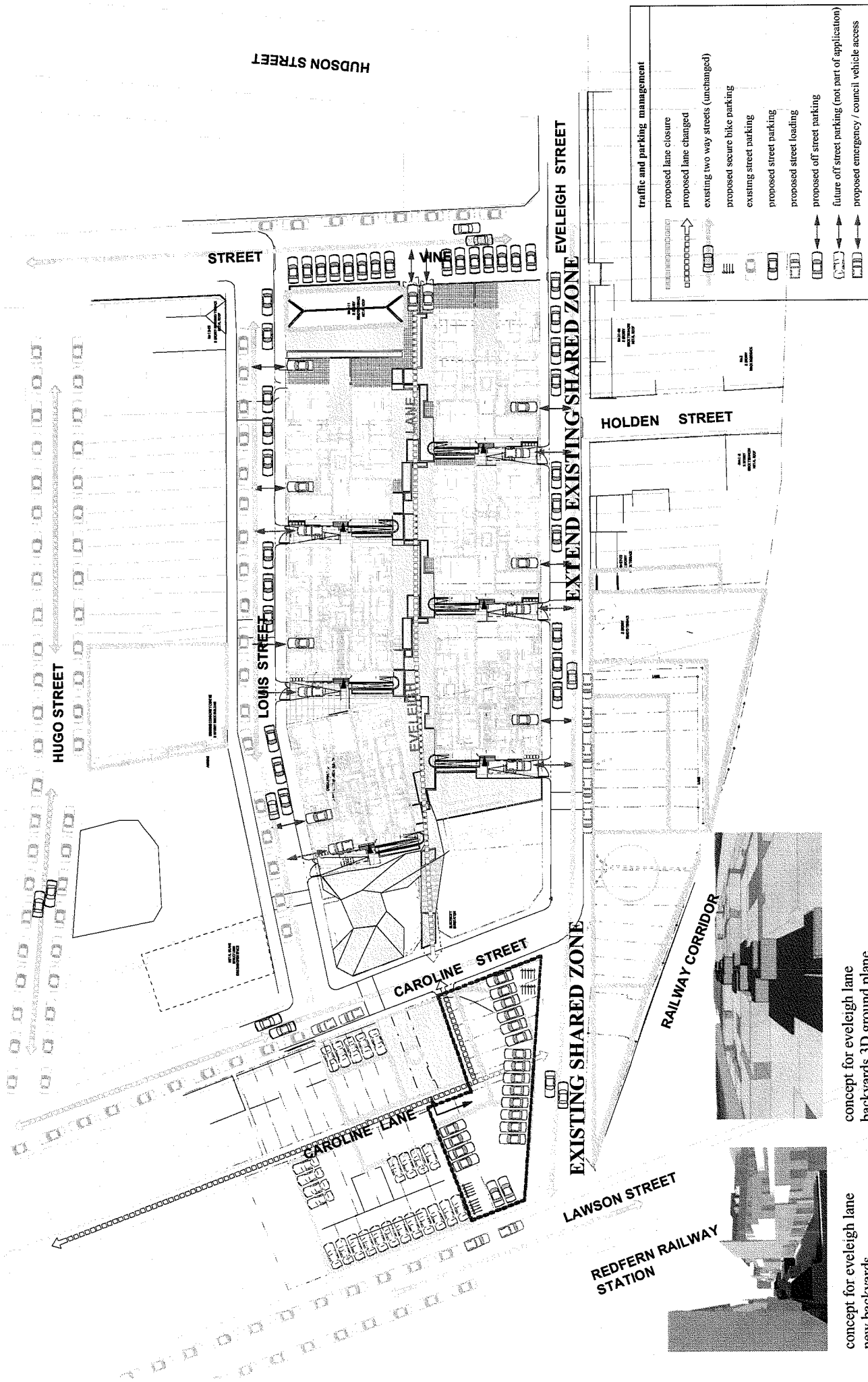
indigenous persons convalescing after surgery and for people who may be accompanying a sick family member and who reside outside the area. The Health Centre will operate on the ground floor and function as a Medical Centre for local residents.

The existing roadways and footways will largely remain as they exist other than the aforementioned Eveleigh Lane closure and a proposal to realign Caroline Lane such that it intersects with Caroline Street rather than Eveleigh Street. Also under consideration is a proposal to extend the existing SHARED ZONE on Eveleigh Street to Vine Street. The functionality and operation of this proposal, however is to be the subject of a separate application.

