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2-32 Junction St, Forest Lodge

For Fitzpatrick Investments Pty Ltd

Planning Proposal

For the attention of: Jamie Stewart

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Document Control

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1 Introduction

1.1 Project Summary

Parking and Traffic Consultants (PTC) has been engaged by Fitzpatrick Investments to prepare a Traffic and Parking Assessment to accompany a Planning Proposal application to the City of Sydney Council (Council). The Planning Proposal seeks to increase the floor space ratio (FSR) from a ratio of 1:1 to 1.75:1 at 2-32 Junction Street, Forest Lodge as shown in Figure 1. Following approval of the Planning Proposal a Development Application (DA) will be prepared for a potential residential based mixed-use development.

Figure 1 – Site Location

1.2 Purpose of this Report

This report presents the following considerations in relation to this planning proposal:

- Section 2 - A description of the project,
- Section 3 - A description of the road network serving the development property,
- Section 4 - Determination of the traffic activity associated with the planning proposal,
- Section 5 - Assessment of the proposed access arrangements, and
- Section 6 - Conclusion

2 Proposal

2.1 Development Site

The development site is located to the west of Junction Street in Forest Lodge within a predominantly residential area. The subject site occupies an area of approximately 4,860sqm and accommodates an existing commercial office building with at-grade on-site parking provided for up to approximately 100 vehicles. The site is slightly rectangular in shape with a 94 metre frontage along Junction Street as shown in Figure 2. The site also has a limited frontage to Larkin Street, although there is currently no vehicular or pedestrian access.

Figure 2 – Site Location and surrounds

The land is zoned B4 Mixed Use under the City of Sydney Local Environmental Plan 2012 (the LEP) which primary objective is to "*provide a mixture of compatible land uses, by way of integrating suitable business, office, residential, retail and other developments in acceptable location so as to maximise public transport patronage and encourage walking and cycling*". The LEP permits a Floor Space Ratio of 1:1 within the site. This Planning Proposal seeks to increase the FSR from 1:1 to 1.75:1. An increase to the FSR may have the potential to involve a higher traffic activity subject to the proposed land use. This aspect of the proposal is described in Section 4 of this report.

2.2 Planning Proposal

The proposal seeks to amend the LEP to allow for an increase the FSR from 1:1 to 1.75:1, with the intent of developing a residential based mixed-use development. Following approval of the Planning Proposal, the development is likely to involve to the retention of a portion of the existing established building accommodating a commercial office (approximately 981 sqm GFA), and approximately 89 residential units.

Details of the proposal are presented on the architectural drawings prepared by BateSmart which are included as **Attachment 1**.

3 Existing Transport Facilities

3.1 Road Hierarchy

The subject development site is located in the suburb of Forest Lodge situated in the Local Government Area (LGA) of the City of Sydney. The road network servicing the area comprises of a number of local roads, making the site easily accessible from different regions of the metropolitan area and also to local retail, commercial and residential land-use.

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

State Roads - Freeways and Primary Arterials (RMS Managed)
Regional Roads - Secondary or sub arterials (Council Managed, Part funded by the State)
Local Roads - Collector and local access roads (Council Managed)

Figure 3 – Road hierarchy (Source: RMS Road Hierarchy Review)

State Road
Regional Road
Local Road

The road network serving the site includes:

Pyrmont Bridge Road is classified as a state road and operates as an arterial road which directs road users into the inner suburbs of Glebe, Forest Lodge and Annandale. To the east of the intersection with Junction Street Pyrmont Bridge Road is known as Bridge Road. The intersection of Junction Street and Pyrmont Bridge Road is a priority controlled intersection. The road comprises of two traffic lanes in each direction and has a posted speed limit of 60km/hr. The outer most lanes in each carriageway operate as a clearway lane between 6am to 10am and 3pm and 7pm (Monday to Friday).

Junction Street is a classified local road and operates as a one-way direction lane between Bridge Road and Lock Lane. From Lock Lane towards St Johns Road, two way movements are permitted. The road currently provides 2 Hour time restricted on-street parking on each side of the road between 8am to 6pm Monday to Friday. The road has a posted speed limit of 50km/hr

St Johns Road is a classified local road and provides two-way traffic. On Street parking is provided on either side of the carriageway which provides 1hour time restricted parking between 8am to 6pm Monday to Friday. Residential on-street parking permit is provided. The posted speed limit is 50km/hr.

Larkin Street is classified as a local road providing access directly from Parramatta Road. No direct access for vehicles is available from Larkin Street into the site, however pedestrians are able to access via a gate. On-street parking is provided on either side of the carriageway which provides 1hour time restricted parking between 8am to 6pm Monday to Friday. Residential on-street parking permit are able to be obtained. The posted speed limit is 50km/hr.

3.2 Public Transport

The site is within a highly accessible location within a short walking distance to public transport primarily by bus. There are no Railway Stations located within walking proximity to the site development. As the development is serviced by buses both along Bridge Road and high frequency buses along Parramatta Road transport corridor, it has been assessed that buses represent the most accessible form of public transport in this area. The location of public transport relative to the site is presented in Figure 4.

