

TRAFFIC IMPACT ASSESSMENT

Planning Proposal

2-10 Bay Street & 294-298 New South Head Road, Double Bay

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Table of Contents

1.	Introduction			
	1.1.	Overview	3	
	1.2.	Background	3	
	1.3.	Structure of this Report	3	
	1.4.	References	4	
2.	Existi	ng Conditions	5	
	2.1.	Location and Site	5	
	2.2.	Road Network	8	
	2.3.	Public & Active Transport	8	
	2.4.	Existing Traffic Generation	14	
	2.5.	Existing Traffic Volumes & Intersection Performance	15	
	2.6.	Existing Intersection Performance	18	
3.	Deve	lopment Contemplated Under Planning Proposal	20	
4.	Parki	ng Requirements	21	
	4.1.	Car Parking	21	
	4.2.	Bicycle Parking	24	
	4.3.	Motorcycle Parking	24	
	4.4.	Service Vehicle Parking & Waste Collection	25	
5.	Traffi	c Impacts	26	
	5.1.	Trip Generation	26	
	5.2.	Traffic Impacts	27	
6.	Desig	n Aspects	28	
	6.1.	Access	28	
	6.2.	Internal Design	28	
7.	Conc	lusions	30	



List of Figures

Figure 1: Location & Road Hierarchy Plan	6
Figure 2: Site Plan	7
Figure 3: Public & Active Transport Services	11
Figure 4: Sydney Trains Rail Network	12
Figure 5: Sydney Ferries Network	13
Figure 6: AM Peak Hour (8:00am – 9:00am) Traffic Flows	16
Figure 7: PM Peak Hour (16:45pm – 17:45pm) Traffic Flows	17

List of Tables

Table 1: Lot Identification & Vehicular Access	5
Table 2: Bus Services	9
Table 3: Rail Services	10
Table 4: Ferry Services	10
Table 5: Intersection Performance Criteria	19
Table 6: Summary of ARC SIDRA Modelling Results – Existing	19
Table 7: Residential Car Parking Requirement and Provision	21
Table 8: Commercial Car Parking Requirement and Provision	22
Table 9: Retail Car Parking Requirement and Provision	23
Table 10: Bicycle Parking Requirement and Provision	24
Table 11: Motorcycle Parking Requirement and Provision	25

Appendices

Appendix A:	Architectural	Concept Plans
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Appendix B: Swept Path Analysis Drawings



1. Introduction

1.1. Overview

PDC Consultants has been commissioned by Loftex Property to undertake a Traffic Impact Assessment of a Planning Proposal (Proposal) relating to the site at 2-10 Bay Street & 294-298 New South Head Road, Double Bay. As indicated by the concept plans prepared by Tzannes and included as **Appendix A**, the Proposal seeks to permit a 6-storey mixed-use development having the following potential characteristics:

- 30 residential apartments;
- 1,934m² of commercial gross floor area (GFA);
- 493m² of retail GFA;
- Ground floor and basement level car parking accommodating a total of 60 car spaces;
- A single loading bay, suitable for use by an 8.8 metre medium rigid vehicle (MRV);
- Two vehicle access driveways onto Brooklyn Lane.

The site is located in the Woollahra local government area (LGA) and accordingly, the proposed development has been assessed in accordance with the Woollahra Development Control Plan 2015 and Local Environmental Plan 2014.

1.2. Background

It is noteworthy to mention that ARC Traffic + Transport (ARC) has previously prepared a Traffic Impact Assessment report (ARC Report) dated December 2017, which accompanied a development application (DA) submission for the subject site and was subsequently withdrawn. This report relies on the survey data collected as part of the ARC Report and this is discussed in further detail in Section 2.5 of this report.

1.3. Structure of this Report

This report documents the findings of our investigations in relation to the anticipated traffic and parking impacts of the Proposal, and should be read in the context of the Planning Proposal report prepared separately by City Plan. The remainder of this report is structured as follows:

- Section 2: Describes the site and existing traffic and parking conditions in the locality;
- Section 3: Describes the development contemplated under the Proposal;
- Section 4: Assesses the parking requirements of the development;



- Section 5: Assesses the traffic generation and impacts of the development;
- Section 6: Discusses the proposed access and internal design arrangements;
- Section 7: Presents the overall study conclusions.

1.4. References

In preparing this report, reference has been made to the following guidelines / standards:

- Woollahra Local Environmental Plan 2014 (Woollahra LEP 2014);
- Woollahra Development Control Plan 2015 (Woollahra DCP 2015);
- State Environmental Planning Policy (Infrastructure) 2007 (SEPP Infrastructure 2007);
- State Environmental Planning Policy No. 65 Design Quality of Residential Apartment Development (SEPP 65);
- NSW Apartment Design Guide (ADG);
- Disability (Access to Premises Buildings) Standards 2010 (Disability Standard 2010);
- Australian Standard AS 2890.1-2004, Part 1: Off-Street Car Parking (AS 2890.1);
- Australian Standard AS 2890.2-2002, Part 2: Off-Street Commercial Vehicle Facilities (AS 2890.2);
- Australian Standard AS 2890.3-2015, Part 3: Bicycle Parking Facilities (AS 2890.3);
- Australian Standard AS 2890.6-2009, Part 6: Off-Street Parking for People with Disabilities (AS 2890.6);
- RMS Guide to Traffic Generating Development 2002 (RMS Guide);
- RMS Technical Direction TDT 2013/04a Guide to Traffic Generating Developments, Updated Traffic Surveys (RMS Guide Update).



