

TRAFFIC IMPACT ASSESSMENT

8 Grosvenor Place, Brookvale

PREPARED FOR: Swell Trading Pty Ltd

REFERENCE: 0395r01v02

DATE: 10/12/2021



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1. Introduction

1.1. Overview

PDC Consultants has been commissioned by Swell Trading Pty Ltd to undertake a traffic impact assessment for the Development Application (DA) relating to the construction of a new warehouse to be used for the purposes of a showroom for display and sales of motor vehicles, and for the servicing and maintenance of the motor vehicles, for the site at 8 Grosvenor Place, Brookvale. Specifically, the DA seeks consent for the demolition of all existing structures and construction of a two-storey development, incorporating:

- 637m² of warehouse gross floor area (GFA) on Ground Floor;
- 126m² of ancillary commercial GFA on Level 1;
- A total of 52 car spaces provided within mechanical car parking systems. The mechanical car parking systems will accommodate eight (8) car spaces for staff and visitors and 44 spaces to accommodate the motor vehicle fleet;
- A 4.5-metre-wide combined entry / exit driveway onto Grosvenor Place.

Having regard for the above, it is evident that the development is not of a scale that requires referral of the DA to Transport for NSW (TfNSW), under the provisions of the State Environmental Planning Policy (Infrastructure) 2007.

The site is located in the Northern Beaches Council (Council) local government area however, a consolidated Development Control Plan for the LGA is yet to be announced or adopted. The development has therefore been assessed in accordance with the Warringah Development Control Plan 2011 and Local Environmental Plan 2011.

1.2. Structure of this Report

This report documents the findings of our investigations in relation to the anticipated traffic and parking impacts of the proposed development and should be read in the context of the Statement of Environmental Effects (SEE), submitted separately to Council. 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 proposed development;
- Section 4: Assesses the parking requirements of the development;
- Section 5: Assesses the traffic impacts of the development;
- Section 6: Discusses the proposed access and internal design arrangements;
- Section 7: Presents the overall study conclusions.



1.3. References

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

- Warringah Local Environmental Plan 2011 (WLEP 2011);
- Warringah Development Control Plan 2011 (WDCP 2011);
- Australian Standard AS 2890.1-2004, Part 1: Off-Street Car Parking (AS 2890.1);
- RMS¹ Guide to Traffic Generating Development 2002 (RMS Guide);
- RMS¹ Technical Direction TDT 2013/04a Guide to Traffic Generating Developments, Updated Traffic Surveys (RMS Guide Update).

 $^{^1}$ Roads and Maritime Services (RMS) has joined with TfNSW, with reference to Roads and Maritime now taken legally to automatically mean TfNSW



2. Existing Conditions

2.1. Location and Site

The subject site is located at 8 Grosvenor Place, Brookvale, being approximately 600 metres east of Westfield Warringah Mall and 13 kilometres north-east of the Sydney CBD. Specifically, the site is located near the north-eastern corner of the William Street / Grosvenor Place intersection.

The site is formally identified as Lot 1 / DP 599064. The site is rectangular in configuration with an area of approximately 1,050m². The site has a single street frontage being, Grosvenor Place to the west, having a length of approximately 22 metres. The northern and southern boundaries border neighbouring industrial buildings, having lengths of 46 metres and 51 metres respectively. The eastern boundary borders a neighbouring car repair shop, having a length of 22 metres.

The site currently accommodates an industrial development providing commercial services as a concrete supplier. Two (2) detached buildings are provided on-site with a total approximate building area of 230m². Vehicle access is provided via an approximately 6.0-metre-wide driveway onto Grosvenor Place. A large concrete hardstand is provided within the site for the purposes of storage and truck turning.

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

2.2. Road Network

The road hierarchy in the vicinity of the site is shown by **Figure 2**, with the following roads considered noteworthy:

- Pittwater Road: forms part of a several classified state and regional roads, including MR 159, MR 164 and SR 2110. Pittwater Road generally runs in a north-south direction between Church Point in the north and Fairlight in the south. Near the site, it is subject to 60km/h speed zoning restrictions and accommodates two to three (2-3) lanes of traffic in each direction.
- Grosvenor Place: a local road in the form of a cul-de-sac, that runs in a north-south direction intersecting with William Street in the south and terminating in north. It is subject to 50km/h speed zoning restrictions and accommodates a single lane of traffic in each direction. Unrestricted parallel parking generally permitted along both kerbsides.





