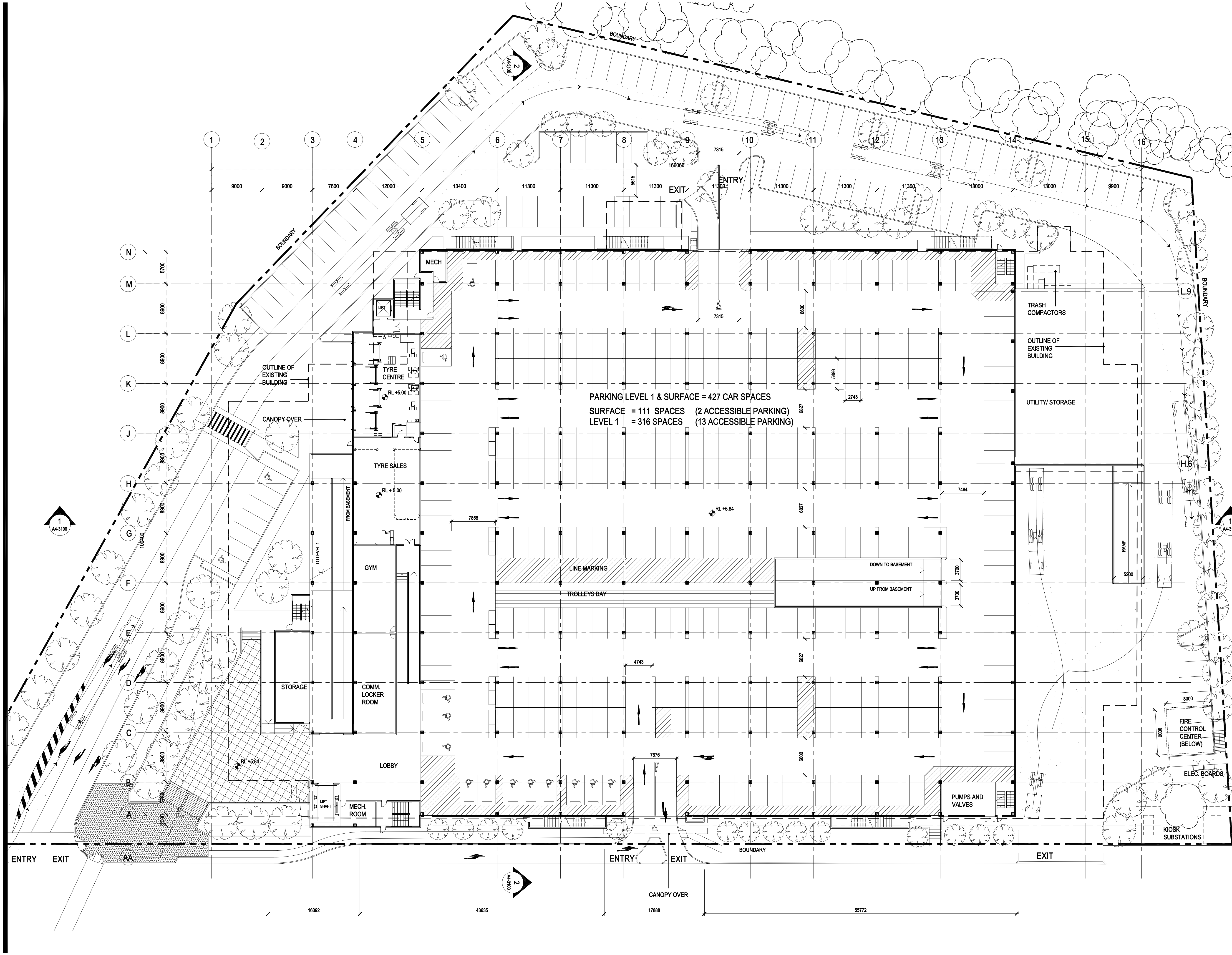

COSTCO WHOLESALE

AUBURN 01

17-21 PARRAMATTA ROAD
LIDCOMBE NSW, AUSTRALIA

COSTCO
WHOLESALE
CORPORATION

999 LAKE DRIVE
ISSAQUAH, WA 98027
T: 425.313.8100
Costco.com

ARCHITECT OF RECORD:

GROUPGSA

Group GSA Pty Ltd ABN 76 002 113 779
Level 7, 80 William St East Sydney NSW
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T +612 9361 4144 F +612 9332 3458
architecture interior design urban design planning
nsw architect M. Sheldon 3990

MULVANNY G2

DESIGN ARCHITECT
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BELLEVUE, WA | 98004
t 425.463.2000 | f 425.463.2002
MulvannyG2.com

CONSULTANTS:

Seattle Structural
Seattle Structural PS Inc.
Civil and Structural Engineering
1420 Fifth Avenue, Suite 425
Seattle, WA 98101-4019
206-343-3000 phone 206-343-3013 fax

HughesTrueman
Consulting Engineers Planners & Managers

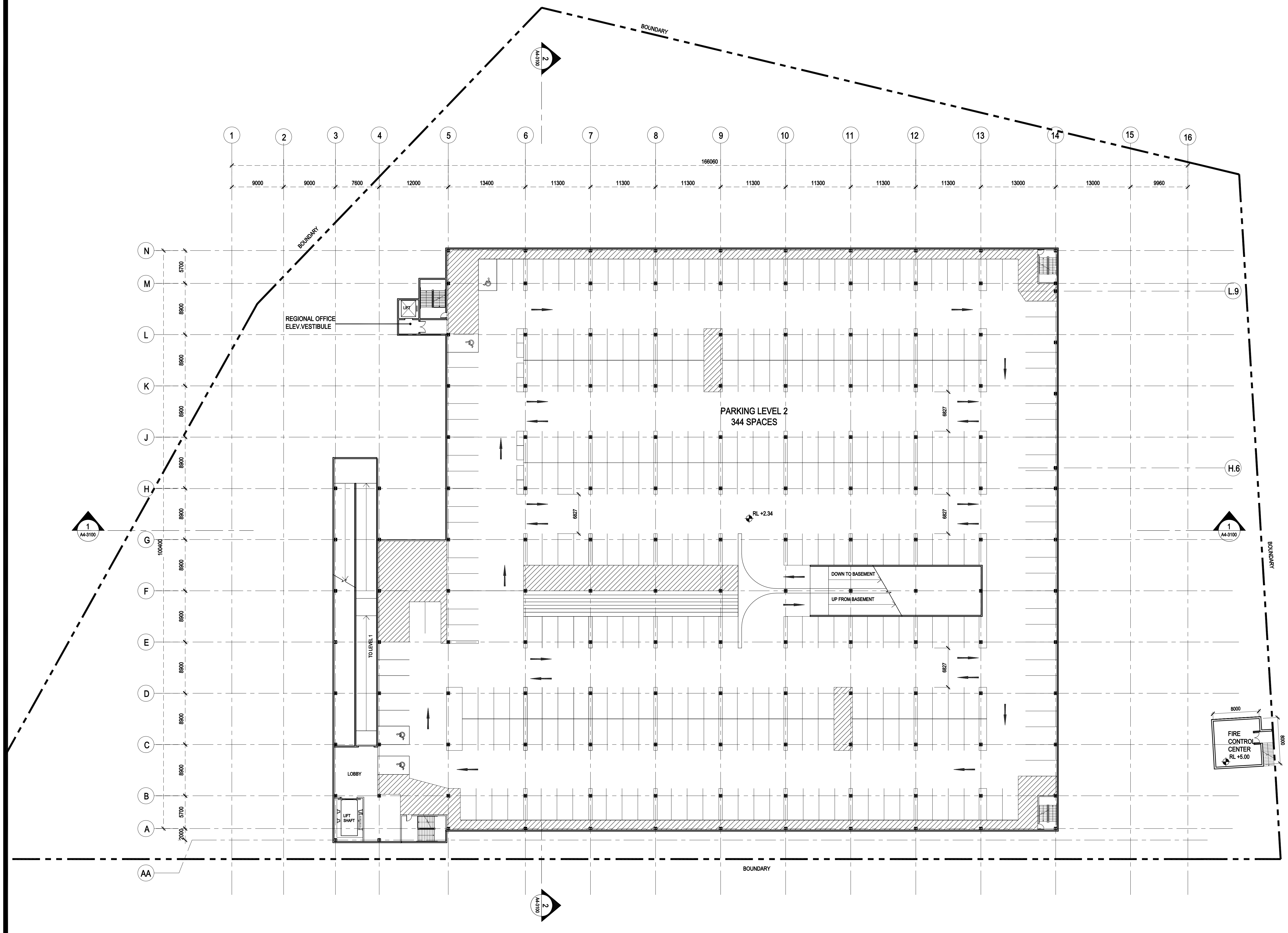
MCGREGOR COXALL
LANDSCAPE ARCHITECTURE
URBAN DESIGN
ESD

	DATE	DESCRIPTION
A	14/09/09	REVISION PART 3A
B	28/09/09	SUBMISSION PART 3A

SEPTEMBER 28, 2009

GROUND FLOOR PLAN
PARKING 1

A1-2002-DA



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stleonards@hughestrueman.com.au