2. Existing Conditions

2.1. Location and Site

The site is located at 2-10 Bay Street & 294-298 New South Head Road, Double Bay being approximately 400 metres north-east of Edgecliff Station Railway Station and 3 kilometres east of the Sydney CBD. More specifically, it is located on the north-western corner of the New South Head Road / Bay Street intersection.

The site is comprised of 5 separate lots, which as a whole, has a total area of $1,863m^2$. **Table 1** below shows the formal identification of each of the 5 lots and describes the existing vehicular access arrangements to each lot.

ADDRESS	LOT IDENTIFICATION	EXISTING VEHICULAR ACCESS	
2 Pay Streat	Lot 24, DP 4606	Two separate 4.5 metre wide entry / exit driveways onto Brooklyn Lane,	
2 Bay Street	Lot 25. DP 4606	serving separate garages.	
4-10 Bay Street	Lot 100, DP 712017	10.0 metre wide entry / exit driveway onto Brooklyn Lane, serving a hardstand parking area.	
294-296 New South Head Road	Lot C, DP 955406	4.0 metre wide entry / exit driveway onto Brooklyn Lane, serving a garage	
298 New South Head Road	Lot B, DP 955406	7.0 metre wide entry / exit driveway onto Bay Street, serving a garage and hardstand parking area.	

Table 1: Lot Identification & Vehicular Access

The site is bound by New South Head Road to the south having a length of 34 metres and Bay Street to the east having a length of 60 metres. The western boundary has a total length of 67 metres which borders a neighbouring residential development and includes a 47 metre street frontage to Brooklyn Lane. The northern boundary borders a neighbouring retail development having a length of 29 metres.

In its entirety, the site is comprised of a number of uses including:

- A single residential dwelling;
- Approximately 1,930m² commercial GFA;
- Approximately 370m² retail GFA;
- Basement, garage and at-grade car parking areas providing a total of approximately 36 car spaces accessed via both Bay Street and Brooklyn Lane.

Figures 1 and 2 overleaf provide an appreciation of the site's location in both a broad and local context respectively.





Figure 1: Location & Road Hierarchy Plan





Figure 2: Site Plan



2.2. Road Network

The road hierarchy in the vicinity of the site is shown by **Figure 1**, with the following roads considered noteworthy:

- New South Head Road forms part of an RMS Main Road, MR 173. New South Head Road generally runs in an east-west direction intersecting with Old South Head Road in the east and the Cross City Tunnel and William Street in the west. It is subject to 60km/h speed zoning restrictions and generally accommodates 2-3 lanes of traffic in both directions. Near the site, 'Clearway' restrictions operate between the hours of 3pm-7pm and 6am-10am, Monday to Friday along the northern and southern kerbsides respectively. Additionally, time restricted (2 hour) parking restrictions apply along both kerbsides between the hours of 9am-3pm, Monday to Friday and 9am-6pm on Saturdays.
- Bay Street: a local road in the form of a cul-de-sac that runs in a north-south direction between Double Bay Wharf at its northern end and New South Head Road at its southern end. It is generally subject to 50km/h speed zoning restrictions however, 40km/h School Zone restrictions apply between the hours of 8:00-9:30am and 2:30-4:00pm on school days only. It accommodates a single lane of traffic in both directions and permits time restricted (2 hour) parallel parking between the hours of 9am-6pm, Monday to Saturday, along both kerbsides.
- Brooklyn Lane: a local road in the form of a cul-de-sac that runs in a north-south direction, intersecting Cooper Street at its northern end. It is subject to 50 km/h speed zoning restrictions and accommodates a single lane of traffic in both directions. To the north of the Brooklyn Lane / Henrietta Lane intersection, the road has a carriageway width of 5 metres, whilst to south of the intersection, the carriageway widens to 6.5 metres. 'No Parking' restrictions apply along both kerbsides of Brooklyn Lane.

2.3. Public & Active Transport

2.3.1. Bus Services

The Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area, states that the walking catchment for metropolitan bus services includes all areas within a 400 metre radius of a bus stop. As can be seen from **Figure 3**, the site is situated within 400 metres of numerous bus stops along New South Head Road, Manning Road and the Edgecliff Bus Interchange.

Accordingly, residents, staff and visitors of the development would have convenient access to these services for journeys to / from the site. **Table 2** below shows the notable town centres that are accessible via the numerous bus services that are accessible within 400 metres of the site and the average service headways during peak and off-peak periods.



