



366-372 Lane Cove Road, North Ryde Planning Proposal Transport Impact Assessment

Client // Franpina Developments Pty Ltd
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Planning Proposal

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1. Introduction

1.1 Background

It is understood that a planning proposal is to be lodged with City of Ryde Council for the rezoning of land located at 366-372 Lane Cove Road, 124A and 126 Epping Road and 1 Paul Street, North Ryde. The planning proposal seeks to amend the planning controls applying to the site as follows:

- from R2 Low Density Residential to B4 Mixed Use
- increase the maximum floor space ratio to 2.5:1
- increase the maximum height controls to 38m.

The proposal is for a mixed use development comprising 180 residential apartments and commercial/ health services floor area of 1,104 sq.m.

Franpina Developments engaged GTA Consultants in September 2014 to undertake a transport impact assessment as part of the planning proposal.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposal, including consideration of the following:

- i existing traffic and parking conditions surrounding the site
- ii suitability of the proposed parking in terms of supply (quantum) and concept layout
- iii service vehicle requirements
- iv pedestrian and bicycle requirements
- v the traffic generating characteristics of the proposal
- vi suitability of the proposed access arrangements for the site
- vii the transport impact of the proposal on the surrounding road network.

1.3 References

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

- an inspection of the site and its surrounds in October 2014
- City of Ryde Development Control Plan (DCP) 2014
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2002
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- traffic surveys undertaken by GTA Consultants as referenced in the context of this report
- plans for the planning proposal prepared by Bates Smart, Drawing Number SK-04-SK-07, dated November 2014.
- other documents and data as referenced in this report.

2. Existing Conditions

The subject site is located at 366-374 Lane Cove Road, North Ryde and is approximately 12 kilometres north-west of the Sydney CBD. The site of 6,654sq.m currently has a land use classification as 'R2 – Low Density Residential' and is occupied by detached residential dwellings and commercial premises providing a variety of health related services.

The surrounding properties predominantly include a mix of low density and medium density residential dwellings. Multi-level commercial developments are located opposite the site, on the northern side of Epping Road and form part of the Macquarie Park commercial centre. A five storey high density residential development is currently under construction immediately east of the site, on the east side of Lane Cove Road with access to be provided via Allengrove Crescent.

The location of the subject site and its surrounding environs is shown in Figure 2.1 with the site perspective in Figure 2.2. The current land zoning is also indicated in Figure 2.3.

Figure 2.1: Subject Site and Its Environs



Basemap Source: Sydney

Figure 2.2: Site Perspective from the Epping Road On-ramp



Figure 2.3: Land Zoning Map



Source: www.legislation.nsw.gov.au (Land Zoning Map LZN_005)

2.1 Walking and Cycling Facilities

There are well established walking and cycling facilities in the vicinity of the site including paths located on both sides Lane Cove Road, the Epping Road ramps to the north and on the southern side of Paul Street.

These paths combine to link the site with Macquarie Park Railway Station, located on the corner of Lane Cove Road and Waterloo Road approximately 400m north of the site.