Figure 1: Site Plan





Figure 2: Location & Road Hierarchy Plan



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 Fall 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 bus stops along Pittwater Road, Sterland Avenue and Wyadra Avenue. Accordingly, staff of the proposed development would have convenient access to public bus services.

Table 1 below shows the notable town centres that are accessible via these bus services and the average service headways during peak and off-peak periods.

ROUTE NO.	ROUTE (TO / FROM)	ROUTE DESCRIPTION	AVERAGE HEADWAY
167	Warringah Mall to Manly	Via South Curl Curl	Weekdays: 20 minutes Weekends: 20 minutes
172X	Warringah Mall to City Wynyard	Via North Balgowlah (Express Service)	Weekdays: 20-30 minutes peak / 1 hour off peak Weekends: 1 hour
173X	Warringah Mall to City Wynyard	Via Balgowlah Shops (Express Service)	Weekdays: 20 minutes Weekends: 20 minutes
199	Palm Beach to Manly	Via Mona Vale & Dee Why	Weekdays: 10 minutes Weekends: 10 minutes
280	Warringah Mall to Chatswood	Via Allambie Heights, Frenchs Forest, Forestville & Roseville	Weekdays: 15 minutes peak / 30 minutes off peak Weekends: 30 minutes
B1	B-Line Mona Vale to City Wynyard	Via Warriewood, Narrabeen, Collaroy, Dee Why, Brookvale, Manly Vale, Mosman & Neutral Bay	Weekdays: 6-10 minutes Weekends: 6-10 minutes
BN1	B-Line Mona Vale to City Wynyard	Via Warriewood, Narrabeen, Collaroy, Dee Why, Brookvale, Manly Vale, Mosman & Neutral Bay	Night-ride service

Table 1: Bus Services

2.3.2. Cycle Network

Figure 3 shows that the site has excellent access to the local bicycle network, with an off-road cycle path provided along Grosvenor Place which extends towards Pittwater Road and along Wattle Road. These are provided to the west and east of the site respectively and provide good connections to the wider bicycle network.



2.4. Existing Traffic Generation

As discussed in Section 2.1 of this report, the site currently accommodates an industrial development, with the RMS Guide stipulating a rate of 1.0 trip / 100m² GFA / hour during 4-6pm (PM) peak period. The RMS Guide does not stipulate a rate during the typical 7-9am (AM) peak period however, it is considered that it would attract a similar rate as the PM peak period. Application of abovementioned rate to the existing industrial development with a building area of approximately 230m² results in the following traffic generation:

- 2 vehicle trips / hour (2 in, 0 out) during the AM peak period;
- 2 vehicle trips / hour (0 in, 2 out) during the PM peak period.

The above assumes a 90% inbound and 10% outbound split during the AM peak period, noting that most staff would typically arrive for work in the weekday morning, and vice versa for the weekday PM peak period.

The above is considered to reflect the baseline traffic generation for the site. Notwithstanding, it is considered that the most relevant use of the above is to determine the net change in traffic generation as a result of the proposed development.





Figure 3: Public & Active Transport Services



3. Proposed Development

A detailed description of the proposed development is provided in the Statement of Environmental Effects submitted separately to Council. In summary, the DA seeks consent for the demolition of all existing structures and construction of a new warehouse to be used for the purposes of a showroom for display and sales of motor vehicles, and for the servicing and maintenance of the motor vehicles, consisting of:

- 637m² of warehouse gross floor area on Ground Floor;
- 126m² of commercial GFA on Level 1;
- A total of 52 car spaces provided within mechanical car parking systems. The mechanical car parking systems will accommodate eight (8) car spaces for staff and visitors and 44 spaces to accommodate the motor vehicle fleet;
- A 4.5-metre-wide combined entry / exit driveway onto Grosvenor Place.

The parking and traffic implications arising from the proposed development are discussed in Sections 4 and 5 respectively. A copy of the relevant architectural drawings, prepared by Chenchow Little Architects, are provided separately to Council.



4. Parking Requirements

4.1. Car Parking

The WDCP 2011 stipulates car parking rates for warehouse developments. Accordingly, **Table 2** below shows the car parking requirements based on the applicable rate under the WDCP 2011.