As indicated previously, the residential dwellings will be centrally located within the site with provision for emergency vehicle access and on-site parking provision for up to 9 vehicles.

The new AHC building on the corner of Caroline Street and Eveleigh Street will have basement carparking for a further 20 vehicles accessed from Caroline Lane. No on-site parking is proposed to be provided for the art gallery and commercial building located between the rail line and Eveleigh Street on the basis of the site's high level of accessibility to public transport and known possible future RailCorp proposals for new rail lines beneath this building site.

Details of the Concept Plan are provided on the drawings prepared by Cracknell Lonergan which accompany the Application, and which are reproduced in part overleaf.



concept for eveleigh lane  
backyards 3D ground plane

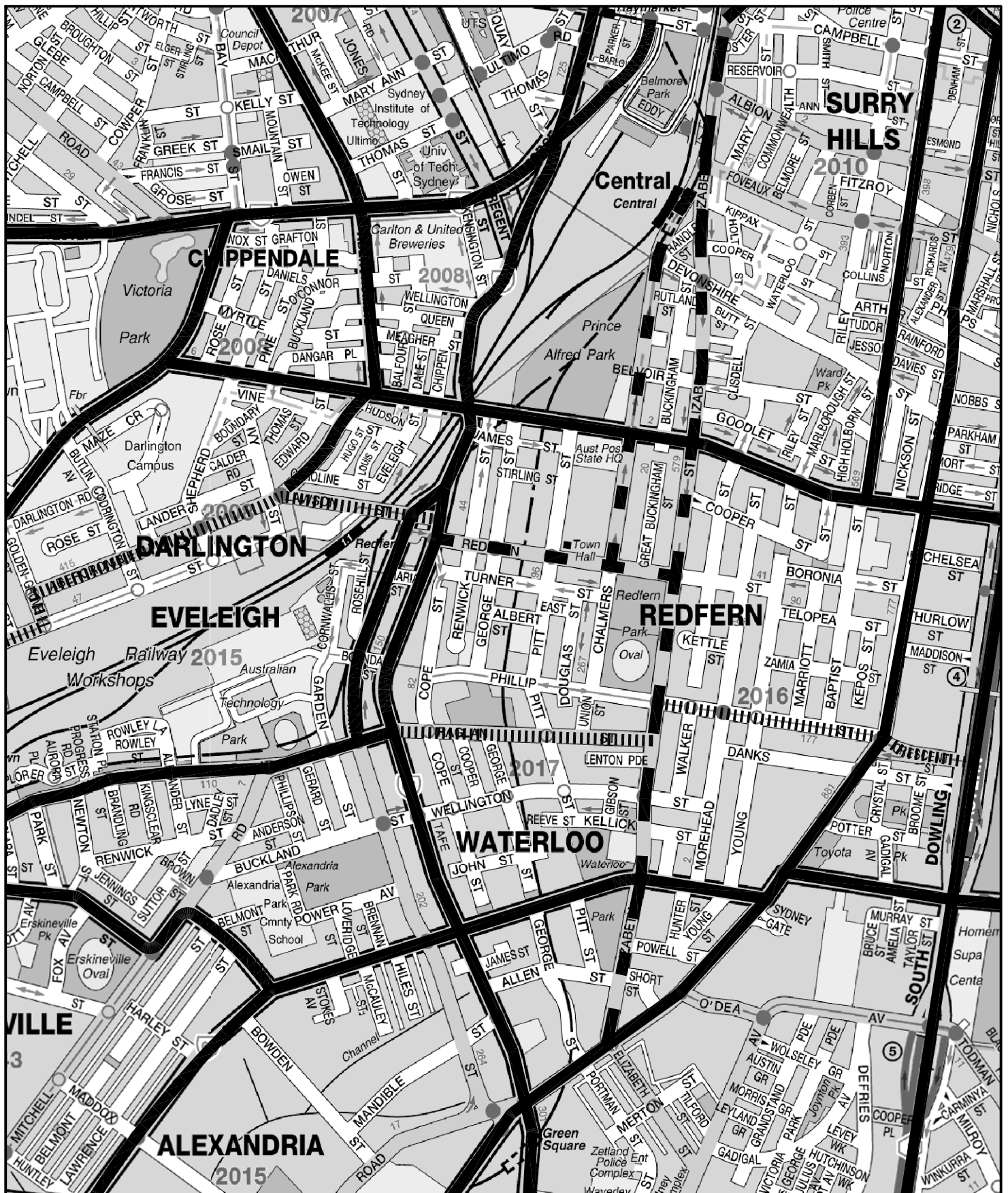
concept for eveleigh lane  
new backyards

