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Traffic Assessment

25-27 Warriewood Road, Warriewood Proposed Residential Development

J & G Knowles & Associates Pty Ltd





Revision Record

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1 Introduction

TTM Consulting was engaged by J&K Knowles & Associates Pty Ltd to prepare a traffic engineering report investigating a proposed residential unit and townhouse development at 27-29 Warriewood Road, Warriewood NSW.

It is understood that a development application will be lodged with Northern Beaches Council (formerly Pittwater Council).

1.1 Scope

This report investigates the transport aspects associated with the proposed development. The scope investigated includes:

- Parking supply required to cater for development demand.
- Parking layout to provide efficient and safe internal manoeuvring.
- Identification of likely traffic volumes and traffic distribution from the future development.
- Identification of likely traffic impact of development on the public road network.
- Access configuration to provide efficient and safe manoeuvring between the site and the public road network.
- Access to suitable levels of public transport.

The development plans have been assessed against the following:

- Pittwater Council: Development Control Plan (DCP) 2015.
- Warriewood Valley Roads Masterplan 2018.
- Warriewood Valley Strategic Review Report (2012).
- Warriewood Valley Strategic Review Addendum Report (2014).
- Australian Standard (AS 2890).
- RTA (RMS) Guide to Traffic Generating Developments.



1.2 Development profile

The proposed residential development contains:

- Lot 21
 - One dwelling house
- Lot 22
 - o 11 residential townhouses (including 3 adaptable units).
 - o 32 residential units (including 8 adaptable units):
 - 4 x one bedroom units
 - 22 x two bedrooms units
 - 6 x three bedrooms units
 - Two levels basement car parks.

The proposed basement car park has a total of 83 car parking spaces including 2 accessible bays, 8 adaptable spaces, 11 visitor spaces and 1 car wash bay.

36 bicycle parking spaces are proposed in addition to the car parking spaces.

Each townhouse and the dwelling house will be allocated with two car spaces within a garage as part of each lot. Three visitor parking spaces and one accessible spaces will be provided on Lorikeet Grove.



1.3 Site location

The site is located at 25-27 Warriewood Road, as shown in Figure 1-1. It has road frontages to Warriewood Road. The site is currently undeveloped.



Figure 1-1: Site location

A development application has been submitted to Council for a proposed Aged Care Facility at the south boundary of the site and the extension of Lorikeet Grove (see Figure 1-2 & Figure 1-3). The aged care facility is proposed to house 130 residents. Parking for 70 vehicles is proposed to be provided over ground and basement parking.



Figure 1-2: Proposed residential development

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Figure 1-3: Proposed aged care facility

It is understood that the adjacent site at 29-31 Warriewood Road has current approval for residential subdivision to provide 40 lots. Eleven of the residential lots will have direct access to Warriewood Road. The remaining 29 lots will access the local road network via the proposed extension of Lorikeet Grove as shown in Figure 1-4.



Figure 1-4: 40 Lot subdivision at 29-31 Warriewood Road¹

¹ Source: Proposed Residential Subdivision 29-31 Warriewood Road Warriewood – Traffic Impact Assessment 16 April 2013 prepared by Ray Dowsett Traffic and Transport Planning Pty Ltd



1.4 Warriewood Valley Roads Masterplan (2018)

The Warriewood Valley Roads Masterplan (2018) sets out Council's plans for the road system including road cross sections, traffic calming and management, and pedestrian and cycle routes within the Warriewood Valley Precinct.

The Masterplan includes an indicative road network. It also identifies an off road shared pedestrian and cycleway path along Warriewood Road.

Warriewood Roads Release Area - Landscape Masterplan and Design Guidelines (Public Domain) specifies the hierarchy for vehicle and pedestrian links. This plan includes an indicative location for a road running from the planned Lorikeet Grove extension through to the intersection of Warriewood Road and Hill Street.



Figure 1-5: Indicative location of road running from Lorikeet Grove extension through to Warriewood Road and Hill Street²

² Source: Northern Beaches Council – Pittwater, Warriewood Valley Release Area – Landscape Masterplan and Design Guidelines (Public Domain) November 2016, viewed 18th September 2018.