Table 2: Bus Services

ROUTE NO.	ROUTE (TO / FROM)	ROUTE DECRIPTION	AVERAGE HEADWAY
200 Bondi Junction to Chatswood Chatswood Via Edgecliff, Rushcutters Bay Woolloomooloo, Sydney, North Sydney Nest, & Artarmon		Via Edgecliff, Rushcutters Bay, Woolloomooloo, Sydney, North Sydney, Crows Nest, & Artarmon	Weekdays: 15-20 minutes peak / 30 minutes peak Weekends:
323	North Bondi to Edgecliff	Via New South Head Road	Weekdays: 20 minutes peak only Weekends: No services
324 Watsons Bay to Walsh Bay		Via New South Head Road	Weekdays: 8-20 minutes peak / 30 minutes off peak Weekends: 30 minutes peak on Saturdays & Sundays
325	325 Watsons Bay to Walsh Bay Via Vaucluse Road		Weekdays: 30 minutes all day Weekends: 30 minutes on Saturdays & Sundays
326 Edgecliff to Bondi Via E Junction		Via Bellevue Hill	Weekdays: 30 minutes peak / 1 hour off peak Weekends: 1 hour on Saturdays & Sundays
327	Edgecliff to Bondi Junction	Via Bellevue Road & Manning Road	Weekdays: 30 minutes peak / 1 hour off peak Weekends: 1 hour on Saturdays & Sundays
328 Bondi Junction to Darling Point Via Edgecliff (Loop Serv		Via Edgecliff (Loop Service)	Weekdays: 20-30 minutes peak / 1 hour off peak Weekends: 1 hour on Saturdays & Sundays
389 Bondi Junction to Via Wooll Pyrmont		Via Woollahra, Paddington, Darlinghurst & Sydney	Weekdays: 7-8 minutes peak / 10-15 minutes off peak Weekends: 15-20 minutes on Saturdays & Sundays
L24 Vaucluse to City Via Rose Bay, Double Bay, Edgecliff & Darlinghurst (Limited Stops)		Weekdays: 2 morning services only Weekends: No services	

2.3.2. Rail Services

The Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area, states that the walking catchment for metropolitan railway stations includes all areas within an 800 metre radius of a station. It can be seen from **Figure 3** that Edgecliff Railway Station is located approximately 400 metres (or 7-9 minute walk) from the site and hence, falls well within the typical walking catchment area. Accordingly, residents, staff, and visitors of the proposed development would have convenient access to the Sydney rail network, as shown by **Figure 4**.

Edgecliff Railway Station is serviced by 2 railway lines being the T4 Eastern Suburbs & Illawarra Line (suburban) and the South Coast Line (intercity). **Table 3** below shows the notable town centres that are accessible along the abovementioned railway lines and the average service headways during peak and off-peak periods.



Table 3: Rail Services

RAILWAY LINE	NOTABLE TOWN CENTRES ALONG LINE	AVERAGE HEADWAY
T4 Eastern Suburbs & Illawarra Line	Waterfall, Cronulla, Sutherland, Hurstville, Wolli Creek, Redfern, Sydney CBD & Bondi Junction	Weekdays: 20 minutes peak / 30 minutes off peak Weekends: 30 minutes all day
South Coast Line	Bomaderry, Kiama, Port Kembla, Wollongong, Waterfall, Sutherland, Hurstville, Wolli Creek, Sydney CBD & Bondi Junction	Weekdays: 7-20 minutes peak / 1 hour off peak Weekends: 1 hour on Saturdays & Sundays

2.3.3. Ferry Services

The Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area, states that the walking catchment for metropolitan ferry wharves includes all areas within an 800 metre radius of a wharf. It can be seen from **Figure 3** that Double Bay Wharf is located approximately 550 metres (or 7 minute walk) from the site and hence, falls within the typical walking catchment area. Accordingly, residents, staff, and visitors of the proposed development would have convenient access to the Sydney Ferries network, as shown by **Figure 5**.

Double Bay Wharf is serviced by a single ferry service being, the F7 Circular Quay to Double Bay ferry route. **Table 4** below shows the services available from Double Bay Wharf and the average service headways during peak and off-peak periods.

Table 4: Ferry Services

ROUTE (TO / FROM)	NOTABLE WHARVES ALONG ROUTE	AVERAGE HEADWAY
F7 Circular Quay to Double Bay	Circular Quay, Garden Island, Darling Point & Double Bay	Weekdays: 30 minutes all day Saturdays: 1 hour all day Sundays & Public Holidays: 1 hour all day

2.3.4. Cycle Network

Figure 3 also shows that the site has good access to the local cycle path network with Bay Street accommodating an on-road cycle path, providing connections to the broader bicycle network. Edgecliff Road, to the south of the site, also accommodates an on-road cycle path.

2.3.5. General Services Access

The site is conveniently located for residents, staff and visitors of the development to take advantage of the retail, commercial, social and recreational services within Double Bay. **Figure 3** shows the walking accessibility of the site, within 400 metres and 800 metres of the site which generally represents an approximately 5 minute and 10 minute walk respectively.











Figure 4: Sydney Trains Rail Network





Figure 5: Sydney Ferries Network



2.4. Existing Traffic Generation

2.4.1. Overview

As discussed in Section 2.1 of this report, the site is comprised of a number of uses including

- A single residential dwelling;
- Approximately 1,930m² commercial GFA;
- Approximately 370m² retail GFA;

2.4.2. Residential

It is understood that the residential dwelling located within 2 Bay Street is a relatively small dwelling (no more than 2 bedroom) with a single parking space. With reference to the RMS Guide, it is estimated that this dwelling would generate an average of no more than one (1) vehicle trip per hour in both the weekday 7-9am (AM) and 4-6pm (PM) peak periods.

2.4.3. Commercial

The RMS Guide Update provides the following summary trip rates for commercial trip generation:

- 1.6 vehicle trips per 100m² GFA, during the AM peak period;
- 1.2 vehicle trips per 100m² GFA, during the PM peak period.

The above trip rates are based on surveys of key sub-regional centres across Metropolitan Sydney, some of which provide excellent accessibility to public transport and local services, others of which provide relatively poor access to these same services. With reference to the surveyed traffic volumes, it is apparent that the current commercial trip generation of the site is lower than the above rates and more akin to the trip generation rates surveyed (for the RMS Guide Update) in Chatswood, being approximately 1 trip per 100m² GFA during both peak periods.

