PARKING & TRAFFIC
CONSULTANTS

Driving success through valuable advice

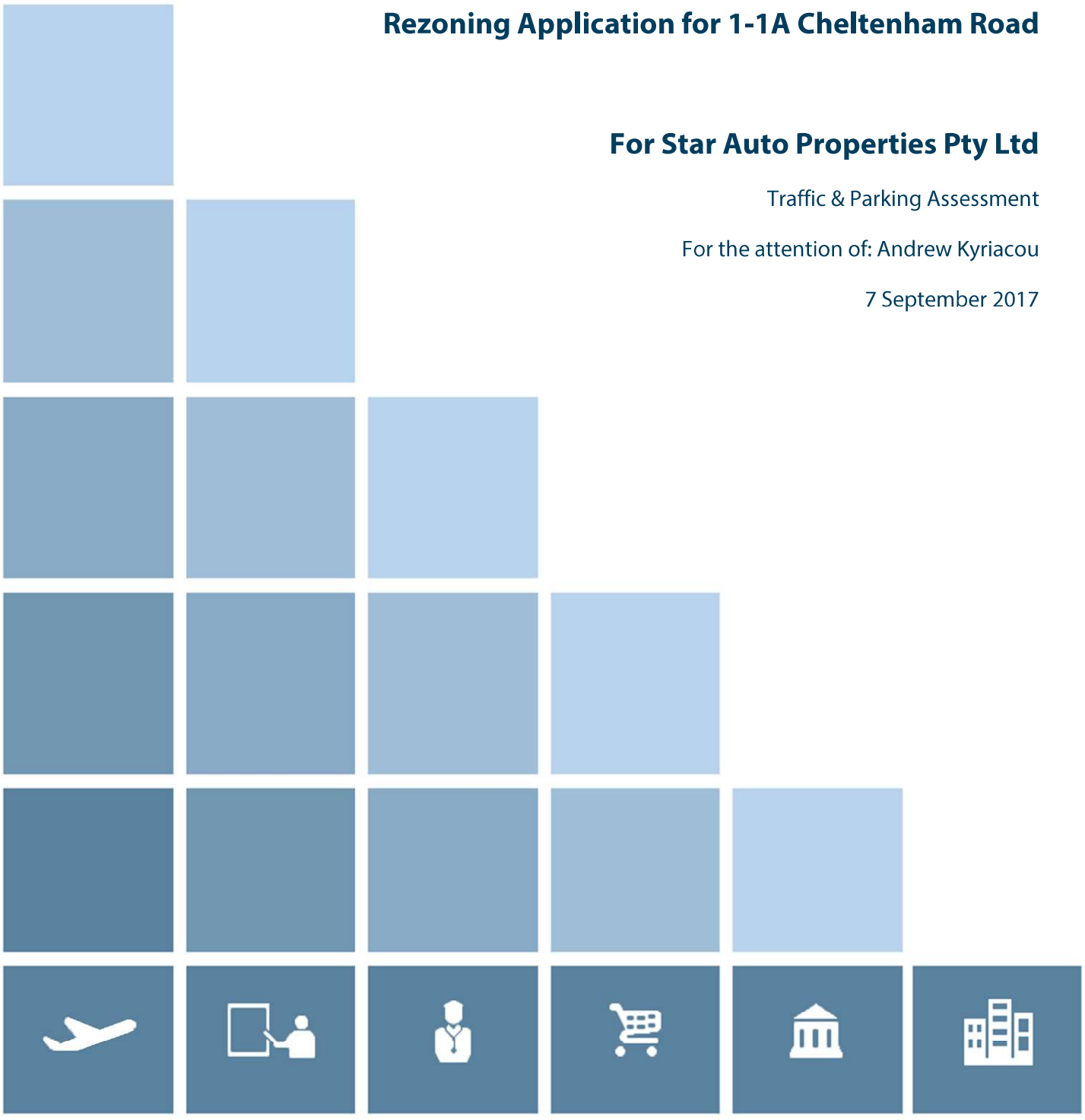
Rezoning Application for 1-1A Cheltenham Road

For Star Auto Properties Pty Ltd

Traffic & Parking Assessment

For the attention of: Andrew Kyriacou

7 September 2017



PARKING & TRAFFIC CONSULTANTS

Driving success through valuable advice

Document Control

Our Reference: T2-2032, Rezoning Application for 1-1A Cheltenham Road, Traffic & Parking Assessment

ISSUE	DATE	ISSUE DETAILS	AUTHOR	REVIEWED
1	18 April 2017	Draft Report	CS	AM
2	24 August 2017	1st Issue	CS	AM
3	30 August 2017	2nd Issue	CS	AM
4	7 September 2017	3rd Issue	CS	AM

Contact

Chris Saunders
02-89200800
chris.saunders@parkingconsultants.com

PARKING & TRAFFIC CONSULTANTS
Suite 102, 506 Miller Street
Cammeray NSW 2062

Ph. +61 2 8920 0800
Fax +61 2 8076 8665

Suite 209, 838 Collins Street
Docklands VIC 3008

Ph. +61 3 9020 7333

Contents

List of Figures:

List of Tables:

1 Introduction

1.1 Project Overview

Parking and Traffic Consultants (PTC) has been engaged by Star Auto Properties Pty Ltd (the Applicant), to prepare a Parking and Traffic Assessment to accompany a Planning Proposal to the NSW Department of Planning, for the rezoning of 1-1A Cheltenham Road, Croydon. This proposal seeks to rezone the current Medium Density Residential (R3) classification to an Enterprise Corridor (B6) with the maximum permissible floor space ratio (FSR) and building height controls to match those of the adjoining B6 properties.

The location of the development is shown in Figure 1.