2 Existing transport network and traffic situation

2.1 Road network

The subject site has street frontages to Warriewood Road. Warriewood Road and internal roads yet to be constructed. The roads in the vicinity of the site are maintained by Northern Beaches Council. The local road characteristics are summarised in Table 2-1.

Table 2-1: Road	characteristics
-----------------	-----------------

Road	Speed Limit	Lanes	Road Authority
Warriewood Road	50kph	2 (undivided, plus parking)	Council
Hill Street	50kph	2 (undivided, plus parking)	Council
Lorikeet Grove (future road)	50kph	2 (undivided, plus parking)	Council
Laneway (future road)	40 or 50kph (to be determined by Council)	2 (undivided, plus parking)	Council

Warriewood Road has a 12-metre-wide carriageway at the site frontage. The intersection of Warriewood Road/Hill Street and the intersection of Warriewood Road/ Macpherson Street are priority-controlled (Give-way) intersections.

Warriewood Road, in conjunction with Foley Street to the north, forms a connection between Pittwater Road and Mona Vale Road with traffic signals controlling access at each intersection. Adjacent to the site Warriewood Road has a reserve width of 20 metres, pavement width of 9.0 metres with kerb and gutter along the eastern side only providing a grassed footway 5.5 metres wide.

The proposed development includes a public road linking Warriewood Road to the planned extension of Lorikeet Grove. Lorikeet Grove currently exists as a no through road as shown in Figure 2-1. Lorikeet Grove has carriageway widths of 5.5 metres to 7.5 metres in parts.

The proposed residential flat building will have access driveway on Lorikeet Grove to the basement carpark. The proposed townhouses will have access driveway on the proposed laneway. The dwelling house on Lot 21 will have an access driveway on Lorikeet Grove.



The cross section for Lorikeet Drive will be similar to what has already been constructed further north (see Table 2-1).



Figure 2-1: Lorikeet Grove further north



2.2 Assessment of existing travel options

2.2.1 Public transport

Bus stops are located on Macpherson Street and Warriewood Road fronting the development site, with services to / from Sydney CBD and Warriewood / Mona Vale. Sydney Buses operates bus routes 185, E85 and L85 which service the site, as shown in Figure 2-2 to Figure 2-4.



Figure 2-2: Bus route 185 network diagram³



Figure 2-3: Bus route E85 network diagram³





Figure 2-4: Bus route L85 network diagram³

³ Source: Transport NSW Website (http://www.transportnsw.info/)



2.2.2 Walking and cycling infrastructure

Formal pedestrian paths are not currently provided on Warriewood Road in the direct vicinity of the site. Pedestrians were observed walking on the southern side of Warriewood Road as shown in Figure 2-5.



Figure 2-5: Pedestrian route on the southern side of Warriewood Road





There are limited dedicated cycle ways within the vicinity of the site as presented in Figure 2-6.

Figure 2-6: RMS Cycle Network⁴

Pittwater Council Road Reserve Walking Plan and Cycle sub plan identities existing and proposed footpaths and shared paths in the vicinity of the site (see Figure 2-7).

⁴ Source: NSW Road Maritime Services Website: http://www.rms.nsw.gov.au/roads/using-roads/bicycles/cyclewayfinder/index.html





Figure 2-7: Existing and proposed footpaths and shared paths in the vicinity of the site⁵

http://portal.pittwater.nsw.gov.au/common/Output/DataworksAccess.aspx?id=z%252bgvDiTtU4M%253d&ext=pdf

⁵ Source: Northern Beaches Council- Pittwater, 2014, *Road Reserve Walking Sub Plan and Cycle Sub Plan Map*, viewed 1st September 2016,



3 Parking

3.1 Council car parking requirements

Councils parking requirement for this type of development are identified in 'Pittwater 21 Development Control Plan (DCP) 2015 – Part B6.3 Off-Street Vehicle Parking Requirement' is presented in Table 3-1.

Table 3-1: Councils parking requirements

Land Use	Units	Minimum Parking Rates	
	1 bedroom	1 space per dwelling	
Residential Flat Building	2 bedrooms or more	2 spaces per dwelling	
	Visitor parking	1 space per 3 dwellings	
	Car wash bay	1 for development with 10 or more dwellings	
Dwellings/Town Houses	2 bedrooms or more	2 spaces per dwelling	

Table 3-2 presents the parking requirements for compliance with the Councils DCP.