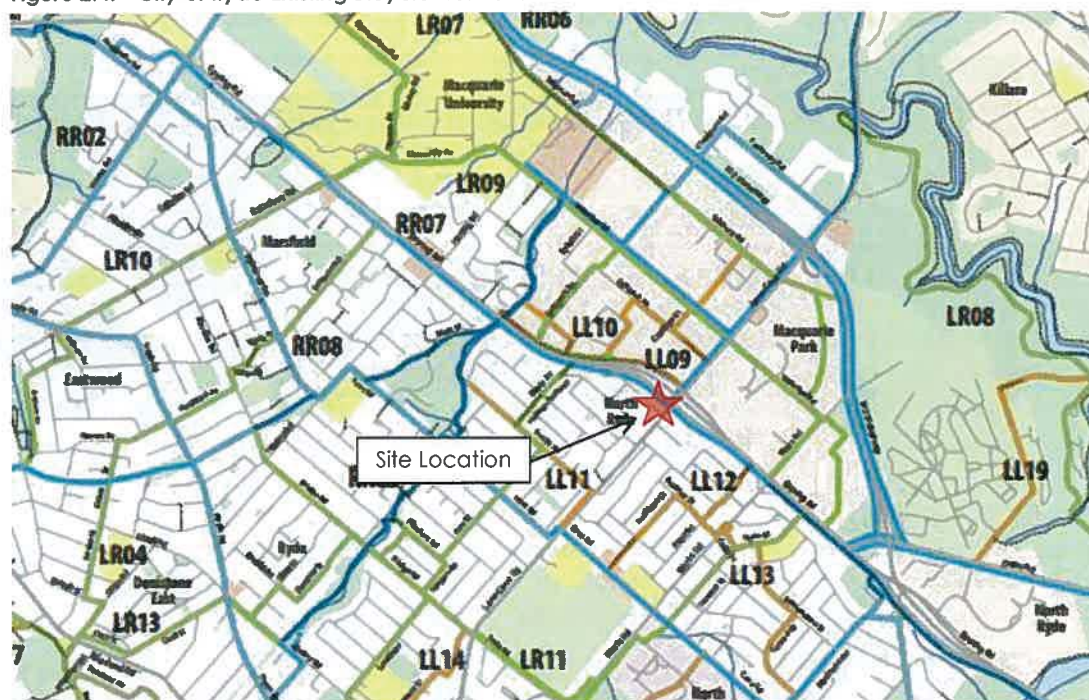
Lane Cove Road also provides a shared path adjacent to the eastern boundary of the site. This shared path commences at Paul Street and connects to the existing facilities at Epping Road. Established on-road and off-road cycling paths are located throughout the local area, with

further facilities linking residential areas west of the site with Macquarie Shopping Centre, Macquarie University and the Macquarie Park commercial centre.

It is also understood that a shared path will be constructed along the Lane Cove Road eastern alignment, between Allengrove Road and Epping Road as part of the aforementioned Allengrove Road residential development.

The existing bicycle network and major trip generators in the vicinity of the site are illustrated in Figure 2.4 with the Lane Cove Road shared path shown in Figure 2.5 and Figure 2.6.

Figure 2.4: City of Ryde Existing Bicycle Network



Source: [City of Ryde Bicycle Strategy](#) (Map 2, Version 2.0, p. 11)

Figure 2.5: Lane Cove Road Shared Path (looking north adjacent to the site)



Figure 2.6: Lane Cove Road Shared Path (north of the site)



2.2 Public Transport

The site is well serviced by public transport facilities with both bus and rail services within close proximity. The site benefits from good access to the regional bus network along Lane Cove Road and Epping Road. The extensive services are operated by several providers, including Sydney Buses, Transdev, Hillsbus, Forest Coaches and Busways. The closest bus stops are located on Lane Cove Road 200m to the north and the Epping Road on-ramp immediately to the west.

The Sydney Buses route map is shown in Figure 2.7.

Macquarie Park Railway Station is located approximately 400m to the north. It provides regular train frequencies on the T1 North Shore and Northern Line connecting Berowra to the City via Macquarie University.

Figure 2.7: Existing Sydney Buses Bus Routes



Source: Sydney Buses region guide for western region (SMBSC 7)

2.3 Road Network

Epping Road

Epping Road is a State Road (MR 373) that generally runs in an east-west direction between the Lane Cove Tunnel and Longueville Road in the east and Blaxland Road, Epping in the west. In the vicinity of the site, it is a two-way divided road configured with 3 lanes in each direction, with additional turning bays at major intersections and a posted speed limit of 80km/h. The westbound on-ramp from the grade separated intersection with Lane Cove Road bounds the site to the north.

Epping Road is shown in Figure 2.8 and Figure 2.9.

