

Item No: R1 Recommendation to Council
Subject: **REVIEW OF CHAPTER E1 PARKING AND ACCESS OF THE WOOLLAHRA DEVELOPMENT CONTROL PLAN 2015.**
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File No: 16/109788
Reason for Report: To:
- obtain a Council resolution to prepare and exhibit a draft development control plan to amend Chapter E1 Parking and Access as contained in Woollahra DCP 2015;
- to identify and explain the changes proposed by the draft DCP.

Recommendation:

- A. That Council resolve to prepare and exhibit a development control plan to amend chapter E1 Parking and Access of the Woollahra Development Control Plan 2015.
- B. That the revised Chapter E1 Parking and Access contained in Annexure 2 of the report to the Urban Planning Committee of 22 August 2016 be used for the purpose of preparing the amended DCP.
- C. That staff report on the submissions received during the public exhibition to a future meeting of the Urban Planning Committee.

1. Background

The Woollahra Development Control Plan 2015 (Woollahra DCP) commenced in May 2015. Chapter E1 Parking and Access (Parking Chapter) of the Woollahra DCP contains the car parking and vehicle access requirements for residential and non-residential development, including the car parking generation rates. The generation rates comprise the number of on-site car parking spaces required for particular types of development.

The Parking Chapter is based on the existing Parking DCP 2011, with some relatively minor changes. The chapter consolidated parking rates set out across various old DCPs (Double Bay Centre, Rose Bay Centre, Neighbourhood Centres, Woollahra Residential, Paddington HCA, Woollahra HCA and Watsons Bay HCA DCPs).

During the preparation of the Parking Chapter, staff noted that parking generation rates for certain land uses were high and that the discounts applied to non-residential parking in commercial centres were dated.

To address these matters, Council's Delivery Program and Operational Plan was revised to include a project to amend the Parking Chapter in response to recommendations from car parking generation rate review.

2. The scope of the review

The main objective of the review was to obtain an updated Parking Chapter which reflects local conditions and allows for the assessment of development applications with regard to car parking and vehicular servicing requirements consistent with best practice.

The project specification required the formulation of appropriate parking generation rates. The reviewed rates were to balance the need and desire for parking in new developments with the objective of minimising the impact of private vehicles on local roads, including associated congestion and demand for on-street parking. The review also considered Council's desire to support our commercial centres by encouraging vibrant retailing with a mixture of shop types.

Council engaged Cardno consultancy to undertake a comprehensive review of the *Woollahra Development Control Plan 2015 – Chapter E1 Parking and Access*. A report on the review of the Parking Chapter prepared by Cardno is attached as **Annexure 1**. A summary of the changes outlined in the report is provided in Part 3 and 4 below.

3. Proposed changes

3.1 Residential car parking rates

Cardno states that the existing residential parking rates were generally reasonable for the purposes of providing adequate and appropriate off-street parking spaces and encouraging the community to divert from private vehicle use. The existing maximum rates were recommended to be retained, except for studio and one bedroom apartments in Double Bay.

This approach is endorsed by staff as it is consistent with Council's strategic direction for car parking and transport management as outlined in the following documents:

Community Strategic Plan 2025 values:

- Reduced traffic congestion.
- Improved parking.
- Good public transport.
- Good pedestrian and bicycling access.

Delivery Program and Operation Plan 2013 – 2017 Goal 6 seeks to:

- Reduce traffic congestion
- Improve parking

Traffic Management Strategy 2014 includes key challenges of:

- Traffic congestion
- Responding to pressures resulting from increased development, increased car ownership and the resulting noise and traffic congestion

The Community Strategic Plan 2025 identifies the need to connect communities as one of the challenges for Woollahra. On this topic the Plan states – *“Living within safe, connected and accessible neighbourhoods is increasingly more important to us, including the need to easily access a range of integrated transport options”*.(p.22)

Under the theme of quality places and spaces the Community Strategic Plan mentions that:

Transport is an important area for all of us to focus on to manage urban growth. Whilst many of us do not rely on using public transport regularly, we want to know that it is provided and services are good. Traffic congestion is a source of considerable frustration for us and, along with difficulties in parking, ranks among the top detractors to our enjoyment of living in the area. Diverse transport options should be available so that we can choose whether or not we wish to use, or own, a car. One of our key community challenges is to focus on public transport, walking and cycling as ways to access our retail centres, parks and foreshore areas and to improve the links between these locations. (p.31)

Studio and one bedroom apartments in the Double Bay Commercial Centre

Cardno recommends that the maximum parking rates for studios and one bedroom apartments in the Double Bay Commercial Centre are reduced by applying the multiplier of 0.6 for non-residential use in the Double Bay B2 Local Centre zone. This will encourage dwelling diversity in the Centre and may increase affordability by providing additional studio and one bedroom apartments.

This recommendation aligns with the objectives, outcomes and recommendations in Council's strategic documents for the Centre such as the Double Bay Place Plan and the HillPDA Double Bay Economic Feasibility Study.

3.2 Non-residential car parking rates

In the Parking Chapter, car parking rates for land uses such as 'entertainment facility', 'pub', 'registered club' and 'place of public worship' are high and generally not in accordance with rates identified in similar and nearby Council areas.

In light of the disparity between parking rates for these land uses, Cardno recommends that the 'Parking rate be determined on a site specific basis' and that 'surveys of comparable developments may be required'.

Staff support removing these rates as recent development applications for these uses have included traffic and transport reports to address car parking on individual merit, rather than assessment against outdated parking generation rates. However, instead of surveys, staff recommend that a comprehensive traffic and parking report, which may include parking surveys of developments of similar land uses in similar areas, be submitted.

3.3 Adjustment of non-residential parking rate multipliers

In 12 commercial centres, the Parking Chapter discounts the amount of parking required for certain non-residential land uses. These discounts, known as 'multipliers', are based on local parking and access conditions and were not reviewed as part of the preparation of Woollahra DCP 2015. Staff consider the multipliers to be outdated.

Cardno reviewed the parking multipliers using an evidence based approach. In order to determine the multipliers for each centre, three criteria were assessed:

- existing on-street parking demand;
- public transport accessibility; and
- excavation.

Council officers note that Cardno recommends applying a discount for excavation in the Double Bay Centre as this was a requirement identified in the brief prepared in early 2015. The brief requested that proposed rates should acknowledge the “*existence of water tables with regard to excavation and the provision of basement car parking areas*”. However, this particular aspect of the brief is no longer considered to be necessary as potential environmental impacts associated with providing basement car parking, such as the impact on groundwater flows are assessed through Council’s geotechnical policy for the Centre which tests these impacts at the development assessment stage. The geotechnical policy has been applied to recent development applications in the Centre.

Recent community feedback during exhibition of the HillPDA Double Bay Economic Feasibility Study also reveals strong opposition to new developments with insufficient off-street parking. This feedback was based on resisting the use of existing on-street parking to cater for the additional parking demand.

Due to the existence of Council’s geotechnical policy and recent community feedback the recommendation to include an additional 30% discount in the Double Bay Centre for excavation is not supported and the discount has not been included in the proposed changes to the Parking Chapter.

The proposed multipliers are shown in the third column of the table below. The multipliers have been simplified by providing a single discount for all non-residential development in each centre, rather than varying rates based on land use categories.

Zone	Parking Demand	Public Transport Accessibility	Multiplier
Watsons Bay B1 Zone	0.1	0.3	0.6
Vaucluse Village B1 Zone	0	0.3	0.7
Rose Bay Centre B2 Zone	0	0.3	0.7
Rose Bay South B4 Zone	0.1	0.3	0.6
Rose Bay North B4 Zone	0	0.3	0.7
Bellevue Hill B1 Zone and Victoria Road B1 Zone	0	0.3	0.7
Double Bay Centre B2 Zone	0.1	0.3	0.6
Edgecliff Road, Woollahra B1 Zone	0.1	0.3	0.6
Queen Street B4 and R2 Zone	0	0.3	0.7
Oxford Street B4 Zone	0	0.3	0.7
Five ways, Paddington B1 Zone	0	0.3	0.7
Edgecliff Commercial Core B2 Zone and New South Head Road, Edgecliff B4 Zone	0.1	0.3	0.6

3.4 Bicycle parking rates introduced

Bicycles are widely known as a sustainable mode of transport and it is best practice to provide bicycle facilities in new developments to cater for current and future demand. There are currently no requirements to provide any bicycle parking in the Parking Chapter. Cardno recommends the inclusion of minimum bicycle parking rates which is in accordance with Council’s support of cycling and the associated benefits such as improved community health and well-being, reduced private motor vehicle use and improved local air quality.

3.5 Motorcycle parking rates introduced

There are currently no requirements to provide any motorcycle parking in the Parking Chapter. With extremely low mileage, motorcycles are considerably more fuel efficient than cars. Motorcycles also have a smaller physical footprint compared with cars both when travelling on the road and when parked. In light of the above benefits, Cardno recommends the inclusion of motorcycle parking rates to require motorcycle parking in new developments.

3.6 Car share provisions

A significant benefit of car share schemes for developers is that they are able to provide fewer parking spaces for developments. Other benefits include reducing the environmental impact associated with privately owned vehicles and on-street parking requirements. Car share companies offer members many of the benefits of a private car without the expense of owning one.

Cardno recommends that each on-site car share parking space provided can replace a maximum of four regular car parking spaces. The proposed DCP controls require that car share spaces must be in publicly accessible locations within a development. This provides a public parking resource for community members and private residents, businesses, and staff members without the need to remove existing on-street car parking spaces.

3.7 Small car spaces

Small car parking spaces are considered suitable for use in public car parks where small cars will comprise a proportion of all vehicle types.

Cardno recommends that small car parking spaces be permitted in public car parks but must constitute less than 5% of the overall number of parking spaces. In residential development the provision of small car spaces is not supported given that spaces will often be unusable for occupants with standard sized vehicles.

3.8 New provisions limiting access to resident parking schemes

Resident parking schemes (RPS) provide preferential access (through the provision of parking permits) to on-street parking for residents who do not have sufficient off-street parking due to:

- site deficiencies,
- the nature of existing buildings, and/or
- locations where there is competition for on-street parking by residents, shoppers, workers and commuters.

Restricting access to existing RPS where developers chose to provide less than the required off-street parking is a way of protecting existing RPS permit holders from increased competition for parking, particularly in areas of high on-street parking demand.

In locations where a RPS applies, Cardno recommends that the current practice of excluding additional residential dwellings from RPS should be formalised. This will ensure that residents who currently rely on a RPS are not disadvantaged by new development which is deficient in on-site parking.

3.9 New provisions requiring green travel plans

A green travel plan provides information to users of a development on the best way to access the site via active transport, such as walking or cycling, or by public transport. A requirement to produce a green travel plan applies to larger developments, but any development may create a green travel plan to reduce the carbon footprint of workers and visitors travelling to the development.

Cardno recommends that the threshold for whether a green travel plan is required varies depending on the type of development as listed below:

- i. Educational establishments with over 100 students.
- ii. Non-residential developments with total floor space exceeding 2,000m².
- iii. Residential developments with 50 or more dwellings.

3.10 New provisions requiring Operational Traffic Management Plans

Operational traffic management plans (OTMP) cover the design of traffic management for developments during their operation, in order to encourage safe movement of traffic for all users. OTMPs are generally only applicable for significant commercial, sporting or community uses. For example, educational establishments and entertainment facilities would require an OTMP. The OTMP would detail how the development site would operate so that traffic impacts arising from the development are mitigated.

As a minimum Cardno recommends an OTMP should include:

- i. Existing and proposed traffic generation.
- ii. Information on the existing and proposed road network, routes and access locations.
- iii. Details of site operations including peak hours, speed zones and forecast traffic flows.
- iv. On-street/off-street parking.
- v. Details on public and active transport.
- vi. Traffic control plans (if required).

3.11 Driveway splay controls amended

The Parking Chapter requires a driveway splay of 2m x 2m when an adjoining fence height exceeds 1.2 metres. This is inconsistent with the minimum requirements of AS/NZS 2890.1. The existing control is not considered to be reasonable in providing a safe roadside environment for all pedestrian groups.

AS/NZS 2890.1 requires that sight triangles be provided with minimum dimensions of 2m x 2.5m and that these areas are to be kept clear of obstructions to visibility. However, it could be argued that the minimum requirements of Figure 3.3 of AS/NZS 2890.1 are excessive, where vehicle movements and pedestrian activity are low and when the streetscape would be diminished. For example, on narrow lots the provision of a driveway and splays could dominate the streetscape by occupying more of the frontage than the front fence.

Cardno recommends that the Parking Chapter be modified to reflect the minimum requirements identified in Figure 3.3 of AS/NZS 2890.1. However, for dwelling house, dual occupancies and attached dwellings in residential zones, where the applicant can demonstrate that pedestrian activity in the vicinity of the driveway is low, staff support more flexibility. In these locations, it is proposed that a maximum fence height of 0.9m be required as opposed to the existing 1.2m, beyond which, fence heights could be increased to provide suitable levels of privacy.

3.12 New control regarding access to parking in Woollahra and Paddington introduced

During the review of the Parking Chapter, Development Control staff were consulted. The Development Control staff identified that in recent court cases in Paddington and Woollahra the size of turning paths to access to parking spaces has been considered. In certain circumstances, consent was granted where applicants were able to demonstrate the ability to access an off-street parking space via a turning path that did not accommodate a B85 vehicle. B85 vehicles represent the 85th percentile class of all cars and light vans on the road and are a maximum of 1.87m wide by 4.91m long. Staff requested that this matter be addressed as part of the review.

In response, a new control is proposed that, in limited circumstances, will allow the approval of off-street car parking spaces (as set out in AS/NZS 2890.1) that are unable to be accessed by a vehicle B85 vehicle.

The proposed control applies:

- i. When the site is in the Paddington or Woollahra Heritage Conservation Area; and
- ii. When the site has rear lane access; and
- iii. When no on-street parking is lost (i.e. the zero net loss argument cannot be applied); and
- iv. When heritage conservation area controls have been addressed.

3.13 Tandem parking

Tandem parking refers to the parking configuration of multiple cars stacked in such a way that the inner most car is not able to exit without moving the other cars. Although tandem parking may prove to be extremely inconvenient, it allows more efficient parking configurations and could reduce excavation cost which is especially important in areas where excavation is an extremely expensive exercise. The inconvenience is less of a problem if the owners of the tandem parking spaces live in the same residence.

To reduce the inconvenience of tandem parking Cardno recommends that in residential premises, only the residents of the same dwelling are allowed to park in tandem and in commercial premises, only staff are allowed to park in tandem. This will maximise the use of parking spaces while still allowing for parking to remain convenient.

3.14 Business zoned land in Paddington

Clause 1.6.3 *Business zoned land in Paddington* deals with variations to parking generation rates for the Oxford Street, Paddington business precinct. As currently expressed this clause is unclear in the extent of its application to certain properties that are zoned B4 Mixed Use. An amendment is proposed to clarify the intention.

3.15 Update references within the chapter and to other documents

The Parking Chapter needs to be amended to update cross references with the Chapter and to other parts of Woollahra DCP 2015. There also need to be updates to the relevant Australian Standard which refer to parking and access standards. Cardno recommends that the Parking Chapter be amended to refer to Part D3.5 of the 'Building Code of Australia' which states accessibility parking rates of approximately 1% to 2% depending on the development type. All changes are highlighted in the amended Parking Chapter (**Annexure 2**).

4. Summary of key changes

The key proposed changes to the Parking Chapter are summarised below:

1. Maximum residential parking generation rates have been maintained in order to discourage private vehicle ownership, decrease traffic congestion, improve on-street parking availability and encourage a greater uptake of alternate transport modes.
2. Maximum parking rates for studios and one bedroom apartments in the Double Bay Commercial Centre have been reduced to encourage a more diverse range of dwellings in Double Bay.
3. Non-residential car parking rates for land uses such as ‘entertainment facility’, ‘pub’, ‘registered club’ and ‘place of public worship’ have been replaced with a requirement that rates be determined on a site-specific basis, rather than assessed against outdated parking generation rates.
4. Non-residential parking rate multipliers have been adjusted to account for existing on-street parking demand and public transport accessibility in 12 commercial centres within the LGA. This is intended to allow for a more reasonable assessment of developments and also simplifies the task for applicants in the calculation of parking rates by providing a single discount.
5. Minimum bicycle parking rates have been introduced in accordance with Council’s support of cycling and the associated benefits such as improved community health and wellbeing, reduced private motor vehicle use and improved local air quality.
6. Minimum motorcycle parking rates have been introduced given that motorcycles are considerably more fuel efficient than cars and also have a smaller physical footprint compared with cars both when travelling on the road and when parked.
7. A provision to consider on-site car share parking spaces on a site-by-site basis has been included, where each car share parking space has the potential to replace a maximum of four regular car parking spaces.
8. Small car parking spaces are proposed to be permitted in public car parks provided they constitute less than 5% of the overall number of parking spaces.
9. A requirement to produce a green travel plan for larger developments has been added to reduce the carbon footprint of workers and visitors travelling to a new development.
10. A requirement to produce an operational traffic management plan for developments that have the potential to significantly impact the surrounding road network has been added to encourage the safe movement of traffic at and around these developments.
11. New provisions limiting access to resident parking schemes have been added where new developments will not be entitled to access permits when any additional residential dwellings are proposed above those that exist pre-development.
12. Driveway splay controls have been amended to improve the safety of all pedestrian groups.
13. A new control regarding access to parking in the Woollahra and Paddington Heritage Conservation Areas has been introduced in line with recent judgements in the Land and Environment Court.
14. An amendment has been made to permit tandem parking in residential developments if the two spaces in tandem are allocated to a single dwelling and in non-residential developments when the spaces are allocated for employee use only.
15. For business zoned land in the Oxford Street Paddington precinct, the clause relating to the definition of this area has been reworded for clarity.
16. References within the chapter, to other parts of the Woollahra DCP 2015 and to Australian Standards are updated.

17. An amendment has been made to the controls for parking spaces for people with a disability to refer to the 'Building Code of Australia' which states accessibility parking rates of approximately 1% to 2% are to be provided.

5. Consultation

We propose that a Draft DCP containing amendments to the Parking Chapter is exhibited for a minimum of 28 days at Council's Customer Service area and on Council's website. Public notice will be given in the Wentworth Courier each week of the exhibition.

The exhibition material would include:

- A Draft DCP based on the changes identified in **Annexure 2**
- The Cardno Report (**Annexure 1**)
- The existing chapter E1 Parking and Access
- Woollahra Local Environmental Plan 2014
- This report.

6. Conclusion

Council appointed Cardno to review the Parking Chapter and recommend changes based on best practice, using an evidence based approach.

Staff have considered Cardno's recommendations and support the majority of the suggested changes as identified in this report.

We consider the proposed amendments:

- Provide up-to-date, best practice parking provisions.
- Are consistent with the Council's strategic planning framework and aims and objectives as contained in the Community Strategic Plan 2025, the Delivery Program and Operational Plan 2013-2017 and Woollahra LEP 2014.
- Provide a clear direction in regarding to the provision and management of parking.

Annexures

1. Cardno and WMC joint report - Chapter E1 Parking and Access review [↓](#)
2. Proposed amendments to Chapter E1 | Parking and Access [↓](#)

Annexure 1

Woollahra DCP Review

E1 Parking and Access

80015079 v04

Prepared for
Woollahra Municipal Council

16/08/2016



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04	16/06/2016	Final – edits to section 3.2, section 3.3 and DRAFT watermark	TY	TIS
05	16/08/2016	FINAL –edits by Council Officers	SC and BM	

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Executive Summary

The Woollahra Local Government Area is located within Sydney's eastern suburbs, approximately 5 kilometres from the Sydney CBD. The population was recorded as 57,677 in 2013 in an area of 1,228 hectares. The corresponding population density is approximately 47 persons per hectare making Woollahra one of the most densely populated LGAs in NSW. Combined with the high proportion of vehicle users, parking is constantly in high demand. Due to the wide range of land uses including residential, business, mixed use, recreational and environmental protected zones, the parking demands vary significantly both spatially and temporally.

Although it is always preferred to minimise the traffic impact from new developments, it is also important to support commercial development to ensure a vibrant economy and a high level of services and amenities for residents and visitors. As with many other regulations and policies, Development Control Plan (DCP) parking controls have substantial implications on socio-economic conditions within the LGA.

Cardno was engaged by Woollahra Municipal Council to undertake a comprehensive review of the Woollahra Development Control Plan 2015 (Woollahra DCP 2015) – Chapter E1 Parking and Access, which forms a part of the Woollahra DCP 2015.

As part of this review, the E1 Parking and Access Chapter of the Woollahra DCP 2015 was amended by Cardno. This report should be read in conjunction with the draft chapter (Draft Version dated August 2016).

Objectives of this study include:

- > Introducing practical guidelines and controls for issues that are currently not covered by the DCP, including Green Travel Plans, Operational Transport Management Plans and motorcycle/bicycle parking rates;
- > Reducing subjectivity in the Woollahra DCP 2015 to assist both developers and Council staff;
- > Updating and providing an evidence base for the non-residential parking multipliers;
- > Horizon scanning of comparable Metropolitan Councils' parking controls; and
- > Reviewing parking rates to ensure alignment with Council's vision for progressive parking policies and the promotion of sustainable and active travel.

This review of the Woollahra DCP 2015 – Chapter E1 Parking and Access, achieved the following outcomes:

- > Objectives and controls were added for each section;
- > Bicycle rates were introduced for each land use as defined in the Standard Instrument;
- > Motorcycle parking rates were introduced for all land uses;
- > Provisions for small car parking spaces were added;
- > Recommendations for on-site waste collection were added;
- > Provisions for Green Travel Plans were added;
- > Provisions for Operational Traffic Management Plans were added;
- > Car share provisions and specific controls added;
- > Car parking rate anomalies and outliers were amended;
- > Non-residential parking rate multipliers were adjusted to account for existing parking demand, public transport accessibility and excavation costs.

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1 Introduction

1.1 Background

The Woollahra Local Government Area is located within Sydney's eastern suburbs, approximately 5 kilometres from the Sydney CBD. The population was recorded as 57,677 in 2013 in an area of 1,228 hectares. The corresponding population density is approximately 47 persons per hectare making Woollahra one of the most densely populated LGAs in NSW. As such, parking is constantly in high demand. Due to the wide range of land uses including residential, business, mixed use, recreational, and environmental protected zones, the parking demands vary significantly both spatially and temporally.

Due to this variance, Cardno was commissioned by Woollahra Municipal Council to conduct a comprehensive review of the Parking and Access Chapter of the Woollahra DCP 2015 to confirm it is reflective of the parking demands in the current climate and to make adjustments as necessary, using an evidence based approach.

This study will investigate best practice currently implemented by the industry as well as compare with parking rates commonly used across similar LGAs to ensure that the DCP will remain relevant in the near future.

1.1.1 Location

The Woollahra LGA comprises an area of 1,228 hectares and is surrounded by City of Sydney to the West, Randwick City Council to the South, Waverley Council to the East and Port Jackson to the North. The Woollahra LGA is outlined in **Figure 1-1** below.

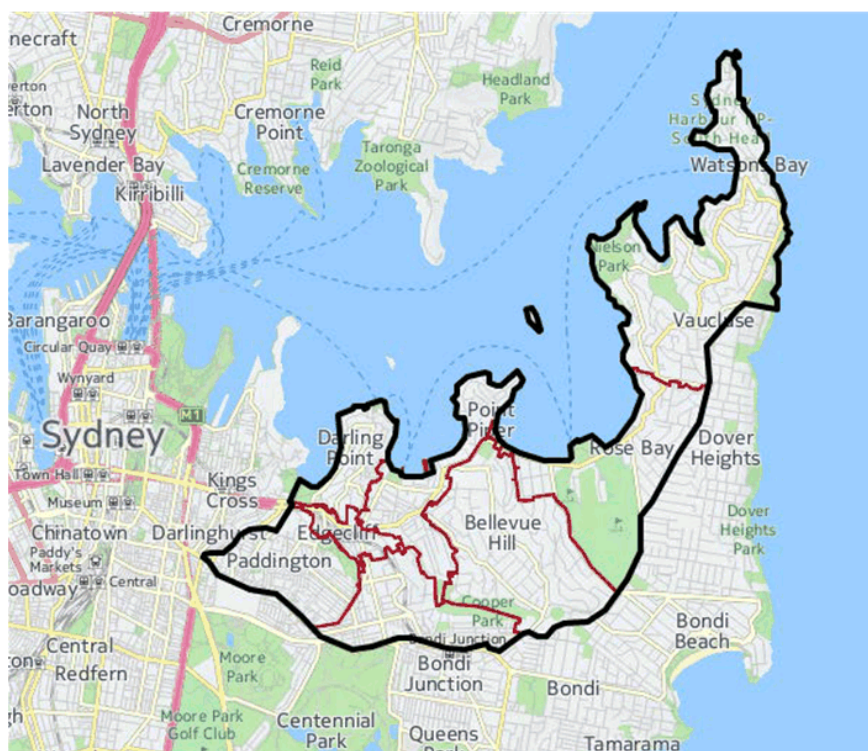


Figure 1-1 Woollahra LGA Boundary

1.1.2 Land Uses

As shown in **Figure 1-2**, there is substantial diversity in land uses across the Woollahra LGA. Primary land uses include Large Lot Residential, Low Density Residential, Public and Private Recreation, National Parks and Nature Reserves and Special Activities.

Although this shows the scheduled land use zones in the Woollahra LGA, in reality, certain development types may overlap in other areas depending on the Woollahra Local Environmental Plan 2014 (WLEP 2014) Land Use Table.

