35-39, 40, 41, 42 & 43 Belgrave Street, Manly

Transport Impact Assessment

Prepared for: **Time & Place**

3 July 2023

PROJECT INFORMATION

Project Name:	35-39, 40, 41, 42 & 43 Belgrave Street, Manly
Client:	Time & Place
Project Number:	2317
Prepared By:	JMT Consulting

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1 Introduction

1.1 Background

JMT Consulting was engaged by Time & Place to prepare a transport assessment to support a Development Application (DA) for the site at 35-39, 40, 41, 42 & 43 Belgrave Street, Manly. The intention is for the development to provide 25 premium residential apartments with associated basement car parking facilities.

The development site will be an amalgamation of the following lots:

- Lot 1 / DP719821 known as 43 Belgrave Street Manly
- Lot 1 / DP34395 known as 42 Belgrave Street Manly
- Lot 1 / DP104766 known as 41 Belgrave Street Manly
- Lot 1 / DP100633 known as 40 Belgrave Street, Manly
- SP 14133 known as 35-39 Belgrave Street, Manly

1.2 Report purpose

The purpose of this report is to summarise the transport implications of the proposed development of the site. The report considers the following items:

- Existing transport conditions in and around the site, including site access arrangements, car parking and the adjacent public transport network
- Future transport access arrangements including:
    - Vehicle access arrangements
    - Car parking arrangements for residents and visitors
    - Bicycle parking provision for residents and visitors
    - Potential impacts on the adjacent road network as a result of the proposal

The analysis contained in this document is based on the architectural drawing set for the project issued by SJB dated June 2023.

2 Existing Conditions

2.1 Site location and vehicle access

The site is located in the suburb of Manly and located within the North Beaches Local Government Area (LGA). The site currently comprises of a small number of commercial tenancies with frontages to both Belgrave Street and Whistler Street. Vehicle access is limited to the property at 42 Belgrave Street which is provided via a driveway on Whistler Street as illustrated in Figure 1 below.

Figure 1 Site location and vehicle access

2.2 Car parking

There is currently limited on-site car parking for the existing commercial tenancies, with on-street parking on Whistler Street and Belgrave Street utilised by staff and visitors.

2.3 Surrounding road network

To manage the extensive network of roads for which councils are responsible under the Roads Act 1993, Transport for NSW (TfNSW) in partnership with local government established an administrative framework of *State, Regional,* and *Local Road* categories. State Roads are managed and financed by TfNSW and Regional and Local Roads are managed and financed by councils.

Key State and Regional roads which provide access to the site are illustrated in Figure 2 below, with Pittwater Road / Belgrave Street being the key State roads in the vicinity of the site. Raglan Street to the north of the site is classified by TfNSW as a Regional Road which performs the function of a collector route through the local area. Whistler Street on the site's eastern frontage is neither classified as a State or Regional road and therefore no restrictions in terms of vehicle access are in place.