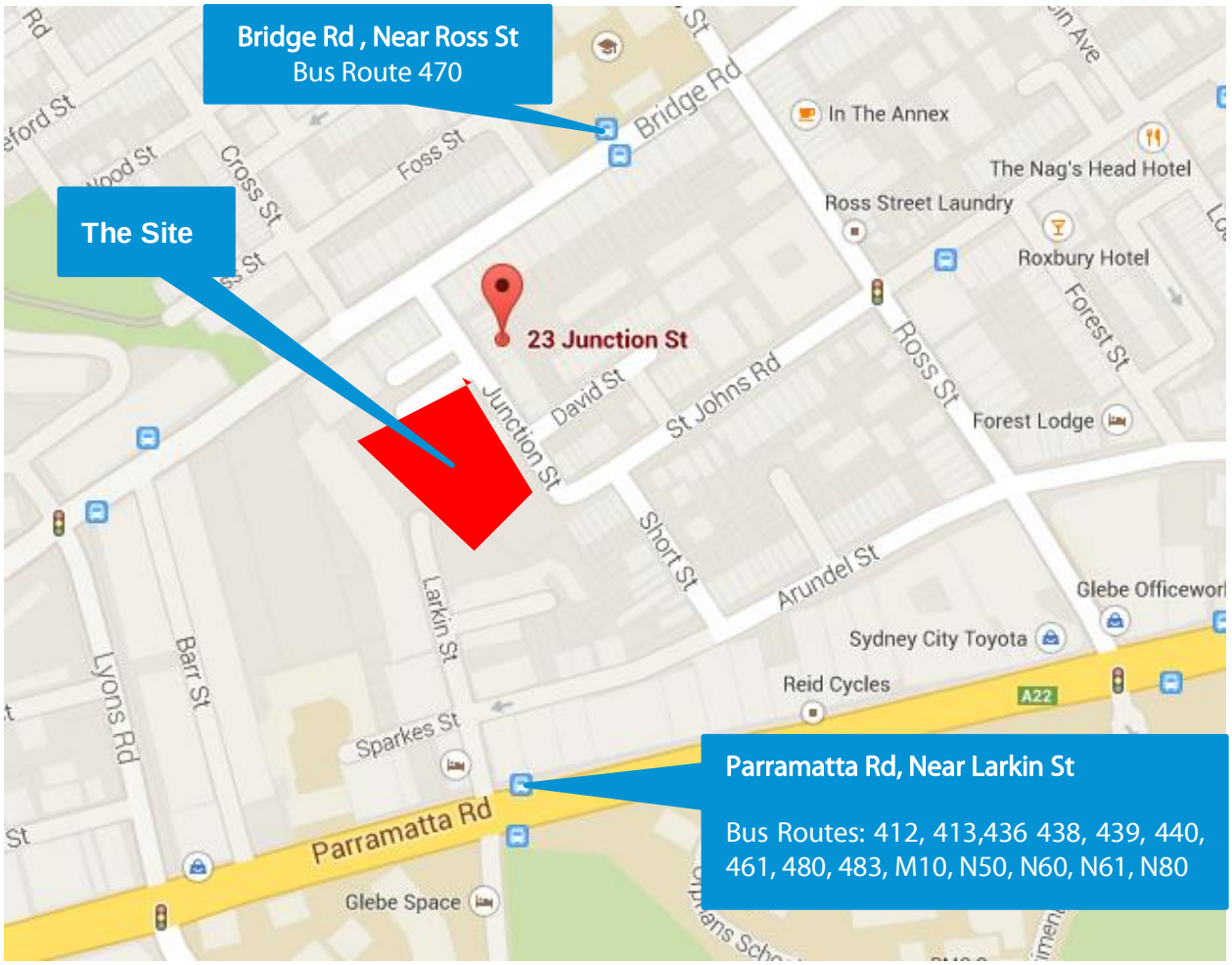

Figure 4 – Location of bus stops adjacent to development

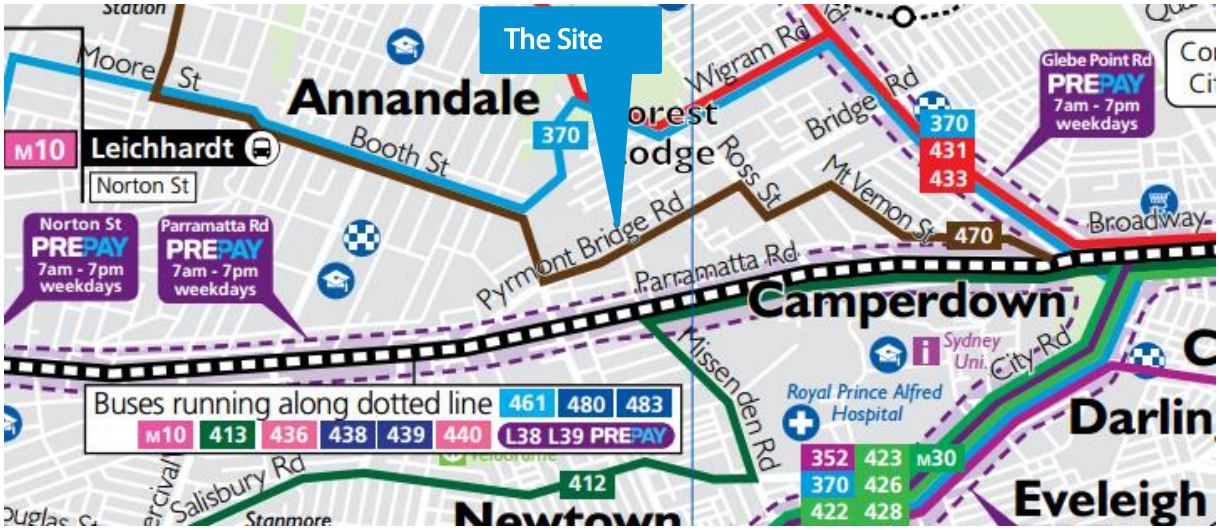

Figure 5 – Bus routes adjacent to the site

3.2.1 Buses

Buses – As shown in Figure 4 and Figure 5 the site is well serviced by buses that operate from the 2 bus stops along Parramatta Road adjacent to Larkin Street and a bus stop on Bridge Road.

Approximately 200m north of the site, a bus stop is located on Bridge Road servicing only one bus route - 470 bus route towards the City Via Glebe buses along Parramatta Road buses operate every 15minutes with a total journey time of 13minutes to Central Station. Whereas 400m to the south of the site, on Parramatta Road, a bus stop is located adjacent to Larkin Street, servicing up to 12 bus routes during the road network peak, whilst during the evening 3 nightrider bus routes service from this bus stop. The buses operate every 3-5 minutes throughout a typical weekday with a total bus journey time of 11minutes to Central Station.

3.3 Bike Plan

The City of Sydney has prepared a bike plan to encourage cycling as a preferred transport choice for the residents, workers and visitors. The plan identifies a number of on and off-road cycle paths and establishes a practical program for cycling infrastructure. The site is serviced by designated cycle routes on St Johns Road, which links directly to the site provides access to the greater Sydney cycle network as a shared cycle path with pedestrians. In addition to this, shared on-street cycling facilities are provided on Bridge Road. Figure 6 shows available cycle facilities adjacent to the development.