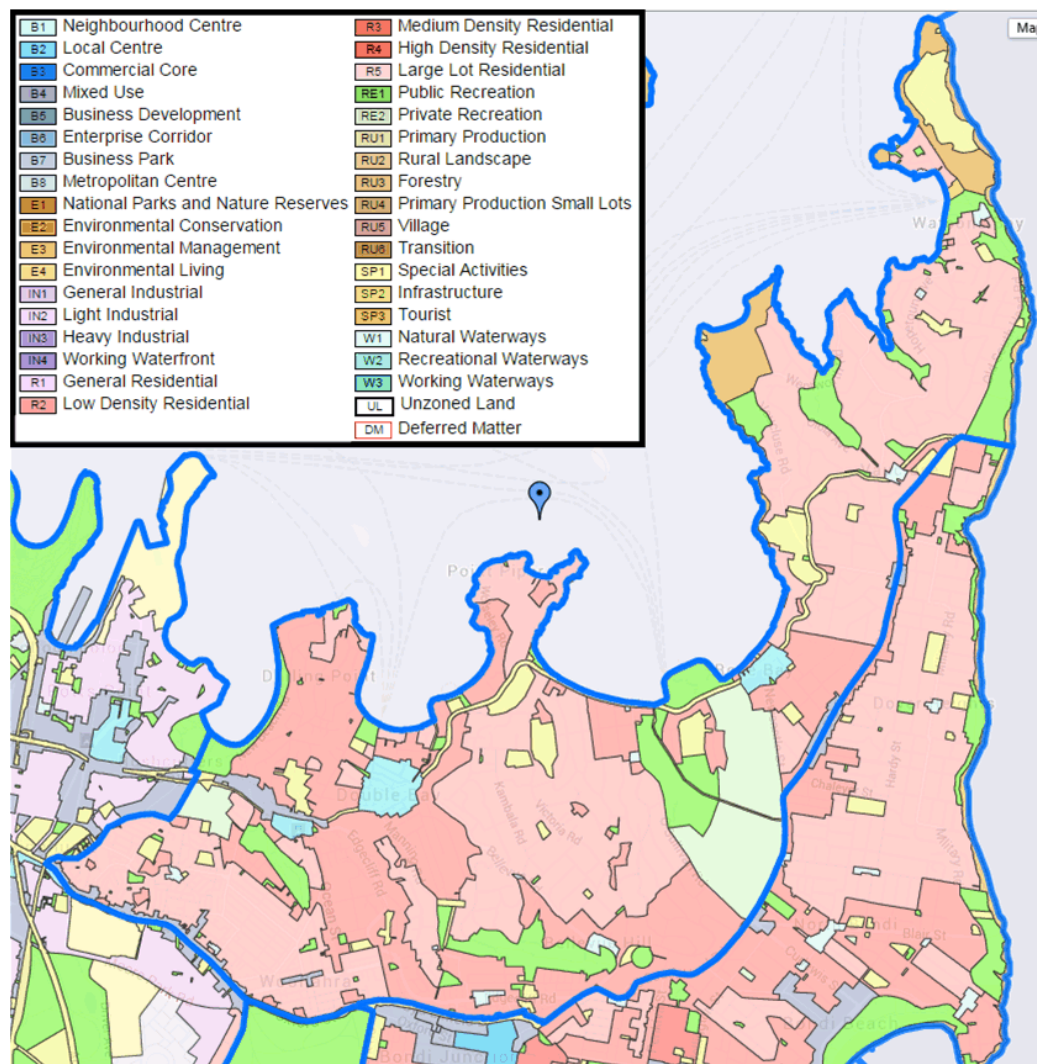


Figure 1-2 Woollahra LGA Land Use Map (Planning Viewer, NSW Government)

1.1.4 Transport and Access

Tables 1-1 and 1-2 below summarise the frequency of the bus and train services in the Woollahra LGA respectively. Note that the train station only includes Edgecliff station and not Bondi Junction since the latter lies outside the LGA. However, a significant portion of the southern part of the LGA is within walking distance to the Bondi Junction Train Station.

Table 1-1 Bus Service Details (Source: Sydney Buses)

Route	Service	Weekday Frequency		
		AM Peak (7AM to 9AM)	PM Peak (4PM to 6PM)	Off Peak
323, 324, 325, L24	City & Edgecliff to New South Head Road	10 minutes	10 minutes	30 minutes
	New South Head Road to Edgecliff & City	10 minutes	10 minutes	30 minutes
200, 326, 327	Edgecliff to Bellevue Hill & Bondi Junction	15 minutes	15 minutes	60 minutes
	Bondi Junction & Bellevue Hill to Edgecliff	15 minutes	15 minutes	60 minutes
386, 387	Vaucluse to Bondi Junction	5 minutes	15 minutes	30 minutes
	Bondi Junction to Vaucluse	15 minutes	5 minutes	30 minutes

Bus services between Bondi Junction and Vaucluse are relatively frequent, running at 5 minute intervals during the commuting hours, they provide plentiful access for workers travelling to and from work during peak times.

Table 1-2 Train Service Details (Source: Sydney Trains)

Line	Train Service	Weekday Frequency		
		AM Peak (7AM to 9AM)	PM Peak (4PM to 6PM)	Off Peak
T4 Eastern Suburbs & Illawarra	Waterfall or Cronulla to Bondi Junction	4 minutes	4 minutes	10 minutes
	Bondi Junction to Waterfall or Cronulla	4 minutes	4 minutes	10 minutes
South Coast	Bomaderry or Port Kembla to Central and Bondi Junction	15 minutes	30 minutes	60 minutes +
	Bondi Junction and Central to Bomaderry or Port Kembla	60 minutes	20 minutes	60 minutes +

Train services along the T4 line are very frequent and only have intervals of 10 minutes between trains even during off peak hours whereas the South Coast line has a much lower frequency and longer waiting time.

The cycling routes in the 2009 Woollahra Cycle Strategy are shown in **Figure 1-3**.



Figure 1-3 Map of Cycle Routes in Woollahra (GTA Consultants, 2009)

It is clear that there are few on-road cycling routes in existence in the LGA and due to limited road widths, the provision of additional cycling lanes are quite limited.

In terms of vehicular access, New South Head Road is one of four state roads in the LGA connecting Edgecliff station in the South-West to Old South Head Road in the North-East. New South Head Road has 3 lanes in each direction with limited parking in the outer lane. The speed limit along the road is 60km/h in both directions within the LGA.

Old South Head Road is another state road in the LGA connecting Bondi Road in the South to Watsons Bay in the North. Old South Head Road is primarily 2 lanes in each direction with limited parking in the outer lane. The speed limit along this road is 60km/h in both directions within the LGA. Old South Head Road lies on the border of Waverley Council and Woollahra Council.

Syd Einfeld Drive is also a state road in the LGA that connects Old South Head Road in the East with Oxford Street in the West. Syd Einfeld Drive is primarily 3 lanes with a speed limit of 80km/h in both directions and lies on the southern border of Woollahra Council.

Oxford Street is the other state road in the LGA connecting the Sydney CBD in the North-West to Syd Einfeld Drive in the East. It is primarily a 3 lane carriageway in both directions with 1 lane reserved for buses in each direction. The speed limit along the road is 50km/h in both directions and lies on the South-West border of Woollahra Council

These four state roads are under the authority of RMS.

Ocean Street, Ocean Avenue and William Street are regional roads under the authority of Council. These roads are generally one lane in each direction and have an abundance of parking on both sides. The speed limit along these roads is 50km/h.

1.2 Objectives

The primary objectives of this study are as follows:

- > Introduce practical guidelines for certain issues, including Green Travel Plans, Operational Transport Management Plans and Bicycle Rates into the Woollahra DCP 2015;
- > Reducing subjectivity in the Woollahra DCP 2015, especially with regards to threshold requirements;
- > Updating and providing an evidence base for the commercial site specific parking rate multipliers and development specific parking rates to account for the present demand whilst acknowledging the vision of Council wanting to promote public and active transport and reduce vehicle movements.

1.3 Limitations and Assumptions

The following limitations and assumptions apply to this report:

- > This report has been prepared with the assumption that Council will interpret the findings and take on board recommendations suited to Council intentions. Cardno is not legally liable for any recommendations provided in this report.
- > The design of the parking surveys have been agreed upon with Council and it is assumed they are representative of the modern day parking demand in commercial regions.

1.4 References

The following documents have been considered as part of this study:

- > Woollahra DCP;
- > Lane Cove DCP;
- > City of Sydney DCP;
- > North Sydney DCP;
- > Mosman DCP;
- > Wollongong DCP;
- > Victoria Planning Provisions
- > RTA Guide to Traffic Generating Developments; and
- > Section 94 and Section 94A of the Environmental Planning and Assessment Act 1979 (EP&A Act).

2 Discussion and Recommendations of Various Aspects

This section will discuss various aspects of the DCP outlined in the brief and from meetings with Council. Recommendations will also be provided for aspects which have been identified as issues.

The basis of these recommendations will be based on comparing the existing Woollahra DCP 2015 with documents from other Councils including the City of Sydney DCP/LEP, North Sydney DCP, Mosman DCP, Lane Cove DCP, Road Traffic Authority Trip Generation Guidelines and the Victoria Planning Provision.

The Councils from the aforementioned DCPs were chosen as the Councils are either located near the Woollahra LGA, are progressive in direction and policy or contain similar demographics to Woollahra. The Victoria Planning Provision was also compared with to provide an external reference point.

It is understood that it is the desire of Woollahra Council to shift away from supplying parking spaces in order to satisfy demand and more towards demand management and sustainable transportation. In general, this would involve providing less parking throughout the LGA but still provide sufficient parking to satisfy commercial developments to operate viably.

In addition to increasing sustainability, lower parking rates would also reduce the congestions occurring along roads, as well as allow developers to save on costs providing parking spaces.

2.1 Shared Provisions

Description

Shared parking provisions refer to how the surrounding land uses are considered in determining parking shortfall. In areas where parking is plentiful, additional parking provision is not provided in excess to maximise use of land and minimise wasted space. Not considering the available parking in nearby areas would result in an over-provision of parking.

Existing

Shared parking provisions are not explicitly stated in the Woollahra DCP 2015 but are considered in the assessment stage in a case by case basis.

This is similar with other Council DCPs in that they consider nearby land uses in the assessment stage.

However, the Victoria Planning Provision is more progressive in that shared parking provision is accounted for in certain locations. Parking studies are undertaken for certain areas in Victoria which reveal whether there is available parking for that area. This information is then input into the Parking Overlay which is presented in a tabular format in the VPP as Column A (parking rate of regular sites) and Column B (reduced parking rate to account for shared parking provisions for certain zones).

Proposed

Requiring each applicant to undertake a parking assessment in order to determine the availability of shared parking provisions would result in less parking being provided and in theory could promote public transport. However, undertaking a parking assessment is onerous for small developments which generate limited trips.

Cardno recommends to only require consideration of shared parking provision if the development is deemed significant enough to require a traffic impact assessment by Council. This can be done as an amended requirement of traffic and parking reports in the Development Application Guide.

2.2 Car Share

Description

Car share refers to services such as GoGet and Hertz where a large number of people can use the same vehicle owned by a group. Users are charged based on the time they book the vehicle for and distance travelled which is automatically calculated by the in-built GPS system.

A significant benefit of car share schemes for developers is that they are able to provide fewer parking spaces for developments and hence increase the amount of floor area used for dwellings. Other benefits include reducing the environmental impact, vehicle footprint and cost for infrequent vehicle users.

Existing

There is a list of public parking spaces in which car share is available listed on the Woollahra Council website. The Woollahra DCP 2015 does not have any specific numbers regarding car share schemes in developments, except a brief mention that it will be taken into account in the development assessment.

North Sydney and Lane Cove specify in their DCP that each car share space can replace 3 (but not more than 4 for North Sydney) regular car spaces.

Proposed

Assuming the mode share of car share users does not change over time, the Benefit-Cost Analysis of Car Share within the City of Sydney study (SGS 2012) found that each car share bay replaces 12 private vehicles. However, this would be unrealistic to apply this to Woollahra since the mode split proportion of cars in City of Sydney is 26%, whereas it is more than double at 54% in Woollahra. The value of 12 private vehicles is also conservative since it does not consider the possible effect of the resident membership registrations plateauing over time and assumes a constant growth rate.

For the purposes of promoting car share, it is recommended that Council adopts the North Sydney maximum rate of 1 car share space per 4 regular car spaces.

2.3 Electric Vehicles

Description

Electric vehicles have the capacity to be significantly environmentally friendlier than conventional vehicles. However, there is currently very low uptake of electric vehicles in Australia and part of the reason is due to the relatively high purchase cost, above average depreciation, lack of charging infrastructure and lack of incentives.

Existing

The Woollahra DCP 2015 has a chapter dedicated to electric vehicle charging points. It states that installing a dedicated 15Amp circuit for vehicle charging in garages is encouraged, but if it is not possible, at least one dedicated 10Amp charging point is required.

North Sydney and Lane Cove DCPs have no mention of electric vehicle facilities but the City of Sydney operates two car parks where electric charge points are provided free of charge.

Proposed

As Woollahra is relatively progressive in terms of providing electric vehicle facilities compared with Councils nearby, Cardno sees no reason for further encouraging facilities for electric vehicles at this stage primarily due to the low ownership and uptake of electric vehicles in NSW as well as the whole of Australia. As such, no recommendations have been made for electric vehicles in the DCP. It has been acknowledged that a limited number of 32Amp charging stations already exist within Sydney and even more advanced charging stations may be required in the future.

2.4 Motorcycles

Description

With extremely low mileage, motorcycles are considerably more fuel efficient than cars. Motorcycles have a smaller physical footprint compared to cars both on the road and whilst parked.

Existing

In the Woollahra DCP 2015 there are currently no motorcycle parking rates listed.

The City of Sydney requires a motorcycle parking space for every 12 car parking spaces in all buildings that provide onsite parking.

North Sydney has a maximum motorcycle parking rate of 1 space per 10 car parking spaces for shop top housing developments.

Lane Cove requires a motorcycle parking space for every 15 car parking spaces for all types of development.

Proposed

Based on 2011 Journey To Work (JTW) data from the Bureau of Transport Statistics (BTS), the percentage of workers who travel to work in the Woollahra LGA using motorbike or scooters is approximately 1.5%.

However, due to the small physical footprint of motorbikes and scooters on and off the road, a higher motorcycle parking rate is encouraged in order to promote the amount of motorbike and scooter users.

The ratio of motorbike/scooter trips to car trips are 1 in 37 for Woollahra (2.7%), 1 in 46 for North Sydney (2.2%), 1 in 21 for City of Sydney (4.8%), 1 in 20 for Waverley (5%) and 1 in 55 for Lane Cove (1.8%). Since the ratio of motorbike to car trips for Woollahra is closest to North Sydney's it is recommended Council adopt a similar requirement of one motorcycle parking space for every 10 car parking spaces for all types of development.

2.5 Bicycle Parking

Description

Bicycles are the world's most common and efficient way of travel. In addition to having extremely low cost, bicycles also give riders a regular exercise workout. Bicycle parking facilities are defined as secure, accessible locations in which bicycles can be stored. Examples would include wall racks, floor loops and lockers.

Existing

There are currently no requirements to provide any bicycle parking in the Woollahra DCP 2015.

The City of Sydney and the North Sydney DCP require certain developments to provide bicycle parking and both have the same bicycle parking rates. Lane Cove has slightly lower requirements overall. Mosman has only three categories of bicycle parking provision which are generally lower than the other DCPs investigated.

City of Sydney, North Sydney and Mosman Council also require the provision of showers once a certain number of bicycle parking spaces are exceeded.

Proposed

Based on the mode split of the different councils investigated, Lane Cove had the closest bicycle mode split of 1.7% compared to Woollahra's 1.8% (BTS 2011). As such, it is recommended the Woollahra DCP 2015 include the bicycle parking rates stipulated in the Lane Cove DCP.

These are listed in **Table 2-1**.

Certain requirements which are believed to be too high have been adjusted accordingly.

In addition to this, requirements to provide end of trip facilities such as showers, change rooms and secure storage should also be stated in the DCP.

Table 2-1 Proposed Woollahra DCP Bicycle Parking Rates

Land Use	Minimum Bicycle Parking Rate	
	Residents / Employees	Customers / Visitors
Residential		
Residential flat buildings	1 per 4 dwellings	1 per 10 dwellings
Tourist and Accommodation		
Serviced apartments, hotels or motel accommodation	1 per 4 staff	1 per 20 rooms
Backpackers' accommodation	1 per 4 staff	1 per 10 beds
Commercial		
Office / business premises	1 per 150m ² GFA	1 per 400m ² GFA
Shop, restaurant or café	1 per 25m ² GFA	2 + 1 per 100m ² GFA over 100m ² GFA
Shopping centre	1 per 200m ² GFA	1 per 1000m ² GFA
Pub	1 per 100m ² GFA	1 per 100m ² GFA
Entertainment facility	-	Greater of 1 per 15 seats or 1 per 40m ² GFA
Place of public worship	-	Greater of 1 per 15 seats or 1 per 40m ² GFA
Community		
Child care centre	1 per 10 staff	2 per centre
Medical centre, health consulting rooms	1 per 5 practitioners	1 per 200m ² GFA
Tertiary educational institution	1 per 10 staff	1 per 10 students
Swimming pool	1 per 10 staff	1 per 40m ² of recreation area
Community facility	1 per 10 staff	2 + 1 per 200m ² of GFA

2.6 Resident Parking Schemes (RPS)

Description

Resident parking schemes (RPS) provide preferential access to on-street parking for residents who do not have sufficient off-street parking. Restricting access to existing RPS for new developments with insufficient off-street parking is a way of protecting existing RPS permit holders from increased competition for parking, particularly in areas of high on-street parking demand.

Proposed

RPS areas are generally subject to high on-street parking occupancies, where the number of permits issued is closely aligned to the number of available car parking spaces. Conversion of a lot from a single dwelling to a dual occupancy may seem to be of small potential impact on a RPS by allowing for up to two additional permits to be issued compared to the pre development situation. However, this increase considered across numerous lots in a given street or area could result in many more permits being issued than the parking spaces available.

As such, in locations where a RPS applies, it is recommended that new developments not be entitled to access permits when any additional residential dwellings are proposed above those that exist pre-development. This will ensure that residents that currently rely on a RPS are not unreasonably impacted by new development with regard to their parking requirements.

2.7 Green Travel Plans

Description

Green travel plans (also known as employee travel plans) are created for the purposes of reducing the environmental foot print and traffic impact of a development or organisation on the surrounding road network. Green travel plans usually detail methods on how staff and visitors are able to access the development site using sustainable methods of transport. Usually this includes active and public transport details which have lower impact on the network compared to traffic generated by private vehicles.

The plan would also include a long term goal or targets which are aimed to be achieved within a certain timeframe. In Australia, there are currently no penalties if the company fails to comply with the set target. However, achieving the targets set in the green travel plan could benefit the company in the following ways:

- > Reduce parking provision required and thus reduce expenses for the company;
- > Encourage staff to exercise resulting in higher productivity and lower turnover; and
- > The company can promote itself as environmentally friendly and energy efficient.

Companies which have successfully incorporated green travel plans in NSW include RMS, Optus and Fairfax (Premier's Council for Active Living, 2010).

Existing

The existing Woollahra DCP 2015 does not mention any green travel plans requirements.

City of Sydney requires travel plans for development over a certain size based on the findings of a transport impact study. Trip data needs to be collected 6 months prior to the commencement of construction as well as collecting data 5+ years in the future to determine the effect of the green travel plan. This data usually surveys for mode split proportions of the company staff for the purposes of assessing the effectiveness of the proposed measures. If the responsibility lies within the company, a contact person with address and contact details is required to be nominated.

North Sydney requires green travel plans for developments exceeding the following thresholds:

- Educational institutions: >100 students
- Residential: 50 + dwellings
- All other development: GFA>2000m²

As part of green travel plan North Sydney also includes carpooling for employees and providing priority parking for carpooling with more than 2 passengers.

Lane Cove has sustainable travel and access plans that include hard and soft measures such as on-site car share parking, bicycle facilities with pool bicycles available, bus connections to train stations, and discounts for public transport.

Proposed

For the purposes of encouraging sustainable transport in Woollahra, the introduction of Green Travel Plans has been recommended.

The threshold beyond which a GTP is required has been adopted from North Sydney Council as North Sydney contains mode splits similar to Woollahra. In addition to this, North Sydney Council contains similar types of land use compared to Woollahra.

The details a GTP should entail will vary on a case by case basis but it should generally include the following:

- > Information on the proposed development including rates for car parking and bicycle parking
- > Details on public and active transport e.g. (bus/train/ferry routes, frequency, stops, etc. and bicycle routes, pram ramps, foot paths, etc.)
- > Details of car share (and their locations) and taxi companies servicing the area and their contact details

- > Details of any electric vehicle facilities (if relevant)
- > Details of current private vehicle users and proposed targets *
- > Details of incentives provided to new residents/employees to reach proposed target. E.g. information packs, complementary bus/train/ferry passes, free charging of EVs, etc. as well as the party responsible for ensuring incentives are provided

* Different developments in different locations may have different GTP targets. Hence it is recommended that Council review GTP targets on a case by case basis.

2.8 Operational traffic management plans

Description

Operational traffic management plans (OTMP) cover the design of traffic management for developments during its operation in order to provide safe movement of traffic for all users. OTMPs consider only the traffic during operation as construction traffic would be assessed separately in the construction traffic management plan (CTMP). OTMPs are generally only applicable for significant commercial developments. OTMPs should detail information on how the development site would operate so that traffic impacts arising from the development could be mitigated.

Existing

A separate OTMP is currently not required at Woollahra.

OTMPs are known as Traffic Management Plans (TMP) at other Councils.

In City of Sydney, TMPs are required for road closures.

North Sydney requires a TMP for developments under clause 104 and schedule 3 of the infrastructure SEPP 2007 or classified as designated development under s.77A of the EP&A 1979. Additionally, they may require a TMP for certain types of listed developments.

Proposed

Council have expressed concern over certain significant developments which have not explicitly stated their plan for managing development traffic resulting in congestions.

Hence for the purposes of mitigating traffic impact on the local area and its surroundings, it is recommended to include the requirement of operational transport management plans for certain developments.

Due to the clarity and clear logic of the North Sydney DCP, it is recommended that Woollahra DCP 2015 adopt the same policy.

OTMPs will differ by development and locality but the details an OTMP should generally entail include:

- > Existing/proposed traffic generation;
- > Information on the existing and proposed road network, routes and access locations;
- > Details of site operations including peak hours, speed zones and forecast traffic flows;
- > On-street/off-street parking;
- > Details on public and active transport e.g. (bus/train/ferry routes, frequency, stops, etc.) and bicycle routes; and
- > Traffic control plans if required.

2.9 Miscellaneous

2.9.1 Driveway Splays

Description

As part of this study, Council has requested a commentary in relation to the current discrepancy between AS/NZS 2890.1 Figure 3.3 sight lines and Condition C 5.4.8 of the Residential DCP.

Existing

Currently in the Woollahra DCP 2015, *Control C8 of Chapter B3 – General Development Controls – Part B – General Residential* and *Section E1.8.6 Driveways and access points of Chapter E1 – Parking and Access* state that:

‘Where a vehicular entrance is proposed in conjunction with a fence of height greater than 1.2m—a 45° splay or its equivalent is provided either side (as applicable) of the entrance to ensure driver and pedestrian vision. The splay is to have minimum dimensions of 2m x 2m (refer to Figure 23).

B3 | General Development Controls

Part B | General Residential

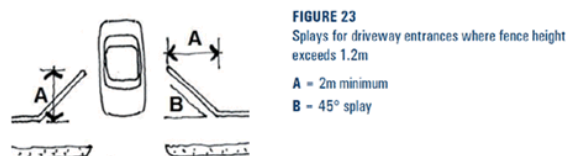


Figure 2-1 Existing driveway splay requirements

Proposed

The Woollahra DCP 2015 control is inconsistent with the requirements of Figure 3.3 of AS/NZS 2890.1. The standard requires that sight triangles be provided with minimum dimensions of 2m x 2.5m and that these areas are to be kept clear of obstructions to visibility.

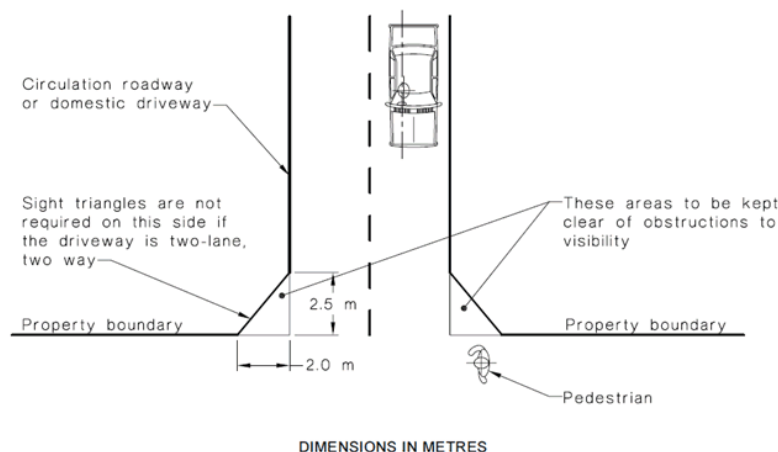


Figure 2-2 Proposed driveway splay requirements (AS/NZS 2890.1)

The minimum sight lines required under AS/NZS 2890.1 are to be provided at the 'property line to ensure adequate visibility between vehicles leaving the car park or domestic driveway and pedestrians on the frontage road footpath.'¹

Everyone is a pedestrian at some stage in their journey. This means pedestrians are a highly diverse road user group which includes children, older people, teenagers, joggers, the disabled and mobility impaired, and people using wheeled toys or recreational devices such as skateboards, rollerblades and foot scooters. Pedestrians are particularly vulnerable in the road environment because most other road users are moving significantly faster than pedestrians, and pedestrians have little or no bodily protection in the event of a collision.²

Some pedestrians, such as school age children, will often not be sufficiently visible to a driver leaving a car park or domestic driveway which is bounded by a 1.2m high fence. Children have a high dependency on walking as a principal mode of transport and are vulnerable road users, given that they are smaller, harder to see, can behave unpredictably and their lack of road experience means it can be difficult for them to identify and navigate dangerous situations. Other pedestrians that are considered to be at higher risk in the vicinity of driveways include the disabled and mobility impaired, and people using wheeled toys or recreational devices such as skateboards, rollerblades and foot scooters.

The current Woollahra DCP 2015 control which only requires a splay when an adjoining fence height exceeds 1.2 metres is not considered to be reasonable in providing a safe roadside environment for all pedestrian groups.

It could however be argued that the minimum requirements of Figure 3.3 of AS/NZS 2890.1 are excessive where vehicle movements and pedestrian activity are low and when they would otherwise result in a diminished streetscape. For example, on small lots the provision of a driveway and splays could dominate the streetscape by occupying more of the frontage than the front fence.

As such, consideration should be given to altering the current Woollahra DCP 2015 control to reflect the minimum requirements identified in Figure 3.3 of AS/NZS 2890.1. For dwelling house, dual occupancies and attached dwellings in residential zones, where the applicant can demonstrate that pedestrian activity in the vicinity of the driveway is low³, flexibility could however be provided.

Such flexibility would provide an increased level of safety for pedestrians over the current control in that a maximum fence height of 0.9m would apply as opposed to the existing 1.2m. Beyond this splay area, fence heights could be increased to provide suitable levels of privacy, etc.

A minor increase in the size of the sight triangle is also recommended from the existing Woollahra DCP 2015 control dimensions of 2m x 2m to the minimum requirement of 2m x 2.5m identified in Figure 3.3 of AS/NZS 2890.1. This will more closely align this modified version of the existing control with the minimum sight line requirement that is required in AS/NZS 2890.1.

In summary, an amended driveway splay control is recommended for inclusion in the updated Parking and Access chapter, as follows:

Driveway splays shall be provided in accordance with Figure 3.3 in Section 3.2.4 of AS/NZS 2890.1.

Exceptions to this may be accepted in the following circumstances:

- for dwelling house, dual occupancies and attached dwellings in residential zones in low pedestrian activity locations³ a fence to a maximum height of 0.9m is permitted in the splay area.
- where an obstruction to visibility of an abutting property is located within the splay area.