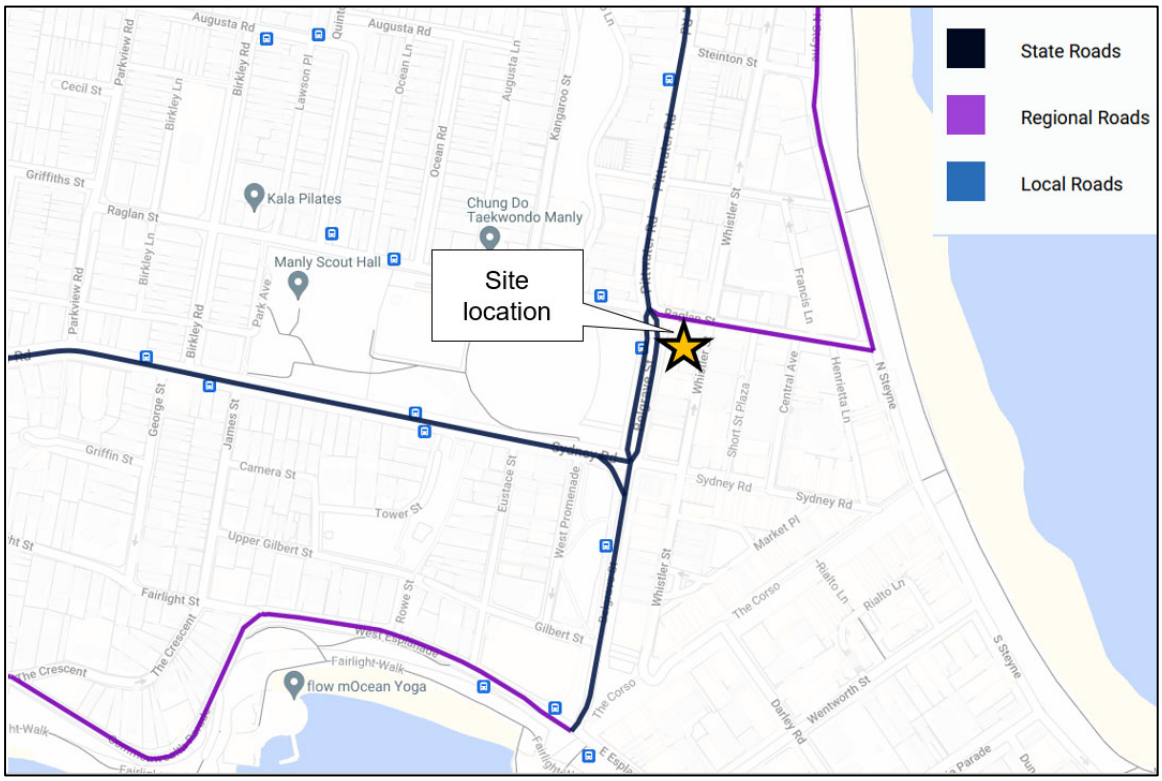

Figure 2 Existing road network

2.4 Public transport

The site is well located to take advantage of local bus services and is within a five minute walk of the Manly Ferry Wharf. Bus stops on Belgrave Street and Pittwater Road adjacent to the site provide access to three bus routes that travel to key destinations in the Northern Beaches area such as Warringah Mall and Dee Why. Bus stops on Sydney Road provide access to other locations including the Sydney CBD.

The public transport network serving the site is shown in Figure 3.