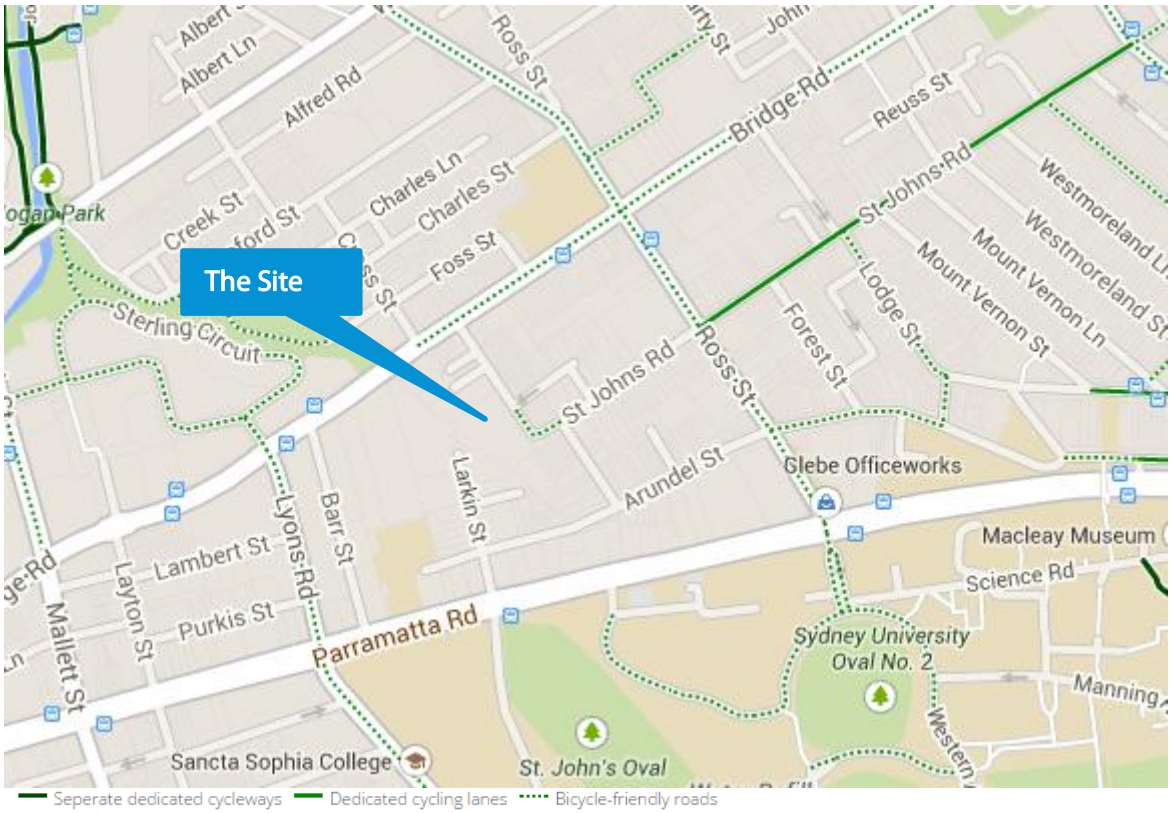

Figure 6 – Cycle pathways within approximate to site development (Source: Sydney Cycleways, 2014)

3.4 Pedestrian Access

Footpaths are provided on both sides of Junction Street and St Johns Road providing safe passageways for pedestrians. Formalized footpaths are also provided on Larkin Street, located to the rear of the development. There is currently no formal public pedestrianized thoroughfare through the site linking Junction Street to Larkin Street.

3.5 Existing Traffic Generation

The existing development at 2-32 Junction Street is a commercial office catering for multiple tenants such as The Blue Print, Bishops Real Estate and FDC being the primary tenant. The existing commercial office covers a Gross Floor Area (GFA) of 1,635 sqm distributed through 3 levels. On-site parking (approximately 100 spaces) is currently provided on site for employees. Due to the nature of FDC services, employees are required to travel to various construction sites through the Sydney Metropolitan Area throughout the day. This results in a higher dependency on vehicle usage compared with a traditional commercial office.

To identify the traffic movements associated with the existing site, a vehicle movement survey was performed at the existing site access on the 5 February 2015 between 7:30am – 9:30am and 4:00pm – 6:00pm. The survey results indicate that the AM and PM Peak periods for the site occurred between 8:30am to 9:30am and 5:00pm to 6:00pm. The following movements were recorded.

- 34 vehicles entered and 3 vehicles exited during the AM Peak (TOTAL: 37 Trips)
- 3 vehicles entered and 39 vehicles exited during the PM Peak (TOTAL: 42 trips)

To compare this with a traditional commercial office we have estimated the number of trips associated with the site is based on the standard practice of referencing published data.

The RMS (formerly the RTA) Guide to Traffic Generating Developments (2002) (the Guide) published by the NSW Roads and Maritime Services (RMS) provides a common approach for decision making and traffic planning and is commonly used where there is limited base data available for locations where parking provision is dictated by the requirements within the LEP. The Guide provides specific traffic generation rates for a number of land uses.

An update to the Guide with revised traffic generation rates is provided in Technical Direction 13/04. This presents the traffic generation rates for a number of land uses based on the surveys undertaken more recently.

Within TD 13/04 average weekday trip generation rates for commercial office blocks are provided for varying office block sizes across the Sydney urban area and Newcastle and Wollongong accessing the site during the key the periods on the road network. For this assessment we have adopted the average AM and PM Peak hour rates which are:

- Weekday average morning peak hour trips - 1.6 per 100 sqm GFA
- Weekday average evening peak hour trips – 1.2 per 100 sqm GFA

In assessing the current site operations against a typical commercial office the following traffic assessment was undertaken.

Usage	Weekday Peak	Measurement	Weekday Peak hour rates[i]	Assessment	Total Peak Trips
Commercial Development	AM Peak	vehicles per 100sqm GFA	1.6	1,635 sqm GFA	26.2 (26)
Total AM Peak					**26**
Commercial Development	PM Peak	vehicles per 100sqm GFA	1.2	1,635 sqm GFA	19.6 (20)
Total PM Peak					**20**

In comparing the FDC commercial offices versus a traditional commercial office, it has been established that the FDC operation currently generates 11 additional trips during the AM Peak and 22 additional trips in the PM Peak.

3.6 Existing Traffic Volumes

In order to assess the current traffic conditions in the vicinity of the development site, traffic surveys have been undertaken at the following intersections

- Arundel Avenue and Short Street; and
- Parramatta Road and Larkin Street.

There surveys were conducted on Monday, 9 February 2015 between 7:30am to 9:30am and between 4:00pm to 6:00pm. These periods were selected as it reflected the typical peak access periods experienced across the road network within the area.

No surveys were undertaken at the intersection of Bridge Road and Junction Street as the proposal is to provide sole access to the site via Larkin Street, therefore all traffic currently associated with the site will be removed from Junction Street.