¹ AS/NZS 2890.1 – Section 3.2.4 (b)

² <http://roadsafety.transport.nsw.gov.au/stayingsafe/pedestrians/index.html>

³ Low pedestrian activity locations are areas away from schools, commercial centres or other locations that generate pedestrian activity.

2.9.2 Small Car Spaces

Description

A small car space is defined as 2.3 m wide x 5.0m long as per AS/NZS 2890.1. Generally they are only provided in locations where providing a regular car space is not feasible due to car park layout constraints. However, there are usually limitations on how many car spaces are able to be deemed as small car spaces to ensure sufficient regular car spaces are provided.

Existing

There are currently no provisions relating to small car spaces in the Woollahra DCP 2015.

City of Sydney's limitation on small car spaces is generally no more than 5-10% of the total car spaces provided. At Lane Cove Council small car spaces are not permitted in private car parks and must form no more than 10% of the overall parking provision in public car parks. Wollongong does not allow small car spaces unless the total regular car spaces have been provided.

Proposed

Small car parking spaces are considered suitable for use in public car parks where small cars will comprise a proportion of all vehicle types.

Cardno recommends that small car parking spaces be permitted in public car parks but must constitute less than 5% of the overall number of parking spaces.

In residential development the provision of small car spaces is not supported given that spaces will often be unusable for occupants with standard sized vehicles.

2.9.3 Tandem Parking

Description

Tandem parking refers to the parking configuration of multiple cars stacked in such a way that the inner most car is not able to exit without moving the other cars. Although tandem parking may prove to be extremely inconvenient, it allows more efficient parking configurations and could reduce excavation cost which is especially important in areas where excavation is an extremely expensive exercise. The inconvenience is less of a problem if the owners of the tandem parking spaces live in the same residence.

Existing

Woollahra currently allows long term tandem parking for non-residential developments where it is not physically possible to provide parking spaces in a side by side configuration.

City of Sydney allows tandem parking for both non-residential and commercial/retail developments. However, tandem parking in residential is limited to only the residents whereas the commercial and retail developments are limited to only the staff.

North Sydney generally does not support tandem parking but may permit it if the number of stacked spaces do not exceed 25% of the total number of non-residential spaces and where the spaces are in the same ownership or lot.

Lane Cove does not support tandem parking in new developments but may consider it if it will reduce the level of excavation required, site is physically constrained and the number of spaces in tandem does not exceed 10% of the total number of spaces.

Proposed

It is understood that tandem parking already exists in certain areas of Woollahra and it will inevitably become more popular with the increasing population and higher vehicle usage along with that. However, to reduce the inconvenience, it is recommended to adopt City of Sydney's limitations on tandem parking where in residential premises, only the residents of the same unit are allowed to park in tandem and in commercial

premises, only staff are allowed to park in tandem. It is believed this would maximise the use of parking spaces while still allowing for parking to remain convenient.

2.9.4 Mechanical Parking

Description

Mechanical parking refers to the use of mechanical lifts in order to add a vertical dimension in which to park cars. Not only do mechanical parking systems save space but it also removes some of the negative points from at-grade car parks such as narrow parking spaces, pollution (from cars circling and in neutral waiting for a space), and vehicle damage from crashes.

The downsides of mechanical parking include requiring regular maintenance, relatively unreliable, and the potential for disaster if it malfunctions.

Existing

The Woollahra DCP 2015 mentions mechanical parking systems and with regards to the location/land use, compliance with the Australian Standards, number and design of waiting bays, and more. The Woollahra DCP 2015 also states a 'report from a suitably qualified traffic consultant is required for any development application that proposes a mechanical parking installation'.

The City of Sydney requires a Parking and Access Report where a development includes a mechanical parking installation, limits each stacked parking arrangement to a maximum of two spaces, and does not allow visitors to park using mechanical parking.

North Sydney generally does not support mechanical parking but may permit it if the number of stacked spaces do not exceed 25% of the total number of non-residential spaces and where the spaces are in the same ownership or lot. Specific to mechanical parking, Council requires proof that: it will reduce the excavation required and preserve significant tree and/or landscape features, the site is physically constrained, and there is a waiting space if the system accommodates more than 10 vehicles.

Lane Cove does not permit mechanical parking systems.

Proposed

Compared with the DCP of other Councils, the current Woollahra DCP 2015 has covered mechanical parking in reasonable amounts of detail with regards to requiring the number of waiting bays, the requirement of a report, and the eligibility of mechanical parking systems. As the DCP of other Councils also have no clear policy direction so a restriction to limit the number of vehicles using mechanical parking systems would be arbitrary. As such, no changes are recommended for mechanical parking.

2.9.5 Disabled Spaces

Description

An accessible parking space in Australia is defined in the AS/NZS 2890.6 as a clearly marked parking space with dimensions of 5.4m x 2.4m adjacent to a shared area containing a bollard with the same dimensions. The number of accessible parking spaces required is generally calculated as a percentage of the total car parking spaces provided.

Existing and Proposed

Woollahra currently refers to the Australian Standards for accessibility car parking provision. However, the Australian Standards does not give any recommendations on the quantity of accessible car parking spaces required. Cardno recommends that the DCP be amended to refer to Part D3.5 of the 'Building Code of Australia' which states accessibility parking rates of approximately 1 to 2% depending on the development type.

2.9.6 Electric Bicycles

Description

Electric bicycles refer to bicycles with an electrified motor which of up to 250W. The electric motor generally cannot be removed from the bicycle to reduce footprint and weight. As such, charging points would have to be located at the bicycle locker.

Existing

Woollahra currently has no requirements for providing charging facilities for electric bicycles.

Lane Cove requires 1 in 5 bicycle lockers to contain a charging facility for electric bicycles.

Proposed

Of all the LGAs investigated, Lane Cove has the most similar bicycle mode split compared to Woollahra (1.7% vs 1.8%). Electric bicycles are a subset of the bicycles category and the electric bicycle / bicycle ratio being similar for both LGAs is probable. Hence, it would be appropriate for Woollahra to adopt Lane Cove's requirement for electric bicycles which requires 1 in 5 bicycle lockers to contain a charging facility.

3 Parking Generation Rates

This section of the report will discuss residential and non-residential parking rates as well as provide recommendations for revising rates if required. Woollahra Council's parking rates are compared to comparable Council areas in Metropolitan Sydney.

Comparison Councils have been chosen based on a qualitative assessment of geographical context, demographics and travel options. Detailed investigation of the evidence base and methodology behind the comparison Council parking rates should be undertaken to provide further confidence in the appropriateness of their application in the Woollahra context.

3.1 Residential car parking rates

The residential parking rates stipulated in the DCP are maximums. Under the current controls, applicants must provide the maximum rate of parking for residential developments. If the number of parking spaces proposed is fewer or more than the maximum rates required based on the DCP, the applicant must provide justification either in the form of a technical note or a traffic impact assessment.

Based upon discussions with Council it has been agreed that the existing residential parking rates are generally reasonable for the purposes of encouraging the community to divert away from private vehicle use.

Studio and 1 bedroom apartments in Double Bay

Cardno acknowledge that a study has been done to investigate the feasibility of reducing the maximum parking rate for studios and one bedroom apartments to zero in the Double Bay Centre. The proportion of households in Woollahra without a car is 15% which is significantly higher than the state average of 10.4%. However, this value is also significantly lower than City of Sydney's 38.7%. In spite of this, one bedroom dwellings and studio apartments in the City of Sydney LGA still have a maximum parking rate ranging from 0.1 to 0.5 spaces per dwelling depending on the land category it falls under.

Based on the comparison with City of Sydney parking rates, it is not recommended that Woollahra Council reduce the maximum parking rates of studios and one bedroom apartments to zero in Double Bay. Cardno recommend that parking for studio and one bedroom apartment is discounted by applying the multiplier for non-residential use in the Double Bay B2 zone. This can be further verified by making reference to the results of the parking surveys and parking multiplier calculations undertaken by Cardno as part of this assessment.

3.2 Non-residential car parking rates

Given the disparity of parking requirements that could be associated with a number of different land uses that may fit within the same land use definition listed in **Table 3-1** below, it is recommended that the parking provision should be determined on a case-by-case basis.

Table 3-1 Proposed parking generation rate modifications for non-residential developments

Land use	Existing WMC parking generation rate	Lane Cove parking generation rate	North Sydney parking generation rate	Proposed parking generation rate
Entertainment Facility	22 spaces per 100m ²	Parking rate to be determined on a comparable development basis	1 space per 100m ²	Parking rate to be determined on a site specific basis. Surveys of comparable development may be required.
Pub	22 spaces per 100m ²	2.5 spaces per 100m ²	1 space per 100m ²	
Registered Club	20 spaces per 100m ²	2.5 spaces per 100m ²	1 space per 100m ²	
Place of Public Worship	22 spaces per 100m ²	1 space per 10 seats plus 1 space per 10m ² where no permanent seating is provided	1 space per 100m ²	

3.3 Site specific non-residential car parking rates

12 sites were identified as commercial zones throughout the Woollahra LGA (originally listed in the WOOLLAHRA DCP 2015), the locations of each of these sites are shown in **Appendix A** and are listed below:

- > Watsons Bay B1 Zone;
- > Vaucluse Village B1 Zone;
- > Rose Bay Centre B2 Zone;
- > Rose Bay South B4 Zone;
- > Rose Bay North B4 Zone;
- > Bellevue Hill B1 Zone and Victoria Road B1 Zone;
- > Double Bay Centre B2 Zone;
- > Edgecliff Road, Woollahra B1 Zone;
- > Queen Street B4 and R2 Zone;
- > Oxford Street B4 Zone;
- > Five ways, Paddington B1 Zone; and
- > Edgecliff Commercial Core B2 Zone and New South Head Road, Edgecliff B4 Zone.

As part of this study, the parking multipliers for these 12 sites were reviewed using an evidence based approach. In order to determine the site specific multipliers for each zone, three criteria were used for the assessment; existing parking demand, public transport accessibility and excavation cost (due to presence of Acid Sulphate Soil).

The site specific multiplier for each zone will start at 1 (100%). Parking demand, public transport accessibility and excavation cost, if applicable, will each account for a reduction as per **Table 3-2**. For example, if a particular commercial area experienced excellent public transport provision (-0.3), high availability of on-street parking (-0.3) and was also affected by acid sulphate soil (-0.3), the theoretical parking multiplier for that commercial area could be as low as 0.1. The individual components of the parking multiplier calculation are explained below.

Table 3-2 Site multiplier reduction

Item	Reduction
Parking demand	0.1 - 0.3
Public transport accessibility	0.1 - 0.3
Excavation	0.3

It should be noted that final car parking provision should always be rounded up to the nearest whole car space.

Worked Example - Office Development

An office development located in the Double Bay Centre B2 Zone comprises of 2,000 m² GFA.

To calculate the number of parking spaces required, the following steps are taken:

1. The non-residential parking rates for "Business premises" are calculated using Table 2 of the DCP:
 - a. 2.5 spaces per 100m².
 - b. $2,000/100 * 2.5 = 50$ spaces.
2. This number is then multiplied by the site-specific multiplier for Double Bay Centre B2 Zone:
 - a. Using the old multipliers: $1.0x 50$ spaces = 50 spaces.
 - b. Using the proposed new multiplier: $0.3 x 50$ spaces = 15 spaces.

3.3.2 Parking Demand

Description

Council requested comprehensive parking surveys in each commercial zone to find representative parking occupancy levels which would inform the site specific multipliers for the 12 commercial zones.

The design of the parking surveys were agreed upon with Council and the details are as follows:

- > The parking surveys consist of a parking inventory before the start of the survey so the parking occupancy can be calculated for each side of the street.
- > Each of the 12 zones also had an approximate 100m buffer zone, meaning the surveys extended approximately 100m past the boundaries of each zone.
- > Each zone was surveyed on Thursday 15th October 2015 during the AM peak (7-9AM) and the PM peak (4-6PM) at 15 minute intervals. Five sites in particular had an extended survey duration in the PM peak until 8PM to account for late night shopping.

Methodology

In order to calculate the average parking occupancy, the total number of spaces within each survey area was aggregated to work out the overall on-street parking stock. Then the average occupancy for each 15 min interval was calculated based on total number of occupied spaces as a percentage of total parking stock in the survey area. Then the overall average parking occupancy across both AM and PM survey periods was calculated by taking the mean average of the 15 minute interval values.

Figure 3-1 demonstrates this calculation for the Rose Bay survey area.

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 1 - Watsons Bay B1 Zone									
	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
Military Rd - North - Red	17	14	14	15	15	15	17	17	16
Military Rd - South - Red	15	13	12	13	15	14	14	13	13
Military Rd - East - Blue	4	3	3	4	4	4	4	4	4
Military Rd - West - Blue	2	1	0	1	0	0	0	1	1
Military Rd - East - Green	8	7	7	7	5	7	6	6	5
Military Rd - West - Green	7	6	7	7	7	4	3	6	4
Robertson Pl - North - Purple	7	5	4	4	4	3	3	3	3
Robertson Pl - South - Purple	11	3	3	3	5	5	4	6	5
Gap Rd - East - Light Green	27	18	21	23	22	17	15	15	17
Gap Rd - West - Light Green	0	0	0	0	0	0	0	0	0
Dunbar St - North - Yellow	9	7	7	7	7	5	5	0	0
Dunbar St - South - Yellow	4	3	3	3	3	4	4	2	2
	111	80	81	87	87	78	75	73	70
		72%	73%	78%	78%	70%	68%	66%	63%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 1 - Watsons Bay B1 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Military Rd - North - Red	17	11	11	14	10	14	14	11	15
Military Rd - South - Red	15	14	14	13	11	12	14	15	12
Military Rd - East - Blue	4	4	4	4	4	4	3	4	3
Military Rd - West - Blue	2	1	0	2	1	2	1	1	0
Military Rd - East - Green	8	3	3	4	4	4	5	8	8
Military Rd - West - Green	7	5	5	6	6	6	7	4	5
Robertson Pl - North - Purple	7	2	3	3	3	3	3	4	5
Robertson Pl - South - Purple	11	4	4	4	4	4	4	4	6
Gap Rd - East - Light Green	27	16	14	14	15	14	12	16	19
Gap Rd - West - Light Green	0	0	0	0	0	0	0	0	0
Dunbar St - North - Yellow	9	3	3	3	2	2	3	3	3
Dunbar St - South - Yellow	4	3	3	3	3	3	3	4	4
	111	66	64	70	63	68	69	74	80
		59%	58%	63%	57%	61%	62%	67%	72%
									AVERAGE 67%

Figure 3-1 Example of parking occupancy calculation

Thresholds were agreed with Council in order to translate the average parking occupancy data into sensible multiplier values for inclusion in the DCP. The general principle is that lower on-street parking occupancy allows for a higher multiplier value and hence lower off street parking provision in new non-residential development. The thresholds and corresponding parking multipliers were agreed as follows:

50% < parking occupancy = 0.3 reduction

51-65% parking occupancy = 0.2 reduction

66-79% parking occupancy = 0.1 reduction

>80%+ parking occupancy = 0 reduction

Following this assessment the average parking occupancy percentages were calculated as shown in **Table 3-3**.

Table 3-3 Parking Occupancy

Zone Description	Average Parking Occupancy (%)	Reduction
Watsons Bay B1 Zone	67	0.1
Vaucluse Village B1 Zone	81	0
Rose Bay Centre B2 Zone	89	0
Rose Bay South B4 Zone	70	0.1
Rose Bay North B4 Zone	84	0
Bellevue Hill B1 Zone and Victoria Road B1 Zone	85	0
Double Bay Centre B2 Zone	78	0.1
Edgecliff Road, Woollahra B1 Zone	73	0.1
Queen Street B4 and R2 Zone	61	0.2
Oxford Street B4 Zone	54	0.2
Five ways, Paddington B1 Zone	89	0
Edgecliff Commercial Core B2 Zone and New South Head Road, Edgecliff B4 Zone	75	0.1

3.3.3 Public Transport

Description

For the purposes of this study, the public transport accessibility is defined as how far people would have to walk in order to reach a public transport node. The walking catchments for each public transport mode (buses, trains and ferries) were assessed for each of the 12 sites. These walking catchments are mapped in the figures below. Note that the different shades for each transport mode represents the walking distance required and that ferries and trains (up to 800m) have larger walking catchments compared to buses (up to 200m). This is a result of ferries and trains being more attractive to travellers than buses due to their higher reliability and potential travel distance.

By including public transport accessibility in the review of site specific parking multipliers, a certain level of future-proofing has been provided. This would potentially allow residents in areas with reduced parking an alternative to travel.

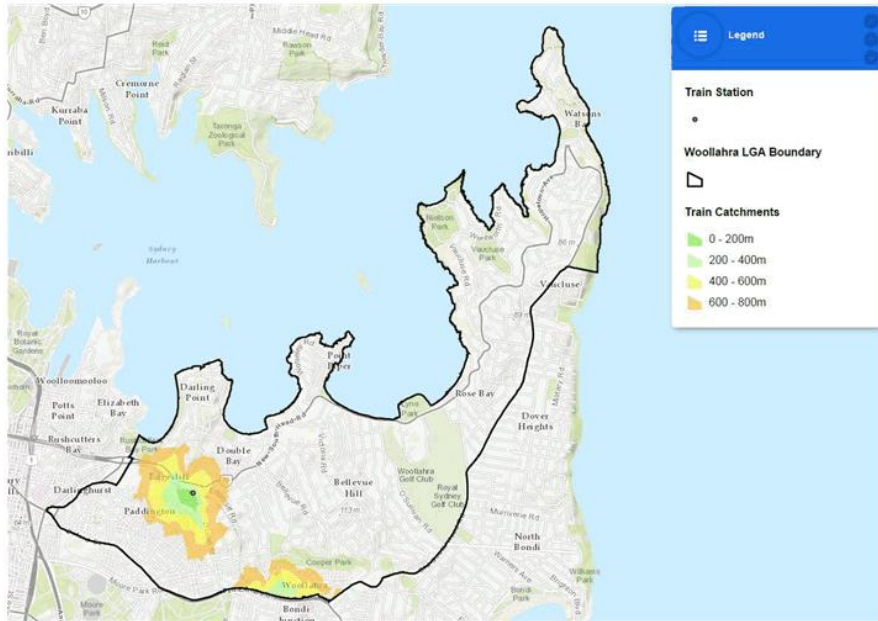


Figure 3-2 Train Station Walking Catchments in Woollahra

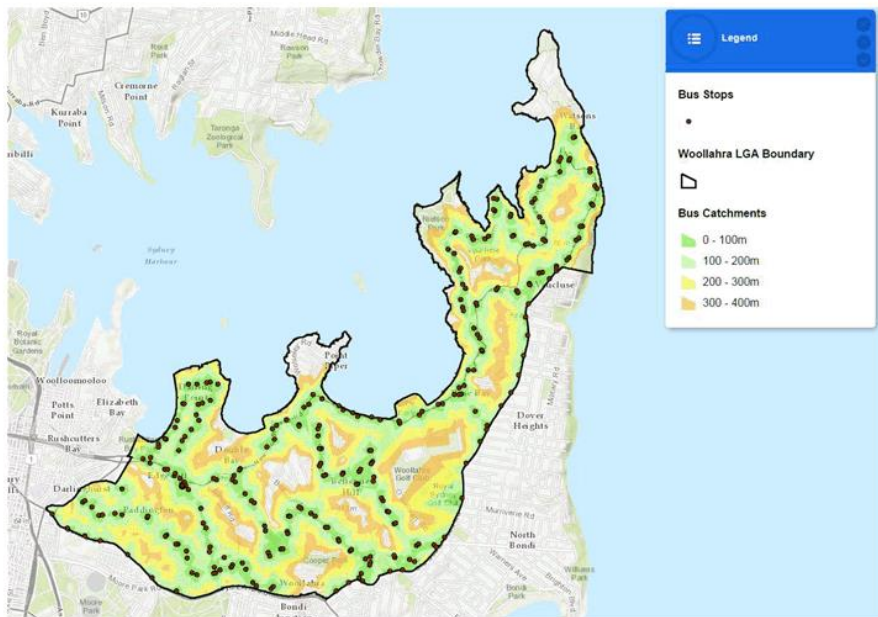


Figure 3-3 Bus Stop Walking Catchments in Woollahra

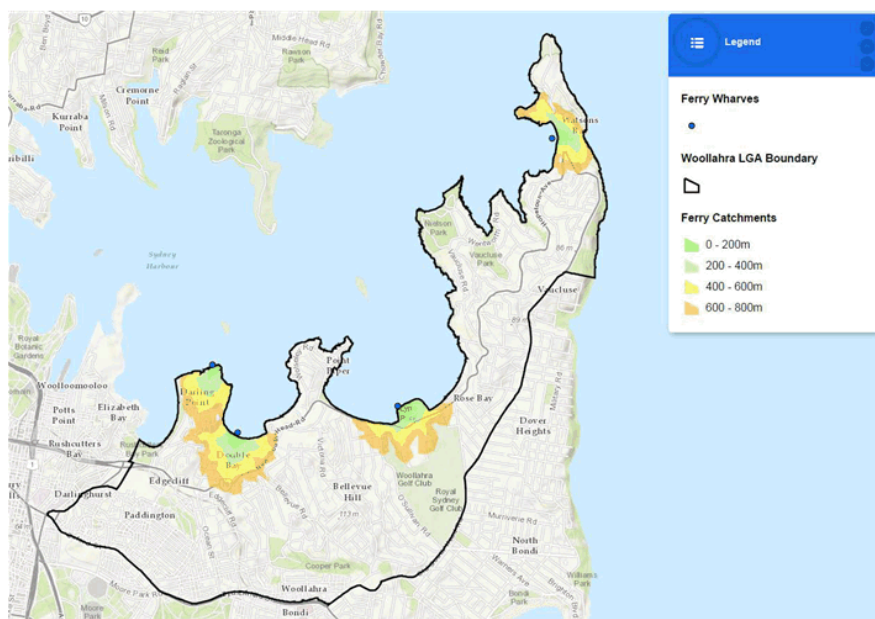


Figure 3-4 Ferry Wharf Walking Catchments in Woollahra

Methodology

In order to quantify these walking catchments for the purposes of this study, the following methodology will be followed:

1. Overlay the ferry, bus and train catchments on top of the commercial zone boundary.
2. Depending on the coverage of each respective commercial zone by the walking catchments for each transport mode (200m for buses, 800m for trains and ferries), the site multiplier for that zone can be reduced as follows:
 - a. 75% < PT accessibility = 0 reduction
 - b. 75-84% PT accessibility = 0.1 reduction
 - c. 85-94% PT accessibility = 0.2 reduction
 - d. 95% > PT accessibility = 0.3 reduction
3. Repeat steps 1-2 for all 12 zones.

The table below lists the zones and the respective percentage area which is within the walking catchments of public transport nodes.

Table 3-4 Walking Catchment %

Zone Description	% of Commercial Zone within Walking Catchment	Reduction
Watsons Bay B1 Zone	100	0.3
Vaucluse Village B1 Zone	100	0.3
Rose Bay Centre B2 Zone	98	0.3
Rose Bay South B4 Zone	100	0.3
Rose Bay North B4 Zone	100	0.3

Zone Description	% of Commercial Zone within Walking Catchment	Reduction
Bellevue Hill B1 Zone and Victoria Road B1 Zone	96	0.3
Double Bay Centre B2 Zone	98	0.3
Edgecliff Road, Woollahra B1 Zone	100	0.3
Queen Street B4 and R2 Zone	100	0.3
Oxford Street B4 Zone	78	0.1
Five ways, Paddington B1 Zone	100	0.3
Edgecliff Commercial Core B2 Zone and New South Head Road, Edgecliff B4 Zone	100	0.3

It has been acknowledged that this methodology does not account for the frequency and directness of public transport. This finer grain analysis of public transport accessibility may be undertaken as part of a further study.

3.3.4 Excavation

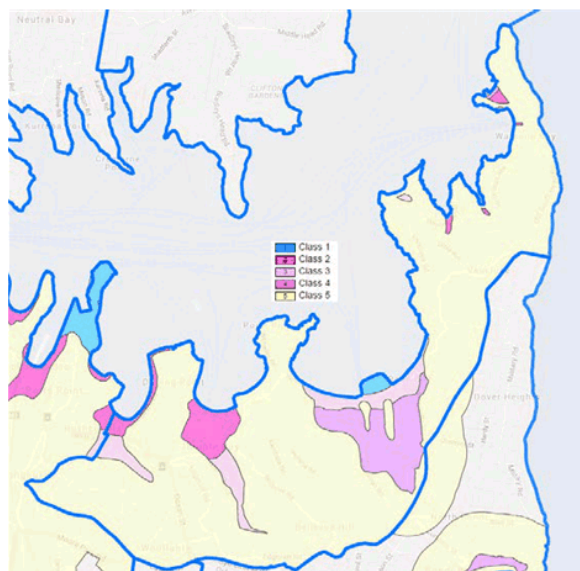
Description

In spatially limited areas, excavation may be required in order to satisfy the parking rates stipulated in the Woollahra DCP 2015. However, certain areas may be significantly more difficult to provide underground parking for due to the high levels of acid sulphate soils.

Up to 5 levels of risk can be defined, from class 1 (where any work is likely to uncover ASS) to class 4 (where work >2 m below the ground surface, or that is likely to lower the water table to >2 m below the ground surface, is likely to uncover ASS), and class 5 (any work within 500 m of class 1 to 4 sites that is likely to lower the water table at those sites).

In order to account for the difficulties involved in excavation, only areas in classes 1 and 2 are included in this analysis.

Figure 3-5 Acid sulphate soils in Woollahra



Methodology

The methodology for including excavation costs into this assessment is as follows:

1. Overlay the acid sulphate soils (ASS) map on top of the zone boundary.
2. If more than 50% of the area within the zone is covered by Class 1 or 2 of the acid sulphate soils, the site multiplier for that zone can be reduced by 0.3 (30%).
3. Repeat steps 1-2 for all 12 zones.

The Cardno finding was that only the Double Bay Centre zone contains ASS Classes 1 or 2 and therefore this is the only commercial centre which qualifies for the 0.3 discount under this criterion.

3.3.5 Limitations

The limitations involved with this review of the site specific multipliers are as follows:

- > The public transport accessibility assessment does not account for directness or frequency of bus services.
- > The parking occupancy surveys largely did not take account of private parking stock, which would need to be surveyed in order to provide a more comprehensive analysis of parking availability within a specific commercial centre.
- > The multipliers should be revisited if major changes are made to public parking provision or public transport services, or if the Acid Sulphate Soils classifications are revised.

3.3.6 Summary & Conclusion

Based on the analysis and discussion presented within this section of the report, it was determined that the existing parking multiplier for non-residential uses outlined within Table 3 of the Woollahra Development Control Plan 2015 is outdated, and should be replaced with following evidence-based values presented in **Table 3-5**, which introduces a flat rate for all land uses within a given commercial zone.