Table 2: Car Parking	Requirement
----------------------	-------------

ТҮРЕ	GFA	DCP PARKING RATE	DCP REQUIREMENT
Warehouse	637m ²	1.3 spaces / 100m ² GFA	8
Commercial	Commercial 126m ² Refer to Notes		-
TOTAL			8

Per the WDCP 2011: "1.3 spaces per 100m² GFA (including up to 20% of floor area as office premises space component. Office premises component above 20% determined at office premises rate"

It is evident from **Table 2** that the proposed development is required to provide a minimum of eight (8) car parking spaces under the WDCP 2011.

As mentioned in Section 3, the development will provide 52 car spaces within mechanical parking systems. Of the 52 car spaces, eight (8) spaces will be allocated for staff and visitors and will therefore comply with requirements of the WDCP 2011. The remaining 44 car spaces will be allocated to the Applicant's business operations, which includes the storage, display and sale of motor vehicles. The proposed provision is therefore considered acceptable, with no reliance on on-street car parking.

4.2. Accessible Car Parking

Given the nature of the proposed development, it is considered that there would be negligible demand for accessible car parking. All staff and visitor car spaces will be provided within the mechanical car parking systems. Staff will be trained on the operation of the mechanical car parking systems and will provide a 'parking' or 'valet' service to visitors who are unaware of the typical operation of the mechanical parking system.

In this regard, visitors (including disabled persons) will arrive at the site and drive into the building in a forward direction. On-site staff will advise the visitor to vacate their vehicle such that the staff will be able to park the vehicle within the mechanical car stacker system.

Prior to departure, on-site staff will retrieve the vehicle from the mechanical car parking system, with the vehicle standing within the parking aisle ready for its owner. Once retrieved, the visitor will leave the site in a forward direction. These arrangements are considered acceptable given that visitors will not have been trained in the operation of the car stacker system, and operation is similar to a valet parking system.



4.3. Motorcycle Parking

The WDCP 2011 does not stipulate a rate for the provision of motorcycle parking at warehouses and in any event, it is considered that the development would generate a negligible demand for motorcycle parking. Accordingly, it is considered acceptable that the development does not provide any on-site motorcycle parking.

4.4. Bicycle Parking

The WDCP 2011 stipulates bicycle parking rates for warehouse developments. **Table 3** below shows the minimum bicycle parking requirement for the development and the proposed provision in response.

ТҮРЕ	GFA	DCP PARKING RATE	DCP REQUIREMENT	
Warehouse ¹	637m ²	1.0 space / 200m ² GFA		
Commercial	126m ²	1.0 space / 200m ² GFA	4	
		TOTAL	4	

Table 3: Bicycle Parking Requirement

¹: Light and General Industry rates applied.

It is evident from **Table 3** that the proposed development is required to provide a minimum of four (4) bicycle spaces under the WDCP 2011. Whilst not indicated on the architectural drawings, it is noted the development will be able to readily provide four (4) bicycle spaces on Ground Floor and will comply with WDCP 2011. The bicycle spaces will be provided on further amended architectural drawings, prior to the issue of a Construction Certificate. The proposed bicycle parking provision is therefore considered acceptable.

4.1. Service Vehicle Parking

The WDCP 2011 does not specify a rate for the provision of service vehicle parking. In any event, given the nature and moderate scale of the proposed development, it is expected that there would only be minimal servicing requirements and truck access, being in the order of five (5) deliveries a month (per Applicant's advice).

Having regard for the above, it is proposed that all servicing will be undertaken on-site, along the parking aisle. To facilitate this arrangement, all entry movements for service vehicles up to and including an 8.8-metre-long Medium Rigid Vehicle (MRV) will reverse from Grosvenor Place and enter the warehouse development. To exit, service vehicles will leave in a forward direction.

The proposed servicing arrangements are considered acceptable, taking into consideration the anticipated minor servicing demands of the development coupled with Grosvenor Place being a local road in the form of the cul-desac, which experiences very low traffic volumes and primarily serves as an access road for adjoining industrial developments. The infrequent reversing movements will have negligible impact on traffic movements along Grosvenor Place.

Further to the above, Clause 3.2.2 of AS 2890.2 states the following:



3.2.2 Occasional Service

Requirements for providing occasional service shall be follows:

- (a) The vehicle shall be able to stand wholly within the site.
- (b) Reverse manoeuvres at the property boundary, if permitted by the relevant authority, shall be limited to one only, either on entering or departing, and be subject to determination of both safety and obstruction to other on-street traffic.
- (c) The swept path plus clearances shall be accommodated within the access driveway or circulation roadway.