MCGREGOR COXALL
LANDSCAPE ARCHITECTURE
URBAN DESIGN
ESD

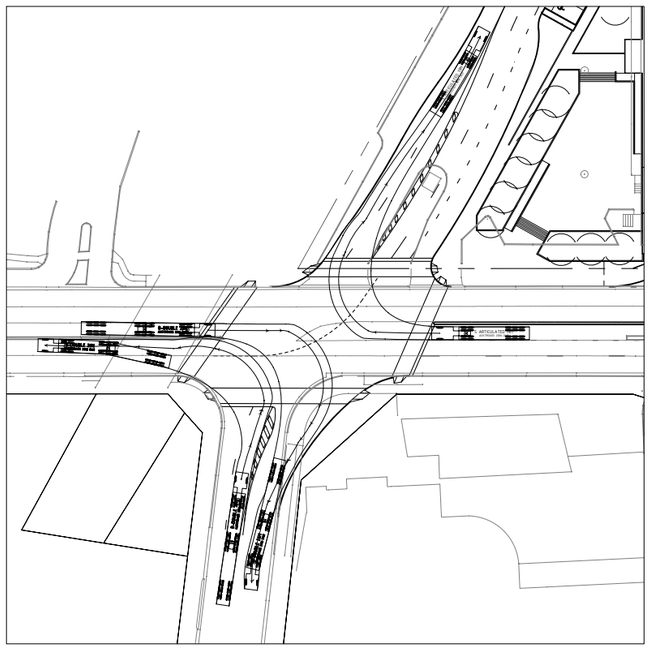
△	DATE	DESCRIPTION
A	14/09/09	REVISION PART 3A
B	28/09/09	SUBMISSION PART 3A

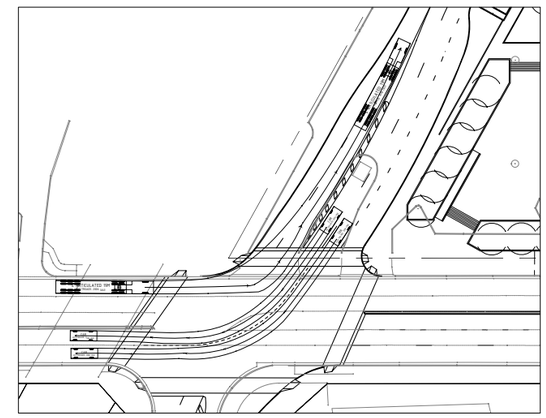
SEPTEMBER 28, 2009

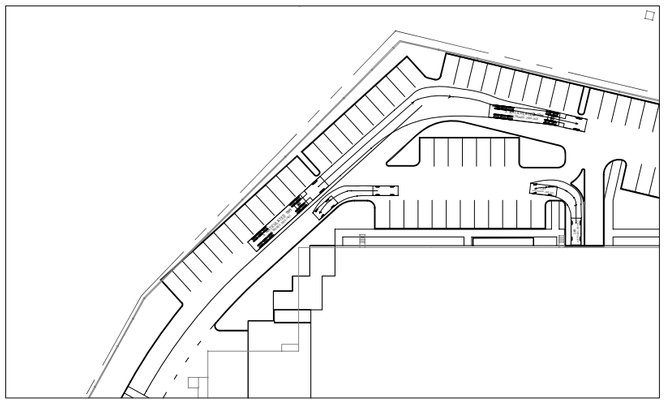
BASEMENT FLOOR PLAN
PARKING 2

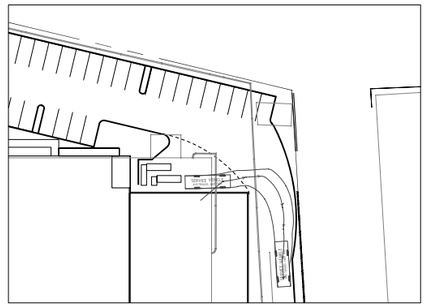
A1-2001-DA

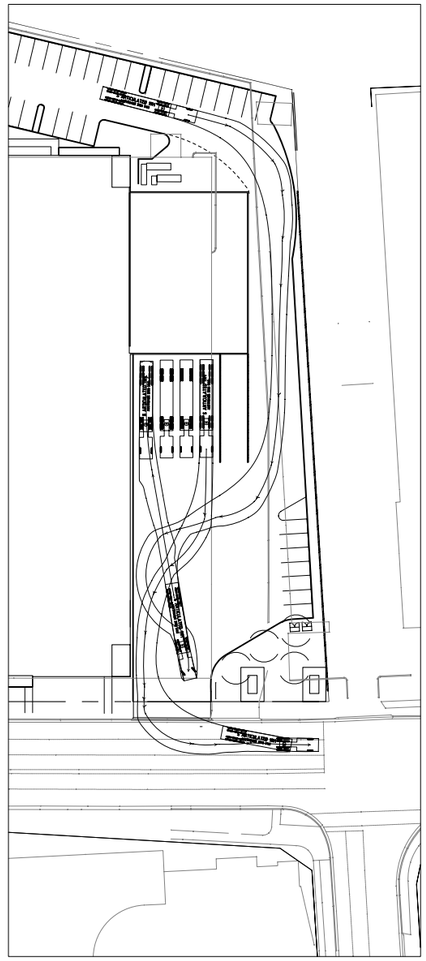
Appendix B Swept-path Analysis