3.3.7 Council Officers Response to Cardno's Summary & Conclusion

Discount for acid sulphate soils in Double Bay

Council officers note that Cardno's proposed parking discount due to excavation responded directly to Council's brief prepared in early 2015, where it was requested that proposed rates should acknowledge the 'existence of water tables with regard to excavation and the provision of basement car parking areas'. However, potential environmental impacts associated with providing basement car parking, such as the impact on groundwater flows are assessed through Council's geotechnical policy which tests these impacts at the development assessment stage.

Recent community feedback during exhibition of the HillPDA Double Bay Economic Feasibility Study also reveals strong opposition to new developments with insufficient off-street parking. This feedback was based on resisting the use of existing on-street parking to cater for the additional parking demand.

Due to the existence of Council's policy and recent community feedback the recommendation to include an additional 30% discount in the Double Bay Centre with regard to excavation is not supported and the discount has not been included in proposed changes to the DCP chapter.

Discounts based on on-street parking surveys

Cardno recommended a parking demand reduction of 30% for the Oxford Street B4 zone based on a measured average parking occupancy rate of 54%. This part of the parking occupancy calculation has been evaluated and found to be inaccurate in that on-street parking spaces within a morning 'Clearway' and afternoon 'Bus Lane' have been taken into account. Both of these parking restrictions prohibit parking for part of the day and should not have been counted as available spaces. The parking surveys for this zone

have been amended taking into consideration this oversight and result in an average on-street parking occupancy of 87%, which results in no discount applying for parking demand within this zone.

The parking survey data provided by Cardno for the Queen Street B4 and R2 zone has also been reviewed and the average occupancy rate appears to be inconsistent with on-site observations undertaken by staff, which revealed on-street parking occupancies above 90% in peak trading hours. The average occupancy rate of 61% provided by Cardno has been replaced with a rate of 80%, which staff consider to be a more reasonable indication of overall parking availability in the area. The result is that the proposed discount of 20% has been removed.

The remaining on-street parking occupancy rates have been reviewed and found to be generally consistent with on-site observations undertaken by staff and as such have been retained.

Discounts based on public transport accessibility

Cardno recommended a public transport accessibility reduction of 10% for Oxford Street B4 zone, whereas all other centres received a 30% reduction. This is not considered to be reasonable given the high frequency bus services that service this zone and as such, this reduction has been increased to 30% in line with the other centres.

Table 3-5 Site specific multipliers and reductions

Zone	Parking Demand	Public Transport Accessibility	Excavation	Total discount
Watsons Bay B1 Zone	0.1	0.3	0	40%
Vaucluse Village B1 Zone	0	0.3	0	30%
Rose Bay Centre B2 Zone	0	0.3	0	30%
Rose Bay South B4 Zone	0.1	0.3	0	40%
Rose Bay North B4 Zone	0	0.3	0	30%
Bellevue Hill B1 Zone and Victoria Road B1 Zone	0	0.3	0	30%
Double Bay Centre B2 Zone	0.1	0.3	0	40%
Edgecliff Road, Woollahra B1 Zone	0.1	0.3	0	40%
Queen Street B4 and R2 Zone	0	0.3	0	30%
Oxford Street B4 Zone	0	0.3	0	30%
Five ways, Paddington B1 Zone	0	0.3	0	30%
Edgecliff Commercial Core B2 Zone and New South Head Road, Edgecliff B4 Zone	0.1	0.3	0	40%

4 Conclusions and Further Work

Cardno was engaged by Woollahra Municipal Council to undertake a review of the Woollahra Development Control Plan (Woollahra DCP 2015) Chapter E1 Parking and Access. As part of this review, practical guidelines were introduced into the DCP including Green Travel Plans, Operational Transport Plans, Bicycle Parking Rates, Motorcycle Parking Rates, and On-Site Waste Collection.

A variety of existing controls were also modified including Non-Residential Parking Rates, Tandem Parking, Disability Parking, Small Car Parking Spaces and Driveway Splay Requirements.

These points were addressed through reviewing and comparing the Woollahra DCP 2015 to comparable Metropolitan Councils. Rates and controls were generally adopted from Councils with similar demographics and travel patterns assuming they were sensible to implement. Other reference materials were the RTA Guide to Traffic Generating Developments and the Victoria Planning Provisions.

A significant portion of this review involved reviewing the non-residential car parking multipliers for 12 commercial zones within Woollahra LGA. Based on discussions with Council, a multi-criteria assessment was developed consisting of parking demand, public transport accessibility and excavation cost. The parking demand was accounted for by performing a comprehensive parking inventory and occupancy survey at the 12 commercial zones. The public transport accessibility was calculated by mapping reasonable walking distance catchments from public transport nodes. And the excavation costs were assessed by overlaying the acid sulphate soils Class 1 and Class 2 on top of the 12 commercial zones. This approach led to an evidence-based revision of the parking multipliers. Cardno also took the opportunity to simplify the multipliers by introducing a flat rate for all land uses within a given commercial zone.

Further work could be undertaken to ensure the robustness of the recommendations and controls within Chapter E1 Parking and Access:

- > Further GIS analysis to build on the public transport accessibility assessment. A finer grain analysis of bus service catchments could be undertaken by considering factors such as frequency, reliability, end destination and passenger waiting facilities.
- > A comprehensive inventory of public and private parking. This would give a more reliable basis for parking occupancy calculations in the commercial zones and is an essential first step in attempting to better utilise available parking as an alternative to building more parking;
- > Review of national and international best practice in regard to Green Travel Plans. Issues such as how to enforce the requirements of Green Travel Plans and how to ensure mode share targets are owned by both the developers and the entities that ultimately occupy the development have still not been satisfactorily resolved in NSW. More research needs to be undertaken in this area to ensure Green Travel Plans are meaningful and contribute to real sustainable travel outcomes.

E1 Parking and Access

APPENDIX A
PARKING SURVEY DATA



Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine



Site 1 - Watsons Bay B1 Zone									
	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
Military Rd - North - Red	17	14	14	15	15	15	17	17	16
Military Rd - South - Red	15	13	12	13	15	14	14	13	13
Military Rd - East - Blue	4	3	3	4	4	4	4	4	4
Military Rd - West - Blue	2	1	0	1	0	0	0	1	1
Military Rd - East - Green	8	7	7	7	5	7	6	6	5
Military Rd - West - Green	7	6	7	7	7	4	3	6	4
Robertson Pl - North - Purple	7	5	4	4	4	3	3	3	3
Robertson Pl - South - Purple	11	3	3	3	5	5	4	6	5
Gap Rd - East - Light Green	27	18	21	23	22	17	15	15	17
Gap Rd - West - Light Green	0	0	0	0	0	0	0	0	0
Dunbar St - North - Yellow	9	7	7	7	7	5	5	0	0
Dunbar St - South - Yellow	4	3	3	3	3	4	4	2	2
	111	80	81	87	87	78	75	73	70
		72%	73%	78%	78%	70%	68%	66%	63%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 1 - Watsons Bay B1 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Military Rd - North - Red		17	11	11	14	10	14	14	11
Military Rd - South - Red	15	14	14	13	11	12	14	15	12
Military Rd - East - Blue	4	4	4	4	4	4	3	4	3
Military Rd - West - Blue	2	1	0	2	1	2	1	1	0
Military Rd - East - Green	8	3	3	4	4	4	5	8	8
Military Rd - West - Green	7	5	5	6	6	6	7	4	5
Robertson Pl - North - Purple	7	2	3	3	3	3	3	4	5
Robertson Pl - South - Purple	11	4	4	4	4	4	4	4	6
Gap Rd - East - Light Green	27	16	14	14	15	14	12	16	19
Gap Rd - West - Light Green	0	0	0	0	0	0	0	0	0
Dunbar St - North - Yellow	9	3	3	3	2	2	3	3	3
Dunbar St - South - Yellow	4	3	3	3	3	3	3	4	4
	111	66	64	70	63	68	69	74	80
		59%	58%	63%	57%	61%	62%	67%	72%

Average occupancy rate: 67%



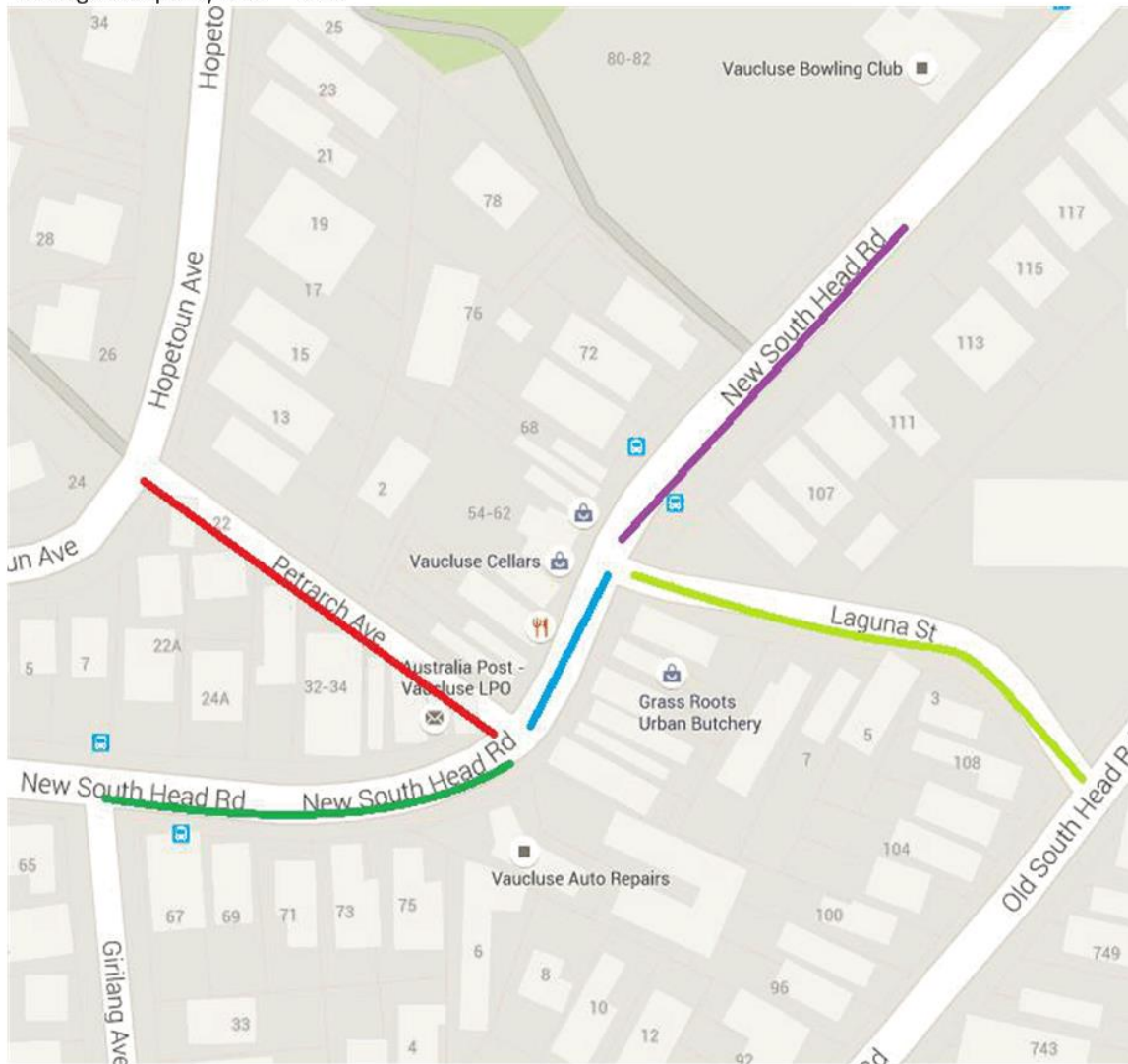
Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 2 - Vaucluse Village B1 Zone		8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
	Total spaces								
Petrarch Ave - North - Red	9	8	8	9	9	9	8	9	9
Petrarch Ave - South - Red	5	4	3	2	4	4	4	4	4
New South Head Rd - North - Green	13	12	12	10	13	12	12	11	12
New South Head Rd - South - Green	7	6	7	7	7	7	6	6	6
New South Head Rd - East - Blue	6	6	5	6	6	5	6	6	6
New South Head Rd - West - Blue	8	8	7	8	8	8	8	7	7
New South Head Rd - East - Purple	12	10	9	9	9	10	10	8	9
New South Head Rd - West - Purple	16	14	14	13	14	12	14	13	13
Laguna St - North - Light Green	16	9	7	7	7	8	7	9	10
Laguna St - South - Light Green	17	13	12	14	13	13	13	11	13
	109	90	84	85	90	88	88	84	89
		83%	77%	78%	83%	81%	81%	77%	82%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 2 - Vaucluse Village B1 Zone										
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45	
Petrarch Ave - North - Red		9	8	8	7	7	6	6	7	6
Petrarch Ave - South - Red	5	3	3	3	3	3	4	5	3	
New South Head Rd - North - Green	13	11	10	9	8	7	8	10	9	
New South Head Rd - South - Green	7	6	6	4	6	7	5	7	7	
New South Head Rd - East - Blue	6	6	5	6	6	6	6	6	6	
New South Head Rd - West - Blue	8	6	5	5	8	8	7	6	7	
New South Head Rd - East - Purple	12	12	12	12	12	12	12	11	12	
New South Head Rd - West - Purple	16	14	14	14	15	15	15	13	15	
Laguna St - North - Light Green	16	10	8	7	11	11	10	12	14	
Laguna St - South - Light Green	17	14	14	13	15	15	14	16	15	
	109	90	85	80	91	90	87	93	94	
		83%	78%	73%	83%	83%	80%	85%	86%	

Average occupancy rate: 81%



Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 3 - Rose Bay Centre B2 Zone		8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
	Total spaces								
New South Head Rd - North - Red	18	7	10	14	17	17	16	14	16
New South Head Rd - South - Red	31	20	24	24	26	24	27	28	30
New South Head Rd - North - Green	17	9	11	11	12	14	10	14	14
New South Head Rd - South - Green	15	11	10	9	14	14	13	12	14
New South Head Rd - North - Blue	6	5	4	6	5	6	4	5	5
New South Head Rd - South - Blue	3	3	3	3	1	1	2	3	1
New South Head Rd - East - Purple	24	24	21	24	23	22	21	20	24
New South Head Rd - West - Purple	15	14	13	14	14	15	13	14	14
Dover Rd - North - Light Green	7	5	6	6	7	6	7	7	6
Dover Rd - South - Light Green	3	3	3	2	3	3	3	3	3
Dover Rd - North - Pink	15	14	14	11	12	15	13	14	14
Dover Rd - South - Pink	19	19	17	16	19	19	17	16	15
Ian St - East - Yellow	24	21	21	23	23	20	21	23	23
Ian St - West - Yellow	18	17	16	17	17	19	18	16	18
Dover Rd ans Ian St Carpark - Black	53	48	50	50	50	52	52	52	52
Wilberforce Ave - East - Brown	31	28	30	29	31	27	30	31	26
Wilberforce Ave - West - Brown	34	32	30	31	32	33	34	32	29
Newcastle St - East - Black	36	33	34	36	31	34	32	34	36
Newcastle St - West - Black	35	35	35	34	31	34	35	34	35
Norwich Rd - East - Grey	32	29	31	32	31	30	32	32	32
Norwich Rd - West - Grey	67	64	64	66	66	67	67	67	67
	503	441	447	458	465	472	467	471	474
		88%	89%	91%	92%	94%	93%	94%	94%

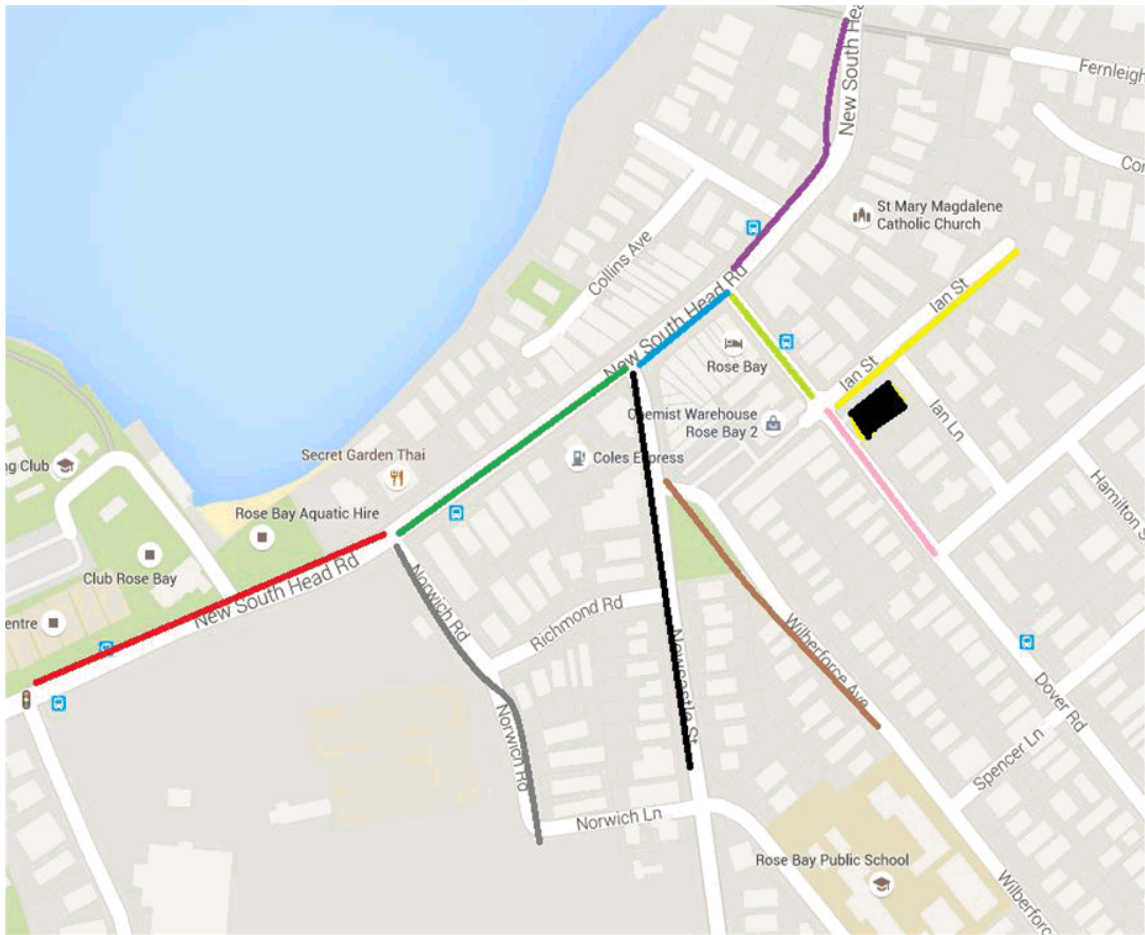
Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 3 - Rose Bay Centre B2 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
New South Head Rd - North - Red	18	17	16	14	17	18	16	16	17
New South Head Rd - South - Red	31	29	29	23	26	26	24	27	27
New South Head Rd - North - Green	17	14	14	13	15	15	16	14	15
New South Head Rd - South - Green	15	11	14	14	13	12	11	14	13
New South Head Rd - North - Blue	6	4	5	6	6	5	4	6	5
New South Head Rd - South - Blue	3	2	1	1	1	1	3	3	3
New South Head Rd - East - Purple	24	21	23	24	24	24	22	21	24
New South Head Rd - West - Purple	15	14	15	15	15	15	12	14	13
Dover Rd - North - Light Green	7	6	6	6	7	7	7	7	6
Dover Rd - South - Light Green	3	3	3	3	3	3	3	3	3
Dover Rd - North - Pink	15	14	12	13	15	14	11	14	13
Dover Rd - South - Pink	19	16	18	17	18	19	19	12	18
Ian St - East - Yellow	24	23	22	21	22	23	24	22	23
Ian St - West - Yellow	18	17	16	15	15	14	16	17	17
Dover Rd ans Ian St Carpark - Black	53	53	50	50	50	47	46	46	46
Wilberforce Ave - East - Brown	31	24	29	30	30	31	31	29	30
Wilberforce Ave - West - Brown	34	31	30	31	31	28	29	32	33
Newcastle St - East - Black	36	36	36	34	31	32	31	30	31
Newcastle St - West - Black	35	34	34	31	30	30	29	32	33
Norwich Rd - East - Grey	32	31	31	30	26	26	25	21	20
Norwich Rd - West - Grey	67	59	63	60	54	59	55	50	51
	503	459	467	451	449	449	434	430	441
		91%	93%	90%	89%	89%	86%	85%	88%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1800 - 2000
Weather	Fine

Site 3 - Rose Bay Centre B2 Zone									
	Total spaces	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45
New South Head Rd - North - Red	18	17	17	16	17	16	15	15	13
New South Head Rd - South - Red	31	28	29	28	27	29	30	30	29
New South Head Rd - North - Green	17	17	16	17	15	17	14	16	16
New South Head Rd - South - Green	15	14	13	14	15	13	12	11	14
New South Head Rd - North - Blue	6	5	4	5	6	6	5	4	6
New South Head Rd - South - Blue	3	2	1	1	2	1	3	3	1
New South Head Rd - East - Purple	24	24	23	22	22	21	22	22	24
New South Head Rd - West - Purple	15	12	12	14	14	15	11	13	12
Dover Rd - North - Light Green	7	7	7	7	6	5	6	6	6
Dover Rd - South - Light Green	3	3	2	2	2	3	2	2	2
Dover Rd - North - Pink	15	14	13	14	15	15	15	14	12
Dover Rd - South - Pink	19	16	17	18	17	14	16	17	16
Ian St - East - Yellow	24	24	23	23	23	24	24	23	20
Ian St - West - Yellow	18	16	17	16	18	18	16	17	15
Dover Rd ans Ian St Carpark - Black	53	45	46	44	39	37	37	33	26
Wilberforce Ave - East - Brown	31	31	30	26	24	22	21	20	21
Wilberforce Ave - West - Brown	34	32	32	31	30	31	32	31	30
Newcastle St - East - Black	36	34	33	31	32	31	30	31	29
Newcastle St - West - Black	35	32	34	33	35	31	32	33	30
Norwich Rd - East - Grey	32	29	26	25	31	32	28	30	26
Norwich Rd - West - Grey	67	56	60	59	54	50	49	52	48
	503	458	455	446	444	431	420	423	396
		91%	90%	89%	88%	86%	83%	84%	79%

Average occupancy rate: 89%



Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 4 - Rose Bay South B4 Zone									
	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
Old South Head Rd - East - Red	6	6	5	6	6	6	6	6	5
Old South Head Rd - West - Red	4	4	4	4	4	4	4	4	4
Faraday Ave - North - Blue	29	27	29	21	21	17	16	20	23
Faraday Ave - South - Blue	26	26	23	26	26	24	25	21	21
Old South Head Rd - East - Green	5	5	4	5	3	5	4	5	5
Old South Head Rd - West - Green	6	6	6	5	6	4	5	5	6
Albemarie Ave - North - Purple	46	46	41	41	40	38	36	36	40
Albemarie Ave - South - Purple	37	35	35	32	33	35	35	35	36
Old South Head Rd - East - Light Blue	7	7	7	7	7	7	6	7	6
Old South Head Rd - West - Light Blue	5	5	5	5	4	5	5	4	5
Wilberforce Ave - North - Pink	60	60	56	58	51	54	57	55	58
Wilberforce Ave - South - Pink	51	51	51	42	39	43	49	50	46
Old South Head Rd - East - Yellow	8	7	8	6	4	5	5	4	4
Old South Head Rd - West - Yellow	8	3	4	5	5	4	4	5	4
Dover Rd - North - Black	22	15	13	14	16	17	17	16	16
Dover Rd - South - Black	22	16	14	16	19	21	21	18	20
Old South Head Rd - East - Brown	10	5	6	7	5	3	4	6	4
Old South Head Rd - West - Brown	10	7	6	5	6	7	7	9	8
Hamilton St - North - Orange	18	12	14	13	14	11	12	12	13
Hamilton St - South - Orange	20	14	13	13	14	16	16	13	15
Old South Head Rd - East - Grey	21	10	12	14	8	12	16	13	14
Old South Head Rd - West - Grey	18	8	14	14	5	8	14	16	12
	439	375	370	359	336	346	364	360	365
		85%	84%	82%	77%	79%	83%	82%	83%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 4 - Rose Bay South B4 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Old South Head Rd - East - Red	6	4	4	5	4	6	6	4	5
Old South Head Rd - West - Red	4	4	4	4	2	4	3	4	1
Faraday Ave - North - Blue	29	20	19	16	22	19	19	19	19
Faraday Ave - South - Blue	26	21	21	22	17	19	18	18	18
Old South Head Rd - East - Green	5	4	4	3	5	4	2	3	4
Old South Head Rd - West - Green	6	5	5	5	4	5	3	3	2
Albemarie Ave - North - Purple	46	30	31	30	29	28	30	26	28
Albemarie Ave - South - Purple	37	30	33	34	30	29	27	28	25
Old South Head Rd - East - Light Blue	7	4	3	5	6	4	4	4	5
Old South Head Rd - West - Light Blue	5	5	5	4	2	3	5	4	2
Wilberforce Ave - North - Pink	60	57	56	40	42	40	40	40	35
Wilberforce Ave - South - Pink	51	48	43	44	40	36	37	38	38
Old South Head Rd - East - Yellow	8	5	4	6	5	6	7	5	4
Old South Head Rd - West - Yellow	8	4	4	7	6	5	4	5	4
Dover Rd - North - Black	22	14	16	12	12	14	16	17	15
Dover Rd - South - Black	22	19	18	12	14	15	13	13	13
Old South Head Rd - East - Brown	10	7	6	6	5	5	7	6	4
Old South Head Rd - West - Brown	10	5	9	7	6	8	9	8	7
Hamilton St - North - Orange	18	14	12	16	16	12	13	16	15
Hamilton St - South - Orange	20	12	15	10	11	10	10	11	10
Old South Head Rd - East - Grey	21	15	9	16	17	15	13	10	9
Old South Head Rd - West - Grey	18	13	11	11	12	10	10	9	8
	439	340	332	315	307	297	296	291	271
		77%	76%	72%	70%	68%	67%	66%	62%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1800 - 2000
Weather	Fine