Based on the approximate 1,930m² of commercial floor space available at the site, the application of this trip generation rate indicates that the existing commercial component of the site would generate approximately 19 vehicle trips per hour during both the AM and PM peak periods.



2.4.4. Retail

The trip generation of the retail component of the site is not easily determined with reference to the RMS Guide Update, which provides trip rates for major shopping centres not readily applicable to retail floor space in Double Bay. Accordingly, reference was made to the trip rates determined as part of numerous previous studies undertaken by ARC in similar centres across the Sydney metropolitan area (including Hunters Hill, Botany and Randwick), as outlined in the ARC Report. These trips rates are 1 vehicle trip per 100m² GFA during the AM peak period and 3.5 trips per 100m² GFA during the PM peak period.

Application of the above rates to the estimated 370m² of retail GFA, results in 4 vehicle trips per hour during the AM peak period and 13 vehicle trips per hour during the PM peak period.

2.4.5. Overall Traffic Generation of Existing Development

With regard to the above, the peak period traffic generation of the existing development has been estimated to be as follows:

- 24 vehicle trips / hour during the AM peak period;
- 33 vehicle trips / hour during the PM peak period.

The above traffic generation has been used to assess the net change in traffic generation as a result of the development contemplated under the Planning Proposal, as is discussed in Section 5.1 of this report.

2.5. Existing Traffic Volumes & Intersection Performance

ARC has undertaken traffic surveys of a number of key intersections within the vicinity of the site. These surveys were undertaken in July and August 2017, between the hours of 7:00-9:00am and 4:00-6:00pm which correspond to the weekday AM and PM commuter peak periods respectively. **Figures 6 and 7** overleaf provide a summary of the peak period traffic volumes through a number of intersections surrounding the site.





Figure 6: AM Peak Hour (8:00am – 9:00am) Traffic Flows





Figure 7: PM Peak Hour (16:45pm – 17:45pm) Traffic Flows



2.6. Existing Intersection Performance

The key intersections identified for this assessment include:

- Bay Street / Cooper Street;
- Cooper Street / Brooklyn Lane / South Avenue;
- Cooper Street / Henrietta Street;
- Cooper Street / Ocean Avenue;
- Ocean Avenue / Greenoaks Avenue.

ARC used the results of the survey, as shown by **Figures 6 and 7**, to develop existing (base-case) SIDRA models of the above key intersections for the AM and PM peak periods. These were calibrated and validated against intersection queue lengths and phase / cycle times, as was observed during separate site inspections undertaken by ARC during both the AM and PM peak periods.

SIDRA modelling outputs a range of performance measures, in particular:

- Degree of Saturation (DOS) The DOS is used to measure the performance of intersections where a value of 1.0 represents an intersection at theoretical capacity. As the performance of an intersection approaches DOS of 1.0, queue lengths and delays increase rapidly. It is usual to attempt to keep DOS to less than 0.9, with satisfactory intersection operation generally achieved with a DOS below 0.8.
- Average Vehicle Delay (AVD) The AVD (or average delay per vehicle in seconds) for intersections also
 provides a measure of the operational performance of an intersection and is used to determine an
 intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the
 average of all vehicle movements through the intersection. For Give Way, Stop & Roundabout controlled
 intersections, the AVD reported is that for the movement with the highest AVD.
- Level of Service (LOS) This is a comparative measure that provides an indication of the operating performance, based on AVD.

Table 5 overleaf provides a recommended baseline for assessment of intersection performance as per the RMSGuide.



Table 5: Intersection	Performance	Criteria
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LEVEL OF SERVICE	AVERAGE DELAY PER VEHICLE (seconds/vehicle)	TRAFFIC SIGNALS AND ROUNDABOUTS	GIVE WAY AND STOP SIGNS
А	Less than 14	Good operation	Good operation
В	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
С	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity	Unsatisfactory and requires other control mode or major treatment

Table 6 below shows the results of the SIDRA modelling undertaken by ARC, and shows the existing (base-case) performance of all key intersections during the weekday AM and PM peak periods.

INTERSECTION	INTERSECTION SCENARIO PERIOD DEGREEE OF SATURATION AVERAGE (secon		AVERAGE DELAY (seconds)	LEVEL OF SERVICE	
Bay Street / Cooper	reet / Cooper		0.128	3.8	A
Street	Existing	PM	0.099	3.5	A
Cooper Street /		AM	0.103	1.3	A
Brooklyn Lane / South Avenue	Existing	PM	0.073	1.3	А
Cooper Street /	/ Existing	AM	0.091	1.6	A
Henrietta Lane		PM	0.072	0.9	A
Cooper Street / Ocean	ooper Street / Ocean Avenue Existing	AM	0.370	1.9	A
Avenue		PM	0.406	1.4	A
Ocean Avenue /	n Avenue /		0.550	7.7	A
Greenoaks Avenue	Existing	PM	0.535	7.2	A

Table 6: Summary of ARC SIDRA Modelling Results – Existing

Table 6 shows that all intersections operate very well during both the weekday AM and PM peak periods. Indeed, all intersections operate with minimal delays and degree of saturation, with a LOS A during both the AM and PM peak periods.