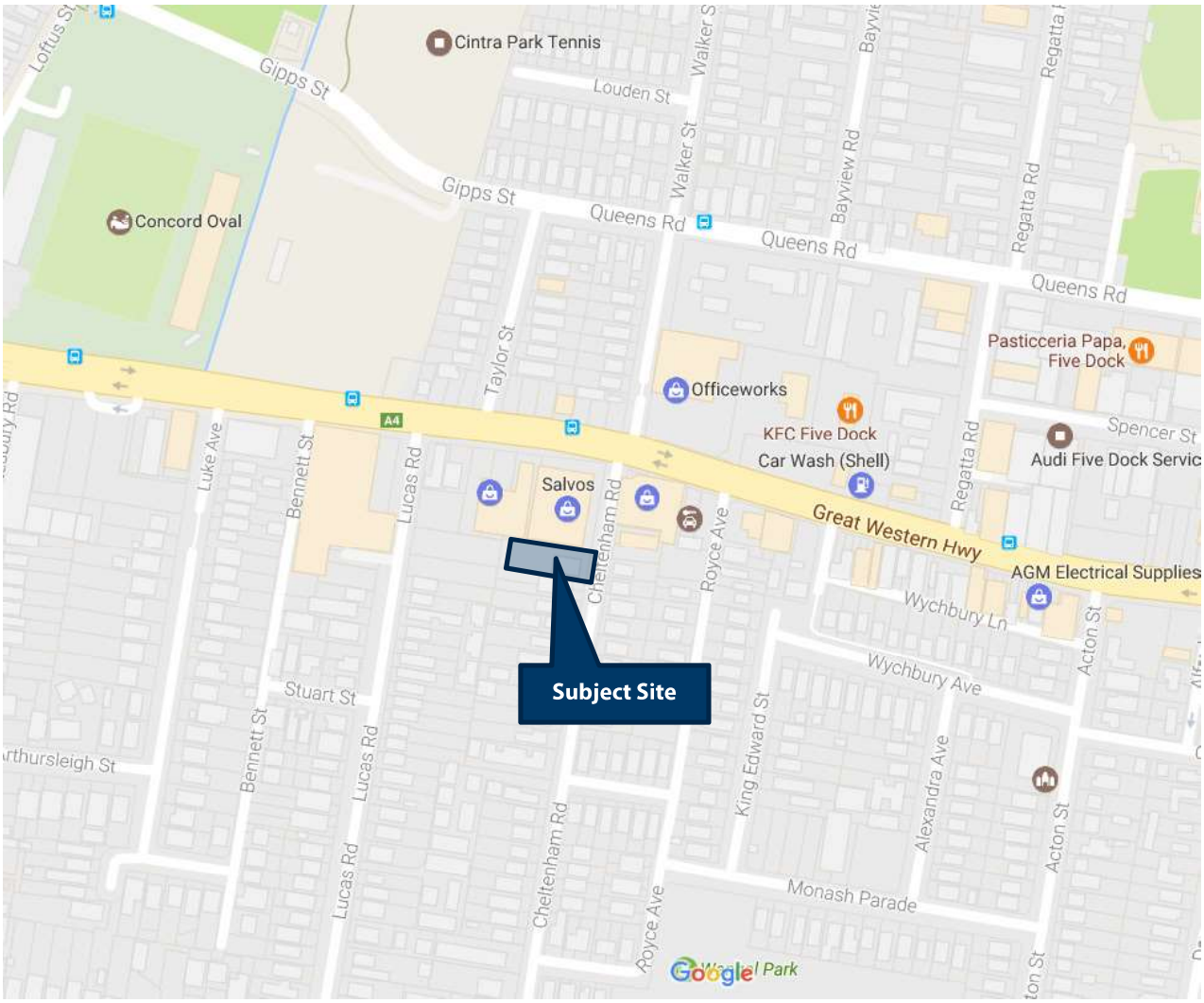


Figure 1 - Site Location

1.2 Purpose of this Report

This report presents the following considerations in relation to the Traffic and Parking assessment to form part of a Planning Proposal to be prepared and submitted by the Applicant.

- **Section 2** - A description of the project,
- **Section 3** - A description of the road network serving the development sites,
- **Section 4** - Determination of the traffic activity associated with the sub-division sites,
- **Section 5** - Access assessment, and
- **Section 6** - Conclusion

2 The Proposal

2.1 Planning Proposal

The subject site is located at 1a Cheltenham Road, Croydon (Lot 1, DP817488). The planning proposed involves the rezoning of the property from Medium Density Residential (R3) to Enterprise Corridor (B6).

Under B6 zoning, the proposal seeks the following conditions:

- Maximum floor space ratio (FSR) of 1.75:1; and
- Maximum building height of 15 metres.

These conditions match those of the adjoining B6 property located at No. 180 Parramatta Road, Croydon.

2.2 Development Intention

The applicant seeks to potentially develop a bulky goods retail premises with a basement floor parking area.

It is noted that the applicant owns the adjacent consolidated land comprising the following properties:

- 194 Parramatta Road: Lot A, B & C in DP84812;
- 204 Parramatta Road: Lot 1 in DP86926;
- 178 Parramatta Road: Lot 100 & 101 in DP850953 Lot 1 in DP86033;

A Development Application has been submitted (DA 89/2017) for the development of a Mercedes Benz showroom and servicing facilities on this land. The DA89/2017 development is designed to be self-sufficient, i.e capable of operating as a standalone facility. Similarly, the intended development for 1a Cheltenham will be designed to operate as a standalone site.

2.3 Development Site

The proposal relates to 1-1A Cheltenham Road, Croydon, listed as Lot 1 of DP817488, within the Local Government Area (LGA) of Burwood Council.

The site has a parcel area of 1,289m^2, with a 20m frontage along Cheltenham Road.

Currently, the site is zoned as Medium Density Residential (R3) and is partly occupied by a single storey domestic dwelling.

An aerial image of the site is provided in Figure 2 below.

Figure 2 - Aerial View of Subject Site & Surrounds

2.4 Site Context

The subject site is located on the perimeter of a Medium Density Residential precinct (R3), immediately adjacent to an Enterprise Corridor (B6). The character of the local environment is described further below:

- The character of the local enterprise corridor, is typified by vehicle showrooms and vehicle workshops, bulky goods retail premises, along with a range of miscellaneous commercial premises. This corridor follows the alignment of Parramatta Road, a classified state road, and defines the northern boundary of the local residential precinct to which the subject site is part of;
- The residential precinct (including the subject site) comprises low to medium density residential land (R2 & R3);
- A general industrial (IN1) precinct is located north-east of the site, comprising businesses of similar characteristics to the adjacent enterprise corridor, described above;

Figure 3 - Local Land Use Map (Source: NSW Planning Viewer)

3 Existing Conditions

3.1 Existing Road Network

The site has direct access from Cheltenham Road, which connects to Parramatta Road at a signalised intersection, providing convenient access to Sydney's Western Suburbs and Inner City suburbs. Access to Burwood, being the most proximate major centre, is most readily achieved via the local road network. The road network serving the site is presented in Figure 4.