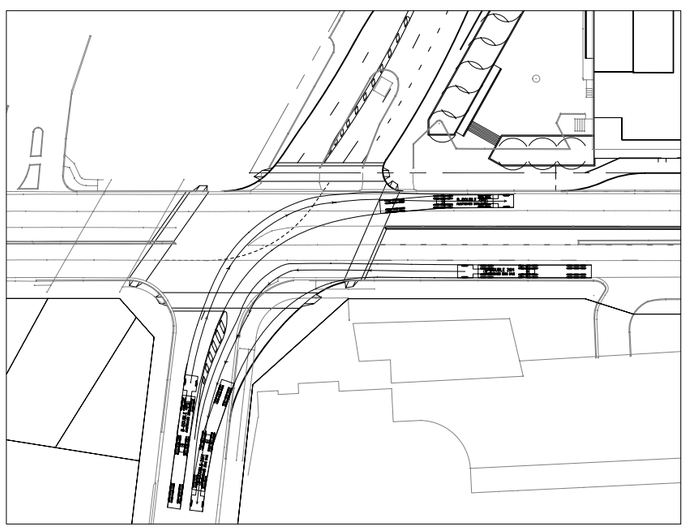


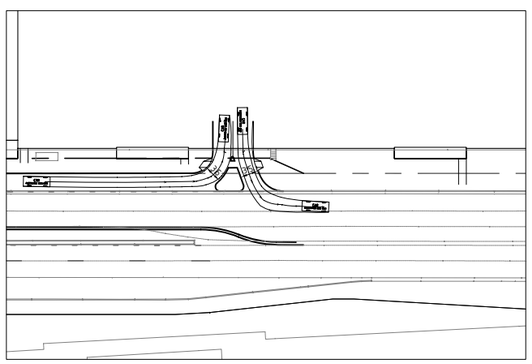












8.80

1.50 5.00

SERVICE VEHICLE meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

5.20

0.95 3.05

CAR meters

Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.5

4.20 13.70

1.40 9.50

0.20

1.60 5.30

S ARTICULATED 19M meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.7
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