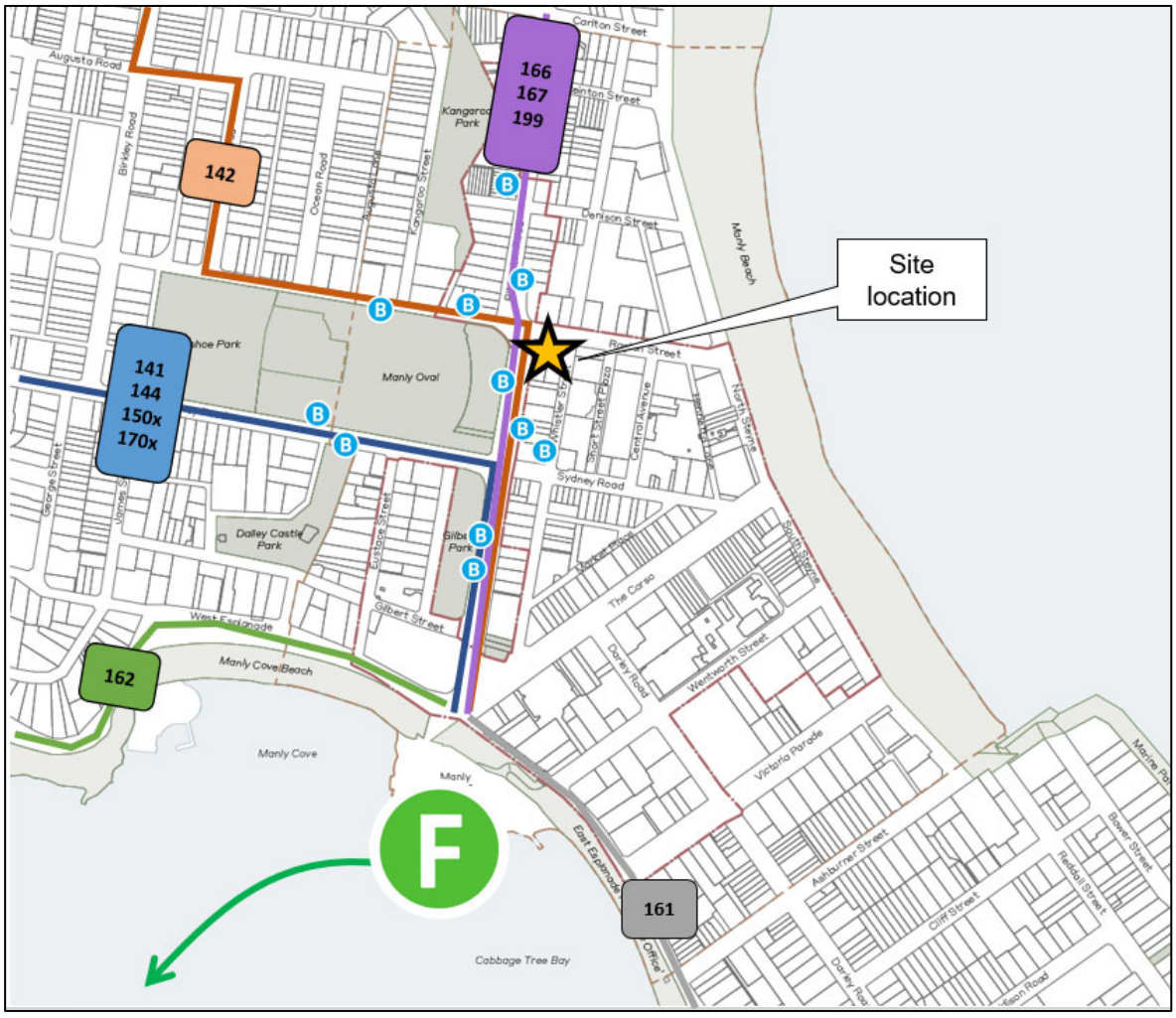

Figure 3 Nearby public transport services and stops

2.5 Crash data

A review of crash data published by Transport for NSW for the most recent five year period has been review and is shown in Figure 4. This indicates no recorded crash history adjacent to the site, particularly at the planned driveway entrance on Whistler Street.

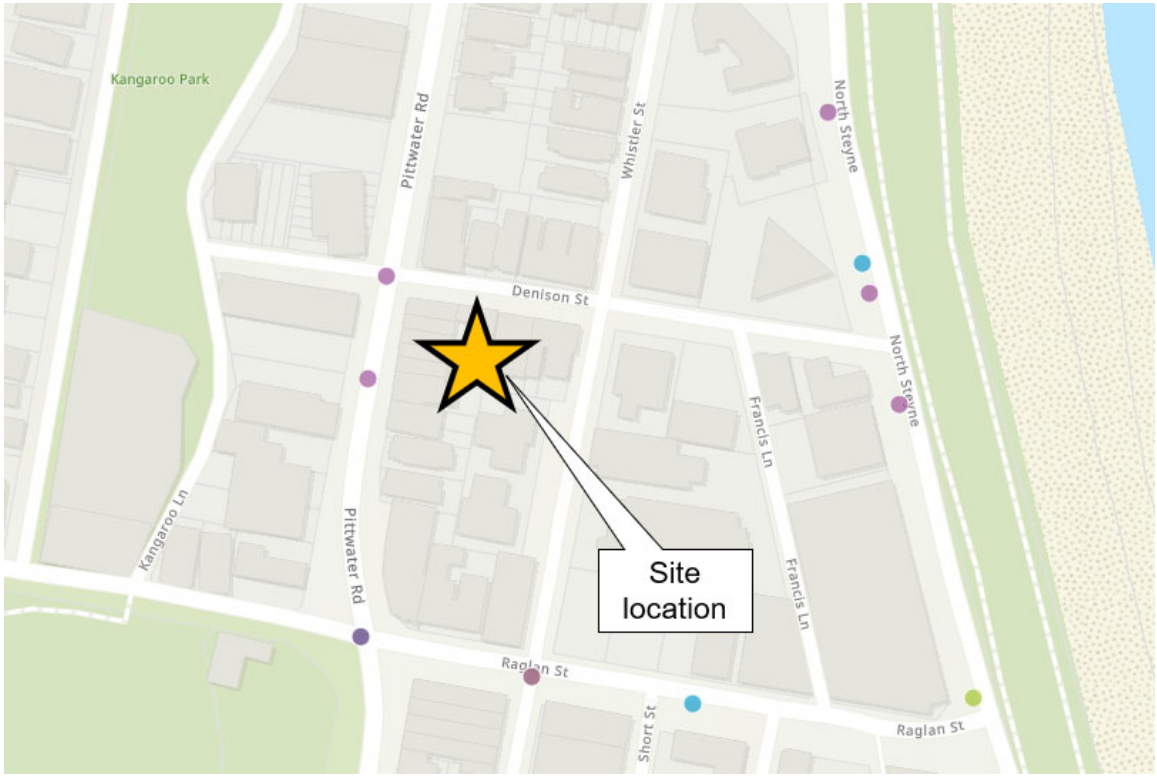

Figure 4 Crash data

Source: NSW Centre for Road Safety

3 Transport Assessment

3.1 Proposed vehicle site access

The proposed vehicle site access strategy is illustrated in Figure 5 below. Given Belgrave Street and Raglan Street classification as a State and Regional road respectively, all vehicle access in future would be provided from Whistler Street. Access to the basement car parking area will be via a single-lane ramp controlled by a traffic light system.