Table 3-2. Dro	nosod dovol	onment car	narking	supply (Council	rates)
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Development Type	Number of bedrooms	Council Minimum Parking Supply	Proposed Car Parking Provision
	4 x one bedroom	4.0	
	22 x two bedrooms	44.0	71 (including 8 adaptable spaces and 2 accessible bays)
Residential Flat	6 x three bedrooms	12.0	
Building	Visitor parking	10.7	11
	Car wash bay	1	1
	Total	70.7	83
Townhouses	11 x three bedrooms	22	22
Dwelling House	1 x Three bedrooms	2	2

Four indented car parking spaces will be provided on Lorikeet Grove. This is in addition to the 11 visitor parking spaces provided in the residential flat building.



3.2 Accessible bay requirements

Pittwater 21 DCP requires that 'accessible parking bays for people with disabilities should be provided at a rate of 3% the required number of parking spaces or part thereof with a minimum of one parking space'.

The accessible car parking requirements are summarised in Table 3-3.

Table 3-3: Accessible parking rate requirements (Pittwater 21 DCP 2014)

Accessible Parking	Required number of parkir		Number of Accessible Parking Spaces to
Requirement	spaces		be Provided on Site
3% of the required car parking spaces (min one accessible parking space)	Residential Flat Building	71	2.1

Two accessible parking bays are provided within the basement car park for the proposed residential units. These two accessible bays are designed in accordance with 'AS 2890.6: Off street parking for people with disabilities'. In addition, eight adaptable parking bays are designed for adaptable units in accordance with 'AS4299 – 1995: Adaptable housing' (5.4m × 3.8m as per Clause 3.7.2).

The provision for accessible bays satisfies Council's DCP requirements.

3.3 Bicycle parking requirements

Council bicycle parking requirements for this type of development are identified in 'Pittwater 21 DCP 2015' states:

'for residential development (other than a dwelling house, dual occupancy, secondary dwellings, exhibition homes and rural workers' dwellings), secure bicycle storage facilities must be provided within the building at the rate of 1 bicycle rack per 3 dwellings.'

Table 3-4 presents the bicycle parking requirements for compliance with the Councils DCP.

Land Use	Councils rates	Council bicycle requirements	Bicycle provisions
Apartments (32 Units)	Residential 1 space per 3dwellings	10.7	36 Bicycle parking provided on-site

The proposed development provides 36 bicycle parking spaces, thus complying with Council DCP bicycle parking requirements.



3.4 Car park layout

Table 3-5 identifies the characteristics of the proposed parking areas with respect to the Council requirements. The last column identifies the compliance of each design aspect.

Design Aspect	Council / AS 2890 Requirements	Proposed Provision	Compliance
Parking space length: – Standard bay – Accessible bay – Visitor Bay	5.4m (min) 5.4m (min) 5.4m (min)	5.4m 5.4m 5.4m	Compliant Compliant Compliant
Parking space width: – Standard bay – Accessible bay – Visitor Bay	2.4m (min) 4.8m (min) 2.4m (min)	2.4m Refer to Section 3.4.1 2.4m	Compliant Refer to Section 3.4.1 Compliant
Access Driveway Width	3.0 to 6.0m (min)	6m (minimum)	Compliant
Aisle Width: Parking aisle Circulation aisle/ramp	5.8m (min)	5.8m (minimum)	Compliant
Access Driveway	First 6m from the property boundary shall be a maximum of 1:20 (5%)	First 6m from the property boundary has a gradient of 1:20 (5%)	Compliant
Parking envelope clearance - Column adjacent to bay	Located between 0.75m and 1.75m of aisle	Located between 0.75m and 1.75m of aisle	Compliant
Rump Grade Transitions	Up to 18% for 2m transitions	12.5% for 2m transition	Compliant
Maximum Gradient Ramp	Up to 20m long – 1 in 4 (25%)	25%	Compliant
Blind Aisle	1m extension beyond the last parking space	Minimum 1m extension beyond the last parking space	Compliant
Height Clearance: General Min. Over PWD bay	2.2m 2.5m	2.2m (minimum) 2.5m (minimum)	Compliant

Table 3-5: Parking design requirement (residential units)



Table 3-6: Garage parking design requirement (Townhouses)

Design Aspect	Council / AS 2890 Requirements	Proposed Provision	Compliance
Garage length – 2 adjacent vehicles	6m (min)	6m	Compliant
Garage width - 2 adjacent vehicles	5.7m (min)	5.7m	Compliant
Access Driveway Width	3.0 to 6.0m (min)	5.2m (minimum)	Compliant

3.4.1 Accessible bays

The eight accessible bays are designed for adaptable housing in accordance with 'AS4299 – 1995: Adaptable housing'.