3. Development Contemplated Under Planning Proposal

As shown by the Tzannes concept plans included as **Appendix A**, the Proposal seeks to permit a 6-storey mixed-use development having the following potential characteristics:

- 30 residential apartments comprising:
 - 6 x one-bedroom apartments;
 - 20 x two-bedroom apartments;
 - 4 x three-bedroom apartments;
- 1,934m² of commercial GFA;
- 493m² of retail GFA;
- Ground floor and basement level parking accommodating a total of 60 car spaces;
- A single loading bay, suitable for use by an 8.8 metre MRV;
- Two vehicle access driveways onto Brooklyn Lane.

The parking and traffic implications arising from the above development are discussed in Sections 4 and 5 respectively.



4. Parking Requirements

4.1. Car Parking

4.1.1. Overview

The development is located within the Double Bay Centre and accordingly, it is subject to parking multipliers as stipulated in the Woollahra DCP 2015. Specifically, a parking multiplier of '0.6' is required to be adopted for one-bedroom apartments, retail floor space and commercial floor space.

With this in mind, the car parking assessment below includes the discounted car parking rate where applicable.

4.1.2. Residential Car Parking

The Woollahra DCP 2015 stipulates <u>maximum</u> car parking rates for residential apartments. Additionally, it is important to note that the site is situated 400 metres from Edgecliff Railway Station and hence, falls within an 800 metre radius of railway station within the Sydney Metropolitan Area. Accordingly, the car parking requirement for the residential component of the development is to be assessed in accordance with both the Woollahra DCP 2015 and ADG, as stipulated by Clause 30(1)(a) of the SEPP 65.

As stated by Objective 3J-1 of the ADG, the minimum car parking requirement for residential apartments is set out in the RMS Guide or Council's DCP, whichever is less. It is noted however, that the RMS Guide adopts a <u>minimum</u> car parking requirement whereas, the Woollahra DCP adopts a <u>maximum</u> car parking requirement.

Table 7 below shows the residential car parking requirement for the development under application of both theRMS Guide and Woollahra DCP 2015, and the proposed provision in response.

TVDE	NO.	IO. RMS MINIMUM PARKING RATE	DCP MAXIMUM PARKING RATE	PARKING MULTIPLIER		RMS MINIMUM	DCP MAXIMUM	PROPOSED
ITFE				RMS	DCP	REQUIREMENT	REQUIREMENT	PROVISION
One Bedroom	6	0.6 spaces / unit	0.5 space / unit	-	0.6		28	28
Two Bedroom	20	0.9 spaces / unit	1.0 space / unit	-	-	34		
Three Bedroom	4	1.4 spaces / unit	1.5 spaces / unit	-	-			
Visitor	30	0.2 spaces / unit	0.2 spaces / unit	-	-	6	6	6
				TOTAL	40	34	34	

Table 7: Residential Car Parking Requirement a	nd Provision
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It is evident from **Table 7** above that the residential component of the development requires a minimum of 40 car spaces under the RMS Guide and is permitted to provide up to a maximum of 34 car spaces under the Woollahra DCP 2015. The key difference between the two policies is the fact that the RMS requirement is a generic *minimum rate* that applies to all developments in NSW and therefore generally seeks to maximise on-site parking provision, particularly for sites that are not well served by public transport. In contrast, it is clear from the *maximum rates*, that the Woollahra DCP 2015 seeks to minimise on-site parking provisions / car ownership rates and encourage the use of more sustainable modes of transport such as buses, ferries and rail, noting that the site benefits from excellent access to public transport services.

In response, the development proposes 34 car parking spaces and this complies with the Woollahra DCP 2015. Although less than the RMS minimum, the provision of 34 spaces also complies with the ADG / SEPP 65, noting that the development only needs to satisfy the RMS Guide or Woollahra DCP, <u>whichever is less</u>.

The proposed residential car parking provision and allocation is therefore considered acceptable. The provision is also consistent with the objectives of the Woollahra DCP 2015 which seeks to minimise on-site parking provisions / car ownership rates and encourage the use of sustainable modes of transport.

4.1.3. Commercial Car Parking

The Woollahra DCP 2015 stipulates minimum car parking rates for commercial developments. **Table 8** below shows the minimum car parking requirement under the applicable 'business premises' parking rate and the proposed provision in response.

TYPE	GFA.	DCP PARKING RATE	PARKING MULTIPLIER	DCP REQUIREMENT	PROPOSED PROVISION
Commercial	1,934m²	2.5 spaces / 100m ² GFA	0.6	29	26
TOTAL			29	26	

Fable 8: Commercial Car F	Parking Requirement	and Provision
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It is evident from **Table 8** that the commercial component of the development requires a minimum of 29 car spaces under application of the Woollahra DCP 2015, and 26 commercial car spaces are provided in response. The provision of 26 car spaces will however include a single 'car share' space for the commercial component and this has the potential to replace up to 4 regular car spaces, as outlined under Clause E1.9.2 of the Woollahra DCP 2015. Accordingly, the development will effectively provide a total of 29 car spaces (25 regular spaces plus 4 car spaces as a result of the 'car share' space) and this complies with the Woollahra DCP 2015.

The proposed commercial car parking provision is therefore considered acceptable.



4.1.4. Retail Car Parking

The Woollahra DCP 2015 stipulates minimum car parking rates for retail developments. **Table 9** below shows the minimum car parking requirement under the applicable 'retail premises' parking rate and the proposed provision in response.