**Figure 2.8: Epping Road On-ramp
(looking west from Lane Cove Road)**



**Figure 2.9: Epping Road On-ramp
(existing site access)**



Lane Cove Road

Lane Cove Road is a State Road (MR 162) that runs in a north-south direction adjacent to the eastern boundary of the site. It forms a continuation of Homebush Bay Drive to the south and Ryde Road/ Mona Vale Road to the north. It is a two-way divided road configured with a 6-lane, 22 metre wide carriageway. Lane Cove Road has a posted speed limit of 70km/h in the vicinity of the site, with kerbside parking not permitted.

Lane Cove Road is shown in Figure 2.10 and Figure 2.11.

**Figure 2.10: Lane Cove Road at Epping Road
Intersection**



Figure 2.11: Lane Cove Road (looking south)



Paul Street

Paul Street is a local road and travels in an east-west direction along the southern boundary of the site. It is a two-way road configured with a 6.5 metre wide carriageway and a 50km/h speed limit. Paul Street intersects with Lane Cove Road in the south-east corner of the site at a priority controlled intersection. Access is restricted to left-in/ left-out movements.

Time restricted kerbside parking is permitted on both sides of Paul Street with one traffic lane providing for two-way movements where parking demand is high.

Paul Street is shown in Figure 2.12 and Figure 2.13.

Figure 2.12: Paul Street
(looking east to Lane Cove Road)



Figure 2.13: Paul Street
(looking west)



2.3.1 Surrounding Intersections

The following intersections currently exist in the vicinity of the site:

- Paul Street/Lane Cove Road (unsignalised)
- Lane Cove Road/Epping Road (grade separated, signalised).

2.4 Traffic Volumes

GTA Consultants completed traffic surveys during the weekday AM peak period in the vicinity of the site on Thursday 30 October 2014. The surveys were conducted at the Epping Road on-ramp site access and at the intersection of Lane Cove Road and Paul Street.

The site currently generates approximately 30 vehicle trips during a typical weekday AM peak hour.

2.5 Intersection Operation

The operation of the key intersections within the study area have been assessed using SIDRA INTERSECTION¹, a computer based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by the RMS, is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 2.1 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service.

¹ Program used under license from Akcelik & Associates Pty Ltd.

Table 2.1: SIDRA INTERSECTION Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Table 2.2 presents a summary of the existing operation of the Epping Road on-ramp and site access.

Table 2.2: Existing Operating Conditions

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Epping Road/ Site Access	AM	South	0.01	3.5	0	A
		East	0.08	0.6	0	N/A
Lane Cove Road/ Paul Street	AM	South	0.39	0.0	0	N/A
		West	0.95	181	34	F

On the basis of the above assessment, the Epping Road site access driveway currently operates satisfactorily with minimal queues and delays on all approaches.

The priority controlled intersection of Lane Cove Road/ Paul Street experiences some delay and queuing along Paul Street. This is largely due to congestion on Lane Cove Road. Site observations confirm that Paul Street vehicles are generally accommodated by Lane Cove Road traffic, with the longest observed queue extending to up to 6 vehicles at any one time.

2.6 Epping to Chatswood Railway – Conversion to Rapid Transit

The North West Rail Link (NWRL) Project is a priority rail transport infrastructure project for the State Government. Once complete, it will be Sydney's first rapid transit rail system with the Epping to Chatswood line being an integral part of the project. The NWRL will transform the existing Sydney Trains rail operations between Epping and Chatswood to provide this rapid transit rail.

2.7 Car Parking

The health-related services currently operating on the majority of the site provide a total of 35 car parking spaces. A vacant block also provides for informal parking for approximately 6 vehicles. Observations at the time of the site visit indicate that parking demand is currently moderate, with up to 25 vehicles parked on-site during the mid-morning peak operating period, representing a demand of approximately 60%.