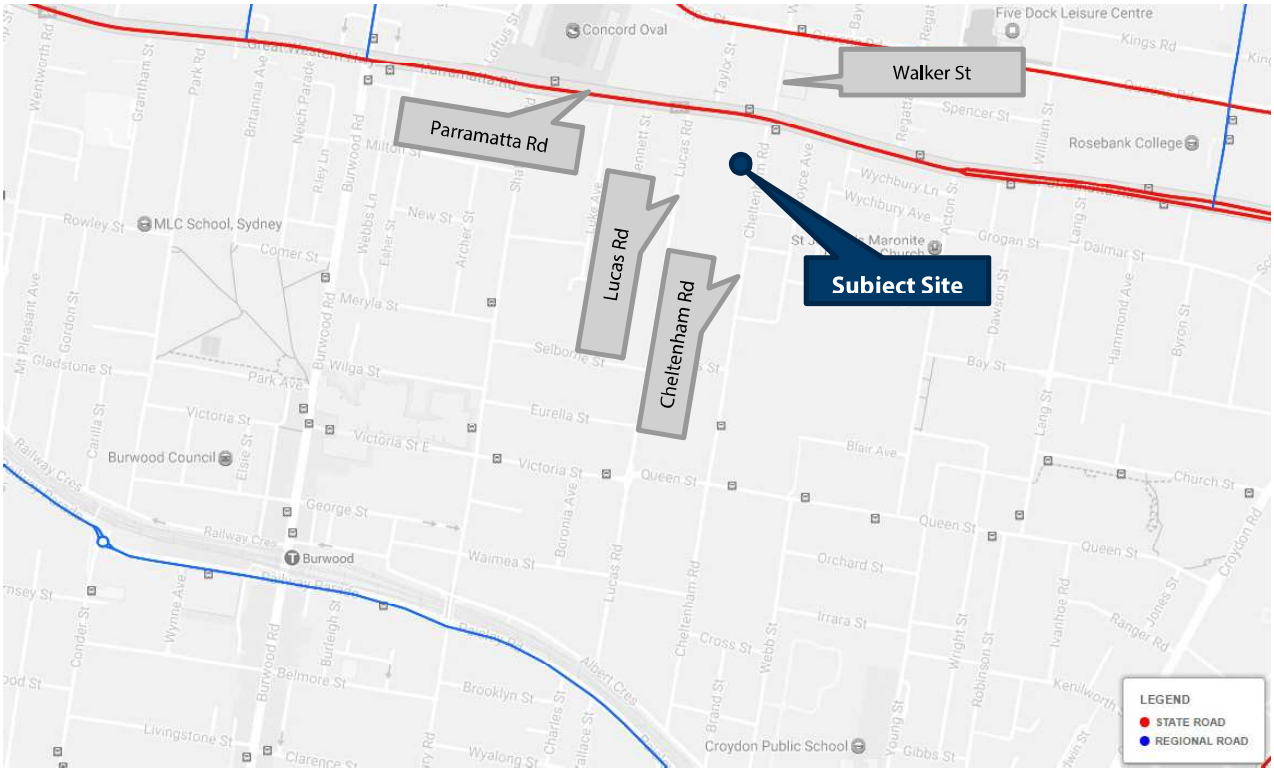


Figure 4 – Road Hierarchy (Source: RMS Road Hierarchy Review)

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)

The roads primarily servicing the site are described in the tables below:

Table 1 – Existing Road Network – Parramatta Road

Parramatta Road	
Road Classification	State Road
Alignment	East-West
Number of Lanes	3 lanes in each direction
Carriageway Type	Divided
Carriageway Width	17m
Speed Limit	60km/h
School Zone	Not within 500m of the site
Parking Controls	Clearway in operation between 10am-3pm (Mon-Fri), 8:00am-8:00pm (Sat-Sun)
Forms Site Frontage	No

Table 2 – Existing Road Network – Cheltenham Road

Cheltenham Road	
Road Classification	Local Road
Alignment	North-South
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	12.5m
Speed Limit	50 km/h
School Zone	Yes (between Queen St and Waimea St, 600m south of site)
Parking Controls	Unrestricted.
Forms Site Frontage	Yes

Table 3 - Existing Road Network - Walker Street

Walker Street	
Road Classification	Local Road
Alignment	North-South
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	7m
Speed Limit	50 km/h
School Zone	No
Parking Controls	No Parking
Forms Site Frontage	No

Table 4 - Existing Road Network – Lucas Road

Lucas Road	
Road Classification	Local Road
Alignment	North-South
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	12m
Speed Limit	50 km/h
School Zone	No
Parking Controls	2P (Eastern Edge)/Unrestricted (Western Edge)
Forms Site Frontage	No *(forms part of 180 Parramatta Rd property frontage)*

3.2 Existing Traffic Volumes

3.2.1 Traffic Survey Data

To identify the existing traffic conditions, intersection surveys were undertaken in proximity to the property at the following locations:

1. Parramatta Road/Cheltenham Road/Walker Street *(Signalised)*; and
2. Parramatta Road/Lucas Road *(Give-way/yield)*.

The intersection surveys were undertaken on 4th April 2017, being a typical Tuesday. The weather was characterised as showers, suggesting that recorded traffic volumes may be slightly higher than average.

These surveys were performed at the following times to record the AM and PM peak activity surrounding the site:

- 7:00am – 9:00am, and
- 4:00pm – 6:00pm.

The traffic survey results have been summarised in Table 5 and Table 6. It was noted in both intersections that the PM peak experienced 14-15% greater traffic volumes than the AM peak. This may be attributable to the light-industrial business character of the local area which would be anticipated to generate more business in the evening. This component would overlap with the background commuter traffic using the classified road network (Parramatta Road).

Table 5 - Traffic Intersection Survey (Parramatta Rd & Lucas Rd)

	Approach	Lucas Rd			Parramatta Rd				Parramatta Rd			Grand Total
	Time Period	Lights	Heavies	Total	Lights	Heavies	Total		Lights	Heavies	Total	
AM	7:00 to 8:00	23	2	**25**	1,657	120	**1,777**		2,067	299	**2,366**	**4,168**
PM	17:00 to 18:00	31	1	**32**	1,904	104	**2,008**		2,653	64	**2,717**	**4,757**

Table 6 - Traffic Intersection Survey (Parramatta Rd & Cheltenham Rd & Walker St)

	Approach	Cheltenham Rd			Parramatta Rd			Walker St			Parramatta Rd			Grand Total
	Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
AM	7:30 to 8:30	153	4	**157**	1,716	167	**1,883**	27	1	**28**	2,103	246	**2,349**	**4,417**
PM	16:45 to 17:45	184	1	**185**	1,933	107	**2,040**	24	0	**24**	2,759	60	**2,819**	**5,068**

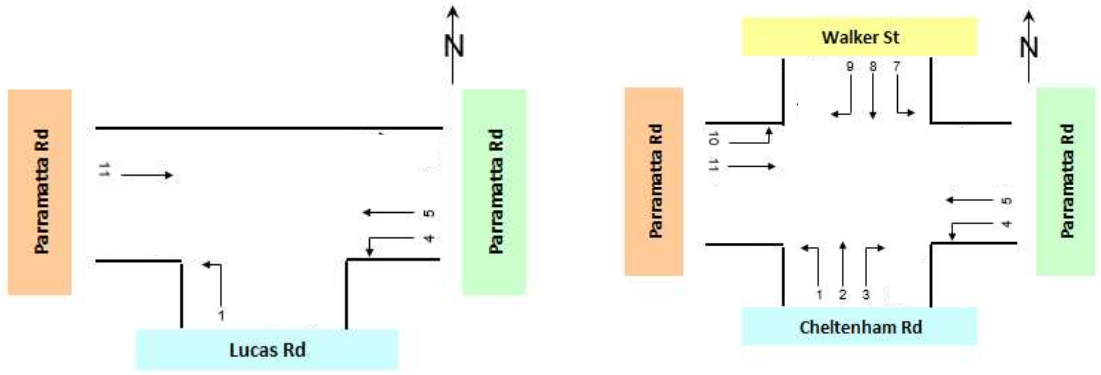


Figure 5 - Traffic Intersection Survey Diagrams

Overall, the Cheltenham Road intersection experiences greater traffic volumes than the Lucas Road intersection, attributable to the ability to make a right-hand turn onto Parramatta Road, attracting more traffic within the local road network south of Parramatta Road.