Figure 7 and Figure 8 provides a summary of the AM and PM Peak hour results.

[i] *This assumes the existing site area of 4,824sqm equates to the potential commercial development area at a FSR 1:1*

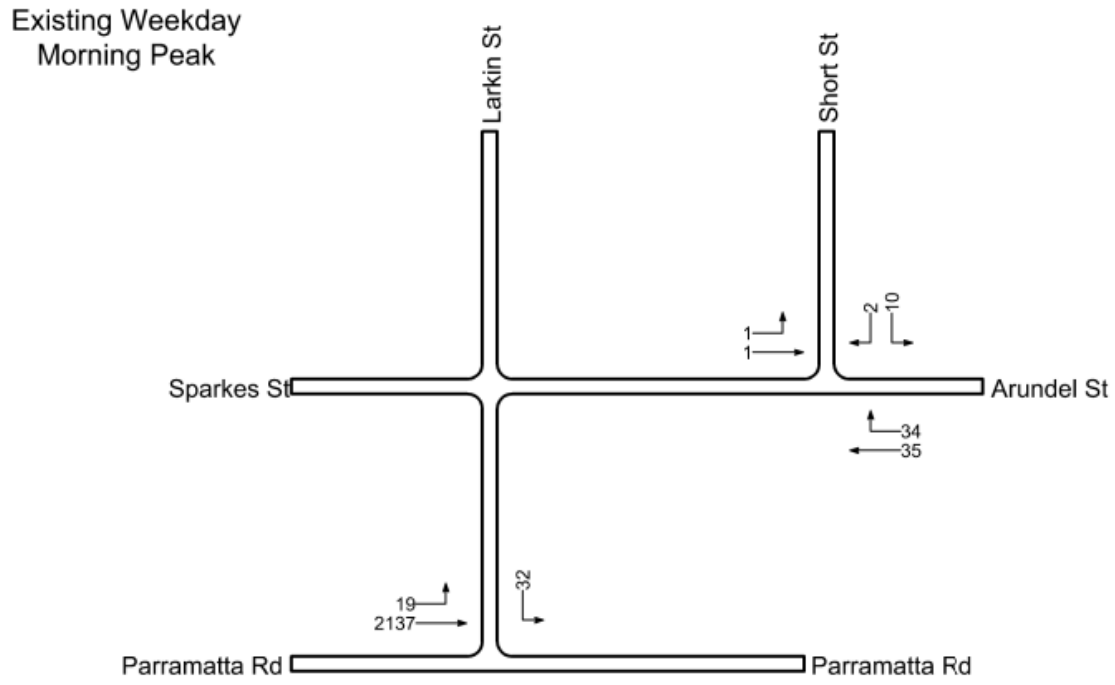

Figure 7 – Existing Weekday morning peak

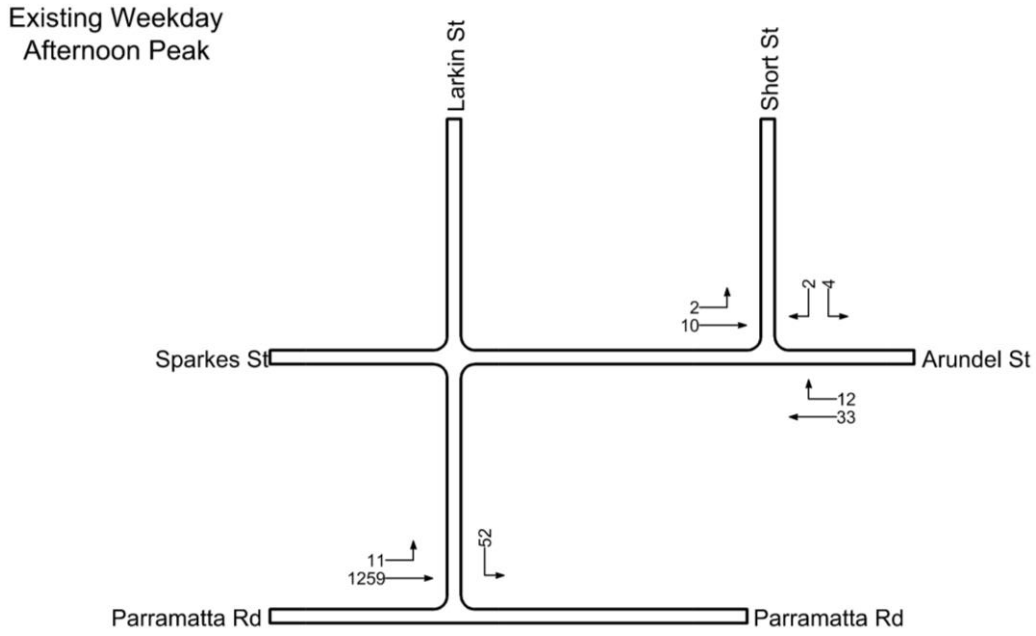

Figure 8 – Existing Weekday afternoon peak

3.7 Intersection Capacity Assessment (Existing Situation)

The existing operation of the surveyed intersections has been assessed using intersection performance software, SIDRA Intersection 6.0.

The SIDRA software package is designed to assess the operation of signal intersection with some previous for coordinated vehicle arrivals, as well as providing various performance indicators.

In order to confirm the current operation of the intersections servicing the site, an assessment has been undertaken using the SIDRA Intersection modelling software for isolated intersections. The program which presents a range of performance indicators (Level of Service, Average Delay, etc.).

Typically there are four performance indicators used to summarise the performance of an intersection, being:

- Degree of Saturation – The total usage of the intersection expressed as a factor of 1 representing 100% use/saturation. (e.g. 0.8=80% saturation)
- Average Delay - The average delay encountered by all vehicle passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- 95% Queue lengths (Q95) - is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measureable distance units.
- Level of Service- This is a categorisation of average delay, intended for simple reference. The RMS Adopts the following bands:

Table 1 - SIDRA Intersection Performance Bands

Level of Service	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

A summary of the Sidra results is presented in the following table, whilst SIDRA Outputs are provided in Attachment 2.

Table 2 – SIDRA Intersection Modelling Results (Existing Situation)

Period	Intersection	Level of Service	Avg Delay	Deg. Of Sat.	95% Back of Queue (m)
AM Peak	Parramatta Road and Larkin Street	B	14.9	0.093	3.1
	Arundel Avenue and Short Street	A	5.6	0.008	0.2
PM Peak	Parramatta Road and Larkin Street	B	8.5	0.067	1.7
	Arundel Avenue and Short Street	A	5.6	0.004	0.1

*Worst movement results are reported for the priority controlled intersection being the minor approach arms to the intersection (Larkin Street and Short Street).