On-street parking in the vicinity is only permitted along Paul Street and is subject to a 2P resident parking scheme. A total of 41 on-street car spaces are provided on both sides of Paul Street

between Lane Cove Road and McGregor Street. Observations indicate that up to 31 vehicles were parked during the mid-morning period, representing a demand of 75%.

Paul Street is also relatively narrow with an approximate width of 7m and as such, allows for one lane, two-way traffic only. Residential driveways provide for regular passing opportunities, however the area would benefit from a 'no parking' zone along the northern side for a length of approximately 30m to alleviate any such conflicts.

3. Development Proposal

3.1 Land Uses

The proposal includes construction of 180 residential apartments and 1,104 sq.m commercial/ retail space, as summarised in Table 3.1.

Table 3.1: Planning Proposal Schedule

Use	Dwelling Type	No. of Apartments/ Area
Residential	1 bedroom	65
	2 bedroom	106
	3 bedroom	9
	Sub-Total	180
Commercial	-	1,104 sq.m GFA

3.2 Vehicle Access

Vehicular access to the site is proposed via two separate crossovers, one left-in/ left-out via the Epping Road on-ramp in the north-west corner of the site and the other via Paul Street along the southern boundary.

Each driveway considers the immediate road hierarchy, surrounding properties and general traffic and pedestrian safety. The driveway along the Epping Road on-ramp frontage is proposed adjacent to the western boundary of the site and therefore provides more than adequate distance from the grade separated intersection of Epping Road/ Lane Cove Road to the east. This ensures good sightlines to approaching vehicles, pedestrian amenity and safety, and effectively improves the site layout over the existing. The Epping Road on-ramp also provides for the most efficient site entry due to its location and ability to accommodate vehicles approaching from all directions. The Paul Street driveway also considers the local road hierarchy.

All basement car parking levels would be connected, with the lower ground floor and part of the basement level 1 car parks providing for commercial, retail and health services. The remainder of the basement level 1 and all of the basement level 2 car parks would accommodate resident parking.

No direct site access is proposed via Lane Cove Road with the total number of driveway crossovers reduced from seven to two.

4. Car Parking

4.1 Car Parking Requirements

The car parking requirements for various development types are set out in the City of Ryde DCP (2014). A review of the car parking requirement rates and the floor area schedule results in a DCP parking requirement for the proposal, as summarised in Table 4.1.

Table 4.1: DCP Car Parking Requirements

Apartment type	No. of Units/Area	DCP Parking Rate	Min. Requirement	Max. Requirement
1-bedroom	65	0.6 to 1.0 spaces/ one bedroom dwelling	39 spaces	65 spaces
2-bedroom	106	0.9 to 1.2 spaces/ two bedroom dwelling	95 spaces	128 spaces
3-bedroom	9	1.4 to 1.6 spaces/ three bedroom dwelling	13 spaces	15 spaces
Visitor	-	1 visitor space/ 5 dwellings	36 spaces	36 spaces
Commercial	1,104 sq.m	1 space/ 40sq.m GFA	28 spaces	28 spaces
Total			211 spaces	272 spaces

Based on the above, the proposed development is required to provide between 211 and 272 car parking spaces.

The concept design proposes a total of 255 car parking spaces and complies with the City of Ryde DCP car parking requirements. Included in this is 36 residential visitor spaces plus 7 separately marked motorbike spaces.

4.2 Car Parking Layout Review

The concept design has been indicatively reviewed against the requirements of the City of Ryde DCP, the Australian Standard for Off Street Car Parking (AS2890.1:2004 and AS2890.6:2009) and the Australian Standard for Off Street Commercial Vehicle Facilities (AS2890.2:2002). This assessment includes a review of the following:

- bay and aisle width
- adjacent structures
- turnaround facilities
- circulation roads and ramps
- ramp grades
- height clearances
- internal queuing
- parking for persons with disabilities
- motorbike parking.