3.2.2 Current Intersection Operation

The performance of the most proximate intersections, being the signalised intersection between Parramatta Road, Cheltenham Road and Walker Street, and the give-way intersection between Parramatta Road and Lucas Road, has been established through the preparation of intersection models using SIDRA modelling software. The model incorporates the surveyed traffic volume data described in Section 3.2.

Detailed results including the degree of saturation, average delay and maximum queue lengths for each approach are presented in Attachment 1 of this Report, while a summary of the intersection results at the AM and PM peak are presented in Table 7.

Table 7 - Summary of Existing Traffic Conditions

Intersection	Peak Period	Average Level of Service *(LoS)*	Average Delay *(sec)*	Worst Degree of Saturation *(DSat)*	95% Queue Length *(Veh)*
Parramatta Road/ Walker Street/ Cheltenham Road	7:30-8:30	A	8.9	0.743	13.1
	16:45-17:45	B	15.3	0.889	24.5
Parramatta Road/ Lucas Road	7:00-8:00	A	0.2	0.438	0.2
	17:00-18:00	A	0.2	0.476	0.2

As expected from the survey data, the critical period of operation for the intersection between Parramatta Road, Cheltenham Road and Walker Street is during the evening (PM) peak, between 16:45 and 17:45.

3.3 Traffic Accidents

The Centre for Road Safety, within Transport for NSW (TfNSW), has provided historical crash data for the five year period between 2011 and 2015 of crashes within the vicinity of the development as shown in Figure 6.

A review of the data indicates that crashes in the vicinity of the site have been very few, with less than 10 incidents being reported over the last 5 years (within 100m of the site), of which only 1 serious injury has occurred. This suggests that the immediate road network is operating safely. Incident activity increases along Shaftsbury Road and Burwood Road, which connect to Burwood Town Centre, and likely experience greater traffic volumes.

Figure 6 – Local Crash from 2011-2015 (Source: Centre for Road Safety - TfNSW, 2016)

3.4 Public Transport

The locality has been assessed in the context of available forms of public transport that may serve the prospective staff of the proposed B6 zone. When defining accessibility to public transport and local amenities, the NSW Guidelines to Walking & Cycling (2004) suggests that 400-800m is a comfortable walking distance.

A review of the public transport infrastructure indicates there are a few public transport options available in the vicinity of the site. Details of the various modes of transport are described in the following sections.

3.4.1 Bus Services

A number of bus stops were identified within comfortable walking distance of the site (800m), as shown in Figure 7. High frequency (10 minute headways) services are available between Burwood and Sydney, with other services providing access to the Western, Inner west and Southern suburbs of Sydney.

It was assessed that the surrounding bus services create good opportunities for prospective employees living in the surrounding suburbs to access the site.

Figure 7 – Local Bus Stops

3.4.2 Trains

The site is approximately 1.6km from Burwood Train Station, or a 19 minute walk. This distance exceeds the 'comfortable' walking catchment, but may still attract some small portion of patrons/employees using the T1 or T2 train lines.

3.5 Active Transport

3.5.1 Cycling

The surrounding area was review in the context of available cycling infrastructure. It was identified that the area is very well connected via a mix of clearly marked shared and separated cycle paths, linking much of the Burwood precinct and neighbouring precincts, with paths along sections of Parramatta Road connecting to Burwood Town Centre. As such, it is considered that the site will offer prospective employees with the option to cycle to and from the workplace.

The local cycling routes are outlined in Figure 8.