The results indicate that the intersection is able to operate well within the capacity, based on existing traffic volumes and provides an acceptable level of service during the typical weekday peak periods.

4 Development Traffic Assessment

4.1 Traffic Generation

4.1.1 Traffic Generation based on a FSR of 1:1 (commercial development)

It is acknowledged that under the current LEP, the site is permitted for a development with an FSR of 1:1 for mixed business, including commercial offices. At present the existing commercial development represents only 1/4 of the developable GFA. The calculation presented in Table 3 illustrates the potential traffic generation if the site were to accommodate a commercial development having an FSR of 1:1 as permitted by the LEP.

Table 3 – Calculated traffic generation based on FSR of 1:1 commerical development (office)

Usage	Weekday Peak	Measurement	Weekday Peak hour rates[iii]	Assessment	Total Peak Trips
Commercial Development (office)	AM Peak	vehicles per 100sqm GFA	1.6	4,824 sqm GFA	77.2 (77)
				Total AM Peak	**77**
Commercial Development (office)	PM Peak	vehicles per 100sqm GFA	1.2	4,824 sqm GFA	57.8 (58)
				Total PM Peak	**58**

Under the existing LEP provisions, the site has the potential to generate up to 77 trips in the AM Peak and 58 trips during the PM Peak should it be developed completely as a commercial development with an FSR of 1:1. This is an increase of 40 trips in the AM Peak and 16 trips in the PM Peak over that presently occurring on site.

4.1.2 Traffic Generation based on a FSR of 1.75:1 (residential + commercial development)

Based on the existing site area of 4,824 sqm, the increased FSR could result in a residential development with a total GFA of 7,389 sqm (that may potentially accommodate approximately 89 apartments) and provide an area of 981 sqm allocated for commercial offices. This assumes the existing operation of FDC will be relocated to a different location and replaced with new commercial office operations.

Within Technical Direction 13/04, the following weekday trip generation rates for high density residential flat dwellings have been provided

- Weekday average morning peak hour trips - 0.19 per Unit
- Weekday average evening peak hour trips – 0.15 per Unit

[iii] *This assumes the existing site area of 4,824sqm equates to the potential commercial development area at a FSR 1:1*

Based on the above rates, Table 4 illustrates the estimated total peak trips that could be generated from site assuming a provision of 89 apartments.

Table 4 - Calculated Existing Traffic Generation based on a FSR of 1.75:1 Residential Development

Usage	Weekday Peak	Measurement	Weekday Peak hour rates[v]	Assessment	Total Peak Trips
Commercial Development	AM Peak	vehicles per 100sqm GFA	1.6	981 sqm GFA	15.7 (16)
Residential Development	AM Peak	vehicles per unit	0.19	89 Units	16.9 (17)
				Total AM Peak	**33**
Commercial Development	PM Peak	vehicles per 100sqm GFA	1.2	981 sqm GFA	11.8 (12)
Residential Development	AM Peak	vehicles per unit	0.15	89 Units	13.3 (13)
				Total PM Peak	**25**

Table 2 illustrates that the proposed planned use for the site would result in up to 33 and 25 trips in the AM Peak and PM Peak hours respectively. In comparing this to the existing situation, the proposal will result in a reduction of 4 trips in the AM Peak and 17 trips in the PM Peak.

4.1.3 Summary of Traffic Generation Scenarios

The estimated traffic generated by this planning proposal is less than the estimated traffic activity should the site be developed as a full commercial development with a FSR of 1:1 under the current LEP requirements. The calculated total peak trips for each of the tested scenarios are summarised in Table 5.

Table 5 – Summary of traffic generation scenarios permissible at the development site

Usage	Assessment	AM Peak Trips	PM Peak Trips
Existing Situation – FDC Commercial Offices (RMS Rates)	1,635 sqm GFA	26	20
Existing Situation – FDC Commercial Offices (Surveys)	1,635 sqm GFA	37	42

Full site development – Commercial Offices (FSR 1:1; RMS Rates)	4,824 sqm GFA	77	58
High-rise Residential Development with Commercial Development (FSR 1.75:1; RMS Rates)	981 sqm GFA (Commercial) + 89 Residential Units	33	25

Therefore, it is concluded that the proposal to increase the FSR from 1:1 to 1.75:1 to potentially allow for residential development and up to 981sqm of commercial floor area would reduce the number of trips accessing the road network compared to the existing situation and the provisions under the current LEP to develop the entire site as a commercial development.

4.2 Traffic Distribution

This Planning Proposal anticipates the closure of the existing driveway accesses from Junction Street and the construction of a new vehicular access on Larkin Street. This will result in the removal of all traffic related to the site from Junction Street, while the projected traffic activity would occur on Larkin Street. In assessing the impacts of increasing traffic on Larkin Street, we have incorporated the following traffic distribution assumptions:

- For the residential development, 20% (In)/80% (Out) has been adopted in the AM peak and vice versa in the PM Peak. These movements generally occur during the road network peak due to residents leaving their premises to travel to work, also allowing for some inbound movements for residents undertaking a round trip.
- For the commercial development during the PM peak hour, a 90%/10% has been adopted and vice versa in the PM Peak. These movements generally relate to commuters travelling to work. This is similar to the current in/out movements generated from the existing commercial development.
- To provide a robust assessment, we have assumed all vehicular trips associated with the site enter and depart at Larkin Street with Parramatta Road to travel elsewhere in the network.

The calculated split in/out trips during the AM and PM Peak hour is presented in Table 6.

Table 6 - Calculated split in/out trips associated with the Planning Proposal (FSR 1.75:1)

	AM Peak			PM Peak		
	In	**Out**	**Total**	**In**	**Out**	**Total**
Commercial (90:10)	14.4 (14)	1.6 (2)	16	1.2 (1)	10.8 (11)	12
Residential (20:80)	3.4 (3)	13.6 (14)	17	10.8 (11)	1.2 (1)	13
Total Trips	**17**	**16**	**33**	**12**	**13**	**25**

The distribution of the post development traffic generation is presented Figure 9 and Figure 10. As noted, to provide a robust assessment associated with the future traffic movements, we have not removed the existing traffic generated from the current site from the survey figures.