Given the constrained site footprint a 3.6m wide (kerb to kerb) ramp is provided which allows for travel in a single direction, with a waiting bay and traffic light system in place to manage conflicts between vehicles travelling in opposing directions. The vehicle access point has been designed in accordance with the design requirements set out in the relevant Australian Standard, namely AS2890.1:2004 and AS2890.2:2018. Vehicle swept paths indicating the entry and exit of vehicles from the site is provided on the following pages.

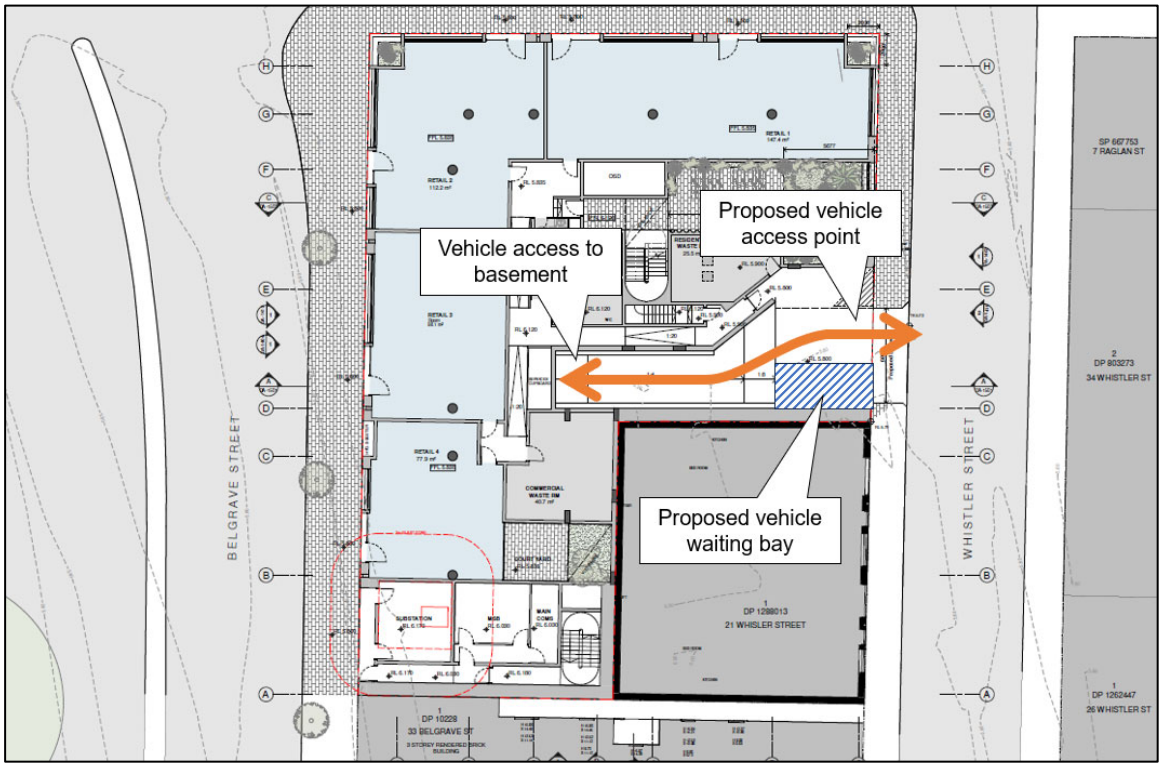

Figure 5 Proposed vehicle site access strategy

The waiting bay has been designed in accordance with AS2890.1, including a total length of 6m and width of 2.4m. The overall driveway width at the vehicle entry point is approximately 6m which exceeds the minimum requirement of 5.5m noted in AS2890.1.