Site 4 - Rose Bay South B4 Zone									
	Total spaces	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45
Old South Head Rd - East - Red	6	4	2	2	3	4	2	2	1
Old South Head Rd - West - Red	4	3	2	3	3	2	1	1	2
Faraday Ave - North - Blue	29	19	16	16	15	15	15	15	14
Faraday Ave - South - Blue	26	18	20	22	19	18	15	13	13
Old South Head Rd - East - Green	5	3	2	2	3	1	1	3	1
Old South Head Rd - West - Green	6	3	3	3	4	3	3	2	2
Albemarie Ave - North - Purple	46	29	26	26	23	23	23	23	25
Albemarie Ave - South - Purple	37	26	26	28	27	19	17	16	16
Old South Head Rd - East - Light Blue	7	4	3	4	2	2	2	2	1
Old South Head Rd - West - Light Blue	5	3	4	4	2	2	3	3	3
Wilberforce Ave - North - Pink	60	37	36	30	31	29	29	27	28
Wilberforce Ave - South - Pink	51	38	36	36	39	37	23	25	25
Old South Head Rd - East - Yellow	8	4	5	6	6	7	9	8	8
Old South Head Rd - West - Yellow	8	6	5	5	6	5	7	7	7
Dover Rd - North - Black	22	14	12	10	10	11	10	9	10
Dover Rd - South - Black	22	13	14	14	12	12	11	13	13
Old South Head Rd - East - Brown	10	4	5	6	6	5	4	5	6
Old South Head Rd - West - Brown	10	7	8	8	6	7	8	7	8
Hamilton St - North - Orange	18	16	15	16	15	15	16	16	16
Hamilton St - South - Orange	20	10	10	11	11	11	10	11	10
Old South Head Rd - East - Grey	21	14	15	16	16	16	15	15	15
Old South Head Rd - West - Grey	18	9	8	9	10	11	13	13	13
	439	284	273	277	269	255	237	236	237
		65%	62%	63%	61%	58%	54%	54%	54%



Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 5 - Rose Bay North B4 Zone		8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
	Total spaces								
Old South Head Rd - East - Black	47	33	37	41	43	29	31	35	32
Old South Head Rd - West - Black	54	34	41	48	51	49	49	45	47
Dudley Rd - North - Yellow	32	27	30	27	31	29	31	29	30
Dudley Rd - South - Yellow	38	24	26	32	34	34	30	32	31
Towns Rd - North - Purple	24	19	22	21	23	19	19	21	21
Towns Rd - South - Purple	29	24	28	27	28	26	27	26	28
Old South Head Rd - East - Blue	40	40	40	38	39	40	37	39	38
Old South Head Rd - West - Blue	33	32	33	33	31	33	29	32	31
Captain Pipers Rd - North - Green	28	28	27	28	25	28	27	24	27
Captain Pipers Rd - South - Green	30	30	30	30	27	28	29	25	28
Old South Head Rd - East - Red	20	19	20	18	19	20	20	17	16
Old South Head Rd - West - Red	23	22	23	23	21	17	21	23	23
	398	332	357	366	372	352	350	348	352
		83%	90%	92%	93%	88%	88%	87%	88%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 5 - Rose Bay North B4 Zone		16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
	Total spaces								
Old South Head Rd - East - Black	47	36	34	38	33	39	37	40	31
Old South Head Rd - West - Black	54	54	51	47	51	52	49	52	44
Dudley Rd - North - Yellow	32	30	29	29	30	32	31	28	26
Dudley Rd - South - Yellow	38	35	34	34	38	31	33	31	29
Towns Rd - North - Purple	24	22	16	19	21	21	23	21	19
Towns Rd - South - Purple	29	21	20	16	14	21	24	26	25
Old South Head Rd - East - Blue	40	33	38	36	30	29	32	32	31
Old South Head Rd - West - Blue	33	31	31	30	29	32	31	30	29
Captain Pipers Rd - North - Green	28	28	26	27	26	23	25	25	26
Captain Pipers Rd - South - Green	30	29	27	28	29	26	27	25	25
Old South Head Rd - East - Red	20	17	19	16	17	15	14	16	15
Old South Head Rd - West - Red	23	20	21	20	22	19	19	21	20
	398	356	346	340	340	340	345	347	320
		89%	87%	85%	85%	85%	87%	87%	80%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1800 - 2000
Weather	Fine

Site 5 - Rose Bay North B4 Zone									
	Total spaces	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45
Old South Head Rd - East - Black	47	29	33	32	28	29	31	33	39
Old South Head Rd - West - Black	54	51	49	42	44	44	43	40	40
Dudley Rd - North - Yellow	32	32	31	27	28	28	25	23	23
Dudley Rd - South - Yellow	38	36	34	30	31	30	32	31	29
Towns Rd - North - Purple	24	22	21	23	19	17	17	18	15
Towns Rd - South - Purple	29	29	27	21	23	25	24	17	17
Old South Head Rd - East - Blue	40	33	34	30	32	31	29	29	27
Old South Head Rd - West - Blue	33	31	31	29	26	28	25	25	23
Captain Pipers Rd - North - Green	28	27	24	26	23	21	23	24	22
Captain Pipers Rd - South - Green	30	26	23	23	21	22	20	21	20
Old South Head Rd - East - Red	20	17	17	15	11	12	10	11	11
Old South Head Rd - West - Red	23	20	21	19	15	18	18	16	15
	398	353	345	317	301	305	297	288	281
		89%	87%	80%	76%	77%	75%	72%	71%

Average occupancy rate: 84%

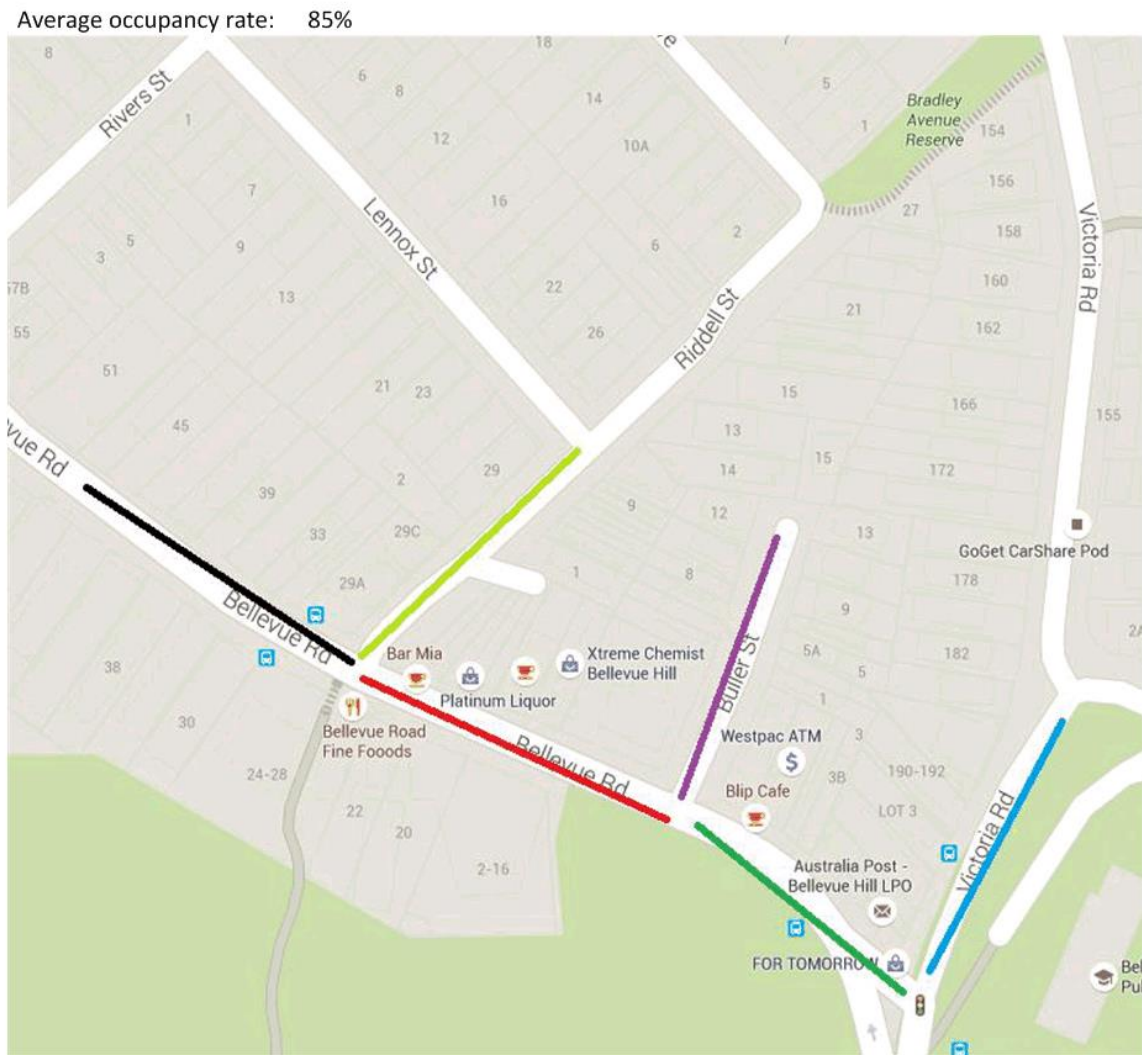


Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 6 - Bellevue Hill B1 Zone									
	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
Bellevue Rd - North - Black	14	13	12	13	13	14	14	13	14
Bellevue Rd - South - Black	17	14	15	14	15	16	15	17	17
Riddell St - East - Light Green	7	5	6	6	7	6	7	6	6
Riddell St - West - Light Green	18	18	16	15	14	17	16	16	15
Bellevue Rd - North - Red	11	10	9	8	11	10	11	11	9
Bellevue Rd - South - Red	10	10	9	8	9	9	10	9	10
Buller St - East - Purple	10	8	6	10	10	9	10	10	8
Buller St - West - Purple	10	8	10	10	10	10	10	10	9
Bellevue Rd - North - Green	10	8	7	8	8	9	9	9	8
Bellevue Rd - South - Green	12	9	10	12	10	11	12	10	10
Victoria Rd - East - Blue	0	0	0	0	0	0	0	0	0
Victoria Rd - East - Blue	3	0	0	0	0	1	2	1	1
	122	103	100	104	107	112	116	112	107
		84%	82%	85%	88%	92%	95%	92%	88%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 6 - Bellevue Hill B1 Zone	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
		Bellevue Rd - North - Black	14	10	10	9	10	13	12
Bellevue Rd - South - Black	17	16	15	14	13	14	15	15	16
Riddell St - East - Light Green	7	7	6	5	6	7	6	7	7
Riddell St - West - Light Green	18	10	15	16	15	15	16	18	17
Bellevue Rd - North - Red	11	6	8	9	8	9	10	9	10
Bellevue Rd - South - Red	10	7	8	8	7	9	8	9	10
Buller St - East - Purple	10	6	5	6	7	9	9	10	9
Buller St - West - Purple	10	7	8	8	10	10	10	8	8
Bellevue Rd - North - Green	10	8	6	5	8	10	10	9	5
Bellevue Rd - South - Green	12	7	8	5	10	10	10	10	8
Victoria Rd - East - Blue	0	0	0	0	0	0	0	0	0
Victoria Rd - East - Blue	3	3	3	2	2	2	2	2	1
	122	87	92	87	96	108	108	111	104
		71%	75%	71%	79%	89%	89%	91%	85%



Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 7 - Double Bay Centre B2 Zone									
	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
Manning Rd - East - Brown	7	7	7	3	7	7	7	7	6
Manning Rd - West - Brown	7	7	7	7	7	7	6	6	6
Patterson St - North - Blue	0	0	0	0	0	0	0	0	0
Patterson St - South - Blue	2	2	2	2	2	2	2	2	2
Kiaora Ln - North - Red	0	0	0	0	0	0	0	0	0
Kiaora Ln - South - Red	6	6	6	6	6	6	6	6	5
Kiaora Ln - North - Blue	Closed								
Kiaora Ln - South - Blue	Closed								
Kiaora Rd - East - Green	4	2	3	2	3	2	2	2	3
Kiaora Rd - West - Green	9	8	9	7	8	6	8	7	8
Leura Rd - East - Red	3	2	2	2	2	2	2	1	2
Leura Rd - West - Red	6	6	6	6	6	6	6	6	6
Bellevue Rd - North - Blue	0	0	0	0	0	0	0	0	0
Bellevue Rd - South - Blue	0	0	0	0	0	0	0	0	0
New South Head Rd - North - Light Green	14	12	14	14	14	14	14	14	14
New South Head Rd - South - Light Green	16	0	0	0	0	0	0	0	0
New South Head Rd - North - Grey	13	11	12	12	12	13	13	11	11
New South Head Rd - South - Grey	13	0	0	0	0	0	0	0	0
New South Head Rd - North - Light Blue	0	0	0	0	0	0	0	0	0
New South Head Rd - South - Light Blue	5	0	0	0	0	0	0	0	0
New South Head Rd - North - Green	30	0	0	0	0	0	0	0	0
New South Head Rd - South - Green	10	0	0	0	0	0	0	0	0
Bay Rd - East - Pink	14	7	11	12	13	13	13	13	13
Bay Rd - West - Pink	14	4	6	7	9	10	10	10	10
Bay Rd - East - Brown	5	1	3	4	4	4	4	4	4
Bay Rd - West - Brown	5	2	3	4	5	5	5	5	5
Bay Rd - East - Grey	4	2	2	2	2	2	2	4	4
Bay Rd - West - Grey	9	4	5	6	7	8	8	8	8
Bay Rd - East - Black	8	4	3	4	5	5	5	5	6
Bay Rd - West - Black	10	3	4	6	7	7	7	7	7
Cross St - North - Brown	21	9	11	11	13	15	19	20	20
Cross St - South - Brown	24	5	9	13	17	19	21	21	22
Cross St - North - Red	18	12	10	13	8	9	12	11	10
Cross St - South - Red	19	12	19	10	15	14	12	17	18
Cross St - North - Yellow	3	3	3	3	2	2	2	3	3
Cross St - South - Yellow	8	8	8	8	8	8	8	8	8

Site 7 - Double Bay Centre B2 Zone	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
Knox Ln - North - Black	17	12	13	15	15	15	14	13	14
Knox Ln - South - Black	5	5	5	4	4	4	4	5	5
Knox St - North - Black	17	15	16	16	16	16	15	15	15
Knox St - South - Black	13	12	11	11	12	12	12	12	11
Goldman Ln - North - Green	0	0	0	0	0	0	0	0	0
Goldman Ln - South - Green	6	6	6	5	5	5	6	6	6
Transvaal Ave - East - Orange	12	10	11	11	11	10	10	10	10
Transvaal Ave - West - Orange	11	11	11	9	9	9	9	10	10
Cooper St - North - Blue	8	8	8	8	8	8	8	8	8
Cooper St - South - Blue	10	10	10	10	10	10	10	10	10
South Ave - North - Black	4	4	4	4	4	4	4	4	4
South Ave - South - Black	2	2	2	2	2	2	2	2	2
Guilfoyle Ave Sth - North - Purple	15	15	15	15	15	14	13	15	13
Guilfoyle Ave Sth - South - Purple	17	17	14	13	16	17	17	15	17
Guilfoyle Ave Nth - North - Purple	15	15	15	15	15	13	15	11	15
Guilfoyle Ave Nth - South - Purple	15	15	13	15	15	15	12	15	15
	474	296	319	317	339	340	345	349	356
		62%	67%	67%	72%	72%	73%	74%	75%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

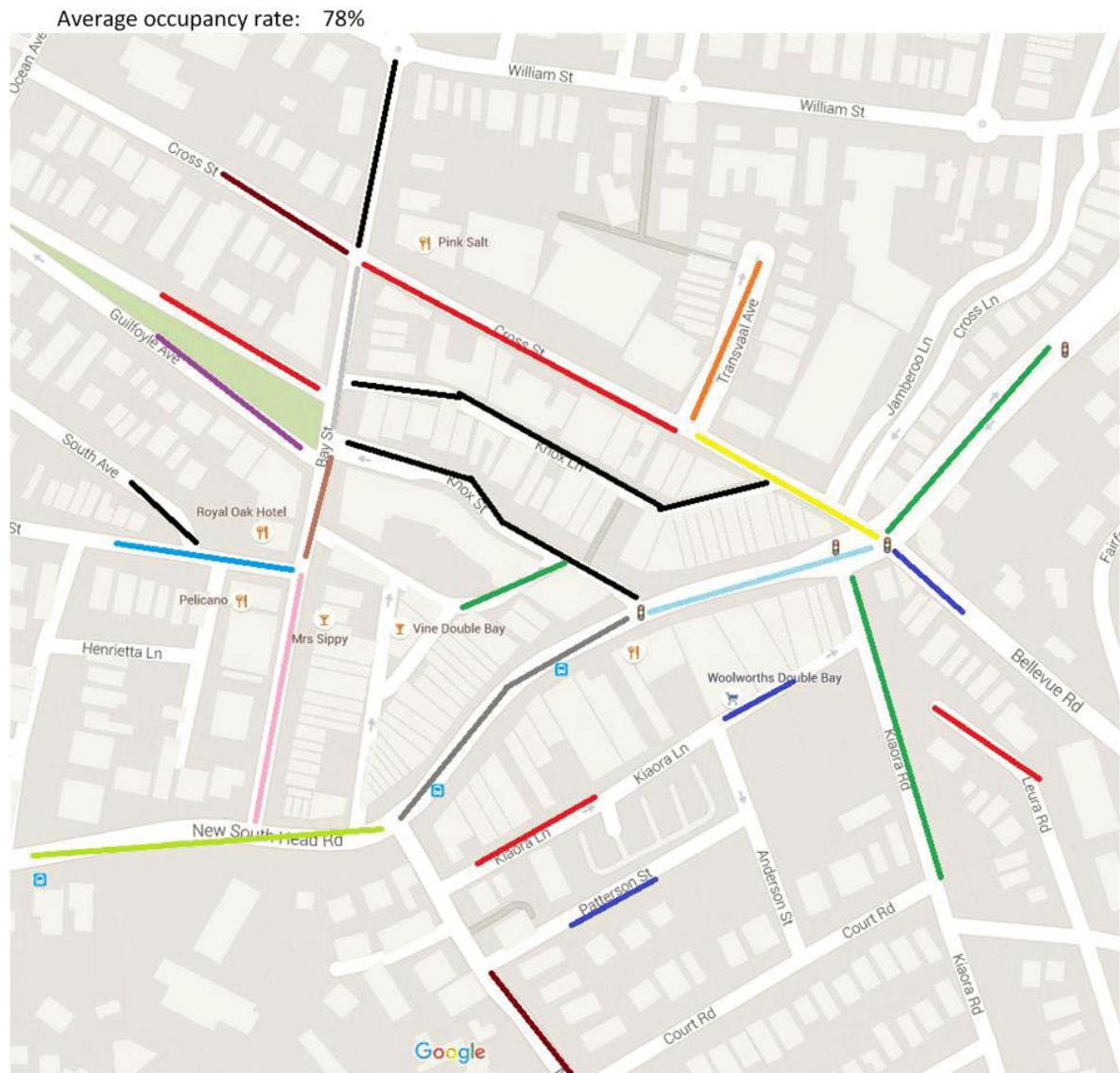
Site 7 - Double Bay Centre B2 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Manning Rd - East - Brown	7	6	6	6	7	7	6	7	7
Manning Rd - West - Brown	7	7	7	7	6	5	5	5	5
Patterson St - North - Blue	0	0	0	0	0	0	0	0	0
Patterson St - South - Blue	2	2	2	2	2	2	2	2	1
Kiaora Ln - North - Red	0	0	0	0	0	0	0	0	0
Kiaora Ln - South - Red	6	6	6	6	6	6	6	5	5
Kiaora Ln - North - Blue	Closed								
Kiaora Ln - South - Blue	Closed								
Kiaora Rd - East - Green	4	2	3	3	2	2	4	4	3
Kiaora Rd - West - Green	9	8	6	6	5	6	6	6	5
Leura Rd - East - Red	3	3	3	3	3	3	3	3	2
Leura Rd - West - Red	6	5	4	4	6	6	6	6	6
Bellevue Rd - North - Blue	0	0	0	0	0	0	0	0	0
Bellevue Rd - South - Blue	0	0	0	0	0	0	0	0	0
New South Head Rd - North - Light Green	14	0	0	0	0	0	0	0	0
New South Head Rd - South - Light Green	16	15	15	15	15	15	14	11	11
New South Head Rd - North - Grey	13	13	13	13	13	13	13	13	13
New South Head Rd - South - Grey	13	10	10	10	10	10	10	10	10
New South Head Rd - North - Light Blue	0	0	0	0	0	0	0	0	0
New South Head Rd - South - Light Blue	5	5	5	5	3	3	3	3	4
New South Head Rd - North - Green	30	10	15	17	0	0	0	0	0
New South Head Rd - South - Green	10	0	0	0	10	10	10	10	10
Bay Rd - East - Pink	14	14	14	14	14	14	13	13	13
Bay Rd - West - Pink	14	10	10	12	12	14	13	11	11
Bay Rd - East - Brown	5	5	5	4	4	4	3	3	3
Bay Rd - West - Brown	5	4	4	3	3	3	3	2	2
Bay Rd - East - Grey	5	5	4	4	4	4	4	4	4
Bay Rd - West - Grey	9	6	6	6	6	5	5	4	4
Bay Rd - East - Black	8	8	8	6	6	6	6	4	4
Bay Rd - West - Black	10	9	9	7	7	7	7	8	8
Cross St - North - Brown	21	15	15	14	14	14	13	13	8
Cross St - South - Brown	24	23	22	21	21	20	21	21	8
Cross St - North - Red	18	18	18	18	18	18	11	11	11
Cross St - South - Red	19	19	19	19	19	19	18	18	18

Site 7 - Double Bay Centre B2 Zone	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Cross St - North - Yellow	3	3	3	3	3	3	1	1	1
Cross St - South - Yellow	8	8	8	8	8	8	6	6	6
Knox Ln - North - Black	17	13	13	13	14	14	11	11	12
Knox Ln - South - Black	5	4	4	4	5	5	4	4	4
Knox St - North - Black	17	17	17	17	17	17	17	17	17
Knox St - South - Black	13	13	13	13	13	13	13	13	13
Goldman Ln - North - Green	0	0	0	0	0	0	0	0	0
Goldman Ln - South - Green	6	6	6	6	6	6	6	6	6
Transvaal Ave - East - Orange	12	8	9	9	8	8	10	10	10
Transvaal Ave - West - Orange	11	10	10	10	10	10	10	10	10
Cooper St - North - Blue	8	7	8	8	7	8	8	6	8
Cooper St - South - Blue	10	10	10	10	10	9	10	8	10
South Ave - North - Black	4	4	4	4	4	4	3	4	4
South Ave - South - Black	2	2	2	2	2	2	2	2	2
Guilfoyle Ave Sth - North - Purple	15	14	14	14	13	14	15	15	14
Guilfoyle Ave Sth - South - Purple	17	16	17	17	17	17	14	16	16
Guilfoyle Ave Nth - North - Purple	15	15	15	15	15	15	15	15	15
Guilfoyle Ave Nth - South - Purple	15	15	14	15	15	15	15	15	15
	475	393	396	393	383	384	365	356	339
		83%	84%	83%	81%	81%	77%	75%	72%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1800 - 2000
Weather	Fine

Site 7 - Double Bay Centre B2 Zone									
	Total spaces	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45
Manning Rd - East - Brown	7	7	7	7	7	7	7	7	7
Manning Rd - West - Brown	7	5	5	5	6	6	6	6	6
Patterson St - North - Blue	0	0	0	0	0	0	0	0	0
Patterson St - South - Blue	2	2	2	2	2	1	2	2	2
Kiaora Ln - North - Red	0	0	0	0	0	0	0	0	0
Kiaora Ln - South - Red	6	6	6	6	6	6	5	5	5
Kiaora Ln - North - Blue	Closed								
Kiaora Ln - South - Blue	Closed								
Kiaora Rd - East - Green	4	1	3	2	3	4	4	4	4
Kiaora Rd - West - Green	9	4	5	4	5	5	6	6	6
Leura Rd - East - Red	3	2	2	2	2	2	2	2	2
Leura Rd - West - Red	6	5	5	4	4	4	3	6	4
Bellevue Rd - North - Blue	0	0	0	0	0	0	0	0	0
Bellevue Rd - South - Blue	0	0	0	0	0	0	0	0	0
New South Head Rd - North - Light Green	14	0	0	0	0	14	14	14	14
New South Head Rd - South - Light Green	16	14	14	14	14	9	7	7	7
New South Head Rd - North - Grey	13	13	13	13	13	13	13	13	13
New South Head Rd - South - Grey	13	13	13	13	13	13	13	13	7
New South Head Rd - North - Light Blue	0	0	0	0	0	0	0	0	0
New South Head Rd - South - Light Blue	5	5	5	5	5	5	5	5	5
New South Head Rd - North - Green	30	13	25	21	21	20	25	25	29
New South Head Rd - South - Green	10	6	8	8	8	6	6	7	7
Bay Rd - East - Pink	14	14	14	14	14	14	14	14	13
Bay Rd - West - Pink	14	12	12	12	12	13	13	13	12
Bay Rd - East - Brown	5	5	2	2	2	4	4	4	5
Bay Rd - West - Brown	5	3	4	4	4	5	5	5	3
Bay Rd - East - Grey	5	4	4	4	4	3	3	3	4
Bay Rd - West - Grey	9	9	5	5	5	6	6	6	6
Bay Rd - East - Black	8	4	7	7	7	7	7	7	10
Bay Rd - West - Black	10	8	7	7	7	8	8	8	10
Cross St - North - Brown	21	16	16	16	16	19	19	19	19
Cross St - South - Brown	24	17	17	17	17	23	23	23	24
Cross St - North - Red	18	16	18	18	18	17	17	17	16
Cross St - South - Red	19	17	19	19	19	19	19	19	19

Site 7 - Double Bay Centre B2 Zone	Total spaces	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45
Cross St - North - Yellow	3	2	2	2	2	3	3	3	3
Cross St - South - Yellow	8	6	7	8	8	8	8	8	8
Knox Ln - North - Black	17	13	16	16	16	16	16	16	16
Knox Ln - South - Black	5	5	5	5	5	4	4	4	4
Knox St - North - Black	17	17	17	17	17	17	17	17	17
Knox St - South - Black	13	13	7	7	7	13	13	13	13
Goldman Ln - North - Green	0	0	0	0	0	0	0	0	0
Goldman Ln - South - Green	6	6	6	6	6	6	6	6	6
Transvaal Ave - East - Orange	12	11	12	12	12	12	12	12	12
Transvaal Ave - West - Orange	11	11	8	8	8	11	11	11	11
Cooper St - North - Blue	8	7	7	7	7	6	5	5	6
Cooper St - South - Blue	10	9	9	9	10	8	8	7	7
South Ave - North - Black	4	3	3	3	3	3	3	3	3
South Ave - South - Black	2	2	2	2	2	2	2	2	2
Guilfoyle Ave Sth - North - Purple	15	13	13	13	14	12	12	11	11
Guilfoyle Ave Sth - South - Purple	17	16	16	16	15	15	15	16	15
Guilfoyle Ave Nth - North - Purple	15	14	14	13	14	15	14	13	13
Guilfoyle Ave Nth - South - Purple	15	14	14	15	15	15	13	11	11
	475	383	396	390	395	419	418	418	417
		81%	84%	82%	83%	88%	88%	88%	88%



Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 8 - Edgecliff Rd, Woollahra B1 Zone	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
		Edgecliff Rd - North - Black	8	0	0	0	0	0	5
Edgecliff Rd - South - Black	10	5	7	10	10	10	6	6	6
Grosvenor St - East - Red	20	18	17	16	18	17	17	17	19
Grosvenor St - West - Red	18	11	12	14	12	12	14	14	14
Edgecliff Rd - North - Yellow	5	0	0	0	0	4	4	4	4
Edgecliff Rd - South - Yellow	3	3	3	33	3	3	3	3	3
Dyson Ln - East - Blue	8	6	6	6	6	5	5	6	6
Dyson Ln - West - Blue	0	0	0	0	0	0	0	0	0
Edgecliff Rd - North - Grey	0	0	0	0	0	0	0	0	0
Edgecliff Rd - South - Grey	3	3	3	3	2	3	3	3	3
Junction St - East - Green	16	13	13	13	13	14	12	12	13
Junction St - West - Green	16	12	12	12	12	12	10	10	12
Edgecliff Rd - North - Brown	2	0	0	0	0	1	2	2	2
Edgecliff Rd - South - Brown	0	0	0	0	0	0	0	0	0
	109	71	73	107	76	81	81	83	88
		65%	67%	98%	70%	74%	74%	76%	81%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 8 - Edgecliff Rd, Woollahra B1 Zone	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
		Edgecliff Rd - North - Black	8	0	0	0	0	0	0
Edgecliff Rd - South - Black	10	5	5	7	6	7	5	7	6
Grosvenor St - East - Red	20	19	19	18	18	18	20	20	20
Grosvenor St - West - Red	18	15	14	13	14	12	14	12	12
Edgecliff Rd - North - Yellow	5	0	0	0	0	0	0	0	0
Edgecliff Rd - South - Yellow	3	3	3	3	3	3	3	3	3
Dyson Ln - East - Blue	8	6	6	7	7	6	6	6	6
Dyson Ln - West - Blue	0	0	0	0	0	0	0	0	0
Edgecliff Rd - North - Grey	0	1	1	1	2	1	1	0	0
Edgecliff Rd - South - Grey	3	6	5	6	6	7	4	4	4
Junction St - East - Green	16	14	14	14	14	14	11	9	6
Junction St - West - Green	16	14	12	12	12	11	11	7	6
Edgecliff Rd - North - Brown	2	0	0	0	0	0	0	0	0
Edgecliff Rd - South - Brown	0	0	0	0	0	0	0	0	0
	109	83	79	81	82	79	75	68	63
		76%	72%	74%	75%	72%	69%	62%	58%

Average occupancy rate: 73%



Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 9 - Queen Street precinct B4 and R2 Zone									
	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
Queen St - North - Black	20	16	16	17	17	17	18	21	21
Queen St - South - Black	25	16	16	18	19	19	17	17	16
Queen St - North - Blue	20	15	15	15	16	13	12	12	12
Queen St - South - Blue	20	12	12	12	12	12	12	13	12
Moncur St - East - Brown	5	2	3	5	4	4	3	3	3
Moncur St - West - Brown	3	0	0	0	1	1	1	1	1
Moncur St - East - Green	12	4	7	4	8	7	6	4	3
Moncur St - West - Green	12	6	5	6	9	4	4	3	3
Queen St - North - Red	20	8	18	20	20	12	13	13	16
Queen St - South - Red	20	7	15	13	16	16	13	14	13
	157	86	107	110	122	105	99	101	100
		55%	68%	70%	78%	67%	63%	64%	64%

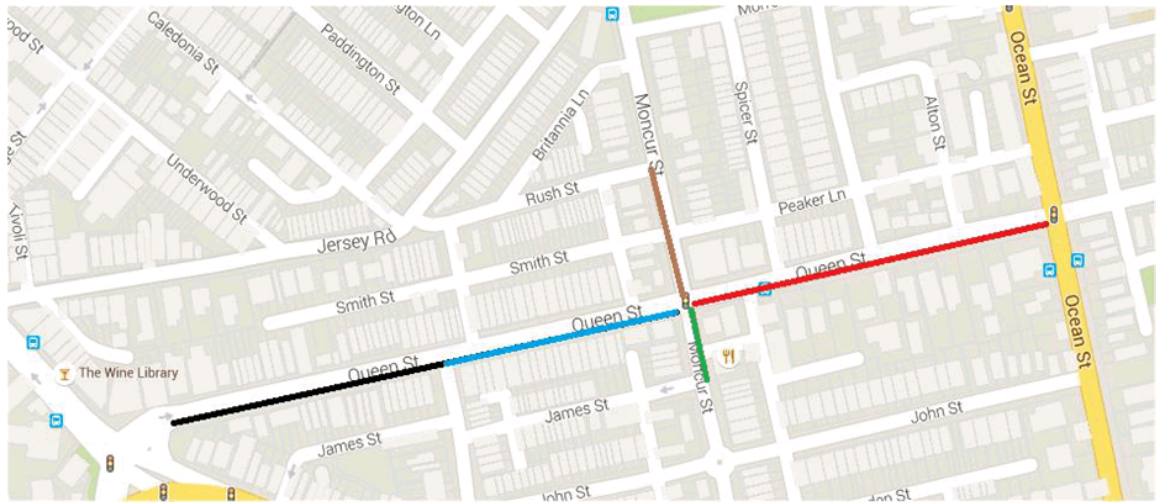
Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 9 - Queen Street precinct B4 and R2 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Queen St - North - Black	20	16	20	21	20	19	16	19	16
Queen St - South - Black	25	17	19	16	16	16	17	14	16
Queen St - North - Blue	20	13	12	13	13	17	16	14	13
Queen St - South - Blue	20	12	12	12	13	12	12	12	13
Moncur St - East - Brown	5	2	3	5	4	4	3	5	5
Moncur St - West - Brown	3	1	1	1	1	1	0	0	0
Moncur St - East - Green	12	4	4	4	4	7	7	7	7
Moncur St - West - Green	12	6	6	6	8	8	10	10	9
Queen St - North - Red	20	12	18	18	21	20	10	9	9
Queen St - South - Red	20	14	16	16	17	17	13	10	7
	157	97	111	112	117	121	104	100	95
		62%	71%	71%	75%	77%	66%	64%	61%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1800 - 2000
Weather	Fine

Site 9 - Queen Street precinct B4 and R2 Zone	Total spaces	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45
		Queen St - North - Black	20	16	16	15	14	14	13
Queen St - South - Black	25	14	13	13	12	11	11	10	10
Queen St - North - Blue	20	14	13	14	14	14	13	14	14
Queen St - South - Blue	20	12	11	10	11	11	13	11	11
Moncur St - East - Brown	5	3	3	3	4	3	3	4	3
Moncur St - West - Brown	3	0	0	0	0	0	0	0	0
Moncur St - East - Green	12	4	5	4	3	4	4	4	4
Moncur St - West - Green	12	8	8	8	8	6	6	4	4
Queen St - North - Red	20	10	9	11	7	4	5	5	5
Queen St - South - Red	20	7	7	7	7	7	7	6	7
	157	88	85	85	80	74	75	71	71
		56%	54%	54%	51%	47%	48%	45%	45%

Average occupancy rate: 61%



Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

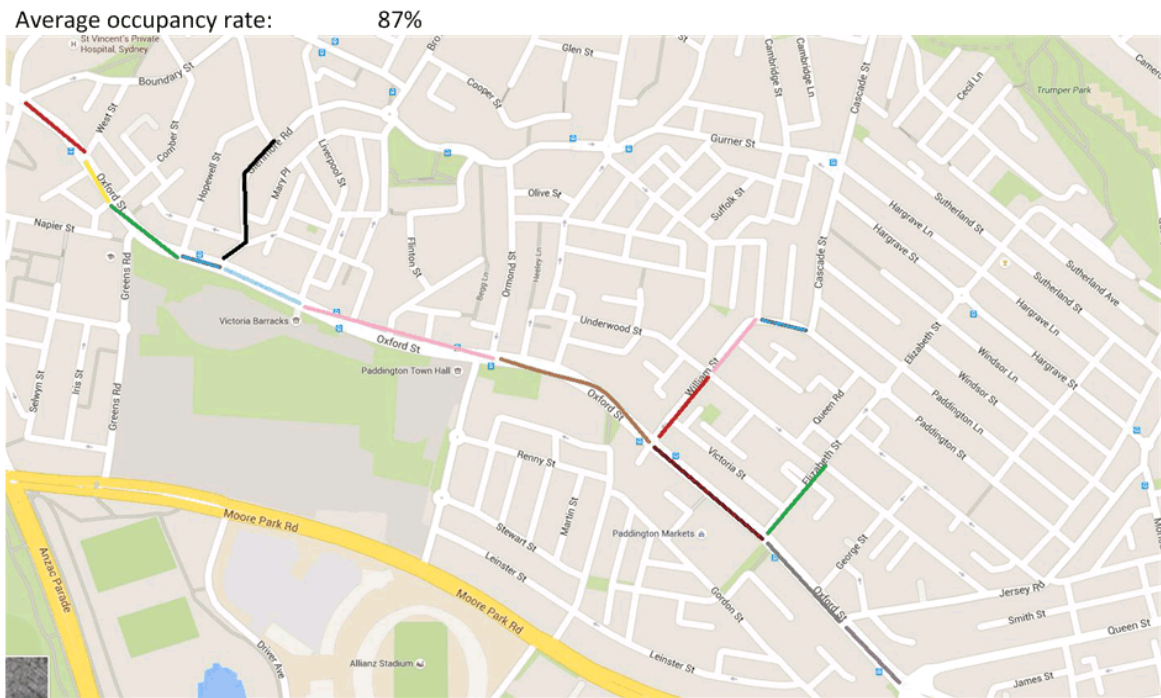
Site 10 - Oxford Street B4 Zone	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
Oxford St - North - Red	9	8	8	9	9	9	9	9	9
Oxford St - South - Red	0	0	0	0	0	0	0	0	0
Oxford St - North - Yellow	3	2	2	2	3	3	3	3	3
Oxford St - South - Yellow	0	0	0	0	0	0	0	0	0
Oxford St - North - Green	10	8	8	9	9	9	10	10	10
Oxford St - South - Green	6	6	6	6	6	6	6	6	6
Oxford St - North - Blue	0	0	0	0	0	0	0	0	0
Oxford St - South - Blue	0	0	0	0	0	0	0	0	0
Glenmore Rd - East - Black	20	9	11	15	18	16	19	18	19
Glenmore Rd - West - Black	25	18	19	21	23	21	24	25	21
Oxford St - North - Light Blue	15	11	13	12	12	14	14	14	14
Oxford St - South - Light Blue	12	12	12	12	12	12	12	12	12
Oxford St - North - Pink	11	7	7	8	9	9	10	10	10
Oxford St - South - Pink	11	0	0	0	0	0	0	0	0
Oxford St - North - Light Brown	30	16	19	25	26	26	26	27	26
Oxford St - South - Light Brown	18	18	18	18	18	18	18	18	18
William St - East - Red	9	7	8	8	8	8	8	8	8
William St - West - Red	0	0	0	0	0	0	0	0	0
William St - East - Pink	11	7	9	9	9	9	9	9	9
William St - West - Pink	0	0	0	0	0	0	0	0	0
William St - North - Blue	2	1	1	1	1	2	2	2	2
William St - South - Blue	12	10	10	10	10	10	10	10	10
Oxford St - North - Brown	17	10	8	11	13	14	14	13	15
Oxford St - South - Brown	22	22	22	22	22	22	22	22	22
Elizabeth St - East - Green	0	0	0	0	0	0	0	0	0
Elizabeth St - West - Green	13	10	10	12	12	12	12	12	12
Oxford St - North - Gray	19	14	14	15	17	16	17	17	17
Oxford St - South - Gray	8	8	8	8	8	8	8	8	8
Oxford St - North - Purple	5	3	3	4	4	4	4	4	4
Oxford St - South - Purple	0	0	0	0	0	0	0	0	0

Site 10 - Oxford Street B4 Zone									
	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
	288	207	216	237	249	248	257	257	255
		72%	75%	82%	86%	86%	89%	89%	89%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 10 - Oxford Street B4 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Oxford St - North - Red	9	9	9	9	9	9	9	9	9
Oxford St - South - Red	0	0	0	0	0	0	0	0	0
Oxford St - North - Yellow	3	3	3	3	3	3	3	3	3
Oxford St - South - Yellow	0	0	0	0	0	0	0	0	0
Oxford St - North - Green	10	10	10	10	10	10	10	10	10
Oxford St - South - Green	6	5	6	6	5	5	4	4	4
Oxford St - North - Blue	0	0	0	0	0	0	0	0	0
Oxford St - South - Blue	0	0	0	0	0	0	0	0	0
Glenmore Rd - East - Black	20	18	19	20	20	18	19	19	20
Glenmore Rd - West - Black	25	24	22	21	22	23	23	25	24
Oxford St - North - Light Blue	15	15	15	15	15	15	15	15	15
Oxford St - South - Light Blue	12	11	11	11	11	10	8	8	8
Oxford St - North - Pink	11	11	11	11	11	11	11	11	11
Oxford St - South - Pink	11	9	9	9	9	9	9	7	7
Oxford St - North - Light Brown	30	30	30	30	30	30	30	30	30
Oxford St - South - Light Brown	18	15	15	15	14	12	13	13	10
William St - East - Red	9	8	8	7	8	7	7	6	6
William St - West - Red	0	0	0	0	0	0	0	0	0
William St - East - Pink	11	10	9	9	9	9	9	9	9
William St - West - Pink	0	0	0	0	0	0	0	0	0
William St - North - Blue	2	2	2	2	2	2	2	2	1
William St - South - Blue	12	11	11	11	11	10	10	10	10
Oxford St - North - Brown	17	17	17	17	17	17	17	17	17
Oxford St - South - Brown	22	16	16	17	17	17	14	14	13
Elizabeth St - East - Green	0	0	0	0	0	0	0	0	0
Elizabeth St - West - Green	13	11	11	11	10	11	9	9	9
Oxford St - North - Gray	19	19	19	19	19	19	19	19	19
Oxford St - South - Gray	8	7	5	6	6	7	7	7	5
Oxford St - North - Purple	5	5	5	5	5	5	5	5	5

Site 10 - Oxford Street B4 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Oxford St - South - Purple	0	0	0	0	0	0	0	0	0
	288	266	263	264	263	259	253	252	245
		92%	91%	92%	91%	90%	88%	88%	85%



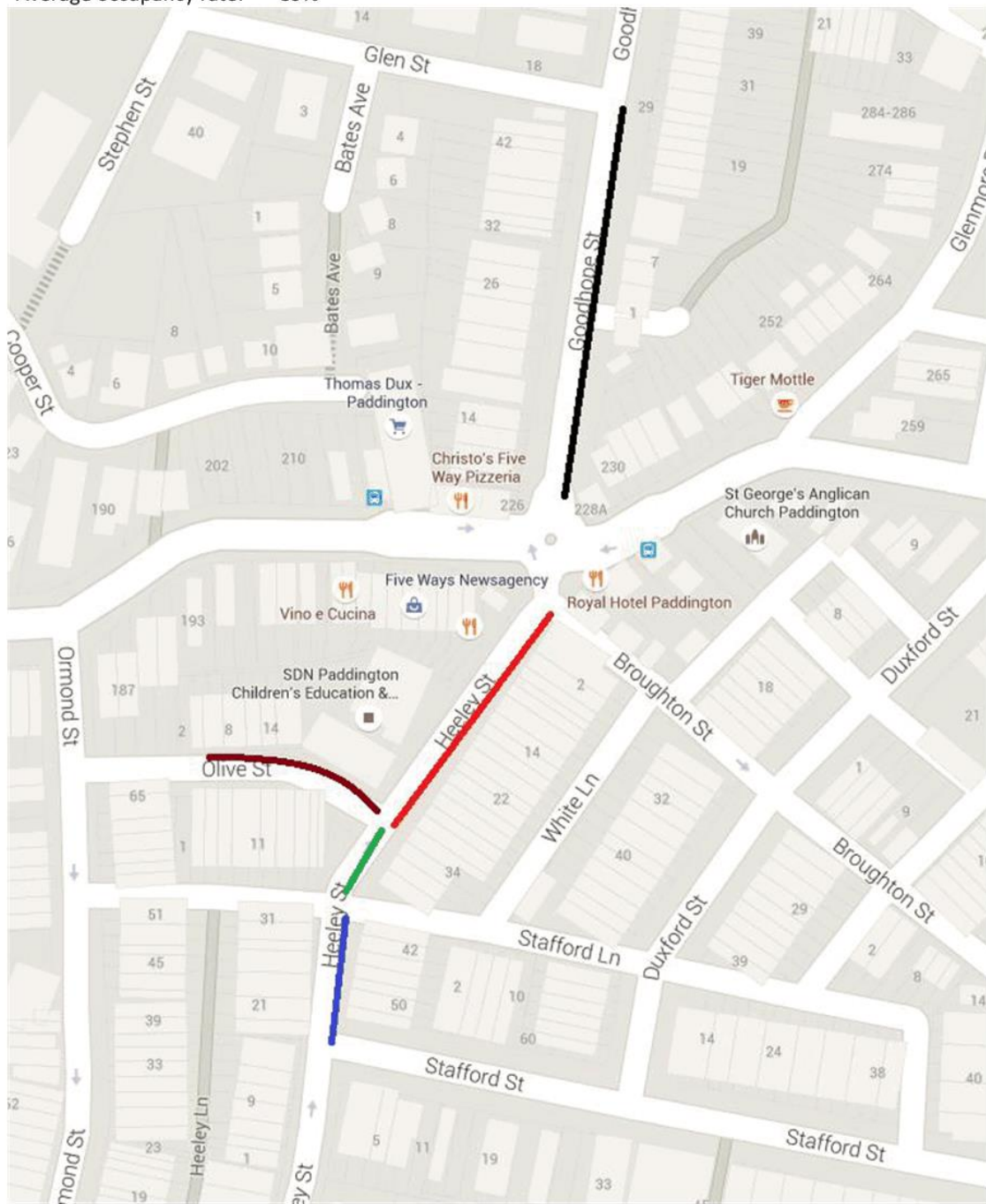
Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 11 - Five Ways, Paddington B1 Zone		8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
	Total spaces								
Goodhope St - East - Black	32	26	26	22	21	31	30	32	31
Goodhope St - West - Black	36	20	25	27	23	29	31	32	30
Heeley St - East - Red	9	8	8	8	8	8	8	8	8
Heeley St - West - Red	10	9	9	9	9	9	10	10	10
Olive St St - North - Brown	7	7	7	7	7	7	7	6	7
Olive St St - South - Brown	7	6	6	7	7	7	7	7	7
Heeley St - East - Green	2	2	2	2	2	1	2	2	2
Heeley St - West - Green	2	2	2	2	1	1	2	2	2
Heeley St - East - Blue	3	3	3	3	3	2	3	3	3
Heeley St - West - Blue	5	5	5	4	4	5	5	5	5
	113	88	93	91	85	100	105	107	105
		78%	82%	81%	75%	88%	93%	95%	93%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 11 - Five Ways, Paddington B1 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Goodhope St - East - Black	32	32	31	31	32	30	29	30	28
Goodhope St - West - Black	36	36	32	34	30	33	34	34	29
Heeley St - East - Red	9	9	9	9	9	9	9	9	8
Heeley St - West - Red	10	10	10	9	9	9	9	9	9
Olive St St - North - Brown	7	7	7	7	7	6	6	6	5
Olive St St - South - Brown	7	7	7	7	7	7	6	6	6
Heeley St - East - Green	2	2	2	2	2	2	2	1	1
Heeley St - West - Green	2	2	2	2	2	2	1	1	1
Heeley St - East - Blue	3	3	3	3	3	3	3	3	3
Heeley St - West - Blue	5	5	5	5	5	5	5	5	4
	113	113	108	109	106	106	104	104	94
		100%	96%	96%	94%	94%	92%	92%	83%

Average occupancy rate: 89%



Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	0800 - 1000
Weather	Fine

Site 12 - Edgecliff B2 Zone and New South Head Road B4 Zone									
	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
William St - North - Black	0	0	0	0	0	0	0	0	0
William St - South - Black	0	0	0	0	0	0	0	0	0
New South Head Rd - North - Red	0	0	0	0	0	0	0	0	0
New South Head Rd - South - Red	0	0	0	0	0	0	0	0	0
New Beach Rd - East - Purple	12	12	12	12	12	12	12	12	12
New Beach Rd - West - Purple	16	15	15	15	15	15	15	15	15
New South Head Rd - North - Green	13	8	9	11	11	11	11	11	11
New South Head Rd - South - Green	0	0	0	0	0	0	0	0	0
Mona Rd - East - Brown	17	9	10	11	13	13	16	17	17
Mona Rd - West - Brown	10	4	4	4	4	4	6	6	6
Glenmore Rd - East - Red	4	3	3	4	4	4	4	4	4
Glenmore Rd - West - Red	13	13	13	13	13	13	13	13	13
Glenmore Rd - East - Light Blue	0	0	0	0	0	0	0	0	0
Glenmore Rd - West - Light Blue	13	13	13	13	12	13	11	13	13
South St - North - Purple	3	3	3	3	3	3	3	3	3
South St - South - Purple	6	6	6	6	5	6	6	5	6
Artlett St - East - Blue	0	0	0	0	0	0	0	0	0
Artlett St - West - Blue	6	6	6	5	6	6	6	5	5
New South Head Rd - North - Dark Blue	11	8	8	9	9	7	9	8	8
New South Head Rd - South - Dark Blue	0	0	0	0	0	0	0	0	0
Darling Point Rd - East - Pink	27	23	23	24	27	27	27	27	27
Darling Point Rd - West - Pink	39	16	19	22	26	29	29	29	32
New Mclean St - East - Light Blue	16	15	15	15	15	14	14	14	14
New Mclean St - West - Light Blue	27	21	23	16	22	22	22	23	23
Glebe St - North - Red	7	7	7	7	7	7	7	7	7
Glebe St - South - Red	3	3	3	3	3	3	3	3	3
New South Head Rd - North - Brown	12	8	8	9	7	6	8	7	7
New South Head Rd - South - Brown	0	0	0	0	0	0	0	0	0
Ocean Ave - East - Light Green	13	7	7	8	10	10	11	10	10

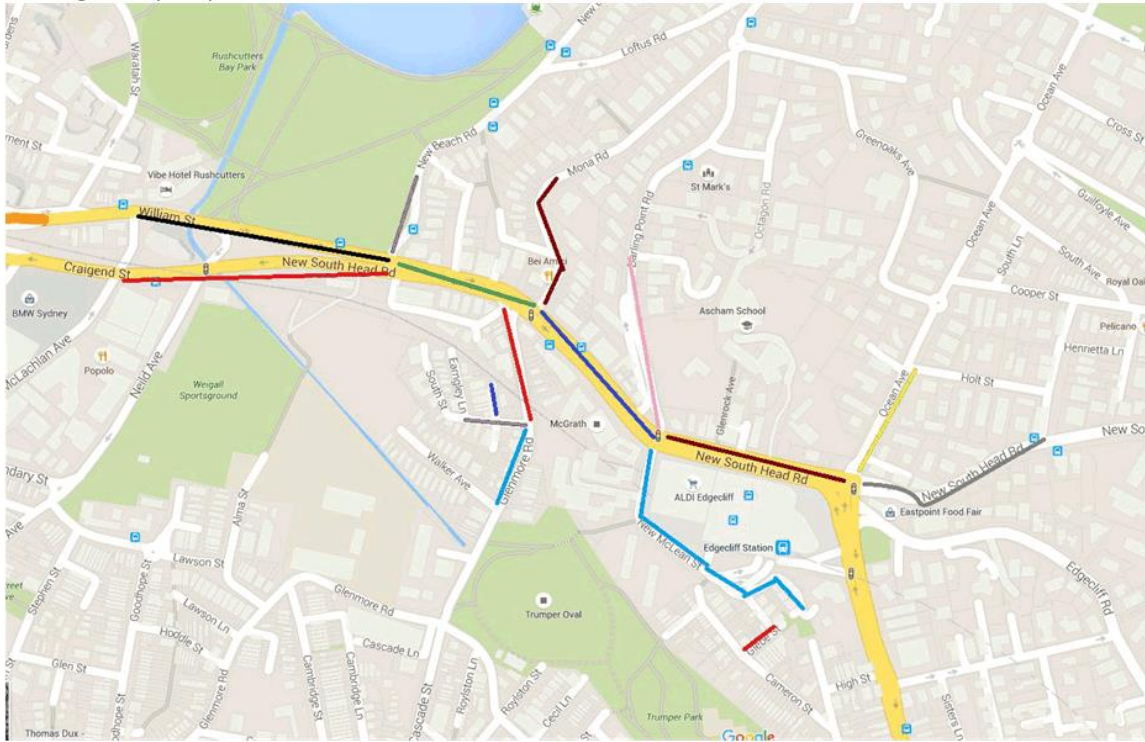
Site 12 - Edgecliff B2 Zone and New South Head Road B4 Zone									
	Total spaces	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45
Ocean Ave - West - Light Green	6	5	5	5	5	4	5	5	5
New South Head Rd - North - Grey	17	11	14	15	15	15	16	15	15
New South Head Rd - South - Grey	0	0	0	0	0	0	0	0	0
	291	216	226	230	244	244	254	252	256
		74%	78%	79%	84%	84%	87%	87%	88%

Client Name	Cardno
Date	Thursday, 15 October 2015
Timing	1600 - 1800
Weather	Fine

Site 12 - Edgecliff B2 Zone and New South Head Road B4 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
William St - North - Black	0	0	0	0	0	0	0	0	0
William St - South - Black	0	0	0	0	0	0	0	0	0
New South Head Rd - North - Red	0	0	0	0	0	0	0	0	0
New South Head Rd - South - Red	0	0	0	0	0	0	0	0	0
New Beach Rd - East - Purple	12	12	12	12	10	10	10	6	6
New Beach Rd - West - Purple	16	16	16	16	15	15	8	8	8
New South Head Rd - North - Green	13	0	0	0	0	0	0	0	0
New South Head Rd - South - Green	0	0	0	0	0	0	0	0	0
Mona Rd - East - Brown	17	17	17	17	15	15	14	14	13
Mona Rd - West - Brown	10	6	6	6	7	6	6	4	4
Glenmore Rd - East - Red	4	4	4	4	4	4	3	3	3
Glenmore Rd - West - Red	13	13	13	13	11	9	9	8	8
Glenmore Rd - East - Light Blue	0	0	0	0	0	0	0	0	0
Glenmore Rd - West - Light Blue	13	13	12	13	13	13	11	12	12
South St - North - Purple	3	3	3	3	3	3	3	2	2
South St - South - Purple	6	4	4	5	4	5	5	5	5
Artlett St - East - Blue	0	0	0	0	0	0	0	0	0
Artlett St - West - Blue	6	6	6	6	5	5	6	5	5
New South Head Rd - North - Dark Blue	11	0	0	0	0	0	0	0	0
New South Head Rd - South - Dark Blue	0	0	0	0	0	0	0	0	0
Darling Point Rd - East - Pink	27	26	26	26	28	26	21	21	16
Darling Point Rd - West - Pink	39	29	29	27	27	25	25	21	21
New Mclean St - East - Light Blue	16	14	14	14	14	15	14	12	11
New Mclean St - West - Light Blue	27	26	24	26	26	26	25	23	19
Glebe St - North - Red	7	6	7	6	6	5	5	6	6
Glebe St - South - Red	3	3	3	3	3	3	3	3	3
New South Head Rd - North - Brown	12	0	0	0	0	0	0	0	0
New South Head Rd - South - Brown	0	0	0	0	0	0	0	0	0

Site 12 - Edgecliff B2 Zone and New South Head Road B4 Zone									
	Total spaces	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45
Ocean Ave - East - Light Green	13	11	12	12	12	11	9	9	9
Ocean Ave - West - Light Green	6	5	5	5	5	4	4	4	4
New South Head Rd - North - Grey	17	0	0	0	0	0	0	0	0
New South Head Rd - South - Grey	0	0	0	0	0	0	0	0	0
	291	214	213	214	208	200	181	166	155
		74%	73%	74%	71%	69%	62%	57%	53%

Average occupancy rate: 75%



Annexure 2



Part E ► General Controls for All Development

WOOLLAHRA DEVELOPMENT CONTROL PLAN 2015

APPROVED DRAFT VERSION

23 MAY 2015



~~Chapter E1~~ ~~Parking and Access~~

~~Part E ▶ General Controls for All Development~~

~~APPROVED VERSION~~

~~23 MAY 2015~~

AUGUST 2016

Chapter E1 ► Parking and Access

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E1.1 Introduction

Parking areas, garages and driveways must be carefully designed so that they do not detract from the appearance of the development and the surrounding streetscape. They should also be designed to limit the amount of impervious surfaces over a site and ~~the amount of~~ excavation required.