OCTOBER 2007  
CONCEPT APPLICATION ISSUE

TRAFFIC DIAGRAM  
1:1000 at A4



# THE PEMULWUY PROJECT



## 4. ROAD NETWORK AND TRAFFIC CONDITIONS

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### 4.1 ROAD NETWORK

The road network serving the Redfern area (Figure 2) comprises:

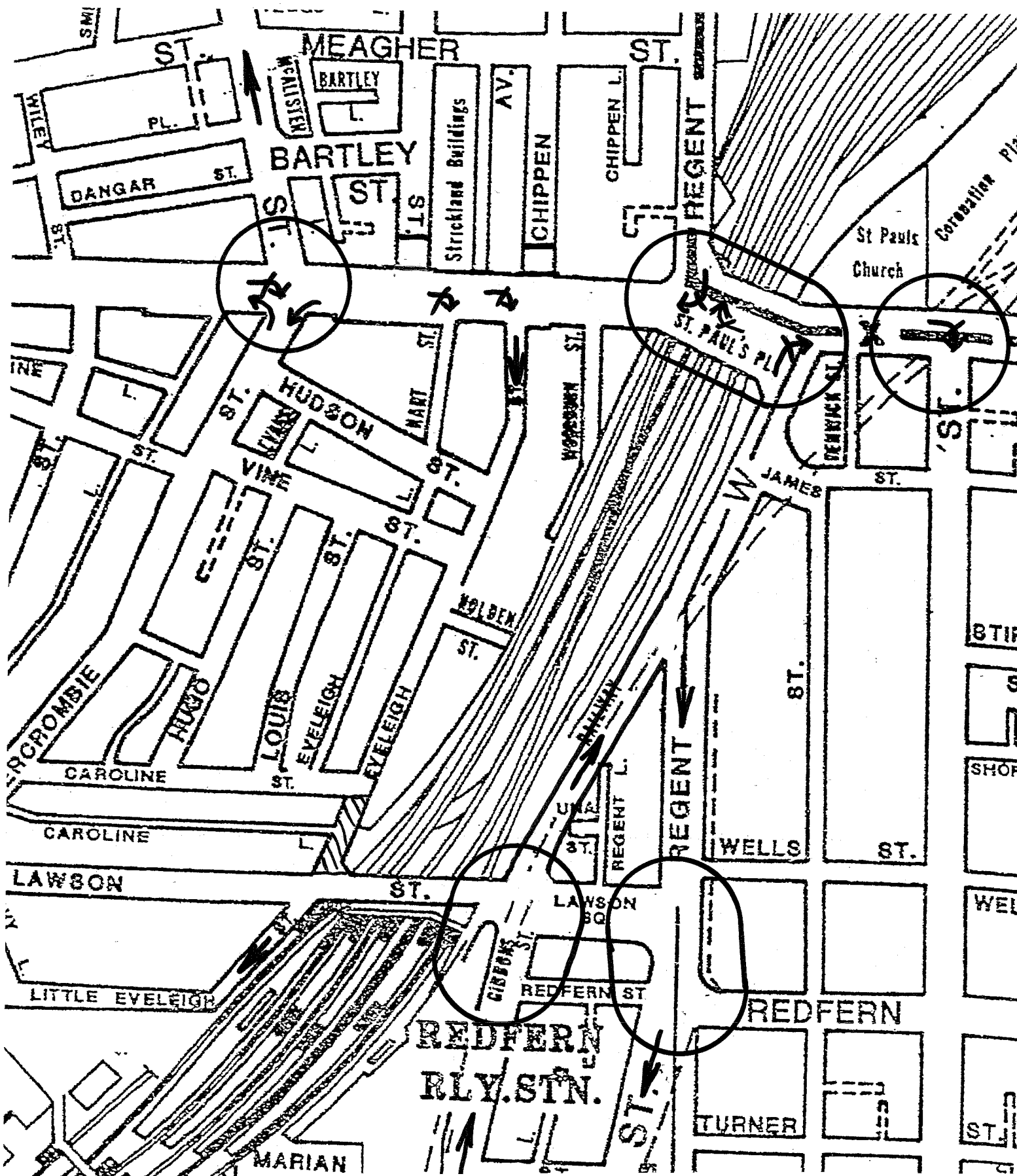
- \* *City Road (Princes Highway)* – a State Highway and arterial route running just to the west
- \* *Cleveland Street* – a State Road and east-west arterial route
- \* *Regent Street/Botany Road/Wyndham Street* – a State Road known as the ‘Southern Arterial Route’
- \* *Abercrombie Street* – a State Road and arterial route north of Cleveland Street and collector road south of Cleveland Street
- \* *Redfern Street/Lawson Street* – a Regional Road and collector route
- \* *Raglan Street/Henderson Road* – a collector route.