ТҮРЕ	GFA.	DCP PARKING RATE	PARKING MULTIPLIER	DCP REQUIREMENT	PROPOSED PROVISION
Retail	493m ²	3.3 spaces / 100m ² GFA	0.6	10	0
			TOTAL	10	0

Table 9: Retail Car Parking Requirement and Provision

It is evident from **Table 9** above that the retail component of the development is required to provide a minimum of 10 car parking spaces under application of the Woollahra DCP 2015. In response, the development does not propose any retail car parking and this is considered acceptable in the circumstances for the following reasons:

- The existing development incorporates approximately 370m² of retail floor space with no on-site parking for retail staff or visitors. The existing development therefore generates a demand for 8 retail car spaces under the applicable car parking rates of the Woollahra DCP 2015 and this demand is wholly accommodated on-street.
- As per **Table 9** above, the Proposal will generate a demand for 10 on-street car spaces however this would equate to a net increase in demand of only 2 on-street car spaces once the existing development is taken into account.
- The Proposal would include the removal of an existing driveway onto Bay Street. This would provide a public benefit through the creation of 1-2 additional on-street parking spaces and would offset the abovementioned net increase in on-street parking demand of 2 car spaces. Accordingly, the Proposal would have no impact on the availability of on-street parking in the locality.
- The site resides within the Double Bay Centre which accommodates numerous retail, commercial, social and recreational services / businesses / shops. Accordingly, it is expected that a significant proportion of retail business would be drawn from 'foot traffic', as pedestrians walk past the site as part of a multi-purpose trip. whereby pedestrians would visit a number of different shops / businesses as part of a single journey. Accordingly, it is expected that the retail tenancies would generate negligible retail visitor parking demands.
- Given the constrained width of Brooklyn Lane and the high traffic generation characteristics of retail developments, it is not considered appropriate to provide on-site retail visitor parking, as this would be accessed off Brooklyn Lane and could potentially result in efficiency concerns. In this regard, it considered appropriate that any minor retail visitor parking demands be accommodated on-street or within the off-street public car parking that is available within the Double Bay Town Centre.



• As discussed in Section 2.3 of this report, the site benefits from excellent access to public transport services being within 400 metres of Edgecliff Railway Station, 400 metres of numerous bus stops located along New South Head Road, Manning Road and Edgecliff Bus Interchange, and within 550 metres of Double Bay Wharf. The site is therefore well situated to take advantage of these public transport services and will result in negligible retail staff and visitor parking demands generally.

With regard for the above, it is evident that the Proposal would have no impact on the availability of parking in the locality and accordingly, it is considered acceptable that the development does not provide any on-site retail parking. Furthermore, it is noted that the Proposal seeks to delete the requirement for minimum retail parking rates to apply to the site and this is supported for the reasons outlined above.

4.2. Bicycle Parking

The Woollahra DCP 2015 stipulates minimum bicycle parking rates for residential, retail and commercial developments. **Table 10** below shows the minimum bicycle parking requirements under the applicable parking rates and the proposed provision in response.

TYPE	USER	NO.	DCP PARKING RATE	DCP REQUIREMENT	
Desidential	Resident	30	1.0 space / unit	33	
Residential	Visitor	30	0.1 spaces / unit		
Commercial	Staff	1,934m²	1.0 space / 150m ² GFA	26	
	Visitor	1,934m²	1.0 space / 400m ² GFA		
	Staff	493m ²	1.0 space / 250m ² GFA	20	
Reldii	Visitor	493m ²	2.0 spaces + 1.0 space / 100m ² over 100m ²		
			TOTAL	59	

Table 10: Bicycle Parking Requirement and Provision

It is evident from **Table 10** above that the development is required to provide a total of 59 bicycle parking spaces, comprising 33 residential spaces and 26 commercial / retail spaces, under the Woollahra DCP 2015.

Whilst the plans do not currently indicate any bicycle parking, it is noted that there is ample space within the lower ground and basement parking levels to accommodate this level of parking provision and accordingly, this could be addressed during the preparation of any future development application.

4.3. Motorcycle Parking

The Woollahra DCP 2015 stipulates minimum motorcycle parking rates for all new developments. **Table 11** overleaf shows the minimum motorcycle parking requirement and the proposed provision in response.



Table 11: Motorcycle Parking Requirement and Provision

TYPE	NO.	DCP PARKING RATE	MINIMUM REQUIREMENT	PROPOSED PROVISION
Car Spaces	60	0.1 spaces / car space	6	5
TOTAL		6	5	

It is evident from **Table 11** that the development is required to provide a total of 6 motorcycle parking spaces, under the Woollahra DCP 2015. As indicated by the architectural drawings included in **Appendix A**, the development provides a total of 5 motorcycle spaces, being one space less than the minimum requirement.

Notwithstanding, the development will be able to readily accommodate an additional motorcycle space, ensuring that the development provides a total of 6 motorcycle spaces. The development is therefore able to comply with the motorcycle parking requirements of the Woollahra DCP 2015.

4.4. Service Vehicle Parking & Waste Collection

The Woollahra DCP 2015 does not stipulate any specific service vehicle parking rates for residential or commercial uses. It does however state that 'a minimum of one loading bay will generally be required for retail premises (such as a supermarket) that require delivery of large items or pallets of goods.' In this regard, it is evident that the proposal requires the provision of a single loading bay. In response, the development provides a single loading bay that is suitable for use by all vehicles up to and including an 8.8 metre MRV, and therefore satisfies the requirements of the Woollahra DCP 2015.

Waste collection of the development would also occur on-site from within the loading bay, with the use of a vehicle no larger than an 8.8 metre MRV. In this regard, it is expected that all residential waste would be collected by Council's contractors and all retail / commercial waste collected by a private waste contractor.