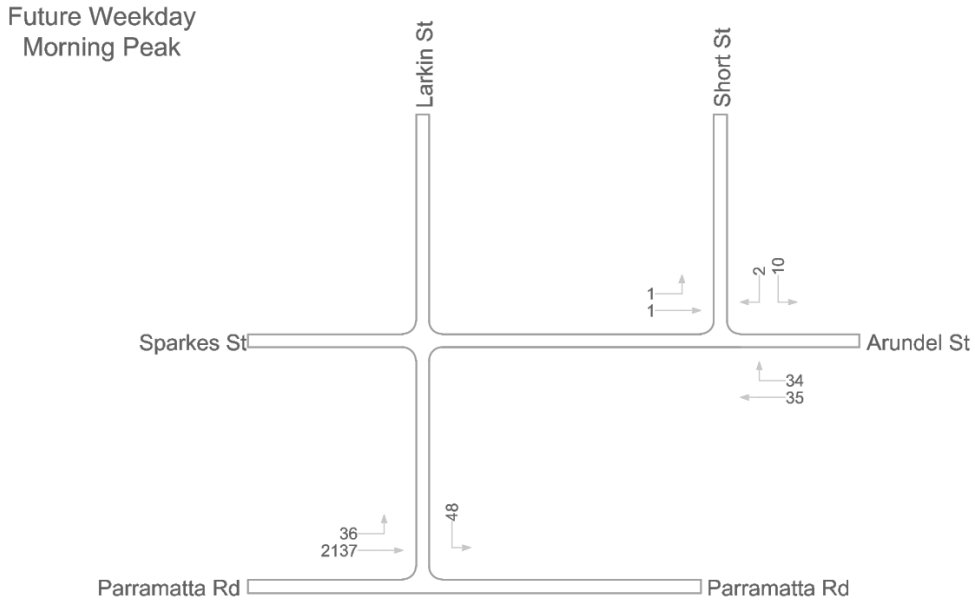

Figure 9 – Future Weekday Morning Peak

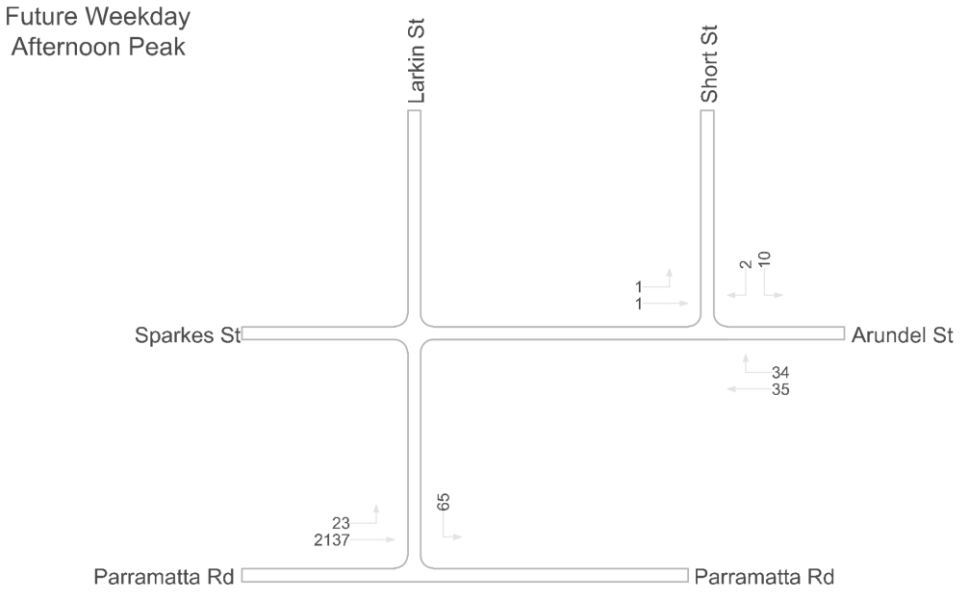

Figure 10 – Future Weekday Afternoon Peak

4.3 Intersection Capacity Assessment (Post Development)

The projected traffic volumes have been applied to the surveyed traffic volumes and subsequently modelled using SIDRA Intersection. The results of this analysis are summarised below in Table 7 with the complete SIDRA outputs provided as Attachment 3.

Table 7 – SIDRA Intersection Modelling Results (Post Development Situation)

Period	Intersection	Level of Service	Avg Delay	Deg. Of Sat.	95% Back of Queue (m)
AM Peak	Parramatta Road and Larkin Street	B*	15.1	0.140	3.2
	Arundel Avenue and Short Street	A	5.6	0.008	0.2
PM Peak	Parramatta Road and Larkin Street	A*	8.6	0.084	2.2
	Arundel Avenue and Short Street	A	5.6	0.004	0.1

*Worst movement results are reported for the priority controlled intersection being the minor road approach.

The project will result in the removal of vehicular trips associated with the site development in the AM and PM Peak using the Junction Street access point. The remove of vehicles using this access will result in an improvement intersection operation at Arundel Avenue and Short Street. The intention of this Planning Proposal will see the access being provided off Larkin Street. The traffic modelling of Parramatta Road and Larkin Street intersection indicates the increase in traffic movement on Larkin Street would not result in any notable impact on the overall operation at this intersection and will continue to operate well within its capacity compared with the existing traffic conditions modelled.

The results presented as part of the traffic modelling have demonstrated that the increase in traffic movements in and out of Larkin Street shows no notable impact on the overall road network operation and will provide an acceptable level of service during the typical weekday peak periods.

5 Parking Assessment

In respect to this Planning Proposal which considers a residential development, the parking provision for the development must comply with to the requirements presented in Council's Local Environmental Plan 2012 (the LEP) and Development Control Plans 2012 (the DCP), requirements. The LEP sets maximum parking provision, whereby a development shall not exceed the maximum parking provision calculated for the specific land use.