Eveleigh Street, Louis Street and Caroline Street are relatively narrow local access roads.




### 4.2 TRAFFIC CONTROLS

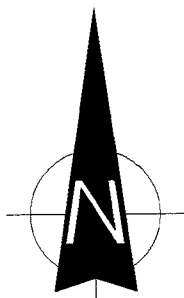
The traffic management measures which have been applied to the road system in the vicinity of the site (Figure 2) comprise:

- \* the SHARED ZONE in Eveleigh Street between Lawson Street and Caroline Street which operates in a ONE WAY northerly direction



# LEGEND

-  TRAFFIC SIGNALS
-  NO RIGHT TURN
-  ONE WAY
-  SHARED ZONE



## TRAFFIC CONTROLS

FIG 4

- \* the 'kerbed' closure of Vine Street between Louis Street and Eveleigh Street
- \* the section of ONE WAY south traffic in Eveleigh Street between Cleveland Street and Hudson Street
- \* the NO RIGHT TURN restrictions along Cleveland Street at Abercrombie Street, Hail Street and Eveleigh Street
- \* the Local Area Traffic Management (LATM) devices (generally in the form of speed humps and raised thresholds) on many of the streets including Eveleigh Street, Caroline Street, Vine Street, Louis Street and Abercrombie Street
- \* the traffic signals along Cleveland Street at the Regent Street and Abercrombie Street intersections (incorporating pedestrian crossings)
- \* the ALL TRAFFIC LEFT restriction in Abercrombie Street at Cleveland Street
- \* the traffic signals along Lawson Street at the Gibbons Street and Regent Street intersections (incorporating pedestrian crossings)
- \* the roundabout at the intersection of Vine Street and Abercrombie Street
- \* the pedestrian refuge on Lawson Street at the Railway Station
- \* the mix of unrestricted and 2P RESIDENT EXEMPT parking on the streets both within and immediately surrounding the development area.

### **4.3 TRAFFIC CONDITIONS**

The arterial routes in the vicinity of the site carrying significant volumes as follows:

<b>Location</b>	<b>AADT</b>
Cleveland Street west of Regent Street	56,110
Regent Street south of Cleveland Street	48,856
Abercrombie Street north of Cleveland Street	21,533



Lawson Street to the east of Abercrombie Street carries in the order of 7,600 vpd which equates to a two-way flow in peak periods of some 760 vph. The existing traffic flows on the local access roads at the site are extremely low with Eveleigh Street, Louis Street and Caroline Street having peak morning and afternoon flows of less than 100 vph.

Apart from the significant arterial flows the traffic conditions in the vicinity of the site, including Lawson Street are quite satisfactory.

#### **4.4 PUBLIC TRANSPORT SERVICES**

The development site is highly accessible to both road and rail based public transport services being less than 400 metres from high frequency bus services on nearby Redfern Street and Regent Street and approximately 50 – 150 metres from Redfern Railway Station.

Details of the bus routes which operate in the vicinity of the site are outlined in the table below whilst route maps for each are provided in Appendix A.

<b>Route No</b>	<b>Service Frequency</b>	<b>Route Description</b>
305	Mon-Fri (Peak Hour Services)	Railway Square to Mascot via Redfern, Alexandria and Beaconsfield (via Regent Street)
308	Daily Daytime Services	Marrickville to City via St Peters, Alexandria and Redfern (via Regent Street)
309	Daily Full Time Service	Port Botany to City via Broadmeadow, Botany, Mascot and Redfern (via Regent Street)
310	Daily Full Time Service	Eastgardens to City via East Botany, Mascot and Redfern (via Regent Street)
352	Mon-Fri Daytime Service	Marrickville to Bondi Junction via Newtown, Chippendale, Surry Hills, Darlinghurst and Paddington

Nearby Redfern Station provides access to 10 of the 11 lines on the City Rail network as well as convenient connection to Central Station and the extensive network of inter urban and country link services which operate to/from this station.