This review indicates that the car parking layout as part of the concept design is expected to operate satisfactorily with ramp grades, height clearances, aisle widths and car space dimensions designed appropriately and feasibly able to accommodate the car parking supply and various uses.

The Paul Street access is proposed to provide access to the lower ground floor car park and would also accommodate service vehicle access. The ramp has been designed in accordance with Australian Standard (AS2890.2:2002) for access by service vehicles (including garbage trucks) up to 9-10m in length.

Basement levels 1 and 2 would provide resident parking with separate boomgates/ security roller doors providing for secure access, where required at all times.

5. Sustainable Transport Infrastructure

5.1 Bicycle End of Trip Facilities

The *NSW Planning Guidelines for Walking and Cycling* (Department of Infrastructure, Planning and Natural Resources, 2004) aims to assist land use planners and related professionals to improve consideration of walking and cycling in their projects. The guidelines have been designed to provide a walking and cycling focus to the NSW Government's *Integrating Land Use & Transport Planning* policy package. The *Planning Guidelines for Walking and Cycling* contain suggested bicycle parking provision rates for different land use types.

The suggested bicycle parking provision are summarised in Table 5.1.

Table 5.1: Suggested Bicycle Parking Rates

Land Use	No. of Units/Area	Suggested Parking Rate		Suggested Parking Provision	
		Residents/Staff	Visitors	Residents/Staff	Visitors
Residential					
1- bedroom	65	20-30% of units	5-10% of units	13-20	3-7
2- bedroom	106			21-32	5-11
3- bedroom	9			2-3	1
Commercial	1,104 sq.m	3-5% of staff	5-10% of staff	1-2 [1]	2-3 [1]
Total				37-57	11-22

[1] Assumes 30 staff for the health services, retail and commercial areas

Based on the above, the proposal is required to provide between 48 and 79 bicycle parking spaces for use by residents, staff and visitors. The development proposes a total of 50 bicycle spaces located within a secure storage area in the lower ground level car park. Additional bicycle racks would also be provided external to the building and close to the entrances. In combination, these proposed facilities comply with the recommended rates.

The permeability of the proposed site layout would allow for a variety of access opportunities for both pedestrians and cyclists along all site frontages. The site boundary structure/ walls have been set back to allow for appropriate footpaths along both Lane Cove Road and Epping Road, and to minimise the visual impact.

The extensive network of internal pedestrian facilities will allow easy access along pedestrian desire lines to public transport facilities/ services, including major bus stops along Lane Cove Road and Epping Road, as well as Macquarie Park Railway Station.

6. Traffic Impact Assessment

6.1 Traffic Generation

6.1.1 Design Rates

Traffic generation estimates for the proposal are typically sourced from the *Guide to Traffic Generating Developments* (2002). However, several more recent and appropriate surveys have been completed to update trip generation and parking information as part of the Guide. The Technical Direction (TDT 2013/04a) published by RMS in August 2013 is intended to be used as a supplement to the 2002 Guide.

Having consideration for the size of apartments and their location, Table 6.1 sets out traffic generation estimates for both peak hour and daily periods.

Table 6.1: Estimated Development Traffic Generation

Land Use	Design Generation Rates (Sydney Average)		Traffic Generation Estimates	
	Peak Hour	Daily	Peak Hour	Daily
High Density Residential Flat Dwellings	0.15-0.19 vehicle trips/unit	1.52 vehicle trips/unit	27-34 vehicle trips/hour	274 vehicle trips/day
Commercial/Health Services	1.6-4 vehicle trips/100 sq.m GFA	11-20 vehicle trips/100 sq.m GFA	18-44 vehicle trips/hour	121-221 vehicle trips/day
Total			45-78 vehicle trips/hour	395-495 vehicle trips/day

Table 6.1 indicates the proposal could be expected to generate between 45 and 78 vehicle trips during any peak hour and 400-500 vehicle trips per day on a typical weekday.