Swept path analysis has been undertaken of the proposed loading arrangements with the use of an 8.8 metre MRV, as is defined in AS 2890.2. The swept path results are included in **Appendix B** and confirm that an 8.8 metre MRV will be able to satisfactorily access the loading bay with all entry and exit movements to occur in a forward direction.



5. Traffic Impacts

5.1. Trip Generation

5.1.1. Residential

The RMS Guide Update recommends application of a traffic generation rate of 0.19 trips / apartment / hour during the AM peak period and 0.15 trips / apartment / hour during the PM peak period, for high density residential developments. Application of these rates to the 30 apartments proposed, results in the following peak period traffic generation:

- 6 vehicle trips / hour, during the AM peak period;
- 5 vehicle trips / hour, during the PM peak period.

5.1.2. Commercial

As discussed in Section 2.4.3 of this report, the existing commercial floor space generates traffic at a rate of approximately $1.0 \text{ trip} / 100\text{m}^2 \text{ GFA} / \text{hour during both peak periods}$. Whilst this rate could be applied to the proposed commercial floor space, it is considered appropriate to adopt a more conservative approach and use the traffic generation rates outlined in the RMS Guide Update which are as follows:

- 1.6 vehicle trips per 100m² GFA, during the AM peak period;
- 1.2 vehicle trips per 100m² GFA, during the PM peak period.

Application of these rates to the proposed 1,934m² of commercial GFA, results in the following commercial traffic generation:

- 31 vehicle trips / hour, during the AM peak period;
- 23 vehicle trips / hour, during the PM peak period.

5.1.3. Retail

Given that the Proposal would not include any on-site retail car parking, it is considered appropriate to adopt the retail trip rates outlined in Section 2.4.4 of this report, which reflect the 'retrained' level of parking. These rates are $1.0 \text{ trip} / 100\text{m}^2 \text{ GFA} / \text{hour during the AM peak period and 3.5 trips} / 100\text{m}^2 / \text{hour GFA during the PM peak period.}$ Application of these rates to the proposed 493m^2 of retail GFA, results in the following retail traffic generation:

- 5 vehicle trips / hour, during the AM peak period;
- 17 vehicle trips / hour, during the PM peak period.



5.1.4. Combined

The total traffic generation of the proposed development is therefore expected to be in the order of:

- 42 vehicle trips / hour, during the AM peak period;
- 45 vehicle trips / hour, during the PM peak period.

The total traffic generation discussed above is however not a net change as this does not take into consideration the generation of the existing development, as is discussed in Section 2.4.5 of this report. In this regard, the net change in generation as a result of the Proposal is expected to be as follows:

- 18 vehicle trips / hour, during the AM peak period;
- 12 vehicle trips / hour, during the PM peak period.

5.2. Traffic Impacts

As discussed above, the Proposal would result in a net increase in traffic generation of 18 vehicle trips / hour during the weekday AM peak period and 12 vehicle trips / hour during the weekday PM peak period, and these trips would split into both directions (in / out of the site) thereby minimising impacts. This equates to only one additional vehicle trip every 3-5 minutes which will have no material impact on the performance of the external road network or key intersections in the locality, and accordingly, no external improvements will be required to facilitate the development.

Additionally, given the moderate increase in traffic generation and noting that the trips would be split into both directions (in / out of the site), it was not considered necessary to undertake further SIDRA modelling as this would simply demonstrate that the Proposal would have negligible impacts on the performance of the key intersections. The traffic impacts of the Proposal are therefore considered acceptable.



6. Design Aspects

6.1. Access

The development proposes two separate access driveways onto Brooklyn Lane. This includes a 5.5 metre wide combined entry / exit driveway serving the ground floor car park and a 6.2 metre wide combined entry / exit driveway serving the basement car park.

The width of the proposed access driveways complies with the minimum requirements of Table 3.1 of AS 2890.1 and importantly, the access arrangements will ensure that all entry and exit movements to the site will occur in a forward direction. Swept path analysis has been undertaken of the proposed vehicle access arrangements in accordance with AS 2890.1. The results are provided as **Appendix B** and indicate that satisfactory entry and exit manoeuvres can be achieved, and that all cars will enter and exit the site in a forward direction.

6.2. Internal Design

The proposed internal parking arrangements as shown by the Tzannes concept plans included in **Appendix A**, generally comply with the relevant requirements of AS 2890.1, AS 2890.2 and AS 2890.6 with the following design aspects considered noteworthy:

6.2.1. Driveway / Ramp

- The vehicular ramp has a grade of 12.5% (1 in 8) for the first 6 metres inside the property boundary and this is a downgrade for vehicles exiting the site. This arrangement complies with the requirements of Clause 3.3 of AS 2890.1.
- The vehicular ramp has a maximum grade of 25% (1 in 4) with 2.0 metre transitions of 12.5% (1 in 8) provided at both ends, thereby satisfying Clause 2.5.3 of AS 2890.1.
- The vehicular ramp has a minimum width of 6.2 metres between kerbs and will therefore accommodate two-lane, two-way traffic flow, thereby satisfying Figure 2.8 of AS 2890.1.

6.2.2. Parking Modules

- All car parking spaces are provided in accordance with the User Class 1A requirements of AS 2890.1, having a minimum space width of 2.4 metres and length of 5.4 metres, with an aisle width of 5.8 metres.
- All accessible car parking spaces are provided with a minimum space width of 2.4 metres and length of 5.4 metres, with an aisle width of 5.8 metres. Additionally, these spaces are located immediately adjacent to a 2.4 metre wide and 5.4 metre long shared area, thereby satisfying the requirements of AS 2890.6.
- All walls / columns are generally located outside of the space design envelope, as required under Figure 5.2 of AS 2890.1.