In reviewing the parking provision requirements associated with this proposal, clause 7.2 of the LEP, states the following:

> **7.2** ***Interpretation***
>
> *(2) For the purposes of this Division, land is in Category A, Category B or Category C if it is shown on the Land Use and Transport Integration Map as being in one of those categories. However, land is taken to be in another of those categories if:*
>
> *(a) the land is part of a site that includes land in that other category, and*
> *(b) this Division would permit a greater number of car parking spaces if the land were in that other category.*
>
> *(3) For the purposes of this Division, land is in Category D, Category E or Category F if it is shown on the Public Transport Accessibility Level Map as being in one of those categories. However, land is taken to be in another of those categories if:*
>
> *(a) the land is part of a site that includes land in that other category, and*
> *(b) this Division would permit a greater number of car parking spaces if the land were in that other category.*
>
> *(4) More than one provision of this Division may apply in the case of a mixed use development and in such a case:*
>
> *(a) the maximum number of car parking spaces is the sum of the number of spaces permitted under each of those provisions, and*
> *(b) a reference in those provisions to a building, is taken to be a reference to the parts of the building in which the relevant use occurs.*

In interpreting the above LEP requirements, the LEP allow for the higher parking provision rate to be adopted for the site should it fall across two land categories.

In reviewing the with the residential component of the development, the Land Use and Public Transport Map (Number 2) for the site has been identified falling within both Category B and C of equal proportions. Based on the interpretation of the LEP Clause 7.5 the following parking provision rates apply to the residential component of the development adopting a land category C. This allows the following:

> *(b) on land in category C:*
> - *for each studio dwelling—0.4 spaces, and*
> - *for each 1 bedroom dwelling—0.5 spaces, and*
> - *for each 2 bedroom dwelling—1 spaces, and*
> - *for each 3 or more bedroom dwelling—1.2 spaces, and*
> - *for each dwelling up to 30 dwellings—0.2 spaces, and*
> - *for each dwelling more than 30 and up to 70 dwellings—0.125 spaces, and*

- *for each dwelling more than 70 dwellings—0.067 spaces,*

In reviewing the parking provision requirements, the Public Transport Accessibility Map (PTAM) covers the requirements for land located in Category D, E or F in this map associated with other uses other than residential. The land is identified as falling within both category E and F zone. Similarly to residential parking provision, the LEP allows for the higher parking provision rate for the site therefore the following parking provision rates apply to the office premise and business premise of the development.

> *(b) if the building is on land in category F for each 75 square metres of gross floor area of the building used for those purposes,*

In assessing the car park requirements for this Planning Proposal, the following parking provision calculation presented in Table 8 has been developed based on 89 apartments of different bedroom mixes and a commercial development of 981 sqm GFA.

Table 8 – Parking Provision Calculation

Use Type					Required Spaces
Studio	1	Units	@	0.4 spaces per room	0.4
1 Bedroom	33	Units	@	0.5 spaces per room	16.5
2 Bedroom	48	Units	@	1.0 spaces per room	48
3 Bedroom	7	Units	@	1.2 spaces per room	8.4
Visitor Parking	30	Units	@	0.2 spaces up to 30 dwellings	6
Visitor Parking	40	Units	@	0.125 spaces between 30 to 70 dwellings	5
Visitor Parking	19	Units	@	0.0675 spaces for more than 70 dwellings	1.3
Required Spaces (Apartment and Visitors)					85.6 (86)
Commercial	1077 sqm	Sqm GFA	@	1 per 75 sqm GFA	14.36 (14)
Required Spaces (Residential + Commercial)					100

In comparing and assessing the impact of potentially providing a maximum of 100 parking spaces within the development to the existing situation, the proposal may see a similar level of parking on site. This form of development would also see the number of trips in/out of the site during the morning and afternoon peak periods reduced compared with the existing situation (as presented in section 4.1.3). Therefore, the proposal to accommodate a development with a 1.75:1 FSR that may include a mixed use development, with a component of commercial, would not result in any detrimental impacts.

6 Summary

This report presents the preliminary traffic assessment findings associated with increasing the FSR of the subject property, known as 2-32 Junction Street, Forest Lodge.

The planning proposal, considers a traffic generation scenario of a mixed use development associated primarily for residential development and some commercial (office) by way of increasing the existing FSR of 1:1 to of 1.75:1. This proposal considers that an 89 residential unit and a 981sqm GFA for commercial development could be provided on site at the revised FSR rates.

The findings of this assessment indicate this will result in less traffic being generated when compared to developing the site in accordance with the current existing usage.

The findings indicate that the planning proposal may permit up to 32 vehicle trips and 25 vehicle trips in the AM and PM Peak respectively. This is a reduction of 5 and 17 vehicle trips in the AM and PM Peak respectively compared with the existing situation.

The project will result in the removal of vehicular trips associated with the site development in the AM and PM Peak using the Junction Street access point. The remove of vehicles using this access will result in an improvement intersection operation at Arundel Avenue and Short Street. The intention of this Planning Proposal will see the access being provided off Larkin Street. The traffic modelling of Parramatta Road and Larkin Street intersection indicates the increase in traffic movement on Larkin Street would not result in any notable impact on the overall operation at this intersection and will continue to operate well within its capacity compared with the existing traffic conditions modelled.

The impact of potentially providing 100 spaces associated with a potential mixed use development with a commercial area is of a similar parking provision already provided on site. In assessing the impacts of this against traffic, the proposal will see a reduction in vehicle trips entering/exiting the site during the AM and PM Peak for a similar level of parking. In reviewing this against the findings of the traffic modelling, the proposal for an increase in FSR from 1:1 to 1.75:1 to permit mixed use development, primarily associated with residential use, have demonstrated that the increase in traffic movements in and out of Larkin Street shows no notable impact on the overall road network operation and will provide an acceptable level of service during the typical weekday peak periods.

As such this traffic assessment supports the Planning Proposal to increase the floor space ratio (FSR) from a ratio 1:1 to 1.75:1.

Attachment 1 – Architectural Plans

Attachment 2 – SIDRA Outputs (Existing Situation)

MOVEMENT SUMMARY

Site: Larkin St and Parramatta Rd - EXISTING AM Peak

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
North: Larkin St											
7	L2	34	0.0	0.093	14.9	LOS B	0.3	2.1	0.80	0.91	47.2
Approach		34	0.0	0.093	14.9	LOS B	0.3	2.1	0.80	0.91	47.2
West: Parramatta Rd (w)											
10	L2	20	0.0	0.011	5.5	LOS A	0.0	0.0	0.00	0.58	53.6
11	T1	2249	0.0	0.577	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		2269	0.0	0.577	0.2	NA	0.0	0.0	0.00	0.01	59.7
All Vehicles		2303	0.0	0.577	0.4	NA	0.3	2.1	0.01	0.02	59.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Larkin St and Parramatta Rd - EXISTING PM Peak