COSTCO WHOLESALE

AUBURN 01

15-21 PARRAMATTA ROAD
LIDCOMBE NSW, AUSTRALIA

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stleonards@hughestrueman.com.au

Plan Scale 1:200 @ B1

△	DATE	DESCRIPTION
A	02.09.09	ISSUED FOR REVIEW
B		NOT ISSUED
C	14.09.09	ISSUED FOR D.G. SUBMISSION

PM:

VEHICLE MANOEUVRING PLAN

NOT FOR CONSTRUCTION

09S603DAC07

Appendix C Proposal Scheme Assessment

Halcrow MWT
Suite 20, 809 Pacific Highway, Chatswood NSW 2067 Australia
Tel +61 2 9410 4100 Fax +61 2 9410 4199
www.halcrow.com/australasia

Halcrow MWT

Technical Note

To	Ken Moon – Roads and Traffic Authority (RTA), NSW	**Project**	Costco development, Linfox site 19-21 Parramatta Road, Auburn
From	Bruce Masson		
Date	04 September 2009	**Ref**	CTLCHKtn04

Copy	Aleks Tancevski – RTA	Patrick Noone – Costco Wholesale
	Andrew Duggan – JBA Urban Planning	Nicholas Deeks – Costco Wholesale

INTRODUCTION

This Technical Note (TN) has been prepared in response to the RTA letter dated 02/09/09, setting out the RTA's Pre-DA advice for access arrangements to the proposed Costco Development at 19-21 Parramatta Road, Auburn. The letter is the RTA's formal response to our earlier TN dated 08/07/09 (referred to as TN3); for clarity, a copy of the letter is attached (**Attachment 1**).

The RTA's letter raised seven points numbered 1-7. We have taken onboard the comments relating to Points 3, 5, 6 and 7 and will address these points appropriately as part of the Part 3A submission.

With regard to Points 1, 2 and 4, we would like to take the opportunity to provide you with additional information that we trust will clarify the position we have reached on access to the site since we submitted TN3. The following sets out our response to each of the points individually.

1. Proposed Signalised Intersection on Parramatta Road

Firstly, please find attached the latest Design Year (with Development) 2021 traffic flows (**Attachment 2**) which the following analysis has been based upon. Justification of these flows will be provided in the Traffic Study that will support the Part 3A submission. In addition, please find attached our latest layout for the primary access; this includes a pedestrian crossing for the Parramatta Road west approach (**Attachment 3**).

We have modelled the latest access scheme using SIDRA Intersection 4.0. We would like to note that the intersection has been modelled using the SIDRA features of 'Extra Bunching' and 'Coordination'. These features have been set in accordance with SIDRA 4.0 guidance and represent the benefit that SCATS signal coordination and the proximity of adjacent intersections would have on the operation of the intersection. In addition, the peak flow factor has been set to 100% to account for the tested flows representing peak hour flows within a congested corridor.

Conversely a number of settings have been adjusted to accurately model other characteristics of the intersection. An example of this is the additional second of 'All-Red' added to relevant phases to account for the size of the proposed intersection and the greater than normal distances between opposing stoplines.

In summary, the SIDRA modelling has been carried out to a detailed level to ensure that it accurately models the likely operation of the proposed intersection. A full SIDRA Intersection file of the model will accompany this TN (which will include our assessment of the Thursday Evening and Saturday Peaks). In the meantime, please find attached PDF print-outs of the SIDRA generated Lane Summary, Phasing Summary and Intersection Layout of the Saturday Peak analysis (**Attachments 4, 5** and **6** respectively).

The results presented in the Lane Summary conclude that the intersection would operate adequately in terms of delays and queues. The following results are worth noting:

- The Level of Service (LOS) of the west and east approaches of Parramatta Road is LOS A;
- The 95th percentile queue on the Parramatta Road west approach is 204m. The distance between the proposed intersection and the Day Street intersection is approximately 200m;
- The 95th percentile queue for the right-turn bay on Parramatta Road east approach is 94m. The length of the proposed turn bay is 106m.