Having regard for the above, swept path analysis has been undertaken of the service vehicle access arrangements using an MRV as defined under AS 2890.2. The results, included in **Appendix A**, confirm satisfactory vehicle access to and from the site and satisfies the 'occasional service' requirements of Clause 3.2.2 of AS 2890.1



5. Traffic Impacts

5.1. Trip Generation

Table 4 shows the traffic generation of the proposed development based on the applicable rates of the RMS Guideand RMS Guide Update.

LAND USE	AREA	PERIOD	TRIP RATE	TRAFFIC GENERATION
) A / = 11 = 1 = 1 = 1		AM	0.5 trips / 100m ² GFA / hour	3 trips / hour (3 in / 0 out)
warenouse	037111-	PM	0.5 trips / 100m ² GFA / hour	3 trips / hour (0 in / 3 out)
Commercial	12Cm ²	AM	1.6 trips / 100m ² GFA / hour	2 trips / hour (2 in / 0 out)
	12011-	PM	1.2 trips / 100m ² GFA / hour	TRAFFIC GENERATION 3 trips / hour (3 in / 0 out) 3 trips / hour (0 in / 3 out) 2 trips / hour (2 in / 0 out) 2 trips / hour (0 in / 2 out) 5 trips / hour (5 in / 0 out) 5 trips / hour (0 in / 5 out)
	AM TOTAL:			5 trips / hour (5 in / 0 out)
			PM TOTAL:	5 trips / hour (0 in / 5 out)

Table 4: Traffic Generation – Proposed Development

Note: The RMS Guide does not stipulate a traffic generation rate for the PM peak period for warehouse developments however, for the purposes of assessment, it has been assumed that this would be consistent with the AM peak period traffic generation rate.

The above is not a net increase in traffic generation, as it does not take into consideration the generation of the existing development. In this regard, the net increase in traffic generation resulting from the proposed development is expected to be as follows:

- 3 vehicle trips / hour (3 in, 0 out), during the AM peak period;
- 3 vehicle trips / hour (0 in, 3 out), during the PM peak period.

5.2. Traffic Impacts

The proposed development will result in a net increase in traffic generation of three (3) vehicle trips / hour during the weekday AM and PM peak period. This equates to a maximum of one (1) additional vehicle trip every 20 minutes, which is expected to have little to no impact on the performance of the external road network, and accordingly no external improvements will be required to facilitate the development.

Furthermore, computer modelling techniques available to analyse intersection performances are not sensitive to such small changes in traffic volumes and hence, such an assessment is not considered to be required. The traffic impacts of the proposed development are therefore considered acceptable.



6. Design Aspects

6.1. Access

With 52 car spaces of Class 1A (with only up to eight (8) spaces for typical staff and visitor parking use), the proposed development requires a Category 1 Driveway under Table 3.1 of AS 2890.1, being a combined entry / exit driveway width of 3.0 to 5.5 metres. In response, the development provides a combined entry / exit driveway of width 4.5 metres onto Grosvenor Place and therefore satisfies the requirements of AS 2890.1.

The proposed arrangements have also been assessed using swept path analysis which confirms compliance with AS 2890.1 and AS 2890.2, and that the proposed access arrangements will operate safely and efficiently. The results of this analysis are included in **Appendix A** for reference. The proposed design of the access is therefore considered acceptable and complies with the relevant requirements of AS 2890.1.

6.2. Internal Design

The proposed internal parking arrangements comply with the relevant requirements of AS 2890.1, AS 2890.2, and AS 2890.3, with the following design aspects considered noteworthy:

6.2.1. Driveway / Ramp

- The driveway has an up-grade of 5% (1 in 20) for the first 3.0 metres followed by a 12.5% grade (1 in 8) for 4.2 metres inside the property boundary and therefore satisfies the of Clause 3.3 of AS 2890.1.
- The driveway ramp has been designed in accordance with Clause 3.3.3.3 of AS 2890.2.
- The driveway ramp has a minimum width of 4.5 metres between kerbs and will therefore accommodate onelane, two-way traffic flow, as demonstrated by the swept path analysis results included in **Appendix A**. This arrangement complies with AS 2890.1 and is considered acceptable given the low traffic generation and tidal nature, with most vehicles arriving the site in the morning and departing the site in the evening.

6.2.2. Mechanical Car Parking System

- The proposed mechanical car parking system is in the form of a 'Dependent 4-Post Quad Stacker', with a summary of the relevant details provided below.
- Each proposed stacker system will accommodate up to four (4) car spaces, including one (1) car on Ground Floor, with the other three (3) cars on overhead platform levels.
- The car stacker is a dependent parking system that requires the Ground Floor space to be vacant before the overhead platform(s) can be lowered to allow the other vehicles to manoeuvre onto or off the platform.