Existing Situation
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
North: Larkin St											
7	L2	55	0.0	0.067	8.5	LOS A	0.2	1.7	0.55	0.75	51.4
Approach		55	0.0	0.067	8.5	LOS A	0.2	1.7	0.55	0.75	51.4
West: Parramatta Rd (w)											
10	L2	12	0.0	0.006	5.5	LOS A	0.0	0.0	0.00	0.58	53.6
11	T1	1325	0.0	0.340	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1337	0.0	0.340	0.1	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		1392	0.0	0.340	0.4	NA	0.2	1.7	0.02	0.03	59.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Arundel St and Short St - EXISTING AM Peak

Existing Situation
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Arundel Street (E)											
5	T1	37	0.0	0.039	0.0	LOS A	0.2	1.3	0.02	0.30	57.4
6	R2	36	0.0	0.039	5.5	LOS A	0.2	1.3	0.02	0.30	55.2
Approach		73	0.0	0.039	2.7	NA	0.2	1.3	0.02	0.30	56.3
North: Short Street											
7	L2	11	0.0	0.008	5.6	LOS A	0.0	0.2	0.00	0.58	53.6
9	R2	2	0.0	0.008	5.5	LOS A	0.0	0.2	0.00	0.58	53.1
Approach		13	0.0	0.008	5.6	LOS A	0.0	0.2	0.00	0.58	53.5
West: Arundel Street (W)											
10	L2	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.00	0.30	55.9
11	T1	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.30	57.4
Approach		2	0.0	0.001	2.8	NA	0.0	0.0	0.00	0.30	56.6
All Vehicles		87	0.0	0.039	3.1	NA	0.2	1.3	0.02	0.34	55.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Arundel St and Short St - EXISTING PM Peak

Existing Situation
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Arundel Street (E)											
5	T1	35	0.0	0.025	0.0	LOS A	0.1	0.8	0.06	0.16	58.4
6	R2	13	0.0	0.025	5.5	LOS A	0.1	0.8	0.06	0.16	56.2
Approach		47	0.0	0.025	1.5	NA	0.1	0.8	0.06	0.16	57.8
North: Short Street											
7	L2	4	0.0	0.004	5.6	LOS A	0.0	0.1	0.04	0.57	53.5
9	R2	2	0.0	0.004	5.5	LOS A	0.0	0.1	0.04	0.57	53.0
Approach		6	0.0	0.004	5.6	LOS A	0.0	0.1	0.04	0.57	53.3
West: Arundel Street (W)											
10	L2	2	0.0	0.007	5.5	LOS A	0.0	0.0	0.00	0.10	57.5
11	T1	11	0.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.10	59.1
Approach		13	0.0	0.007	0.9	NA	0.0	0.0	0.00	0.10	58.8
All Vehicles		66	0.0	0.025	1.8	NA	0.1	0.8	0.05	0.19	57.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Attachment 3 – SIDRA Outputs (Post Development)

MOVEMENT SUMMARY

Site: Larkin St and Parramatta Rd - POST DEV AM Peak

Post Development Situation
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
North: Larkin St											
7	L2	51	0.0	0.140	15.1	LOS B	0.5	3.2	0.80	0.92	47.0
Approach		51	0.0	0.140	15.1	LOS B	0.5	3.2	0.80	0.92	47.0
West: Parramatta Rd (w)											
10	L2	38	0.0	0.020	5.5	LOS A	0.0	0.0	0.00	0.58	53.6
11	T1	2249	0.0	0.577	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		2287	0.0	0.577	0.2	NA	0.0	0.0	0.00	0.01	59.7
All Vehicles		2338	0.0	0.577	0.5	NA	0.5	3.2	0.02	0.03	59.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Larkin St and Parramatta Rd - POST DEV PM Peak

Post Development Situation
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
North: Larkin St											
7	L2	68	0.0	0.084	8.6	LOS A	0.3	2.2	0.55	0.76	51.3
Approach		68	0.0	0.084	8.6	LOS A	0.3	2.2	0.55	0.76	51.3
West: Parramatta Rd (w)											
10	L2	24	0.0	0.013	5.5	LOS A	0.0	0.0	0.00	0.58	53.6
11	T1	1325	0.0	0.340	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1349	0.0	0.340	0.1	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		1418	0.0	0.340	0.5	NA	0.3	2.2	0.03	0.05	59.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Arundel St and Short St - POST DEV AM Peak (NO CHANGE)

Post Development Situation
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Arundel Street (E)											
5	T1	37	0.0	0.039	0.0	LOS A	0.2	1.3	0.02	0.30	57.4
6	R2	36	0.0	0.039	5.5	LOS A	0.2	1.3	0.02	0.30	55.2
Approach		73	0.0	0.039	2.7	NA	0.2	1.3	0.02	0.30	56.3
North: Short Street											
7	L2	11	0.0	0.008	5.6	LOS A	0.0	0.2	0.00	0.58	53.6
9	R2	2	0.0	0.008	5.5	LOS A	0.0	0.2	0.00	0.58	53.1
Approach		13	0.0	0.008	5.6	LOS A	0.0	0.2	0.00	0.58	53.5
West: Arundel Street (W)											
10	L2	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.00	0.30	55.9
11	T1	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.30	57.4
Approach		2	0.0	0.001	2.8	NA	0.0	0.0	0.00	0.30	56.6
All Vehicles		87	0.0	0.039	3.1	NA	0.2	1.3	0.02	0.34	55.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Arundel St and Short St - POST DEV PM Peak (NO CHANGE)

Post Development Situation
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Arundel Street (E)											
5	T1	35	0.0	0.025	0.0	LOS A	0.1	0.8	0.06	0.16	58.4
6	R2	13	0.0	0.025	5.5	LOS A	0.1	0.8	0.06	0.16	56.2
Approach		47	0.0	0.025	1.5	NA	0.1	0.8	0.06	0.16	57.8
North: Short Street											
7	L2	4	0.0	0.004	5.6	LOS A	0.0	0.1	0.04	0.57	53.5
9	R2	2	0.0	0.004	5.5	LOS A	0.0	0.1	0.04	0.57	53.0
Approach		6	0.0	0.004	5.6	LOS A	0.0	0.1	0.04	0.57	53.3
West: Arundel Street (W)											
10	L2	2	0.0	0.007	5.5	LOS A	0.0	0.0	0.00	0.10	57.5
11	T1	11	0.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.10	59.1
Approach		13	0.0	0.007	0.9	NA	0.0	0.0	0.00	0.10	58.8
All Vehicles		66	0.0	0.025	1.8	NA	0.1	0.8	0.05	0.19	57.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.