The Phasing Summary shows the phase scheme proposed for operating of the primary intersection. As can be seen, the scheme no longer proposes a split phase operation. The phasing can be summarised as follows:

- Phase A – Parramatta Road with an 'early start' for the east approach;
- Phase B – Costco Access/Nyrang Street with a 'late finish' for the Costco approach.

Because of the heritage status of the bridge over Haslam Creek, widening of Parramatta Road west to provide a deceleration lane in to the site is not a recommended option. Furthermore, once familiar with the layout of the warehouse, our analysis concludes that the majority of left-turners accessing the site from the west would prefer to use the secondary left-in access as it provides direct access to the ground floor car park. Therefore, we anticipate the number of left-turners at the primary signalised intersection would only be in the order of 60 vehicles or on average one a minute during the Saturday Peak.

As a comparison, we note that current volumes of left-turners to John Street (accounting for background traffic growth) are in the order of 250 vehicles per hour. No deceleration lane is provided for left-turners at the John Street intersection; therefore, to protect the heritage status of the bridge and in light of the low vehicle numbers left-turning, it is our opinion that the intersection would operate satisfactorily without a left-turn deceleration lane on the Parramatta Road west approach.

2. Proposed Secondary Egress for Customers

It is not entirely clear from the letter of 02/09/09 what the RTA's reluctance is with regard to the secondary egress. The design of the egress is in line with the design of the egress from the Bunnings store car park to the west of the site. Both accesses do not provide an acceleration lane as it is considered safer for exiting vehicles to directly enter the eastbound Parramatta Road traffic flow when an appropriate gap appears.

The proximity of the primary access would greatly assist with generating gaps for vehicles exiting the secondary access. This conclusion is based upon the following:

1) The 'Early Start' to Phase A (see sub-Phase A1 on the Phasing Summary) runs for 15s. During this time, the only traffic eastbound towards the secondary egress would be left-turners from the primary access. During the Saturday Peak, it is anticipated that there would be only 48 left-turners an hour (less than one a minute); therefore, it is predicted that during sub-Phase A1 there would be sufficient gaps in the eastbound traffic for vehicles to exit the secondary egress;
2) The anticipated split of traffic exiting the Costco Access and Nyrang Street during full Phase B (which runs for a total of 44s) would be 70% westbound, 18% north-southbound, and 12% eastbound towards the secondary egress. Therefore, whilst the intersection runs Phase B to clear the predominantly westbound traffic, it is predicted that there would be sufficient gaps in the eastbound traffic for vehicles to exit the secondary egress.

In summary, the proposed intersection would run a cycle time of 130s, which equates to 28 cycles per hour. For approximately one minute of each cycle (15s + 44s), the only eastbound flows past the secondary egress would be those from Nyrang Street and the Costco primary access, a predicted total of 63 vehicles. This equates to on average 2-3 eastbound vehicles during this one minute period every cycle. It is concluded that this would provide more than sufficient gaps in the eastbound traffic for vehicles exiting the secondary egress.

Furthermore, a safe and effective secondary egress is considered an important component of the total access strategy for the site as it provides a number of benefits, these include:

- Improved car park circulation providing a direct exit from the ground floor car park reducing unnecessary circulating traffic;
- Reducing the potential for blocking of the left-in access, a complimentary benefit of the improved circulation;
- Provides an additional point of egress for exiting traffic and therefore assists the operation of the primary access intersection.

As discussed, it is unclear why the RTA is reluctant to support the secondary egress. The design provides appropriate visibility distances and obliges exiting vehicles to wait for a suitable gap before entering the eastbound traffic stream. Furthermore, the operation and proximity of the primary signalised intersection would ensure that suitable gaps in the eastbound traffic flow would be generated.

Notwithstanding the above, our preliminary assessment of a No-Secondary-Egress option concludes that the primary signalised intersection could be modified to accommodate all exiting customer traffic should such be required. This would most likely result in reduced performance for through traffic on Parramatta Road.