The chapter establishes the car parking and vehicle access requirements for development.

The parking generation rates for residential development are maximum rates, whereas the parking generation rates for non-residential development are minimum rates.

E1.1.1 Land where this chapter applies

This chapter applies to all land within the Woollahra Municipality.

E1.1.2 Development to which this chapter applies

This chapter applies to development that requires consent and may generate demand for parking, loading or other associated facilities.

This chapter adopts the land use definitions and terms of the Woollahra Local Environmental Plan 2014 (Woollahra LEP 2014). In doing so, it sometimes uses group terms and sub-terms. Where a land use fits into a group term but is also separately defined as a sub-term, the parking generation rate for the sub-term should be applied.

For example, the group term “food and drink premises” includes the sub-terms “restaurants”, “take away food premises” and “pubs”. This chapter contains a parking generation rate for both “food and drink premises” and “pubs”. If the development application is for a pub, the rate for a “pub” should be applied instead of the rate for the group term “food and drink premises”.

E1.1.3 Objectives

The objectives of this chapter are:

- 01 To minimise the amount and impact of vehicular traffic generated ~~because of~~ due to proposed development.
- 02 To ensure that development generating vehicular traffic makes adequate provision off street for the car parking and servicing needs of its occupants and users, including residents, employees, visitors, ~~employees~~ and deliveries.
- 03 To ensure the safe and efficient movement of vehicles within, entering and leaving properties.

- 04 To minimise the environmental effects, particularly visual impact, of parked vehicles on the amenity of the municipality.
- 05 To ensure that access points to car parking areas are situated to minimise disruption of vehicle movement on the public road system.

E1.1.4 Relationship to other parts of the DCP

This chapter is to be read in conjunction with the other parts of the DCP that are relevant to the development proposal, including:

- ▶ Part B: General Residential.
- ▶ Part C: Heritage Conservation Areas.
- ▶ Part D: Business Centres.
- ▶ Part E: General Controls for All Development - this part contains chapters on Parking and Access, Stormwater and Flood Risk Management, Tree Management, Contaminated Land, Waste Management, Sustainability, Signage and Adaptable Housing.
- ▶ Part F: Land Use Specific Controls - this part contains chapters on Child Care Centres, Educational Establishments, Licensed Premises and Telecommunications.

Note, depending on ~~where your site is~~ the location of the proposed development, Part B: General Residential, Part C: Heritage Conservation Areas or Part D: Business Centres, must be considered with the parking generation rates in this chapter.

Parts B, C and D contain streetscape and other design controls relating to parking and driveways.

In some residential locations the maximum number of on-site parking spaces may not be able to be achieved because the parking would detrimentally impact on the character of the streetscape. The precinct controls in Parts B and C prevail over the residential parking generation rates in this chapter.

E1.1.5 Relationship to other documents

In implementing this DCP the following Australian Standards apply for the design of parking and loading facilities, unless otherwise specified:

- ▶ ~~AS2890~~ AS/NZS 2890.1 Part 1: Off-street car parking;
- ▶ ~~AS2890~~ AS 2890.2 Part 2: Off-street commercial vehicle facilities;
- ▶ ~~AS2890~~ AS 2890.3 Part 3: Bicycle parking ~~facilities~~;
- ▶ ~~AS2890~~ AS 2890.5 Part 5: On-street parking; and
- ▶ ~~AS2890~~ AS/NZS 2890.6 Part 6: Off-Street parking for people with disabilities.

E1.2 Preparing your development application

E1.2.1 Development applications and required information

Development applications are to be accompanied by dimensioned plans, drawn to scale, showing proposed locations and arrangements for:

- ▶ off-street parking;
- ▶ loading and unloading areas (where applicable);
- ▶ circulation of traffic within, into and out of the property;
- ▶ position and gradients of access aisles, entrances and exits; and
- ▶ landscaping.

Additional information

A traffic and parking report, prepared by a suitably qualified person, may be required by Council for certain developments, including:

- ▶ all traffic generating developments listed in Schedule 3 of the *State Environmental Planning Policy (Infrastructure) 2007*;
- ▶ supermarkets;
- ▶ [Shoppingshopping](#) centres;
- ▶ child care centres;
- ▶ mixed use developments;
- ▶ residential flat buildings and multi dwelling housing;
- ▶ health services facilities (e.g. medical consulting rooms, medical centres and hospitals);
- ▶ community facilities;
- ▶ entertainment facilities (e.g. cinemas and theatres);
- ▶ recreation facility (indoor, major and outdoor facilities);
- ▶ function centres;
- ▶ tourist facilities;
- ▶ tourist and visitor accommodation (e.g. hotel or motel accommodation, serviced apartments);
- ▶ educational establishments;
- ▶ public car parks;
- ▶ places of public worship;
- ▶ premises licensed under the *Liquor Act 2007* of the *Registered Club Act 1976*;
- ▶ drive-in take-away food outlets; and
- ▶ service stations.

Applicants should also refer to requirements for information and referrals under the provisions of *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP).

Refer to Council's Development Application Guide (DA Guide) for further information.

E1.2.2 Matters the consent authority will consider

Where premises are proposed to be used for more than one purpose, the parking provisions should satisfy the requirements of this chapter in relation to each use. Council may approve, or require, the reservation of a proportion of the total number of required spaces on-site for the use of specific occupants or visitors to a development.

In determining car parking provision for any development, including a change of use, Council will take into account the following matters:

- ▶ the scale and nature of the development;
- ▶ existing traffic generation associated with the site;
- ▶ traffic generation associated with the proposed development;
- ▶ traffic volumes on the road network in the area of the development and the capacity of the road network;
- ▶ impacts on traffic and pedestrian safety;
- ▶ impacts on residential amenity;
- ▶ for commercial development—the type of activities on the site, including allocation floor area for different uses associated with the commercial development e.g., area dedicated to back-of-house uses such as storage areas;
- ▶ for residential development—a proposal to accommodate a car share scheme parking space on the site or directly adjoining the site;
- ▶ methodologies to ameliorate traffic generation impacts (e.g. traffic calming);
- ▶ the availability of public parking (on-street and off-street) near the development;
- ▶ the availability of public transport to serve the development;
- ▶ the probable mode of transport of users to and from the development;
- ▶ the suitability of street lighting in the area;
- ▶ whether the development warrants special consideration because it is proposed for, or relates to, a heritage item;
- ▶ the characteristics of the streetscape and the site, particularly the subdivision pattern, topography, street design and width, street tree planting, on-street parking or loading spaces and any existing access arrangements; and
- ▶ construction method.

E1.2.3 Compliance with the parking controls

This chapter contains minimum parking generation rates for non-residential development and maximum rates for residential development.

However, to achieve environmentally acceptable solutions, every individual case needs to be considered on merit having regard to the circumstances of the proposal.

Non-compliance with the parking controls

Council may allow non-compliance with the requirements of this chapter in exceptional circumstances. The applicant will be required to demonstrate, to the satisfaction of Council, the exceptional circumstances relating to a particular development application which would warrant non-compliance with the requirements of this chapter.

In its consideration of any non-compliance, Council will have regard to the objectives of this chapter, as well as other relevant chapters, and the specific nature of the exceptional circumstances as they relate to the parking requirement.

Council must be satisfied that the development seeks to minimise and manage the impact of traffic generation, and does not unreasonably increase demand for on-street parking, having regard to the existing context and capacity. A traffic and parking report, prepared by a suitably qualified person, may need to be submitted with the development application to demonstrate this. The requirements of the report are specified in the DA Guide.

E1.2.4 Monetary contributions instead of required parking spaces

A monetary contribution may be required, or may be accepted, for a shortfall in car parking spaces for development in certain commercial centres. The Woollahra Section 94 Contributions Plan identifies the commercial centres where contributions apply and sets down the contribution rates.

When determining whether a monetary contribution is required ~~or is acceptable~~, Council will ~~include~~ consider the following matters ~~in its consideration~~:

- ▶ whether in terms of relevant design and operational standards it is physically possible to provide the total required number of car parking spaces, manoeuvring areas and access areas on-site;
- ▶ whether long-stay car parking demand will be provided for on-site;
- ▶ whether opportunities exist, or could be made available, for shared parking arrangements;
- ▶ whether it is appropriate to establish additional ingress and egress points;
- ▶ whether car parking on a particular site would be restricted or excluded altogether for reasons of pedestrian safety and comfort, or in order to minimise and avoid vehicle conflicts;
- ▶ whether an otherwise environmentally acceptable development may be refused consent on the grounds of inability to satisfy the parking space requirements; and
- ▶ the findings and recommendations of any traffic and parking study.

E1.3 How to determine the car parking rate

The number of car parking spaces to be provided on a site is determined by addressing the following parts of this DCP:

	Residential development	Non-residential development
Step 1	Go to Section E1.4 Residential parking : Identify the parking rate for your development type.	Go to Section 1.5.2 Non-residential parking generation rates : Identify the base generation parking rate applying to the land use that reflects your development.
Step 2	Go to the residential precinct controls in Part B of this DCP : Read the desired future character, streetscape and location of the garages controls that apply to your residential precinct. The provision of on-site car parking and garaging should not compromise the streetscape amenity.	Go to Section 1.5.3 Parking multipliers Identify if a multiplier applies to the centre where your development is proposed. If yes, multiply the base parking generation rate by the multiplier. Round up to the nearest whole number for the required parking rate.
Step 3	<u>Go to Section E1.6 Bicycle parking rates and Section E1.7 Motorcycle parking rates:</u> <u>Identify the bicycle and motorcycle parking rates for your development type.</u>	<u>Go to Section E1.6 Bicycle parking rates and Section E1.7 Motorcycle parking rates:</u> <u>Identify the bicycle and motorcycle parking rates for your development type.</u>
Step 3.4	Go to Section E1.6.8 Variations to the parking generation rates : Determine if a variation to the parking rate applies. For example, the property may be a heritage item.	Go to Section E1.6.8 Variations to the parking generation rates : Determine if a variation to the parking rate applies. For example, the proposal may be a change of use and located in Oxford Street, Paddington.

Note: The steps above help determine the number of on-site parking spaces to be provided. You must consider these parking generation requirements in conjunction with the other controls and design requirements in this chapter.

E1.4 Residential parking

This section contains parking generation rates and design controls for parking in residential developments, including the residential component of mixed use development.

E1.4.1 Calculating required parking for residential uses

Residential parking generation rates

Table 1 set outs the parking generation rates for residential land uses. The rates identify the maximum number of parking spaces based on the type of residential development, and in some cases, the number of bedrooms in the development.

Variations to parking rates

In calculating the requirements for car parking provision, reference should also be made to the special provisions in Section E1.6-8 which identify circumstances where the requirements may vary in regards to:

- ▶ items of environmental heritage; and
- ▶ mixed use development.

E1.4.2 Residential parking generation rates

The parking generation rates in Table 1 below set the maximum number of parking spaces to be provided for residential development.

TABLE 1- Residential uses parking generation rates

Land use	Maximum parking generation rates
Low density residential	
Dwelling house	2 spaces ¹
Semi-detached dwelling	2 spaces per <u>dwellingdwelling</u> ¹
Dual occupancy	2 spaces per <u>dwellingdwelling</u> ¹
Attached dwellings	
Attached dwelling located in a heritage conservation area	2 spaces per <u>dwellingdwelling</u> ^{1,2}
Attached dwelling not in a heritage conservation area	Same rates as for residential flat buildings and multi dwelling housing stated <u>belowbelow</u> ²
Residential flat buildings and multi dwelling housing <i>Spaces based on number of bedrooms per dwelling</i> ³	
Studio apartment ⁴	0.5 space
1 bedroom	1 space
2 bedrooms	1.5 spaces
3 or more bedrooms	2 spaces
Visitors	0.25 <u>spacespaces</u>
Mixed use development (residential component) <i>Spaces based on number of bedrooms per <u>dwelling</u>² <u>dwelling</u>³</i>	
1 bedroom or studio apartment ⁵	0.5 space

¹ The second space may be a tandem space subject to precinct and streetscape character considerations.

² Onsite parking areas, parking structures and servicing areas such as loading facilities are not a mandatory requirement in heritage conservation areas. On-site car parking may only be permitted or required when the specified controls in chapters Part C, chapters C1 (Paddington HCA) C2 (Woollahra HCA) and C3 (Watsons Bay HCA) are satisfactorily met.

³ Round up to nearest whole number with halves (i.e. 0.5).

⁴ A studio apartment is an apartment that does not have a wall separating the sleeping area from the main kitchen and living area, and is generally smaller in size than a 1 bedroom apartment.

⁵ The number of parking spaces for 1 bedroom and studio apartments in the Double Bay Centre should be multiplied by the parking multiplier for non-residential uses in the Double Bay B2 zone.

Land use	Maximum parking generation rates
2 bedrooms	1 space
3 or more bedrooms	1.5 space
<u>Visitor parking</u> <u>Visitors</u>	0.2 <u>spaces</u> <u>spaces</u>

Providing fewer spaces than the number calculated using the parking generation rates

The rates in Table 1 are maximum parking rates. The maximum number of parking spaces may not be achieved on a site depending on the site and its context.

In particular, the desired future character, streetscape and garages controls in the residential chapters of this DCP (Part B) take precedence over the numeric parking rates in this chapter.

For example, a dwelling on a small or narrow lot may not achieve the maximum number of on-site parking spaces if the arrangement of the spaces cannot meet the character, streetscape and location of garage requirements for the precinct. This is particularly relevant in the R2 Low Density Residential zoned areas.

However, in other instances where the maximum number of parking spaces is not achieved, the parking provided should not be substantially below the maximum rates. Where less than the maximum parking rate is proposed, justification must cover matters such as, but not limited to the matters listed in Section 1.2.2 (Matters the consent authority will consider).

Council will generally only support such proposals where the applicant can demonstrate that the development is unlikely to create significant additional demand for on-street parking in surrounding streets.

Providing more spaces than the number calculated using parking generation rates

Where an application proposes to provide more than the number of spaces specified in Table 1, justification must be provided and address such matters as, but not limited to:

- an explanation for additional residential parking demand based on lack of alternative transport options. For example, the proximity and frequency of public transport, availability of car share schemes, and topography;
- the impact of any increased building bulk on the streetscape;
- compliance with landscape area requirements;
- impact of any increased building bulk on the amenity of adjoining properties in terms of:
 - overshadowing
 - loss of views
 - overbearing appearance; and
- the amount of additional excavation and its impact on:
 - land form

- structural integrity of structures and buildings on adjoining land
- stability of land on the site and on adjoining sites
- impact on water permeable ground surfaces arising from an increased building footprint and hard surface driveways.

E1.5 Non-residential parking

E1.5.1 Calculating required parking for non-residential uses

Non-residential parking generation rates

The parking generation rates in Table 2 [below](#) set the minimum number of parking spaces to be provided for non-residential development. The parking rates are then modified by a multiplier if the development is located in a particular centre. The multipliers are set out in Table 3.

Variations to parking rates

In calculating the requirements for car parking, [for non-residential uses](#) reference should also be made to the special provisions in Section E1.68, which identify circumstances where the requirements may vary in regards to:

- ▶ items of environmental heritage;
- ▶ mixed use developments;
- ▶ certain business zoned land in Paddington;
- ▶ business zoned land in Double Bay; and
- ▶ development for a health care professional in certain parts of Woollahra.

Change of use

Where there is an intensification of parking based on the ~~car~~ parking rates of this chapter, the amount of parking required will equal the difference between the parking generated by the proposed development and the parking generated by the current use as calculated by the rates in this chapter.

Alterations and additions

For proposals involving additional floor space, required parking shall be calculated using the rate specified in this chapter.

New development

Where a building is to be totally demolished and replaced, parking will be provided at the rate specified in this chapter. No parking credits will be allowed for the current building and its use.

E1.5.2 Non-residential parking generation rates

The base parking generation rates set out in Table 2 are calculated per unit of gross floor area of a development.

In addition to the controls in this part of the DCP, the parking provision must be consistent with the desired future character for the centre or precinct where the development is proposed. (Refer to the Part D of this DCP on the business centres for any streetscape requirements and considerations.)

TABLE 2 Non-residential parking generation rates

Land use	Minimum parking generation rate
Commercial land uses	
Business premises	2.5 spaces per 100m ²
Retail premises	3.3 spaces per 100m ²
Entertainment facility	22 spaces per 100m² <u>Parking rate to be determined on a site specific basis.</u> <u>A traffic and parking report must be submitted with applications for this use.</u>
Food and drink premises ⁶	7 spaces per 100m ² Note: variations to these parking rates apply to restaurants or cafes in the Double Bay Centre and to certain business zoned land in Paddington (see Section E1.68).
Pub ⁷⁻⁸	22 spaces per 100m² <u>Parking rate to be determined on a site specific basis.</u> <u>A traffic and parking report must be submitted with applications for this use.</u>
Supermarkets	3.5 spaces per 100m ²
Registered club³ <u>club</u>	20 spaces per 100m² <u>Parking rate to be determined on a site specific basis.</u> <u>A traffic and parking report must be submitted with applications for this use.</u>

⁶ For restaurants or cafes, the calculation of 'gross floor area' includes any outdoor seating areas, court yards and any other locations where patrons will be served, but excludes footpath dining areas provided the proposal complies with Council's policy for footway restaurants.

⁷ ~~Calculation of 'gross floor area' includes any gaming areas, smoking areas and outdoor areas for the use of patrons such as beer gardens.~~

⁸ ~~Where there is non-compliance with the required on-site parking rate, a traffic and parking report is to be submitted with the development application. The requirements of the report are specified in the DA Guide.~~

Land use	Minimum parking generation rate
Bowling club ³ club	30 spaces per first green and 15 spaces for additional greens Parking rate to be determined on a site specific basis. <u>A traffic and parking report must be submitted with applications for this use.</u>
Office premises	2.5 spaces per 100m ²
Hardware and building supplies Landscape and garden supplies Vehicle sales and hire premises ⁹ Veterinary hospital	3.3 spaces per 100m ²
Tourist and visitor accommodation	3 spaces per 100m ²
Bed and breakfast accommodation	One on-site parking space for the bed and breakfast accommodation. This is additional to the required car parking for the dwelling house, and subject to compliance with the precinct criteria for the location of garages.
Serviced apartment	See rates for residential flat buildings (Table 1)
Industrial land uses	
General industry	2.7 spaces per 100m ²
Light industry	3 spaces per 100m ²
Vehicle body repair workshop	6.75 spaces per 100m ²
Boat repair facility	6.75 spaces per 100m ²
Community land uses	
Child care centre	
Staff parking ¹⁰	0.5 spaces per 100m ²
Community facility	2 spaces per 100m ²
Educational establishment	1 space per 100m ² On-site parking for disabled persons is <u>to be</u> provided at a minimum rate of one ₁ car space per 50 car spaces or part thereof.

⁹ Calculation of 'gross floor area' includes any outdoor display area.

¹⁰ This rate applies only to staff parking. Separate requirements for an on-site pick-up and drop-off area are set out in Part F of this DCP, Chapter F1 Child Care Centres.

Land use	Minimum parking generation rate
Tertiary establishment	In addition to the above, on-site parking is provided for students at a rate of one car space per 10 students.
Emergency services facility	3 spaces per 100m ²
Health services facility	<u>2 spaces per 100m²</u>
Health consulting rooms	4.5 spaces per 100m ² Note: Variations to these parking rates apply to residential zoned land in the area bounded by Syd Einfield Drive, Edgecliff Road, Adelaide Street and Vernon Street, Woollahra (see Section E1.8.6).
Hospital	2 spaces per 100m²
Medical centre	5 spaces per 100m ²
Place of public worship	22 spaces per 100m² <u>Parking rate to be determined on a site specific basis.</u> <u>A traffic and parking report must be submitted with applications for this use.</u>
Public administration building	2.5 spaces per 100m ²
Recreational land uses	
Recreational facility (indoor)	2 spaces per 100m ²
Marina ¹¹	0.6 spaces per wet berth 0.2 spaces per dry storage and swing mooring 0.5 spaces per marina employee

¹¹ Where variation to required parking is sought, a traffic and parking report is to be submitted with the development application. The requirements of the report are specified in the DA Guide.

E1.5.3 Parking multipliers

In some centres the base parking generation rate for non-residential uses is discounted to respond to the particular circumstances of areas in the municipality. These multipliers are set out in Table 2 below.

The multipliers take account of the availability of public transport or public parking facilities in an area, as well as reflect the planning strategies or policies which Council is pursuing for each centre or locality. The multipliers have been determined from an assessment of the car parking conditions in the area, and may be varied as car parking conditions and planning policies are reviewed.

The total number of parking spaces required following calculation of the multiplier should be rounded up to the nearest whole number.

Note: If the subject site is not located within a centre identified in Table 3 below, a multiplier does not apply.

TABLE 3 Parking multiplier for non-residential uses - Centre	Business premises, office premises	Retail premises	Food and drink premises (except restaurants and cafes)	Restaurants and cafes	Recreational facilities (indoor), tourist and visitor accomm.	Community land uses
Watsons Bay B1 Zone	x1.0	x1.0	x1.0	X0.611	x1.0	x1.0
Vaucluse Village B1 Zone	x0.5	x0.6	x0.7	X0.6	x0.7	x0.5
Rose Bay Centre B2 Zone	x0.5	x0.7	x0.7	X0.6	x0.7	x0.5
Rose Bay South B4 Zone	x0.5	x0.5	x0.5	X0.6	x0.5	x0.5
Rose Bay North B4 Zone	x0.7	x0.8	x0.8	X0.6	x0.8	x0.7
Bellevue Hill at Bellevue Rd and Victoria Rd B1 Zone	x0.5	x0.8	x0.7	X0.6	x0.7	x0.5
Double Bay Centre B2 Zone	x1.0	x1.0	x1.0	X0.6	x1.0	x1.0
Edgecliff Rd, Woollahra B1 Zone	x0.5	x0.7	x0.5	X0.6	x0.5	x0.5
Queen Street precinct B4 and R2 Zone, between Ocean St and Oxford St and Moncur St, between Rush and James St	x0.8	x0.8	x0.8	X0.6	x0.8	x0.8
Oxford Street B4 Zone including adjoining B4 zoned properties in Glenmore Rd, Elizabeth St and 4-10 William Street	x0.5	x0.8	x0.7	X0.6	x0.7	x0.5
Five Ways, Paddington B1 Zone	x0.5	x0.8	x0.7	X0.6	x0.7	x0.5
Edgecliff Commercial Core B2 Zone and New South Head Road Edgecliff commercial corridor B4 Zone	x1.0	x1.0	x1.0	X0.6	x1.0	x1.0

TABLE 3 Parking multiplier/multipliers for non-residential uses

Centre	Parking multiplier
Watsons Bay B1 Zone	0.6
Vaucluse Village B1 Zone	0.7
Rose Bay Centre B2 Zone	0.7
Rose Bay South B4 Zone	0.6
Rose Bay North B4 Zone	0.7
Bellevue Hill at Bellevue Rd and Victoria Rd B1 Zone	0.7
Double Bay Centre B2 Zone	0.6
Edgecliff Rd, Woollahra B1 Zone	0.6
Queen Street precinct B4 and R2 Zone, between Ocean St and Oxford St and Moncur St, between Rush and James St	0.7
Oxford Street B4 Zone including adjoining B4 zoned properties, but excluding 12-94 and 3 63 William Street	0.7
Five Ways, Paddington B1 Zone	0.7
Edgecliff Commercial Core B2 Zone and New South Head Road Edgecliff commercial corridor B4 Zone	0.6

E1.6 Bicycle parking rates

This section lists the minimum bicycle parking rates required for residential, commercial or industrial land uses.

E1.6.1 Calculating required bicycle parking

Change of use

Where there is an intensification of parking based on the parking rates of this chapter, the amount of parking required will equal the difference between the parking generated by the proposed development and the parking generated by the current use as calculated by the rates in this chapter.

Alterations and additions

For proposals involving additional floor space, required parking shall be calculated using the rate specified in this chapter.

New development

Where a building is to be totally demolished and replaced, parking will be provided at the rate specified in this chapter. No parking credits will be allowed for the current building and its use.

<u>Objectives</u>	<u>Controls</u>
<u>O1 To provide adequate and sufficient bicycle parking facilities for the purposes of encouraging active transport.</u>	<u>C1 Bicycle parking provision for all developments must adhere to minimum bicycle parking rates in Table 4.</u> <u>C2 Bicycle parking must comply with the provisions and intent of AS 2890.3 Bicycle Parking Facilities in terms of security, accessibility and design specifications.</u>
<u>O2 To provide sufficient end-of-trip facilities for non-residential land uses.</u>	<u>C3 One secure locker is provided for each bicycle parking space.</u> <u>C4 One shower and change cubicle is provided for between 5 and up to 10 bicycle parking spaces, two showers and change cubicles for 11-20 bicycle parking spaces and one additional shower and cubicle for each additional 10 bicycle parking spaces.</u>
<u>O3 To provide parking facilities for electric bicycles.</u>	<u>C5 A charging point is provided for every five bicycle parking spaces.</u>

E1.6.2 Bicycle parking rates

Table 4 below lists the on-site bicycle parking rates required for various land uses.