Depending on the dwell time at Central Station, Citybound commuters have a 5 – 7 minute trip time between Redfern and Town Hall Stations. Throughout the day there is a citybound train departing Redfern on average every 2 minutes. During the AM commuter peak citybound rail passengers have a service on average once a minute at Redfern whilst in the PM commuter peak the average is once every 90 seconds. Outbound passengers are equally well served, with trains also departing on average once every 2 minutes.

Details of the number of rail services available at Redfern Station during the AM and PM commuter peaks are summarised in the table below:

**RAIL SERVICES AT REDFERN STATION DURING WEEKDAY PEAK PERIODS**

<b>Rail Line</b>	<b>Direction</b>	<b>No of Services AM Peak (6-9am)</b>	<b>No of Services PM Peak (3-6pm)</b>
Eastern Suburbs and Illawarra	To City	41	33
	From City	30	39
Bankstown	To City	15	14
	From City	15	15
Inner West/South	To City	37	36
	From City	36	36
Airport and East Hills	To City	4	0
	From City	0	7
North Shore	To City	45	36
	From City	35	47
Western	To City	38	24
	From City	20	34
Northern	To City	20	12
	From City	17	21

Given this site's high level of accessibility to public transport, both residents, workers and visitors of the development are expected to make good use of the services provided particularly for journey to work purposes.

## **4.5 BICYCLE ROUTES**

The development area is located in close proximity to a number of existing and proposed (local and regional) bicycle routes. In early 2007, the City of Sydney released its 'Cycle Strategy and Action Plan 2007 – 2017'. Details of the proposed network are provided in Figure 19 of the strategy and reproduced overleaf. The existing bicycle routes in the vicinity of the site include on-road facilities along Redfern Street and Lawson Street which connect to Little Eveleigh Street and Wilson Street. This route then extends towards Erskineville, Newtown, the University of Sydney and City Road. The Redfern Waterloo Authority's (RWA) Built Environmental Plan (Stage One) identifies the need for stronger bicycle (and pedestrian) connections between the site and Redfern Station as well as the existing cycle routes on Lawson Street and Little Eveleigh Street.

## 5. PARKING

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### Carparking

The development scheme involves the provision of only a modest number of on-site parking spaces.

In terms of parking provision, the former South Sydney Council DCP № 11 continues to apply to this site and the surrounding areas. For residential developments of the scale proposed DCP № 11 imposes the following parking rates:

- 0.5 spaces per one-bedroom apartment
- 0.8 spaces per two-bedroom apartment/townhouse
- 1.2 spaces per three or more-bedroom apartment/townhouse
- 1 space per 6 residences for visitors

Application of this rate would suggest a need to provide in the order of 63 spaces comprising:

- |             |   |                                       |
|-------------|---|---------------------------------------|
| 22.4 spaces | - | 28 x two-bedroom apartments           |
| 40.8 spaces | - | 34 x three or more-bedroom townhouses |
| 10 spaces   | - | visitor parking                       |

The rates specified in DCP № 11, however represent a universal rate for the entire former South Sydney Local Government Area. They do not consider such factors as proximity to public transport and services or the intended market in which the development is being provided.

To demonstrate the impact such factors has on car ownership, an analysis has been undertaken of the Australian Bureau of Statistics, 2001 Census Data for the following areas:

- \* Sydney Metropolitan Region (Statistical Division 105)
- \* Inner Sydney (Statistical Sub-Division 10505)
- \* South Sydney (Statistical Local Area 1050707)
- \* Census Collection District 1400804 (subject site).

Figure 5 overleaf describes the area covered by the abovementioned Census Collection District (CCD).