Taking into consideration the existing surveyed site generation of 30 vehicles per hour, the proposal represents a net increase of less than 48 vehicles in any peak hour. This represents a minor impact on the surrounding road network.

6.2 Distribution and Assignment

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

- i configuration of the arterial road network in the immediate vicinity of the site
- ii existing operation of intersections providing access between the local and arterial road network
- iii distribution of households in the vicinity of the site
- iv surrounding employment centres, retail centres and schools in relation to the site
- v likely distribution of staff residences in relation to the site
- vi configuration of access points to the site.

Having consideration for the above and for the purposes of estimating vehicle movements, the following directional distributions have been assumed:

Residential

- Epping Road on-ramp 70%
- Paul Street 30%

Commercial

- Epping Road on-ramp 50%
- Paul Street 50%

In addition, the directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) has been assumed to be the following:

Residential

- AM Peak Hour – Inbound 20% Outbound 80%
- PM Peak Hour – Inbound 80% Outbound 20%.

Commercial

- AM Peak Hour – Inbound 50% Outbound 50%
- PM Peak Hour – Inbound 50% Outbound 50%.

6.3 Traffic Impact

Based on the above, the Epping Road on-ramp access would have a negligible change to existing site traffic generation, with a net change of between 0 and 16 vehicle trips in any peak hour. Paul Street would likely accommodate a minor increase in traffic generation, with between 17 and 32 additional vehicle trips in any peak hour.

Against existing traffic volumes in the vicinity of the site, the additional traffic generated by the proposal could not be expected to compromise the safety or function of the surrounding road network.

Paul Street would, however, experience an increase in delay and queuing on approach to Lane Cove Road. The vehicle queue length would likely increase from approximately 5 vehicles to 15 vehicles. With this in mind, it is worth noting that the assessment is conservative given that the commercial uses and health services would not be generating peak activity during typical weekday peak periods and residents would also likely alter their departure routes, dependent on any such associated delay.

7. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- i A planning proposal is to be lodged with City of Ryde Council to amend the current site planning controls in order to enable a mixed use development to be located at 366-372 Lane Cove Road, 124A and 126 Epping Road and 1 Paul Street, North Ryde.
- ii The amended planning controls include rezoning the land from R2 Low Density to B4 Mixed Use, an increase in the maximum floor space ratio to 2.5:1 and an increase in the maximum height controls to 38m.
- iii The planning proposal includes an indicative on-site car parking provision of 255 car parking spaces.
- iv The proposal generates a City of Ryde DCP (2014) parking requirement of between 211 and 272 car spaces.
- v The concept design parking layout has been indicatively reviewed and is consistent with the dimensional requirements as set out in the relevant guidelines and Australian Standards.
- vi Secure resident bicycle parking facilities are proposed within a storage area in the lower ground level car park. Additional bicycle racks would be provided external to the buildings.
- vii The proposal generates a minimum bicycle parking requirement 48 spaces. The proposed supply of 50 spaces (with additional external racks) meets this requirement.
- viii The Guide to Traffic Generating Developments (RMS, 2002) and Technical Direction (TDT 2013/04a) traffic generation rates are considered appropriate for such a development in close proximity to a range of public transport services.
- ix The site is expected to generate up to 78 vehicle trips in any peak hour. Considering the existing site generation of 30 vehicle trips per hour, the proposal represents a net increase up to 48 vehicle trips in any peak hour.
- x The Epping Road on-ramp site access would generate an additional 16 vehicle trips in any peak hour with Paul Street generating between 17 and 32 vehicle trips.
- xi Paul Street at Lane Cove Road currently experiences some delay with queues of up to 5 vehicles.
- xii The proposal indicates that vehicle queuing may extend up to 15 vehicles, however this assessment is conservative given that peak periods for commercial and health services typically occur outside the typical weekday peak periods.
- xiii The total number of driveway crossovers is reduced from seven to two, with no site access proposed via Lane Cove Road.

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