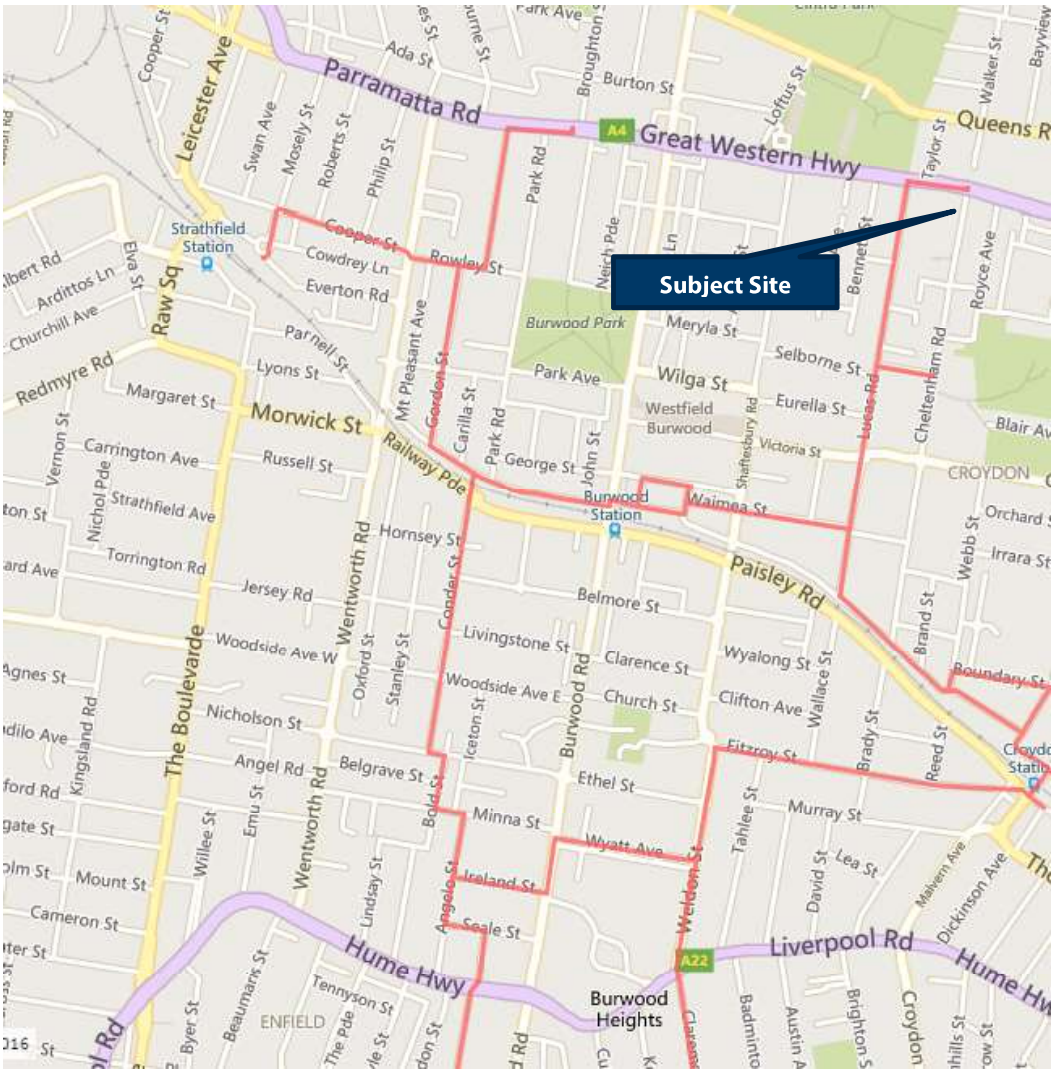


Figure 8 – Burwood Cycling Map (Source: Burwood Council)

3.5.2 Walkability

In order to establish the walkability of the site, a review of the local surrounds, and pedestrian infrastructure was undertaken. The surrounding region is predominantly Medium Density Residential, which could constitute a potential source of employees or patrons for the proposed rezoned land.

In regards to pedestrian infrastructure, all local roads are furnished with footpaths, and where necessary, zebra crossings, refuge islands, speed humps and associated signage have been provided, and are in good condition. Furthermore, the general street scape is well vegetated, lighted, and incorporates off-street footpaths through parks, and as such, encourages pedestrian travel in the area.

4 Development Traffic Assessment

4.1 Traffic Generation & Distribution

The traffic generation of the proposed rezoning has been established with reference to the RMS Guide to Traffic Generating Developments (RMS Guide), which presents the traffic generation rates for a number of permitted land uses under the B6 zoning category. The Guide was last updated in October 2002 and is largely based on surveys undertaken during the nineties.

RMS is currently updating the Guide to include more recent data and revised land use traffic generation rates; however as an interim measure RMS has recently published a Technical Direction titled TDT 2013/04a- Guide to Traffic Generating Developments-Updated Traffic Surveys, which provides preliminary updated traffic generation rates for a number of land-uses including residential and bulky-goods retail developments.

It is noted that traffic generation rates have been estimated based on a range of permitted land-uses.

The network peak periods are the focus of this assessment, being the standard approach supported by RMS, due to the potential cumulative impacts between network traffic and the development traffic. The typical surrounding businesses (bulky good retail, motor show rooms) generate notably higher trip volumes during the evening period than the morning period (see Section 3.2). As such, Table 8 outlines the trips generation rates for some of the permitted land uses that would be anticipated to generate the greatest volumes of traffic during the network peak PM periods.

Some permitted land uses have been excluded from this table:

- Impractical site area constraints – timber yards;
- Low-trip generations – residential/accommodation land-uses;
- Multi-purpose trip generators – neighbourhood shops, take-away food & drink premises;
- Off-peak generators – Nurseries generate the greatest trip generations on Sundays, outside of peak commuter periods.

Ultimately however, any development on this land will be subject to a traffic impact assessment as part of the development application process.

Table 8 - RMS Trip Generation Rates

Stage	Land use	Unit of Measurement	Source	Trip Generation Rates (Network PM Peak, Weekday) *5:00pm -6:00pm*
Current	Residential - Medium Density (R3)	Per Dwelling	RMS 'Guide' (2002)	0.5
Proposed	**Enterprise Corridor (B6)**			
	'Bulky Goods Retail'	Per 100m^2 GFA	TDT 2013/04a	1.3
	'Motor Showroom'	Per 100m^2 GFA	RMS 'Guide' (2002)	0.7
	'Major Hardware/Building Supplies'	Per 100m^2 GFA	TDT 2013/04a	2.85

With a proposed FSR of 1.75:1 and a site area of 1,289m^2, this amounts to a potential Gross Floor Area (GFA) of 2255m^2. Applying the rates in the previous table to the subject site results in the estimated traffic volumes outlined in Table 9.

Table 9- Trip Generation Potential

Land use	Max Units/GFA	Trip Generation Rates (Network PM Peak, Weekday) *5:00pm -6:00pm*
Residential - Medium Density (R3)	10 units	5
Enterprise Corridor (B6)	**GFA[1]:**	
'Bulky Goods Retail'	2,255m^2	30
'Motor Showroom'	2,255m^2	16
'Major Hardware/Building Supplies'	2,255m^2	65

The above estimates suggest that the proposed rezoning has the potential to generate up to 65 trips during the network PM peak if developed as a major hardware store, or, a *net increase* of 60 trips when discounting the potential trip generation of the existing land zone.

It is noted that the adopted survey data is based on major retailers and suppliers (i.e Bunnings, Mitre 10, Freedom Furniture, etc), whose stores are generally developed on larger sites.

When considering the land use potential, it is noted that the intention is to potentially develop the land as a bulky goods retail premise/showroom. Under this scenario, traffic volumes would be anticipated to be lower than the traffic generating potential of alternative permitted land uses such as major hardware/building supply stores.

Notwithstanding, this assessment has based traffic on a worst case scenario of 'Hardware/Building Supplies' for robustness, noting that these volumes are unlikely to eventuate. The additional trips have been modelled and assessed in Section 4.3.

4.2 Trip Distribution

The proposed site has frontage on Cheltenham Road, with an existing domestic driveway providing access to the property from Cheltenham Road. For the purpose of this assessment, it is assumed that access to the property shall be retained via Cheltenham Road.

In regards to the proportion of arriving and exiting movements, it is noted that businesses typically cease operation between 5:00pm and 6:00pm, with the bulk of staff leaving the premises during this period. Patrons visiting during this hour will typically arrive and depart in the same hour. To account for this, a nominal split of 40:60 has been adopted for arriving and departing trips respectively.[2]

The proposed distribution of evening peak hour traffic (Table 9) on the surrounding network is shown in Figure 9.