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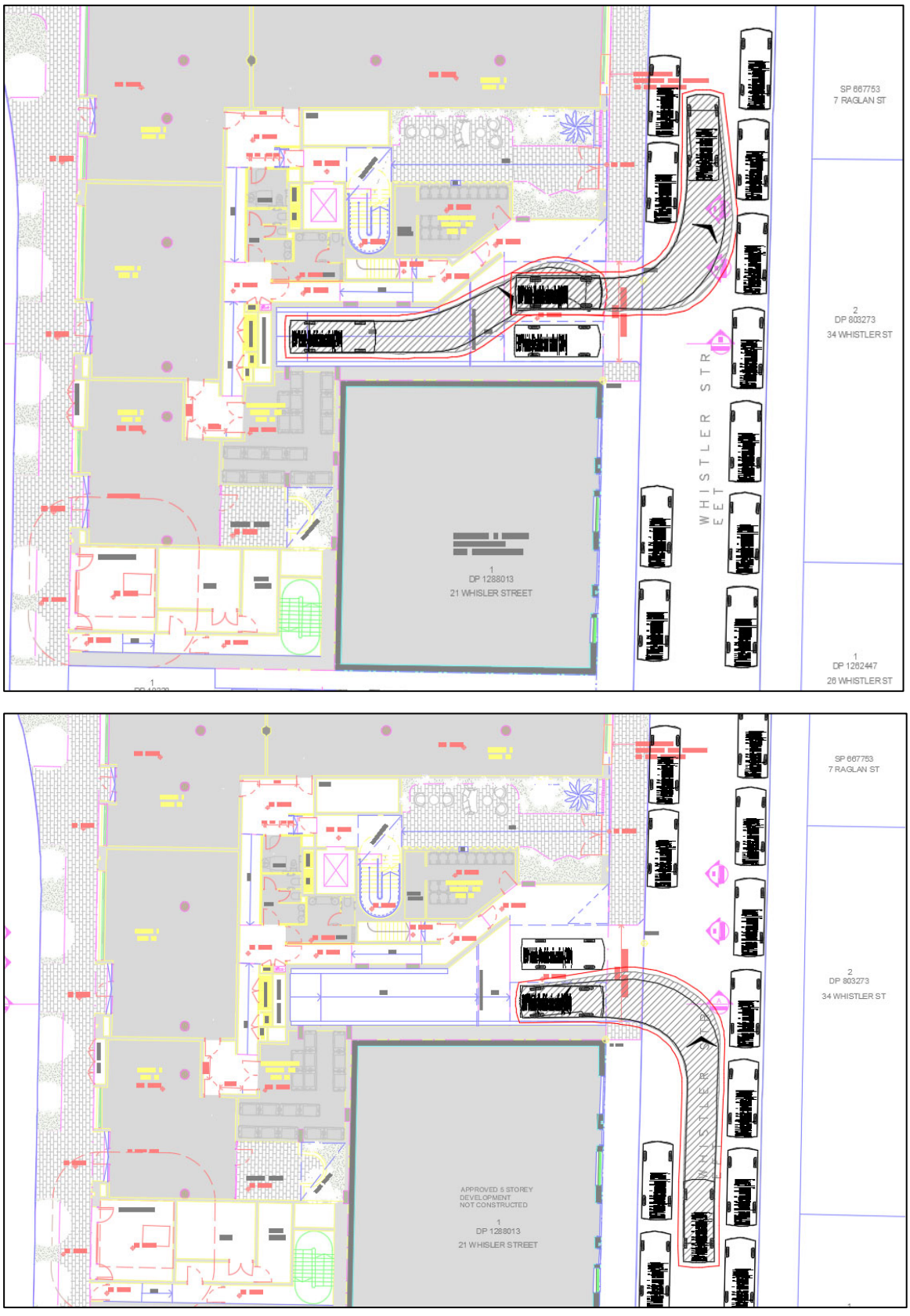

Figure 6 Swept path analysis – vehicle site access

3.2 Driveway design

As indicated in Figure 7 the site access driveway has been designed to provide drivers with adequate sight distances to view oncoming pedestrians on Denison Street, with no obstructions of greater than 1m in height provided within the 'sight triangles' as required under AS2890.1 clause 3.2.4 (b).