The average levels of car ownership per dwelling for each of these areas was identified as being:

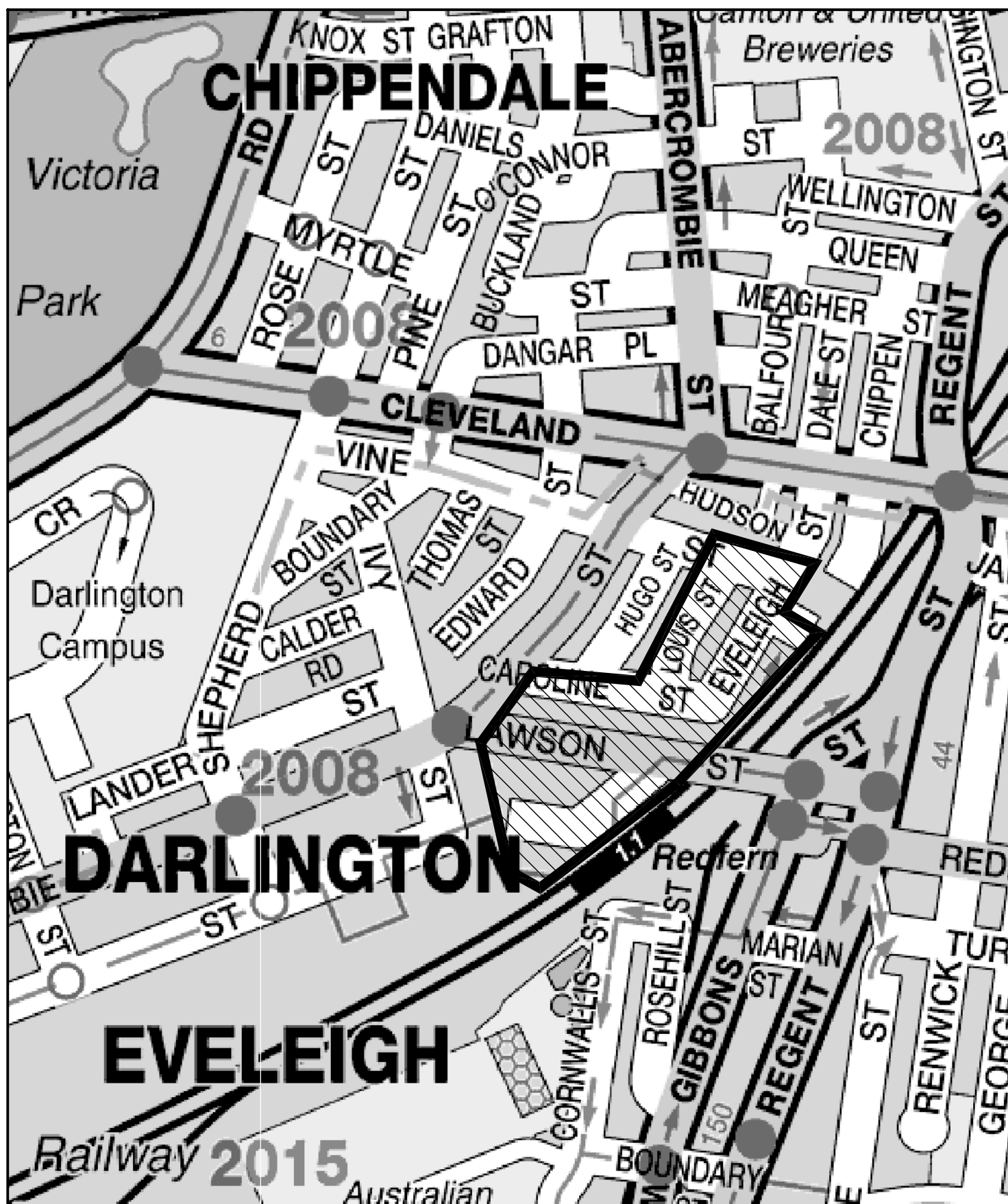
Sydney Region	1.46 vehicles per dwelling (2006 Census Data)
Inner Sydney	0.88 vehicles per dwelling
South Sydney	0.68 vehicles per dwelling
CCD	0.42 vehicles per dwelling

With the nominated Census Collection District being located in such close proximity to public transport and services and almost exclusively occupied by older style terrace housing with virtually no off-street parking, it is clearly apparent that residents and tenants of these dwellings choose as a consequence of either economic and/or need not to own a car.

Having said this application of the existing average car ownership of persons residing in homes on the development site and surrounding areas would suggest a parking requirement for prospective tenants of 24 spaces.

The proposed development incorporates residential parking for up to 9 vehicles, all of which are to be designated for the exclusive use of tenants residing in the four-bedroom dwellings.