4 Service vehicles

The residential refuse of the apartment will be collected by southbound waste vehicles on Lorikeet Grove.

A temporary bin store area will be allocated at the northwest of the site boundary. Bins will be wheeled out to the temporary bin store area from the refuse room on the ground floor the day before waste collection.

TTM has been advised that bins will be serviced by a rear lift vehicle. The waste vehicle coming from norther Lorikeet Grove will be pulled up at the side of the road. The stopping area of the waste truck will be at least 10 metres from the intersection up north of Lorikeet Grove.

The residential refuse of the townhouses will be collected from Warriewood Road, in the frontage of the site, except townhouse TH12. Waste collection of Townhouse TH12 will occur kerb side on Lorikeet Grove.

It is our advice that the proposed service vehicle arrangement is considered acceptable for the development.

Further information is contained in the waste report prepared separately by TTM Consulting.



5 Impact of proposed development

The RTA (RMS) Guide to Traffic Generating Developments specifies land use traffic generation rates for the proposed development, as presented below:

Table 5-1: Traffic Generation Rates

Land Use	RMS Traffic Generation Rates (Medium Density Residential Flat building)	Vehicles Trips (peak hour)
Residential Units		
26 x one / two bedrooms	Up to 2 bedrooms: 0.4 - 0.5 vehicle trips / dwelling	10.8
6 x three bedrooms	3 bedrooms or more: 0.5 - 0.65 vehicle trips/dwelling	3
Town Houses / Dwelling House		
11 town houses	0.5 - 0.65 vehicle trips/dwelling	6.6
1 dwelling house	0.5 - 0.65 vehicle trips/dwelling	0.6
Total Traffic Generation	·	21 vehicle trips

The traffic generation potential of up to 21 vehicles in the morning and evening peak periods is relatively minor and not of a level normally associated with unacceptable traffic implications in terms of road network capacity or traffic related environmental effect.



6 Conclusions

6.1 Development access

The proposed access complies with the Council requirements and is considered acceptable for the development.

6.2 Car parking arrangements

The proposed parking supply for the site satisfies Council parking requirements. The proposed car parking layout complies with AS2890 and AS4299 requirements.

TTM advises the proposed car parking arrangement for this development is acceptable.

6.3 Impact on surrounding road network

Assessment of the proposed development indicates that the development will not have a significant impact on the road network.

6.4 Service vehicle arrangements

Servicing for this development will be facilitated along Lorikeet Grove. There will be very low and infrequent service vehicle demands for this site. The service vehicle arrangement is considered acceptable for the development.

6.5 Public transport and bicycle / pedestrian facilities

The current public transport infrastructure and proposed site provisions for pedestrian and bicycle facilities is considered adequate for the development.

6.6 Conclusion

TTM see no traffic engineering reason why the relevant approvals should not be granted



Appendix A Proposed site plan

Site: 25-27 Warriewood Road, Warriewood – Traffic Assessment Reference: 16SYT0026



PROJECT WARRIEWOOD RESIDENTIAL DEVELOPMENT

address 25 - 27 WARRIEWOOD ROAD, NSW 2102

DRAWING TITLE PROPOSED APARTMENT GROUND FLOOR PLAN / TOWNHOUSE GARAGE LOWER LEVEL FLOOR REAN KNOWLES GROUP

DEVELOPMENT APPLICATION



1510121 PROJECT DATE JULY 2018 SCALE (@A1) DRAWING No. REV 1:200 DA - 100 H date 03.09.2018





WARRIEWOOD RESIDENTIAL DEVELOPMENT ADDRESS 25 - 27 WARRIEWOOD ROAD, NSW 2102 DRAWING TITLE PROPOSED BASEMENT 01 PLAN ^{CLIENT} KNOWLES GROUP