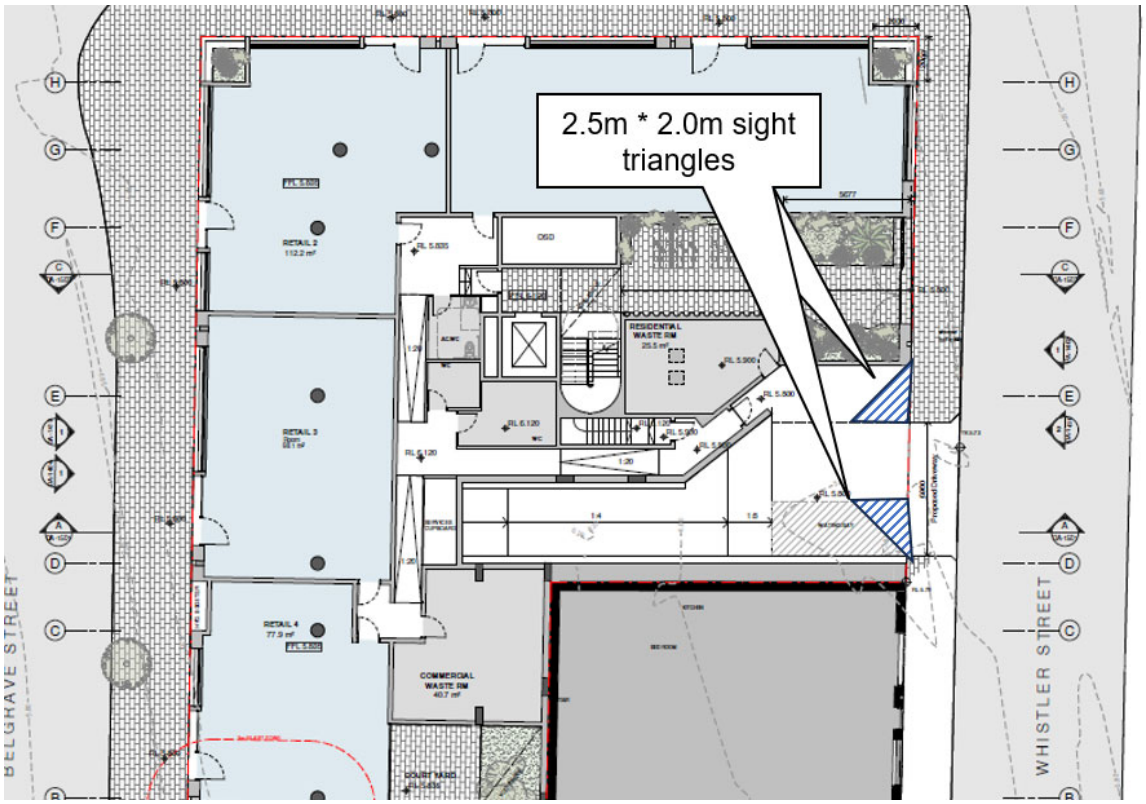

Figure 7 Sight distances from access driveway

AS2890.1 -2004 at Clause 3.2.2 notes that driveway ramps can be designed with reduced widths that do not permit unobstructed two-way traffic movements in situations where there are expected to be less than 30 vehicle movements (two way) per hour. For the subject site traffic movements are anticipated to be approximately ten vehicles per hour during busy periods which is well below this threshold noted in AS2890.1. The driveway width is therefore considered suitable given the site context.

3.3 Vehicle access ramp operations

As previously noted a one-way ramp with complementary traffic light system and waiting bays is proposed within the site due to it's constrained footprint.

To consider the suitability of the waiting space at ground level and confirm that no queueing will occur on Whistler Street modelling has been undertaken using steady state queueing theory as outlined in The Austroads publication "Guide to Traffic Management Part 2: Traffic Theory (2015)".

The utilisation factor ρ or ratio of average arrival rate r and service rates s is given by the formula below. In this instance, r = 11 vehicles per hour and s = 167 vehicles per hour[1].

Utilisation Factor $\rho = r / s = 11 / 167 = 0.066$

The probability that the ground floor waiting bay will be empty is given the following formula:

$P_0 = 1 - \rho = 1 - 0.066 = 0.936 \text{ or } 93.6\%$

Therefore the probability that the ground floor waiting bay will be **empty** in the busiest hour of the day is 93.6%.

The probability of 1 car stopped in the ground floor waiting bay whilst the access ramp is in use by another vehicle is given by the following equation:

$P(>1) = \rho^{(n+1)} = 0.066^2 = 0.0021$ or 0.21%

Therefore the probability that less than two cars will be using the vehicle access ramp at any one time is 99.71%.

Where traffic flow at the site entrance is restricted by a mechanical system (e.g. car lift, traffic signals etc), Clause 3.5 of AS2890.1 - 2004 requires the 98th percentile queue to be accommodated on-site. As there is a probability of 99.71% that the vehicle access ramp will be in use by less than two cars during the busiest time of the day, the proposed access arrangements whereby a single waiting bay is provided at ground floor complies with the requirements of Australian Standards.

3.4 Car park design

The car park has been designed in accordance with AS2890.1 with respect to ramp gradients, circulation aisle widths and car space dimensions. A review of the plans has found that the car park layout complies with the requirements of AS2890.1-2004 for Class 1 parking areas (aisles minimum 5.8 metres wide with parking spaces 2.4 metres wide by 5.4 metres long and 2.4 metre wide shared zones for accessible spaces). A 1m extension at the end of the dead end aisle is provided to facilitate vehicle movements into and out of the car space and ensure compliance with Australian Standards.

Accessible parking spaces (including adjacent shared areas) are provided in the basement which has been designed in accordance with AS2890.6.

[1] Based on a typical travel distance to basement level of 30m and a vehicle travel speed of 5km/h

3.5 Forecast traffic generation

The forecast traffic generation for the proposal has been determined based on the Sydney wide average traffic generation rates for residential uses as published by TfNSW.