[1] *Application of 1.75:1 maximum FSR to the Site area of 1,300m^2*

[2] *Assumes approximately 10 staff members leave the site (i.e 28 patrons : 28 patrons+10 staff)*

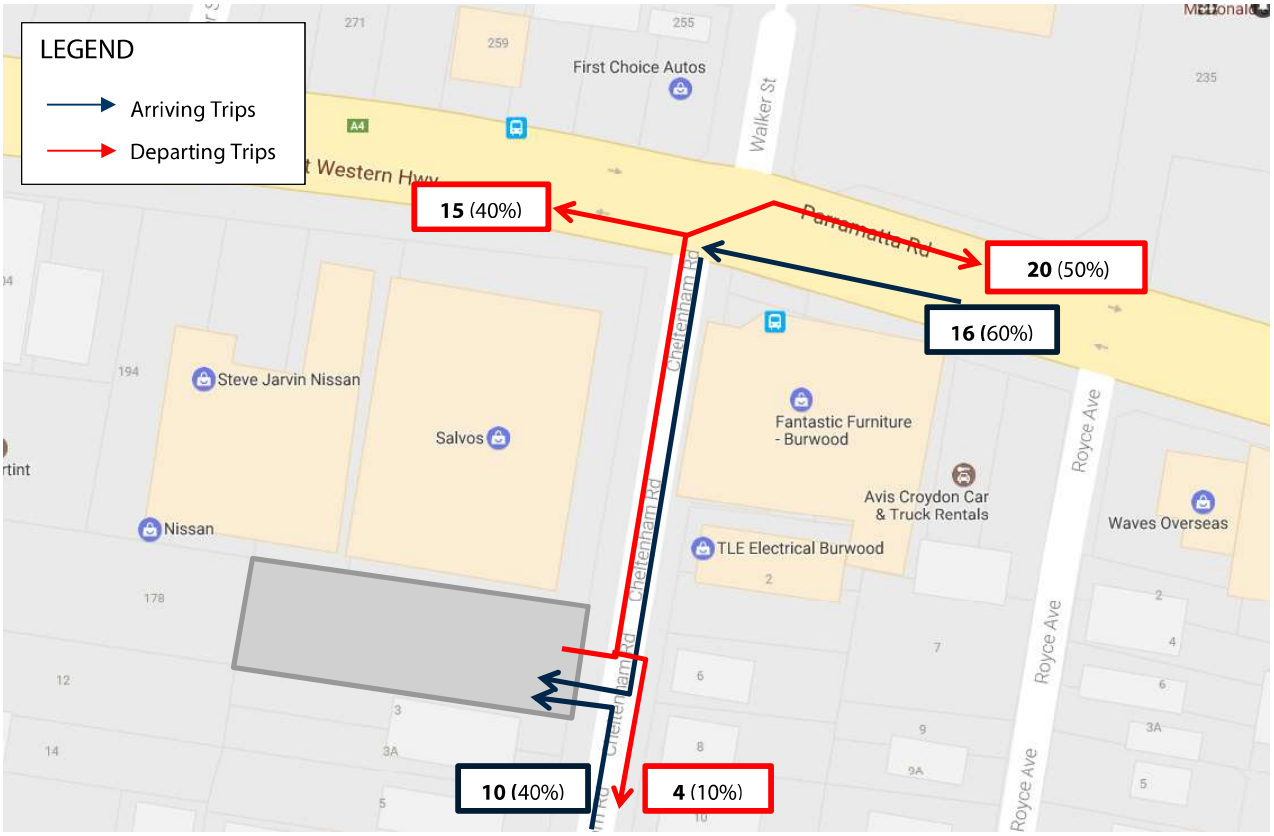


Figure 9 –Distribution of Traffic

4.3 Traffic Modelling Assessment

In order to assess the potential traffic impact associated with the proposed rezoning on the Parramatta Road/Walker Street/Cheltenham Road intersection, a modelling scenario has been developed. This model is based on traffic surveys of the existing traffic conditions (discussed in Section 3.2) and the potential future traffic generations associated with the rezoning, outlined in Section 4.1.

The SIDRA Intersection 7.0 modelling program was used to undertake the model – this is a modelling tool accepted by RMS, that produces the following assessment outputs:

- Level of Service (LoS): a qualitative assessment of the quantitative effect of factors such as speed, volume of traffic, geometric features, traffic interruptions, delays and freedom to manoeuvre *(RMS 'Guide' (2002)*;
- Degree of Saturation (Dsat): is the ratio between traffic demand and the capacity of an intersection. As a general case, a saturation of over 85% becomes problematic, where excessive queues can impact adjacent movements, leading to a rapid decline in performance;
- Average Delay: The average amount of time (across all available intersection movements) for a user to navigate through the intersection;
- 95% Queue length: The longest expected queue length measured in number of vehicles i.e a 5% chance of exceeding this queue length.

The modelling and projected traffic activity has been established around the critical weekday evening period, which represents the peak loads and therefore worst case scenarios. Daily traffic volumes are not presented in this assessment as the road network has been assessed on the basis of the peak traffic activity. This approach has been confirmed as acceptable by RMS.

The detailed modelling results are presented in Attachment 2 and the summary of the intersection analysis is presented in Table 10. A level of service comparison is provided in Figure 10. Level of Service is a

Table 10 –Intersection Performance Comparison between Existing and Proposed Land-use Zones

Parameter	Existing (R3 Zone)	Proposed (B6 Zone)
Time Period	16:45-17:45	16:45-17:45
Average Level of Service	B	B
Worst Level of Service	B	C *(Cheltenham Road)*
Average Delay (seconds)	15.3	15.5
Worst Degree of Saturation (DSat)	0.889 *(Parramatta Rd)*	0.889 *(Parramatta Rd)*
Cheltenham Road DSat	0.689	0.837

Parameter	Existing (R3 Zone)	Proposed (B6 Zone)
95% Back of Queue (Veh) (Parramatta Rd)	24.5	24.5
95% Back of Queue (Veh) (Cheltenham Rd)	3.9	5.2

As per the model outputs, the assessment of traffic activity has established that the proposed rezoning will have minimal impact upon the overall operation of the intersection, with the average LoS remaining at 'B', which is considered 'good with acceptable delays' according to RMS guidelines. This is under worst-case traffic generations which are not anticipated to eventuate.

Notwithstanding, the level of service along Cheltenham Road reduces from LoS 'B' to LoS 'C' with an associated delay increase of 3.9 seconds, from 24.7 seconds to 28.6 seconds. Nonetheless, an LoS 'C' is considered 'satisfactory' by RMS in relation to signalised intersections. Moreover, the DSat of Cheltenham Road in the proposed scenario is 0.837, remaining under the maximum 0.85 limit. Accordingly, the intersections within the vicinity of the site will continue to operate similarly to the existing despite introducing the worst-case potential traffic volumes associated with the proposed rezoning.