DEVELOPMENT APPLICATION

OF 1 BED APT: OF 2 BED APT: OF 3-BED APT:	4 22 6
TAL APARTMENTS: TAL TOWNHOUSES:	32 12
ERALL	<u>44</u>
APTABLE UNITS	
ARTMENTS: WNHOUSES	8 3
ERALL	<u>11</u>
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ARTMENTS - STANDARD SPACES - ADAPTABLE SPACES - VISITOR SPACES - DDA - VEHICLE WASH BAY	52 8 11 2 1
WNHOUSES - SPACES - VISITOR SPACES - (N/A TO IS APPLICATION AND PROVIDED ON- REET IN-LIEU)	24 0
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ARTMENTS - STANDARD SPACES - ADAPTABLE SPACES - VISITOR SPACES (BASEMENT) - DDA - VEHICLE WASH BAY	61 8 11 2 1
WNHOUSES - SPACES - VISITOR SPACES (N/A TO IS APPLICATION AND PROVIDED ON- REET IN-LIEU)	24 0
ERALL:	107

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APT. G03	02 03
APT. G04	04 05
APT. G05	06 07
APT. G06	08 09
APT. G07	10 11
APT. G09	12
APT. G11	14 15 16
ADAPTABLE APARTMENTS	10
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APT. G08	33 41 82 (Adaptable
APT. G10	42 42 81 (Adaptable
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APT 1.04	20 37
APT. 1.07	38 39
APT. 1.08	40 43
APT. 1.10	44 45
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APT. 1.13	21 49
ADAPTABLE APARTMENTS	50
APT. 1.02	30 (Adaptable
APT. 1.05	34 31 (Adaptable
APT. 1.06	35 ` 32 (Adaptable
APT. 1.09	36 59
APT. 1.12	69 (Adaptable 58
	70 (Adaptable
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APT. 2.03	55, 56 23
APT. 2.04	57 71
APT. 2.05	72 73
APT. 2.06	74, 75 24
APT. 2.07	76 77
APT. 2.08	78, 79 80
VISITORS / DDA VISITORS	25
VISITORS	26

VISITORS DDA VISITORS VISITORS VISITORS VISITORS VISITORS VISITORS VISITORS DDA

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STORAGE NUMBER



project date JULY 2018 SCALE (@A1) DRAWING No. REV 1:200 DA - 105 F date 01.08.2018



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WARRIEWOOD RESIDENTIAL DEVELOPMENT ADDRESS 25 - 27 WARRIEWOOD ROAD, NSW 2102 DRAWING TITLE PROPOSED BASEMENT 02 PLAN ^{CLIENT} KNOWLES GROUP

DEVELOPMENT APPLICATION

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RALL:	<u>9</u>
KING PROVIDED	
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NHOUSES - SPACES - VISITOR SPACES (N/A TO APPLICATION AND PROVIDED ON- EET IN-LIEU)	24 0
RALL:	<u>1</u>

APARTMENT NUMBER	
GROUND FLOOR	NUMBER
STANDARD APARTMENTS	
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APT. G03	02 03
APT. G04	04 05
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APT. G06	08 09
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APT. G09	12 13
APT. G11	14 15
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APT. G10	82 (Adaptable) 42
	81 (Adaptable)
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APT. 1.03	19
APT. 1.04	20 37
APT. 1.07	38 39
APT. 1.08	40 43
APT. 1.10	44 45
APT. 1.11	46 47, 48
APT. 1.13	21 49
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APT. 1.05	34 31 (Adaptable)
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APT. 1.12	69 (Adaptable) 58
	70 (Adaptable)
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APT. 2.03	55, 56 23
APT. 2.04	57 71
APT. 2.05	72 73
APT. 2.06	73 74, 75
APT. 2.07	24 76 77
APT. 2.08	77 78, 79
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VISITORS / DDA	
VISITORS	25 26
VISITORS DDA	27 28
VISITORS VISITORS	60 61
VISITORS VISITORS	62 63
VISITORS VISITORS	64 65
VISITORS VISITORS	66 67
DDA	68

STORAGE NUMBER

23

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project date JULY 2018 SCALE (@A1) DRAWING No. REV 1:200 DA - 106 F date 01.08.2018



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