The proposed retail component of the development is expected to serve the largely local walk-up catchment and passing trade in and around the Manly town centre. Given that limited car parking will be provided for this use and the site's location within the Manly town centre it is assumed that the generation of the retail component will be minimal – particularly during peak hours. For this reason the traffic generation potential from the retail uses has been based on the number of car parking spaces provided.

The forecast traffic generation arising from the development application is summarised in Table 1 below – indicating minimal traffic movements on the surrounding road network. This level of traffic generation is considered negligible in the context of the surrounding road network and would not impact it's operation.

Table 1 Forecast traffic generation

Quantum	Use	Peak hour traffic generation rate		Forecast Traffic Generation	
		AM Peak Hour	PM Peak Hour	AM peak hour	PM peak hour
25 units	Residential	0.19 / unit	0.15 / unit	5	4
6 parking spaces	Commercial	1.0 / parking space	1.0 / parking space	6	6
Total Traffic Generation				***11***	***10***

3.6 Car parking provision

The off-street parking provisions permitted on the site as part of the development proposal are specified in Council's Development Control Plan (DCP). The DCP requires:

- 0.6 resident parking space for each Studio or one bedroom dwelling
- 1 resident parking space for each 2 bedroom dwelling
- 2 resident parking spaces for each 3 or more bedroom dwelling
- 0.16 visitor parking space for each dwelling
- 1 space per 40sqm GFA of retail uses

The proposed parking allocation compared against the DCP requirements is outlined in the table below.

Table 2 On-site parking summary

Land Use	Type	No. of units / GFA	DCP parking rate	No. of spaces required	No. of spaces proposed
Residential	1 bed	0	0.6 / unit	0	**35**
	2 bed	15	1 / unit	15	
	3 bed	10	2 / unit	20	
	Sub-Total	***25***		***35***	
	Visitor		0.16 / unit	4	4
Retail		447	1 / 40m^2 GFA	11	6
Total				**50**	**45**

The proposal would provide car parking on-site for residents and visitors consistent with the minimum DCP requirements. For retail uses six car parking spaces are proposed which is below the DCP requirement of eleven spaces, however this is considered acceptable for the following reasons:

- The existing commercial/retail tenancies that currently occupy the site contain in the order of 800sqm – 1000sqm of floor space. No car parking is provided for these existing tenancies, with all staff and visitors required to park on surrounding streets. Under the current DCP controls this level of floor space

would require between 20 – 25 car parking spaces - resulting in an existing 'parking credit'. In this context the six retail car parking spaces is considered to provide an improvement when compared to current conditions.

- There are significant numbers of off-street car parking spaces in close proximity to the site (see Figure 8) which can comfortably accommodate the one visitor parking space, including:
  - Manly National Car Park which provides for 220 parking spaces
  - Pacific Waves Car Park which provides for 170 parking spaces
  - Whistler Street Car Park which provides for 311 parking spaces

Figure 8 Nearby off-street car parking areas

3.7 Site servicing

Consistent with current conditions and commensurate for a residential building containing only 25 dwellings, all site servicing (including waste collection) will take place on either Whistler Street or Belgrave Street.

Waste collection will take place on Whistler Street, consistent with the strategy for the neighbouring site at 21 Whistler Street. A bin storage area is provided on ground floor so bins can be efficiently moved from the site to Whistler Street for pick up on collection days.

Any occasional delivery vehicle requirements will be satisfied by the available on-street parking as is normal for small developments of this nature. In particular, it is noted that there are sign-posted loading zones approximately 40m south of the site on Whistler Street.

There is an existing loading zone on Belgrave Street (see Figure 9) that operates between 6am-9am Monday to Friday. This loading zone is currently utilised by the existing retail/commercial tenancies and would continue to be used for the purpose of servicing the retail component of the proposed development.