TABLE 4 Bicycle parking rates

<u>Land use</u>	<u>Minimum bicycle parking rates¹²</u>	
	<u>Residents/Employees</u>	<u>Customers/Visitors</u>
<u>Residential</u>		
<u>Residential flat buildings</u>	<u>1 per 4 dwellings</u>	<u>1 per 10 dwellings</u>
<u>Tourist and Visitor Accommodation</u>		
<u>Serviced apartments, hotel or motel accommodation</u>	<u>1 per 4 staff</u>	<u>1 per 20 rooms</u>
<u>Backpackers' accommodation</u>	<u>1 per 4 staff</u>	<u>1 per 10 beds</u>
<u>Commercial</u>		
<u>Office / business premises</u>	<u>1 per 150m² GFA</u>	<u>1 per 400m² GFA</u>
<u>Bulky goods premises</u>	<u>1 per 600m² GFA</u>	<u>1 per 1,000m² GFA</u>
<u>Shop, restaurant or cafe</u>	<u>1 per 25m² GFA</u>	<u>2 + 1 per 100m² over 100m² GFA</u>
<u>Shopping centre</u>	<u>1 per 200m² GFA</u>	<u>1 per 1,000m² GFA</u>
<u>Pub</u>	<u>1 per 100m² GFA</u>	<u>1 per 100m² GFA</u>
<u>Entertainment facility</u>	<u>:</u>	<u>Greater of 1 per 15 seats or 1 per 40m² GFA</u>
<u>Place of public worship</u>	<u>:</u>	<u>Greater of 1 per 15 seats or 1 per 40m² GFA</u>
<u>Industry</u>		
<u>Industry, warehouse or distribution centre</u>	<u>1 per 10 staff</u>	<u>:</u>

¹² Round up to nearest whole number with halves (i.e. 0.5).

<u>Land use</u>	<u>Minimum bicycle parking rates¹²</u>	
	<u>Residents/Employees</u>	<u>Customers/Visitors</u>
<u>Community</u>		
<u>Child care centre</u>	<u>1 per 10 staff</u>	<u>2 per centre</u>
<u>Medical centre, health consulting rooms</u>	<u>1 per 5 practitioners</u>	<u>1 per 200m² GFA</u>
<u>Tertiary educational institution</u>	<u>1 per 10 staff</u>	<u>1 per 10 students</u>
<u>Swimming pool</u>	<u>1 per 10 staff</u>	<u>1 per 40m² of recreation area</u>
<u>Community facility</u>	<u>1 per 10 staff</u>	<u>2 + 1 per 200m² of GFA</u>

In addition:

- Where a proposed use is not included in the table above, an applicant is to provide bicycle facilities according to Council requirements.

E1.7 Motorcycle parking rates

Motorcycles are defined as any powered two-wheel vehicle, including motorbikes, scooters and mopeds.

E1.7.1 Calculating required motorcycle parking

Change of use

Where there is an intensification of parking based on the parking rates of this chapter, the amount of parking required will equal the difference between the parking generated by the proposed development and the parking generated by the current use as calculated by the rates in this chapter.

Alterations and additions

For proposals involving additional floor space, required parking shall be calculated using the rate specified in this chapter.

New development

Where a building is to be totally demolished and replaced, parking will be provided at the rate specified in this chapter. No parking credits will be allowed for the current building and its use.

Objectives

O1 To provide adequate and sufficient motorcycle parking

Controls

C1 Developers shall provide a minimum of 1 motorcycle parking space per 10 car spaces for all types of development.¹³

C2 Motorcycle parking spaces must have a minimum dimension of 1.2m x 2.5m.

C3 Motorcycle parking areas shall be located close to the pedestrian access of the development.

¹³ Round up to nearest whole number with halves (i.e. 0.5).

~~E1.6~~E1.8 Variations to the parking generation rates

E1.8.1 Application of variations

The variations to parking generation rates in section E1.7 apply to car parking, bicycle parking and motorcycle parking.

~~E1.6.1~~E1.8.2 Items of the environmental heritage

In considering a development application involving a heritage item listed in Schedule 5 of Woollahra LEP 2014, Council may vary the parking requirements of this chapter, but only if conservation of the heritage values relies on the variation.

Under clause 5.10 (4) of Woollahra LEP 2014, the consent authority must, before granting consent in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned.

~~E1.6.2~~E1.8.3 Mixed use developments

For mixed use developments, Council may support a reduction in the total required number of non-residential ~~car~~ parking spaces where the applicant can demonstrate to the satisfaction of Council that:

- ▶ overlapping parking demand will occur for different uses; or
- ▶ complementary use of spaces will occur for uses with different peak parking demand times.

~~E1.6.3~~E1.8.4 Business zoned~~Certain land in Paddington~~ zoned B4 Mixed Use

This section applies to land zoned B4 Mixed Use in the Paddington business precinct in Paddington located in Oxford Street and the streets directly adjoining and in the vicinity of Oxford Street zoned B4 Mixed Use, excluding land at 12-94 and 3-63-William Street, 83 and 85 Underwood Street and 2 Hopetoun Avenue.

Change of use to a shop

~~For business zoned land in Paddington,~~ Council will not require additional off-street ~~car~~ parking for a change of use from a shop to another shop, or from a commercial ~~premises~~premise to a shop, provided the proposal is within an existing building.

The area of a premises used for ancillary purposes such as storage, staff amenities, offices, fitting rooms and workrooms, will not be included as floor area for the purposes of car parking calculations.

Change of use to a restaurant or cafe

~~For business zoned land in Paddington,~~ Council will not require additional off-street ~~car~~ parking for proposals within an existing building and its site (such as an external courtyard)- involving a change of use from a shop or commercial premises to a restaurant or café.

~~E1.6.4~~**E1.8.5 Business zoned land in Double Bay**

This section applies to land within the Double Bay Centre as identified in Chapter D5 Double Bay Centre of this DCP.

Change of use

~~Within the Double Bay Centre,~~ Council will not require additional off-street car parking or require a contribution under Council's Section 94 Contributions Plan for a change of use, provided the proposal does not result in a net increase in gross floor area.

Change of use: restaurants or cafes

~~Within the Double Bay Centre,~~ Council will not require additional off-street ~~car~~ parking for proposals within an existing building and its site (such as an external courtyard)- involving a change of use from a shop or commercial premises to a restaurant or café.

Footpath dining

~~Within the Double Bay Centre,~~ Council will not require additional off-street car parking or require a contribution under Council's Section 94 Contributions Plan for proposed outdoor eating areas on public footpaths, provided the proposal complies with Council's policy for footway restaurants.

Studio and one bedroom apartments

The calculation of on-site parking for studio and one bedroom apartments is to include the parking multiplier for non-residential development as specified in Section E1.5.3.

~~E1.6.5~~**E1.8.6 Health care professional uses in ~~Syd Einfeld Drive,~~ Edgecliff Road, Adelaide Street and Vernon Street, Woollahra**

For residential zoned land in the area bounded by Syd Einfeld Drive, Edgecliff Road (southern side), Adelaide Street (western side) and Vernon Street (both sides) the rate in Table 2 does not apply. Instead the maximum number of spaces to be provided is:

- ▶ 1 space for 1 health care professional; and
- ▶ 2 spaces for 2 or 3 health care professionals.

E1.7 E1.9 Special provisions

E1.7.1 E1.9.1 Car parks with 20 or more spaces

Where more than 20 car parking spaces are provided on-site, the parking is to be accommodated undercover or in a basement area. This requirement applies to both residential and non-residential development.

(Refer to Part E of the DCP, Chapter E2 Stormwater and Flood Risk Management for flood planning levels associated with below ground parking.)

E1.9.2 Car share

Car sharing services allow a large number of people to utilise the same vehicle at different periods, reducing the number of vehicles and parking spaces required while still providing the benefits of car ownership.

<u>Objectives</u>	<u>Controls</u>
<u>O1 To reduce the reliance on private vehicles and the corresponding traffic impact on the road network</u>	<u>C1 On-site car share may be permitted on a site-by-site basis at the discretion of Council. Each car share parking space has the potential to replace a maximum of 4 regular car parking spaces.</u>
<u>O2 To facilitate public use of car share vehicles</u>	
<u>O3 To increase uptake and awareness of car share vehicles</u>	<u>C2 Where a commercial car share space is proposed, the applicant is to include a letter from a commercial car share operator confirming their intention to place a car share vehicle within the development.</u>
	<u>C3 Nominated commercial car share spaces must be placed in publicly accessible locations within the development.</u>

E1.9.3 Tandem parking in non-

Tandem parking is generally not preferred by Council but will be considered in exceptional circumstances.

In residential developments, tandem parking will only be permitted if the two spaces in tandem are allocated to a single dwelling.

The use of tandem parking to satisfy long stay parking demand requirements in non-residential developments may be permitted where it is not physically possible to provide parking spaces in a side-by-side configuration. However, the tandem spaces must be for employee use only.

Tandem spaces must satisfy the parking and access design standards in Section E1.8 below 10.

E1.7.2 E1.9.4 Medical consulting rooms

The following requirements apply to medical consulting rooms:

- ▶ Parking areas, other than those provided at the rear of properties, are to be uncovered.
- ▶ Parking areas are not to be enclosed by gates, doors or roller shutters during business hours. Requirements may be imposed by Council in relation to boundary fencing to facilitate vehicular access to parking spaces.
- ▶ Parking areas to serve medical consulting rooms are to be landscaped in accordance with a landscape plan. Applicants should contact Council's Open Space and Trees section to determine appropriate plant species for landscaping purposes.

E1.7.3 E1.9.5 Parking spaces for people with a disability

- ▶ Vehicular Accessible parking spaces must be provided at a rate in accordance with Australian Standard AS 2890.6 Off-street parking for people with disabilities Part D3.5 of the Building Code of Australia.
- ▶ Council may require additional parking spaces for people with a disability above the Australian Standard, and imposed rates stated in Part D3.5 of the Building Code of Australia as a condition of consent.

E1.9.6 Small car parking spaces

- ▶ Small car parking spaces are permitted in public car parks but must constitute less than 5% of the overall number of parking spaces.
- ▶ Dimensions for small car parking spaces must be in accordance with Australian Standard AS/NZS 2890.1 Off-street car parking.

E1.9.7 Resident Parking Scheme (RPS) Areas

Resident Parking Schemes (RPS) provide preferential access to on-street parking for residents who do not have sufficient off-street parking. Where a development increases dwelling density, extending the RPS to new residents may lead to an under-supply of on-street car parking. To avoid this, occupants of the additional dwellings are not eligible for on-street parking permits.

- ▶ Where a development increases dwelling density, occupants of the additional dwelling(s) are not permitted access to resident parking schemes.

E1.8 E1.10 Parking and access design standards

E1.8.1 E1.10.1 Design and use of parking areas

Parking areas are to be designed to function solely for the purpose of parking vehicles. Space for waste receptacles and storage should be located so that it does not reduce the amount and effective operation of parking.

E1.8.2 E1.10.2 Australian Standards

The following minimum requirements are based on the Standards Association of Australia, and Council's experience with development in the Municipality.

In implementing this DCP the following Australian Standards¹⁴ apply for the design of parking and loading facilities, unless otherwise specified:

- ▶ AS2890AS/NZS 2890.1 Part 1: Off-street car parking;
- ▶ AS2890AS 2890.2 Part 2: Off-street commercial vehicle facilities;
- ▶ AS2890AS 2890.3 Part 3: Bicycle parking facilities;
- ▶ AS2890AS 2890.5 Part 5: On-street parking; and
- ▶ AS2890AS/NZS 2890.6 Part 6: Off-Street parking for people with disabilities.

The size of parking bays, the width of the aisles and the location of columns, poles, walls or other physical barriers are to be based on providing adequate manoeuvring area for access to parking bays and adequate clearance for opening vehicle doors once the vehicle is parked.

E1.8.3 E1.10.3 Car parking space and bay size

Minimum bay width and length dimensions are to comply with AS2890AS/NZS 2890.1 and AS2890AS 2890.2.

¹⁴ The most recent version of Australian Standards should be used.

~~E1.8.4~~ E1.10.4 Ramps and primary aisles

The minimum dimensions for the design of ramps and primary aisles which do not have direct access to or from parking bays are shown in AS/NZS 2890.1 - Section 2.5 Design of Circulation Roadways and Ramps.

The ramp grading is to be designed to ensure that the breakover angle coming onto, or off, a ramp is not so severe as to cause scraping of a vehicle undercarriage. Design of ramps and gradients will be consistent with ~~AS2890~~AS/NZS 2890.1.

~~E1.8.5~~ E1.10.5 Turning paths

The design of turning paths for manoeuvring, parking space access and aisle designs are set out in ~~AS2890~~AS/NZS 2890.1 Appendix B Section B3 Swept Paths for cars (for the B85 vehicle) and AS 2890.2 Part 2: Off-section street commercial vehicle facilities.

Some laneways or narrow streets do not have sufficient turning space for B85 vehicles. The removal of on-street parking to establish a turning space into private property should be avoided and will only be considered in the following circumstances:

- ▶ no more than a maximum of 5.4m of on-street parking, measured at the kerb line, ~~may be~~ removed to provide for a turning space;
- ▶ the use and quantity of the remaining on-street parking spaces ~~may~~is not ~~be~~ adversely affected; and
- ▶ 5.4m is a maximum. If Council can demonstrate that a B85 vehicle can access and egress the site with the removal of less than 5.4m of on-street parking, then this lesser amount is all that will be approved.

Consideration will be given to the approval of proposed off-street car parking spaces (as set out in AS/NZS 2890.1) that are unable to be accessed by a B85 vehicle in private car parks in relation to the above points only if:

- ▶ the site is in the Paddington or Woollahra Heritage Conservation Area see Part C, Chapters C1 and C2), and
- ▶ the site has rear lane access, and
- ▶ no on-street parking is lost (i.e. the zero net loss argument cannot be applied), and
- ▶ all applicable controls in Part C Chapters C1, and C2 are met to the Council's satisfaction.

Note: On-site parking in the Paddington and Woollahra Heritage Conservation Areas is not mandatory. On-site parking may only be permitted or required when specified controls set out in Part C Chapters C1 (Paddington HCA) and C2 (Woollahra HCA) are satisfactorily met.

~~E1.8.6~~ E1.10.6 Driveways and access points

The following requirements apply to the siting and design of driveways:

- ▶ The design of driveways and access points, except for dwelling houses, is to be such that vehicle entry and exit from a site, onto a public road, is made by driving in a forward direction, unless otherwise required by Council.
- ▶ All driveways, except for dwelling houses, are signposted indicating 'IN/ENTRANCE', 'OUT/EXIT' and 'KEEP LEFT' as appropriate.
- ▶ Driveways are situated so that any vehicle turning from, or into, the street can be readily seen by the driver of an approaching motor vehicle or pedestrian.
- ▶ Access driveway locations comply with Figure 3.1 in Section 3.3.3 of AS2890AS/NZS 2890.1.
- ~~▶ Where a vehicular entrance is proposed in conjunction with a fence of height greater than 1.2m, a 45° splay or its equivalent is to be provided either side (as applicable) of the entrance to ensure driver and pedestrian vision. The splay is to have minimum dimensions of 2m x 2m.~~
- ▶ Driveway splays shall be provided in accordance with Figure 3.3 in Section 3.2.4 of AS/NZS 2890.1. Exceptions to this may be accepted in the following circumstances:
 - for dwelling house, dual occupancies and attached dwellings in residential zones in low pedestrian activity locations¹⁵ a fence to a maximum height of 0.9m is permitted in the splay area.
 - where an object in the adjoining property creates an obstruction to visibility within the splay area.

Note: Driveway construction on Council's roads will require the submission of a Section 138 of the *Roads Act 1993* application. The form is available on the Council website. A copy of Council's standard drawing for driveways is available with the application.

- ▶ The width of internal access driveways are to comply with Section 3.2 of AS2890AS/NZS 2890.1 regarding driveway access requirements. Wider internal driveway widths may be acceptable depending on the site conditions. A passing bay is to be provided where the driveway length exceeds 40m.
- ▶ Vehicular access to an ancillary dwelling is provided from the same vehicular crossing for the principal residence.
- ▶ Where possible, all car parking and garage structures are located at the rear, with access from the rear lane or side driveway.
- ▶ Car parking and driveway areas are located and designed to:
 - enable the efficient use of car spaces and accessways, including safe manoeuvrability for vehicles between the site and street;
 - fit in with any adopted street hierarchy and objectives of the hierarchy and with any related local traffic management plans;
 - preserve significant trees and vegetation; and

¹⁵ Low pedestrian activity locations are areas away from schools, commercial centres or other locations that generate pedestrian activity.

- complement the desired future character for the locality as described in the residential chapters of this DCP.
- ▶ Vehicle crossings are constructed at an angle of 90° to the carriageway of the road. Vehicle crossings must take the shortest route across the footpath, between the kerb and boundary.
- ▶ The width of vehicle crossings is minimised so as to retain on-street parking. Footpath crossings will not be permitted where:
 - One off-street parking space will result in the loss of two on-street parking spaces. For example, where the street is narrow with parking on both sides.
 - The provision of off-street parking will result in the loss of a significant tree.
- ▶ Vehicle crossings are located to minimise the loss of useable on-street parking. That is, they are located immediately adjacent to the adjoining property's vehicle crossing (0m) or a minimum distance of one on-street car parking space (5.4m) from any existing driveway crossing.

~~E1.8.7~~ E1.10.7 Signposting

Parking areas, including visitor parking spaces, should be well signposted to indicate the availability of off-street parking, with entry and exit points clearly visible from both the street and the site.

Pavement bay delineation, arrows and other pavement markings are to be marked using white paint. Details of all proposed signposting and linemarking of parking areas are to be submitted with the development application.

~~E1.8.8~~ E1.10.8 Landscape plan

A landscape plan should be submitted with the development application showing the dimensions, levels, existing vegetation and position, type and characteristics of all proposed landscaping and plant material.

In particular, the plan should address the following:

- ▶ Screening: Uncovered car parking areas should be adequately and appropriately screened and landscaped by the planting of shrubs and shade trees.
- ▶ Water runoff: An open texture surface material should be used to reduce water run-off from parking areas.

~~E1.8.9~~ E1.10.9 Drainage of car parking areas

Drainage of car parking areas must be consistent with Council's provisions in Part E of the DCP, Chapter E2 Stormwater and Flood Risk Management.

E1.0E1.11 Electric vehicle charging points

The controls for electric vehicles charging points seek to recognise an increased uptake of electric hybrid vehicles and encourage the installation of dedicated charging points in residential, mixed use and commercial developments.

Most new electric vehicles will charge on a regular 10Amp circuit, however a 15Amp circuit provides faster and more stable charging and is preferable. The circuit, regardless of whether it is 10Amp or 15Amp, should be a dedicated circuit to ensure that the circuit does not become overloaded.

Objectives	Controls
<p>O1 To accommodate hybrid electric vehicles by ensuring that adequate charging points for these vehicles are provided in off-street private car parking areas.</p>	<p>C1 The installation of a 15Amp dedicated circuit for vehicle charging is encouraged in garages for a dwelling house, semi-detached dwelling or dual occupancies.</p> <p>If a 15Amp circuit is not installed, the garage includes at least one standard 10Amp charging point that is suitably located for charging electric vehicles, and can be dedicated for that purpose.</p> <p>C2 The installation of at least one 15Amp dedicated circuit for vehicle charging is encouraged in the common parking areas of a residential flat building, multi-unit dwellings, and the residential component of a mixed use development. The circuit is to be suitably located to provide for convenient, shared access.</p> <p>Alternatively, or in addition, the development may include a user pays charging point with a dedicated space for electric vehicles.</p> <p>C3 For commercial development, the car parking area may include a user pays charging point with a dedicated space for electric vehicles.</p> <p>Note: The charging points are to be shown on the DA plans.</p>

E1.12 Green Travel Plans

A green travel plan provides information to users of the development on how to reach the site via active and public transport. Usually only developments of significant size require a green travel plan. However, any developer may elect to provide a green travel plan to reduce vehicle use.

<u>Objectives</u>	<u>Controls</u>
<u>O1 To ensure green travel plans are provided with certain developments.</u>	<u>C1 Developments which exceed the threshold values listed in Section E1.12.1 will require a green travel plan.</u>
<u>O2 To ensure the targets set out by the green travel plan are reasonable and practical.</u>	<u>C2 Council will review the targets laid out by the green travel plan before implementation.</u>
<u>O3 To ensure responsibility for implementing the green travel plan is held by a representative within the organisation or company.</u>	<u>C3 The address and contact details of a contact person shall be provided. The contact person will be responsible for implementing and enforcing the green travel plan.</u>
<u>O4 To monitor and review the effectiveness of the green travel plan.</u>	<u>C4 After implementation of the green travel plan, annual reports will be required to provide information on the number of people trips, travel modes by time of day, journey purpose and origin/destination of trips for a minimum of 5 years post occupation.</u>

E1.12.1 Green travel plan thresholds

A green travel plan is required for development listed below:

- ▶ Educational establishments allowing an additional 100 students.
- ▶ Non-residential developments with a gross floor area of 2,000m² or more.
- ▶ Residential developments which provide 50 or more additional dwellings.

E1.13 Operational traffic management plan

Operational traffic management plans are required for certain major developments that are likely to impose a significant impact on the surrounding road network.

E1.13.1 Operational traffic management plan for non-residential developments

An operational traffic management plan (OTMP) is required for developments under clause 104 and Schedule 3 of *State Environmental Planning Policy (Infrastructure) 2007* or classified as designated developments under s.77A of the EP&A 1979.

Otherwise, Council may require an OTMP for the following developments:

- ▶ Child care centres.
- ▶ Drive-in take-away food outlets.
- ▶ Education facilities.
- ▶ Entertainment facilities.
- ▶ Health care facilities.
- ▶ Hotel and motel accommodation.
- ▶ Industrial premises.
- ▶ Public car parks.
- ▶ Places of public worship.
- ▶ Pubs.
- ▶ Recreation and tourist facilities.
- ▶ Registered clubs.
- ▶ Retail premises comprising supermarkets and or shopping centres.
- ▶ Service stations.
- ▶ Other developments. (Generally if there is significant expansion or modification).

E1.13.2 Details an operational traffic management plan

The minimum details for an operational management plan are:

- ▶ Existing and proposed traffic generation.
- ▶ Information on the existing and proposed road network, routes and access locations.
- ▶ Details of site operations including peak hours, speed zones and forecast traffic flows.
- ▶ On-street/off-street parking.
- ▶ Details on public and active transport.
- ▶ Traffic control plans (if required).

~~E1.10~~ **E1.14 Off-street loading and servicing facilities**

Off-street loading and servicing arrangements may need to be provided for businesses, commercial, industrial, office, retail and storage uses, and any other use where regular deliveries of goods are made to or from the site.

~~E1.10.1~~ **E1.14.1 Number of loading bays required**

The following developments will generally be required to provide a minimum of one loading bay:

- ▶ retail premises (such as a supermarket) that require delivery of large items or pallets of goods;
- ▶ hotel, motel or serviced apartment accommodation;
- ▶ registered clubs or bowling clubs;
- ▶ hardware, building, landscape and garden supplies;
- ▶ warehouse or distribution centre;
- ▶ food and drink premises or pubs with a seating capacity of 50 persons;
- ▶ bulky goods premises;
- ▶ educational establishments;
- ▶ emergency services or health services facilities; and
- ▶ marinas or boat repair facilities.

Council may require additional or less loading bays depending on the scale and type of use, having particular regard to the anticipated volume and frequency of deliveries associated with the proposed development, and the availability and suitability of any existing on street 'loading zone' located directly in front of, or at the side of, the premises.

~~E1.10.2~~ **E1.14.2 Location and design of loading bays**

- ▶ Loading bays and service areas should operate independently of other parking areas and should be situated to ensure that all service vehicles stand entirely on the site of the premises during loading and unloading operations.
- ▶ Vehicles will generally be required to enter and exit the site in a forwards direction.
- ▶ Service areas and loading docks should be designed to cater for the vehicles and servicing operations anticipated to occur in a particular development. Loading facilities and service areas should be visually unobtrusive and preferably:
 - located via a rear lane or side street, where such access is available;
 - located within the building envelope; and
 - designed to be perpendicular to lane frontage.
- ▶ Designs should comply with ~~AS2890~~ AS 2890.2 Part 2: Off-street commercial vehicle facilities and should accommodate the largest design vehicle to service the site.

~~E1.11.1~~E1.15 Mechanical parking installations and paid parking stations

~~E1.11.1~~E1.15.1 Locations and land use

Mechanical parking installations such as car lifts and car stackers are generally not desirable, and will only be considered in exceptional circumstances.

Mechanical parking installations may be permitted for residential and non-residential development where one or more of the following applies:

- ▶ The topography or lot size does not reasonably allow a simpler, more conventional parking arrangement.
- ▶ An existing building is being refurbished and there is no land available for additional parking. Refurbishment does not include extension of the building so as to increase site coverage or any other works to increase site coverage, all of which have the effect of reducing site area which could be used for conventional parking arrangements.
- ▶ In the case of non-residential development, the installations are for long-stay parking.
- ▶ In the case of residential development, the installations are for resident rather than visitor parking.

~~E1.11.2~~E1.15.2 Compliance with the Australian Standards

Vehicle access to the mechanical parking installation must be made in accordance with AS/[Nzs](#) 2890.1 (2004).

Where there is one car lift proposed, this must be capable of accommodating a B99 vehicle.

Where ~~there are~~ multiple car lifts are proposed, one car lift must be capable of accommodating a B99 vehicle and the remaining lifts must be capable of accommodating a B85 vehicle.

~~E1.11.3~~E1.15.3 Waiting bays

- ▶ The design must include sufficient size to ensure that vehicles queuing to enter the mechanical parking installation or paid parking station does not extend beyond the property boundary. Vehicles must not wait on the footpath or roadway.
- ▶ The waiting bay(s) must be adequately sized to enable vehicle(s) to wait, while another vehicle exits the site. It is not acceptable for waiting vehicle(s) to reverse onto the footpath to enable another vehicle to manoeuvre off the site.
- ▶ The minimum length of each waiting bay is 6m.
- ▶ Waiting bays must not exceed a maximum grade of 1 in 20 (5%).
- ▶ Waiting bays must not obstruct the driveway.

~~E1.11.4~~E1.15.4 **Car parks with more than 25 vehicles**

If a car lift is providing access to a car parking area with more than 25 parking spaces, then two separate car lifts must be provided.

~~E1.11.5~~E1.15.5 **Residential visitor parking**

Residential visitor parking must be provided external to the mechanical parking installation.

~~E1.11.6~~E1.15.6 **Access**

Where a development is required to provide parking for people with a disability, a mechanical parking installation must allow people with a disability to exit in the event of breakdown or failure.

~~E1.11.7~~E1.15.7 **Development application information**

A report from a suitably qualified traffic consultant is required for any development application that proposes a mechanical parking installation or paid parking station relating to the parking of three or more cars.

As a minimum, the report should provide a queuing analysis, taking into account:

- ▶ the proposed peak hour vehicle volumes;
- ▶ the service rate (in seconds) associated with the proposed parking equipment; and
- ▶ the number of on-site waiting bays required to accommodate the 98th percentile queue at peak traffic levels.

The development application should also include the following information:

- ▶ details of required servicing and ongoing maintenance;
- ▶ internal and external dimensions of the device;
- ▶ details of the noise output of the device; and
- ▶ manufacturer's documentation, including information on service rates.