- Each stacker will have a minimum car space width of 2.4 metres between posts and will accommodate vehicles up to and including a B99 Design Vehicle (5.2 metres in length).
- Notwithstanding the above, a single widened stacker system, having a clear width of 3.0 metres, will be provided to accommodate the Applicant's wider motor vehicles.
- The first three (3) levels of the stacker will accommodate vehicles up to 1.8 metres in height, with the uppermost parking space having a minimum head clearance of 2.2 metres. The 1.8-metre head clearance will accommodate the majority of the client's motor vehicle fleet with the 2.2 metres head clearance accommodating the larger vehicles in the fleet.
- To access the upper platform levels, the use of mechanical car ramps will be installed on the Ground Floor slab. These mechanical ramps will 'tilt' to match the corresponding height of the car stacker platform to allow for vehicles to access the upper platform levels with satisfactory clearances to the underside of the vehicle. In its 'rest' position, the mechanical car ramps will be 'flush' with the Ground Floor slab and will be traversable.
- All on-site staff will be trained in the operation of the mechanical car parking systems to ensure the safety and operation of the system.

6.2.3. Parking Modules

- All walls / columns are located outside of the space design envelope, as required under Figure 5.2 of AS 2890.1.
- The parking aisle has a width of 9.0 metres and is in accordance with Figure 2.2 of AS 2890.1
- A 1.0 metre blind aisle extension has been provided beyond the last angled car parking space, in accordance with Figure 2.3 of AS 2890.1.

6.2.4. Head Heights

• A clear head height of 4.5 metres is required above all areas where the MRV is required to traverse in accordance with Table 2.1 of AS 2890.2.

6.2.5. Other Design Aspects

- A 2.5 metre by 2.0 metre visual splay is provided on both sides of the driveway, at the property boundary, in accordance with Figure 3.3 of AS 2890.1. This area is to be kept clear of all vertical obstructions with a height greater than 0.6 metres.
- All bicycle parking spaces are provided as Security Level B facilities, in accordance with AS 2890.3.
- As advised by the Applicant, visitations to the site will be scheduled prior to arrival. In this regard, visitors will arrive at the site and drive into the building in a forward direction. On-site staff will advise the visitor to vacate their vehicle such that the staff will be able to park the vehicle within the mechanical car stacker system.



Prior to departure, on-site staff will retrieve the vehicle from the mechanical car parking system, with the vehicle left standing in the parking aisle ready for its owner. Once retrieved, the visitor will leave the site in a forward direction. These arrangements are considered acceptable given that visitors will not have been inducted to the operation of the system, and are similar to a valet parking system.

In summary, the internal parking arrangements have been designed in accordance with AS 2890.1, AS 2890.2 and AS 2890.3. Any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.



7. Conclusions

In summary:

- PDC Consultants has been commissioned by Swell Trading Pty Ltd8 Grosvenor Place, Brookvale to undertake a traffic impact assessment for the DA relating to the demolition of all existing structures and construction of a new warehouse, to be used for the purposes of a showroom for display and sales of motor vehicles, and for the servicing and maintenance of the motor vehicles, incorporating:
 - 637m² of warehouse gross floor area on Ground Floor;
 - 126m² of ancillary commercial GFA on Level 1;
 - A total of 52 car spaces provided within mechanical car parking systems. The mechanical car parking systems will accommodate eight (8) car spaces for staff and visitors and 44 spaces to accommodate the motor vehicle fleet;
 - A 4.5-metre-wide combined entry / exit driveway onto Grosvenor Place.
- The traffic generation assessment confirms that the development will generate a net increase of only three (3) vehicle trips / hour, once the generation of the existing development is taken into consideration. This is a minor increase that 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 development is required to provide a minimum of eight (8) car spaces under the WDCP 2011. In response, the development will provide 52 car spaces within mechanical parking systems. Of the 52 car spaces, eight (8) spaces will be allocated for staff and visitors and will therefore comply with requirements of the WDCP 2011. The remaining 44 car spaces will be allocated to the Applicant's business operations which includes the storage, display and sale of motor vehicles. The proposed development is considered an acceptable level of provision.
- The internal parking arrangements have been designed in accordance with AS 2890.1, AS 2890.2 and AS 2890.3. Any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

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



Appendix A

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