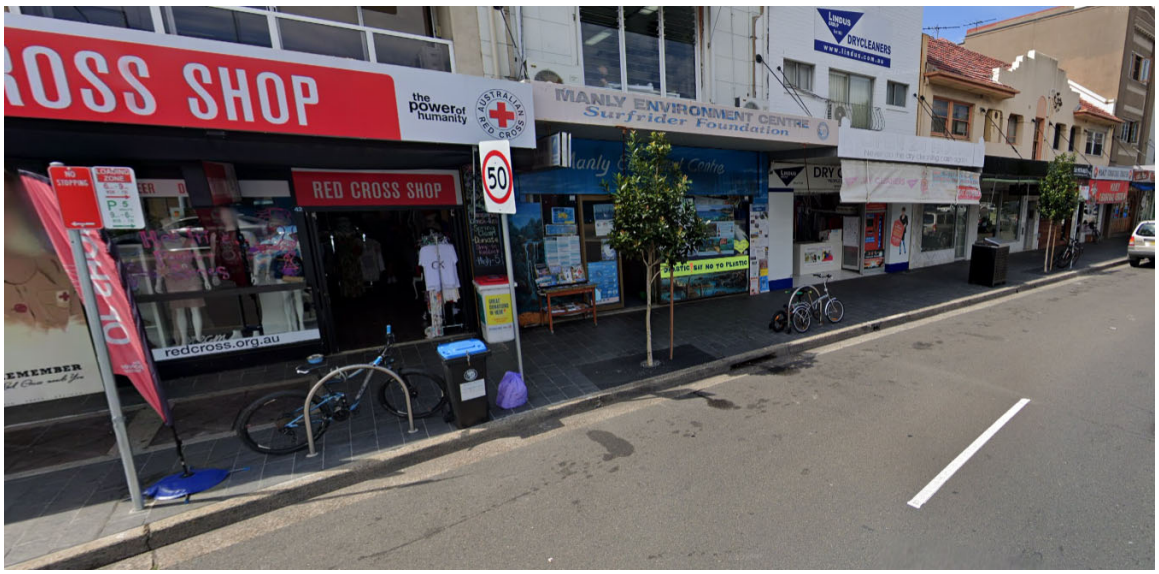

Figure 9 Existing Belgrave Street loading zone

3.8 Construction traffic management

A detailed Construction Traffic Management Plan (CTMP) will be developed prior to the commencement of construction on the site, to be reinforced through a suitably worded consent condition. The purpose of the CTMP will be to assess the proposed access and operation of construction traffic with respect to safety and capacity. The Contractor will be responsible for preparing the CTMP, ensuring the following are addressed:

- Proposed construction vehicle routes;
- Indicative construction programme;
- Expected construction vehicle types and volumes;
- Car parking arrangements and site access during construction;
- Safety measures to minimise impacts to pedestrians and cyclists. T

The Contractor will also be responsible for monitoring and coordinating all vehicles entering and exiting the site.

For the purposes of this assessment a number of key principles have been developed with respect to construction traffic management, which will be further developed as part of the detailed CTMP to be prepared at a later date. These key principles include:

- Trucks to minimise the use local streets for access to the site;
- Work zones to be established on either Whistler Street or Belgrave Street fronting the site, subject to Council approval. No works zones envisaged for Raglan Street;
- No vehicles to reverse into or out of the site across public footpaths;
- Pedestrians near the ingress/egress points will not be held unnecessarily;
- Pedestrian movements adjacent the construction site will be managed and controlled by site personnel where required;
- Truck drivers will be advised of the designated truck routes to/ from the site;
- Pedestrian warning signs and construction safety signs/devices to be utilised in the vicinity of the site in accordance with WorkCover requirements;
- Construction activity to be carried out in accordance with approved hours of work;
- Truck loads would be covered during transportation off-site;
- During site induction, workers will be informed of the existing public transport routes servicing the site; and
- Development and enforcement of driver charter.

4 Summary

This transport assessment has been prepared by JMT Consulting to accompany a Development Application to Northern Beaches Council for the development of a mixed use building located at 35-39, 40, 41, 42 & 43 Belgrave Street, Manly. The intention is for the development to provide 25 premium residential apartments with ancillary ground floor retail and basement car parking facilities. Key findings of the assessment are as follows:

- The site has good access to nearby public transport, with bus stops located on Belgrave Street and Sydney Road in close proximity to the site servicing key destinations including the Warringah Mall and the Sydney CBD. Manly Ferry Wharf is located within a 5 minute walk of the site.
- Access to the site is proposed to be via a driveway on Whistler Street – away from existing classified roads fronting the site.
- The proposed access arrangements allows vehicles to enter and exit the site in a forwards direction, with appropriate sight lines afforded to drivers to view oncoming pedestrians on Whistler Street.
- A single lane access ramp with a ground floor waiting bay, controlled by traffic lights, is proposed to accommodate vehicle access to the basement car park. A queuing assessment has determined that the probability of less than two cars using the vehicle access ramp at any one time is 99.71% - confirming the proposed design is appropriate to accommodate expected demand.
- The basement car park has been designed in accordance with relevant Australian Standards AS2890.1 and AS2890.6.
- The proposal is forecast to generate a negligible increase in peak hour traffic movements of approximately ten vehicles per hour which would not impact the surrounding road network.
- The proposal includes on-site car parking for residents and visitors consistent with the requirements of Council's planning controls. spaces within the basement of the building for residents. Some parking is also provided for the retail component (despite the walk up / local nature of the retail uses) which is an improvement compared to current conditions on the site.

In the above context, the traffic and transport impacts arising from the proposal are considered acceptable.