Whilst the provision of 9 spaces is considerably less than the current CCD car ownership rate the provision is considered adequate in this instance on the basis that there is an extensive supply of unoccupied on-street parking available on the streets immediately surrounding the site. This comment is supported by parking



LEGEND



2001 CENSUS  
COLLECTION DISTRICT

FIG 5



activity surveys recently carried out by this firm as part of this project. The surveys were carried out over 2 periods of a normal weekday (during University Semester) and a single period on a Saturday.

The results of the surveys which are summarised in the table below indicates that there are in the order of 346 spaces in the area bounded by Lawson Street, Abercrombie Street, Eveleigh Street and Vine Street. Of this number less than 55% of spaces are normally occupied during the normal weekday business periods and considerably less on weekday evenings and weekends.

<b>PARKING ACTIVITY SURVEY AUGUST 2007</b>					
	Capacity	Parking Type	No of Occupied Spaces		
			Weekday		Saturday
			10am- Noon	6- 8pm	10am- Noon
Caroline Street N/S	5	2P Res	3	5	1
	16	UNR	6	5	4
Caroline Street S/S	28	UNR	12	11	8
Eveleigh Street E/S	20	UNR	3	3	2
	5	UNR Angle	5	2	0
Eveleigh Street W/S	19	UNR	0	0	0
Louis Street E/S	23	UNR	3	3	3
Louis Street W/S	23	UNR	4	2	0
Vine Street N/S	11	UNR	9	5	2
	15*	UNR angle	5	4	4
	3	½ P	1	2	1
Vine Street S/S	16	UNR	11	4	2
Hugo Street E/S	22	UNR	15	13	8
Hugo Street W/S	22	UNR	18	12	14
Lawson Street N/S	3	LZ	2	2	2
	1	½ P	1	1	1
	22	2P Res	19	21	17
Lawson Street S/S	25	2P Res	23	22	22
Abercrombie St W/S	4	½ P	4	2	3
	23	2P Res	17	19	20
Abercrombie St E/S	2	UNR	2	1	2
	30	2P Res	25	25	24
<b>Total</b>	<b>346</b>		<b>185</b>	<b>161</b>	<b>140</b>

UNR = Unrestricted Parking

In view of the anticipated low levels of car ownership, the sites close proximity to public transport and the availability of parking on the streets both within and immediately surrounding the site it is considered that the proposed residential parking provision is appropriate for this type of residential development.

### **Other Landuses**

In addition to the residential development, the concept proposal also includes a number of other land use activities. These uses include Office/Commercial, Retail, Medical, Health and Fitness and Cultural.

DCP 11 specifies the following maximum parking rates for most of these uses as follows:

<b>Landuse</b>	<b>Parking Rate</b>
Office/commercial	1 space per 125m <sup>2</sup> GFA
Gymnasiums	3 spaces per 100m <sup>2</sup> GFA
Art Galleries	1 space per 200m <sup>2</sup> GFA
Retail	1 space per 50m <sup>2</sup> GFA
Medical Centres	2 spaces per Doctor(rostered or at any one time)
Hospital (Respite)	1 space per Doctor plus 1 space per 2 non medical staff plus 1 space per 3 beds (visitors)

Application of these rates to the proposed relevant elements of the concept development scheme indicates the following maximum on site parking provision.

Office/Commercial (5875m <sup>2</sup> )	47 spaces
Gymnasium (715m <sup>2</sup> )	22 spaces
Art Gallery (1400m <sup>2</sup> )	7 spaces
Retail (575m <sup>2</sup> )	11.5 spaces
Elders Spiritual Centre (200m <sup>2</sup> )	1.8 spaces
Respite (20 beds) and Medical Centre	20 spaces
Total	110 spaces

The concept development scheme incorporates only a modest number of off street parking spaces for the non residential uses, all of which, are, to be provided within a 20 space basement carpark located beneath the mixed use development located on the corner of Lawson Street and Eveleigh Street. It is proposed that these spaces be allocated as follows:

Art Gallery	4 spaces
Office/Commercial uses	7 spaces
Retail uses	3 spaces
Respite and Medical Centre	4 spaces
Elders Spiritual Centre	Nil spaces
Gymnasium	2 spaces

The reduced provision of parking over the maximum allocation recommended is DCP11 is considered reasonable in this instance on the basis that:

- \* the site is located within 50 – 150 metres of Redfern Railway Station with the exception of Town Hall and Central Stations, no other station on the City Rail network is as well served by rail services. Given the sites high level of accessibility to public transport, it is not an unreasonable expectation that the vast majority of employees working in the commercial/office areas will choose not to drive
- \* the reduced parking provision is consistent with the aims and objectives of the State Government's 'Metropolitan Strategy' and those of the Redfern Waterloo Authority and City of Sydney with respect to reducing car dependency and increasing public transport usage particularly for journey to work purposes
- \* the new Gymnasium replaces an existing facility where staff and patrons currently rely on the availability of parking on the surrounding streets
- \* The retail space will be either ancillary to the Art Gallery or expected to be taken up by tenants whose goods and services will target either the local community or the high volume of passing foot traffic (eg university students)

- \* persons using the Elders Spiritual Centre will primarily comprise of residents living in the Eveleigh/Redfern area and as such are more likely to walk than drive
- \* the 20 bed Respite facility is to be used by 'out of town' indigenous persons who have been discharged from hospital but who need to reside locally on a temporary basis in order to gain follow up treatment. Due to their condition they are unlikely to be driving
- \* as indicated previously, there is a significant under utilisation of the available kerbside parking both within and on the streets immediately surrounding area. This under utilisation exceeds the parking requirement assessed under DCP 11.

### **Bicycle Parking**

With car ownership levels expected to be low, external trips will primarily focus on cycling, walking and public transport modes. To facilitate cycling, it is proposed to provide communal storage/parking facilities for the tenants of the apartments and other uses which are generally in accordance with the requirements of DCP № 11.

Whilst it is not proposed to provide designated bicycle storage areas within the townhouses, sufficient space is available in the private courtyard areas to accommodate the storage of bicycles.

## 6. ACCESS AND CIRCULATION

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The site has quite flexible vehicle access provisions comprising:

- \* Eveleigh Street connecting to Lawson Street and Cleveland Street
- \* Caroline Street connecting to Abercrombie Street
- \* Vine Street connecting to Abercrombie Street
- \* Hudson Street connecting to Abercrombie Street and via Hart Street to Cleveland Street.

The traffic signals along Lawson Street at Abercrombie Street, Gibbons Street and Regent Street provide controlled access to the higher order road system.

Vehicle access for the elements of the development will comprise:

- \* construction of a new (north-south) section of Caroline Lane to access the basement carparking in the southern building zone
- \* driveways accesses along Eveleigh Street (x 3) and Louis Street (x 3) plus 2 on Vine Street for frontage carparking and emergency vehicle access to the residential component of the project
- \* closure of Eveleigh Lane between Caroline Street and Vine Street for incorporation as private open space for tenants of the residential development surrounding this laneway
- \* the potential extension of the existing SHARED ZONE in Eveleigh Street to Vine Street. This proposal is to be the subject of a separate application to the City of Sydney's Traffic Committee prior to referral to the RTA for final approval.

The proposed access arrangements will be designed to accord with the requirements of AS 2890.1 and to accommodate all vehicles requiring to use the accesses.

Pedestrian movements to/from the site will be very much focussed on the intersection of Eveleigh Street and Lawson Streets, as a consequence of this being the desire line for trips between the site and Redfern Station and the retail/commercial areas on Regent Street and Redfern Street. At present, pedestrian movements across Lawson Street in the vicinity of Eveleigh Street are assisted by the provision of a refuge island. In view of the significant increase in pedestrian movements which are envisaged at this location as a consequence of the proposed landuses it is recommended that pedestrian activated signals be installed in lieu of the refuge island. Such provision will not only enhance the safety of pedestrians but is also consistent with the bicycle and pedestrian improvements identified in the Redfern – Waterloo Built Environment Plan.



## 7. TRAFFIC AND TRANSPORT

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### Traffic

There is very minimal traffic movements currently generated by the site and what movements occur are largely generated by on-street parking. The traffic movements which will be generated with the proposed development will be directly related to the proposed parking provision.

The projected traffic movements during the morning and afternoon peak periods are as follows:

	AM		PM	
	IN	OUT	IN	OUT
Dwellings	3	13	13	3
Commercial	12	2	2	12
Retail	2	2	2	2
Visitation/Servicing	3	3	4	4
<b>Total</b>	<b>20</b>	<b>20</b>	<b>21</b>	<b>21</b>

These movements will be spread over the numerous available access routes and such minor movements will not present any adverse capacity or safety issues.

### Transport

As indicated previously, the site's high level of accessibility to both rail and road based public transport together with the constrained level of on-site parking will encourage a significant proportion of residents, workers and visitors to the site to take advantage of the available public transport system.