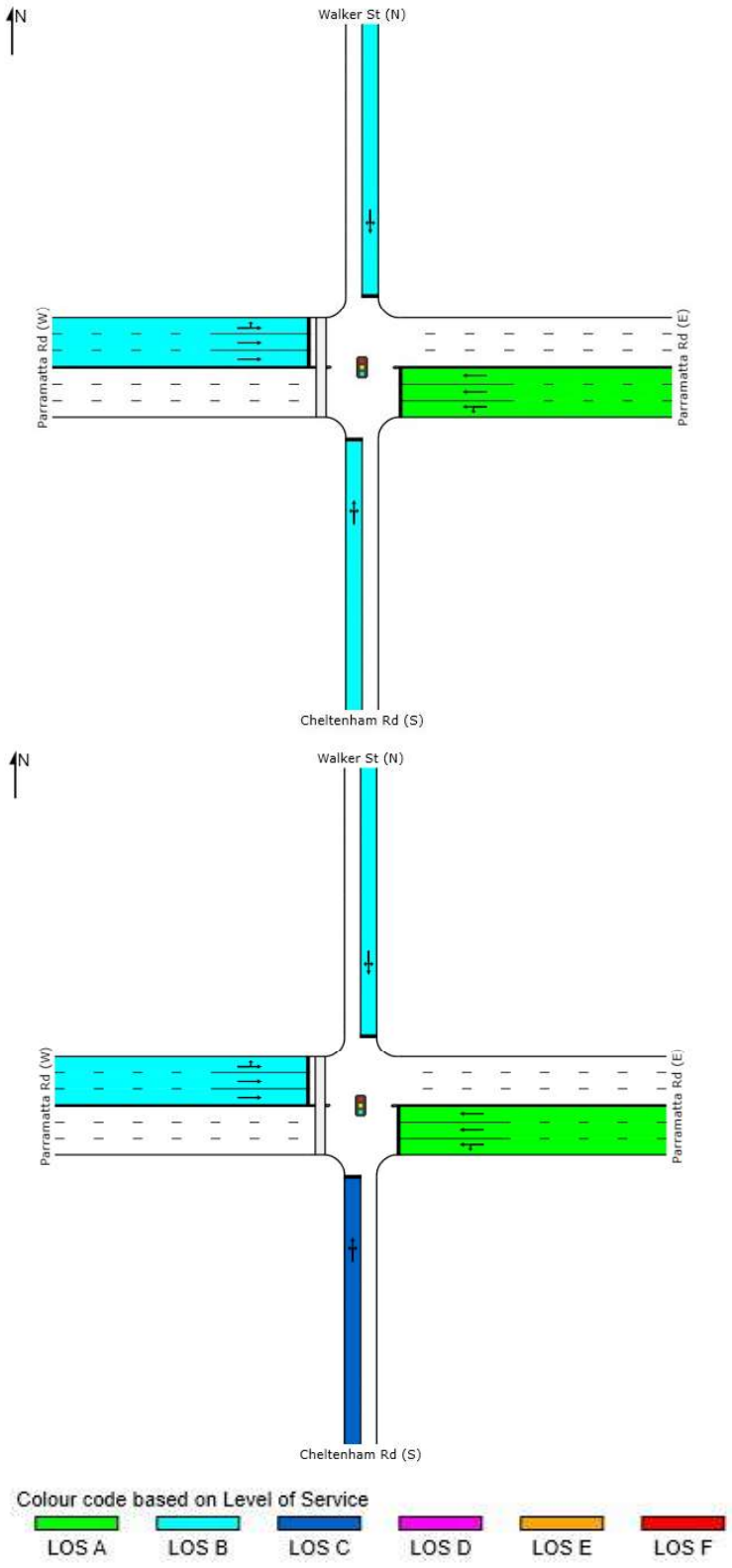


Figure 10 - Level of Service Diagram, Existing (Top) & Proposed (Bottom)

5 Access Assessment

The proposed lot has a single road frontage along Cheltenham Road, with two existing driveways along this frontage – one serving the domestic dwelling (No 1 Cheltenham Road), and one providing access to the rear of the domestic dwelling (1A Cheltenham Road).

From Table 10, it was noted that under worst-case traffic generations the 95% back of queue along Cheltenham Road is 5.2 vehicles, or 37m, compared to the existing queue length result of 3.9 vehicles.

It is noted that the adjacent building, 166-176 Parramatta Road (Lot 1, DP 206441) currently occupied by the Salvos building, has 90 degree parking immediately onto Cheltenham Road, running for 40m, being most of the property frontage. Any additional queue lengths on Cheltenham Road has the potential to temporarily obstruct some of these parking bays. This is seen as an inevitable consequence of this style of parking (typically not permitted for new development) which is sensitive to any future traffic growth. Nonetheless, the impacts are considered minimal, as the proximity to the traffic signals with Parramatta Road, will lead to regularly halted traffic, during which parked vehicles may be given way to exit by traffic

The property itself is located approximately 60m from the intersection with Parramatta Road, and in light of its size and anticipated traffic generation, is not anticipated to generate sufficient traffic that would create queuing into the property, along Cheltenham Road. This would be confirmed through further assessment however, upon any Development Application submission of the subject lot.

Given that the property has only 1 road frontage, and that this is not located on a classified road, nor is it anticipated to impact upon the operation of a classified road, access via Cheltenham Road is considered appropriate for the proposed rezoning.

Any alterations to the existing property access arrangements shall be assessed by Burwood Council as part of the development application for the subject lot.

6 Parking Provision

For development within the Parramatta Enterprise Corridor (B6), the Burwood DCP stipulates minimum car parking rates for a number of permitted land uses.

It is noted that under the permitted FSR for the B6 land zone (1.75:1), the subject lot, with a site area of 1,289m^2, may develop a maximum gross floor area of 2,255.75m^2.

Table 11 - Potential Parking Provision Requirements by Land Use (Burwood DCP)

Land Use	DCP Minimum Parking Rate	Potential GFA (m^2)	Car Parking Requirement
Bulky good premises; garden centres; hardware and building supplies; landscaping material supplies; markets; plant nurseries; roadside stalls; Rural supplies; timberyards; wholesale supplies	1 space per 33m^2 GFA	2,255.75	**68**
Shops; amusement centres; industrial retail outlets; other retail premises not defined	1 space per 40m^2 GFA	2,255.75	**56**
Business, Office premises, Vehicle hire or sales premises	1 space per 50m^2 GFA	2,255.75	**45**
Light Industry, warehouse or distribution centre	1 space per 100m^2 GFA	2,255.75	**23**

The above rates are for information only, in the context of this rezoning proposal. The parking demands and provisions associated with a future development proposal will be assessed in detail as part of any future Development Application for the subject lot.

7 Conclusion

In summary, this report presents an assessment of the traffic and parking implications associated with a proposed rezoning of 1-1A Cheltenham Road, Croydon.