6.2.3. Head Heights

- A minimum clear head height of 2.2 metres is required above all traffic circulation and car parking areas in accordance with Clause 5.3.1 of AS 2890.1.
- A minimum clear head height of 2.5 metres is required above the accessible car parking space and shared areas, in accordance with Clause 2.4 of AS 2890.6.
- A minimum clear head height of 4.5 metres is required above all areas to be traversed by the MRV including directly above the loading bay, in accordance with AS 2890.2.

6.2.4. Other Design Aspects

- A 2.5 metre by 2.0 metre visual splay is required to be provided on the egress side of the driveways, at the property boundary, in accordance with Figure 3.3 of AS 2890.1. These areas are to be kept clear of all vertical obstructions with a height greater than 0.6 metres.
- All motorcycle spaces are provided in accordance with Clause 2.4.7 of AS 2890.1.

In summary, the proposed access and parking arrangements would operate satisfactorily and generally comply with AS 2890.1, AS 2890.2 and AS 2890.6.



7. Conclusions

In summary:

- PDC Consultants has been commissioned by Loftex Property to undertake a Traffic Impact Assessment of a Planning Proposal relating to the site at 2-10 Bay Street & 294-298 New South Head Road, Double Bay. As shown by the Tzannes concept plans included as **Appendix A**, the Planning Proposal seeks to permit a 6-storey mixed-use development, having the following potential characteristics:
 - 30 residential apartments;
 - 1,934m² of commercial GFA;
 - 493m² of retail GFA;
 - Ground floor and basement level car parking accommodating a total of 60 car spaces;
 - A single loading bay suitable for all vehicles up to an 8.8 metre MRV;
 - Two vehicle access driveways onto Brooklyn Lane.
- The traffic generation assessment confirms that the development will generate 42 vehicle trips / hour and 45 vehicle trips / hour during the AM and PM peak periods respectively. This translates to a net increase in traffic generation of 18 vehicle trips / hour during the weekday AM peak period and 12 vehicle trips / hour during the weekday PM peak period once the existing development is taken into consideration. This equates to only one additional vehicle trip every 3-5 minutes which will have no material impact on the performance of the external road network or key intersections in the locality, and accordingly, no external improvements will be required to facilitate the development. The traffic impacts of the proposed development are therefore considered acceptable.
- The residential component of the development requires a minimum of 40 car spaces under the RMS Guide and is permitted to provide up to 34 car spaces under the Woollahra DCP 2015. In response the development provides 34 residential car spaces and therefore satisfies the Woollahra DCP 2015. The proposed residential car parking provision is therefore considered acceptable.
- The commercial component of the development requires a minimum of 29 car spaces under application of the Woollahra DCP 2015, and 26 commercial car spaces are provided in response. The provision of 26 car spaces will however include a single 'car share' space which has the potential to replace up to 4 regular car spaces, as outlined under Clause E1.9.2 of the Woollahra DCP 2015. Accordingly, the development will effectively provide a total of 29 car spaces (25 regular spaces plus 4 car spaces as a result of the 'car share' space) and this complies with the Woollahra DCP 2015. The proposed commercial car parking provision is therefore considered acceptable.
- The retail component of the development requires a minimum of 10 car parking spaces under application of the Woollahra DCP 2015. The development does not propose any retail car parking in response, consistent with the existing development, and this is considered acceptable having regard for the reasons discussed under Section 4.1 of this report. Furthermore, it is noted that the Proposal seeks to delete the requirement for minimum retail parking rates to apply to the site and this is supported.
- The proposed access and parking arrangements generally comply with the requirements of AS 2890.1, AS 2890.2 and AS 2890.6, and will operate satisfactorily.

It is therefore concluded that the Proposal is supportable on traffic planning grounds.



Appendix A

0091r02v02 | 7/04/2019 2-10 Bay Street & 294-298 New South Head Road, Double Bay | Traffic Impact Assessment



GFA COMPLIANCE TABLE

Site Area	1862m ²		
PROPOSED CONTROLS		CONCEPT SCHEME	
Maximum FSR	3:1	GFA	5547m ²
Maximum GFA	5586m²		COMPLIES
Minimum Non-residential FSR	1.3:1	Non-residential GFA	2427m ²
Minimum Non-residential GFA	2420m ²		COMPLIES



APARTMENT MIX		GFA	
One Bedroom Apartments Two Bedroom Apartments Three Bedroom Apartments	6 20 4	Residential GFA Commercial GFA Retail GFA	3120m² 1934m² 493m²
Total Apartments	30	Total GFA	5547m ²





Project Bay Street Apartments

Address Bay Street Double Bay

Status

Drawing Basement Plan

Project No. 16030

Option

Drawing No. Date Revision NOT FOR CONSTRUCTION SK01 15.03.19 1

4 6 m



















	Project	Drawing	
	Bay Street Apartments	Section AA	
	Address Bay Street Double Bay	Project No. 16030	Option
6 m	Status NOT FOR CONSTRUCTION	Drawing No. Date SK10 15.03.1	Revision 9 1



























Appendix B

0091r02v02 | 7/04/2019 2-10 Bay Street & 294-298 New South Head Road, Double Bay | Traffic Impact Assessment