- The proposal involves a rezoning from Medium Density Residential (R3) to Enterprise Corridor (B6), which will align with the character of the adjoining properties (180 Parramatta Road);
- With a site area of 1,289m^2, under B6 zoning permissions, a GFA of 2,255m^2 could be achieved if fully developed;
- The development intention is to develop a bulky goods retail showroom on the subject property, with a basement parking area;
- The permitted land-use that would be expected to generate the greatest number of vehicles trips coinciding with network commuter peak periods is a hardware/building supply store. It was conservatively estimated that the site may produce a *net increase* of up to 60 trips during the weekday evening peak period (5:00pm-6:00pm). Under the development intention however, traffic generations would be anticipated to be notably lower;
- The assessment of traffic activity has established that the proposed subdivision will have minimal impact upon the overall operation of the surrounding road network, with the *average* level of service of the most proximate intersection between Cheltenham Road, Parramatta Road and Walker Street, remaining unchanged at an LoS 'B' under the worst-case scenario (hardware/building supplies). This level of service is classified by the RMS as 'good, with acceptable delays and spare capacity';
- A small local decrease in the level of service for drivers accessing Parramatta Road from Cheltenham Road can be expected under worst case trip generations, reducing from LoS 'B' to LoS 'C'. Nonetheless, this performance is still within satisfactory operation levels set out by RMS guidelines. Accordingly, the intersections within the vicinity of the site will continue to operate similarly to the existing operation and therefore, will not require any upgrades.
- Access to the property via Cheltenham Road is considered appropriate, and is not anticipated to conflict with the operation of Parramatta Road and Cheltenham Road. Any alterations to the existing access arrangements shall be subject to Council Approval and RMS;
- Parking provisions for B6 land-use have a wide potential range. A detailed parking assessment will be required for any future Development Application for the subject lot.

In this regard, the proposal in relation to the traffic will have no notable impact upon the operation of overall road network.

Attachment 1 – Sidra Modelling – Existing Conditions

Existing AM Scenario: 7:30-8:30, Tuesday 4th April 2017

LANE SUMMARY

Site: 101 [AM - Chelt/Parr/Walk (Existing)]

New Site
Signals - Fixed Time Isolated Cycle Time = 40 seconds (Practical Cycle Time)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cheltenham Rd (S)													
Lane 1	157	1.2	268	0.586	100	23.6	LOS B	3.2	22.5	Full	500	0.0	0.0
Approach	157	1.2		0.586		23.6	LOS B	3.2	22.5				
East: Parramatta Rd (E)													
Lane 1	627	5.0	1030	0.608	100	7.7	LOS A	8.5	62.1	Full	500	0.0	0.0
Lane 2	628	6.0	1032	0.608	100	6.7	LOS A	8.5	62.7	Full	500	0.0	0.0
Lane 3	628	6.0	1032	0.608	100	6.7	LOS A	8.5	62.7	Full	500	0.0	0.0
Approach	1883	5.7		0.608		7.0	LOS A	8.5	62.7				
North: Walker St (N)													
Lane 1	29	0.0	276	0.105	100	17.4	LOS B	0.5	3.7	Full	500	0.0	0.0
Approach	29	0.0		0.105		17.4	LOS B	0.5	3.7				
West: Parramatta Rd (W)													
Lane 1	782	2.6	1053	0.743	100	9.5	LOS A	13.1	93.7	Full	500	0.0	0.0
Lane 2	784	2.6	1055	0.743	100	9.2	LOS A	13.1	93.8	Full	500	0.0	0.0
Lane 3	784	2.6	1055	0.743	100	9.2	LOS A	13.1	93.8	Full	500	0.0	0.0
Approach	2349	2.6		0.743		9.3	LOS A	13.1	93.8				
Intersection	4418	3.8		0.743		8.9	LOS A	13.1	93.8				

Existing PM Scenario: 16:45-17:45, Tuesday 4th April 2017

LANE SUMMARY

Site: 101 [PM - Chelt/Parr/Walk (Existing)]

New Site
Signals - Fixed Time Isolated Cycle Time = 40 seconds (Practical Cycle Time)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cheltenham Rd (S)													
Lane 1	186	1.0	270	0.689	100	24.7	LOS B	3.9	27.8	Full	500	0.0	0.0
Approach	186	1.0		0.689		24.7	LOS B	3.9	27.8				
East: Parramatta Rd (E)													
Lane 1	679	4.8	1034	0.657	100	7.8	LOS A	9.6	70.3	Full	500	0.0	0.0
Lane 2	680	5.5	1036	0.657	100	7.1	LOS A	9.7	70.8	Full	500	0.0	0.0
Lane 3	680	5.5	1036	0.657	100	7.1	LOS A	9.7	70.8	Full	500	0.0	0.0
Approach	2040	5.2		0.657		7.3	LOS A	9.7	70.8				
North: Walker St (N)													
Lane 1	24	0.0	272	0.088	100	17.4	LOS B	0.4	3.0	Full	500	0.0	0.0
Approach	24	0.0		0.088		17.4	LOS B	0.4	3.0				
West: Parramatta Rd (W)													
Lane 1	939	2.2	1056	0.889	100	20.5	LOS B	24.5	174.4	Full	500	0.0	0.0
Lane 2	940	2.1	1058	0.889	100	20.4	LOS B	24.5	174.6	Full	500	0.0	0.0
Lane 3	940	2.1	1058	0.889	100	20.4	LOS B	24.5	174.6	Full	500	0.0	0.0
Approach	2819	2.2		0.889		20.4	LOS B	24.5	174.6				
Intersection	5069	3.4		0.889		15.3	LOS B	24.5	174.6				

Attachment 2 - Sidra Modelling – Proposed Conditions

Proposed PM Scenario (Rezoned to B6): 16:45-17:45

LANE SUMMARY

Site: 101 [PM - Chelt/Parr/Walk (Proposed)]

New Site
Signals - Fixed Time Isolated Cycle Time = 40 seconds (Practical Cycle Time)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cheltenham Rd (S)													
Lane 1	221	0.8	264	0.837	100	28.6	LOS C	5.2	37.0	Full	500	0.0	0.0
Approach	221	0.8		0.837		28.6	LOS C	5.2	37.0				
East: Parramatta Rd (E)													
Lane 1	684	4.6	1033	0.662	100	8.0	LOS A	9.8	71.4	Full	500	0.0	0.0
Lane 2	686	5.5	1036	0.662	100	7.2	LOS A	9.8	72.0	Full	500	0.0	0.0
Lane 3	686	5.5	1036	0.662	100	7.2	LOS A	9.8	72.0	Full	500	0.0	0.0
Approach	2056	5.2		0.662		7.5	LOS A	9.8	72.0				
North: Walker St (N)													
Lane 1	24	0.0	269	0.089	100	17.4	LOS B	0.4	3.0	Full	500	0.0	0.0
Approach	24	0.0		0.089		17.4	LOS B	0.4	3.0				
West: Parramatta Rd (W)													
Lane 1	939	2.2	1056	0.889	100	20.5	LOS B	24.5	174.4	Full	500	0.0	0.0
Lane 2	940	2.1	1058	0.889	100	20.4	LOS B	24.5	174.6	Full	500	0.0	0.0
Lane 3	940	2.1	1058	0.889	100	20.4	LOS B	24.5	174.6	Full	500	0.0	0.0
Approach	2819	2.2		0.889		20.4	LOS B	24.5	174.6				
Intersection	5120	3.3		0.889		15.5	LOS B	24.5	174.6				