4. Truck Exit onto Parramatta Road

As the attached plan (**Attachment 7**) shows, the current scheme provides this access in line with the existing Linfox site driveway and we anticipate truck movements associated with the Costco store would be lower than the currently permitted truck movements associated with the Linfox site.

SUMMARY

The above and attached analysis concludes our latest access scheme is suitable for providing safe and effective access to the proposed Costco Warehouse. We trust that this TN provides sufficient additional information for the RTA to consider the latest scheme prior to us meeting this coming Tuesday 08/09/09.

Halcrow
September 2009

ATTACHMENT 1

Your Reference:	CTLCHKtn03
Our Reference:	RDC 09M803
Contact:	Aleks Tancevski
Telephone:	8849 2313

Piran Trethewey
Halcrow MWT
Suite 20, 809 Pacific Highway
Chatswood NSW 2067

PRE-DA ADVICE FOR ACCESS ARRANGEMENTS TO THE PROPOSED COSTCO DEVELOPMENT AT 19-21 PARRAMATTA ROAD, AUBURN

Dear Sir,

I refer to your email dated 8 July 2009 requesting the Roads and Traffic Authority (RTA) to review the submitted Technical Note and provide 'in principle' agreement to the proposed access arrangement associated with the above-mentioned development

As advised during our phone conversation in the last week of July, the RTA has reviewed the submitted Technical Note and provides the following pre-development application comments, which are to be addressed as part of any Major Project application submission:

1. Proposed Signalised Intersection on Parramatta Road

The RTA cannot support the current layout proposed for the signalised intersection of Parramatta Road, Nyrang Street and proposed access road as the queue from the proposed signalised intersection extends past the existing signalised intersection of Parramatta Road and Day Street on Saturday midday. In addition, the proposed split approach signal phasing for the right turn movements will significantly reduce the green time available for through traffic on Parramatta Road, which is undesirable given the high Annual Average Daily Traffic (AADT) for this arterial road. Concerns are also raised with regard to the length of the proposed right turn bay into the subject site as the right turn bay has the potential to queue out into the through traffic lanes of Parramatta Road. The RTA requests that the developer modify the layout for the proposed signalised intersection to ensure that network efficiency on Parramatta Road is not compromised by the proposed development. The modified intersection treatment would have to be supported by appropriate intersection modelling analysis (to RTA satisfaction) and the RTA will review this analysis as part of the assessment of the Major Project application.

Further to the above, given the significant traffic generation of the proposed development a left turn deceleration lane shall be provided on Parramatta Road into the site access road at the proposed signalised intersection.

2. Proposed Secondary Egress for Customers

The RTA does not support the proposed uncontrolled secondary egress (in the middle of the site) directly from the customer car park onto Parramatta Road. Accordingly all customers shall exit the subject site via the proposed signalised intersection on Parramatta Road.

3. Left Turn Deceleration Lane

The RTA 'agrees in principle' to the proposed left turn deceleration lane on Parramatta Road (in the middle of the site) into the subject site provided that this deceleration lane is fully designed and constructed in accordance with the RTA's Road Design Guide. In addition, the developer shall dedicate a 3.5 metre wide strip of land as public road along the Parramatta Road frontage of the subject site for the full length of the deceleration lane. This land dedication shall be at full cost to the developer. The dedication should also allow for the reconstruction of a footpath.

4. Truck Exit onto Parramatta Road

The RTA does not support the proposed location of the truck exit driveway (far eastern driveway), as this driveway is located directly adjacent to the stop line at the existing signalised intersection of Parramatta Road and John Street. The proposed truck exit driveway shall be located a sufficient distance away from this signalised intersection.

5. Swept Paths of Largest Vehicle

The swept path of the largest vehicle entering and exiting the subject site, as well as manoeuvrability through the site, shall comply with Austroads. In this regard, swept path plans shall be submitted with the development application illustrating compliance with this requirement.

6. Car Parking Areas

The layout of the proposed car parking areas associated with the subject development (such as driveways, aisle lengths, aisle widths, grades, sight distance requirements) shall be in accordance with AS 2890.1- 2004 and AS 2890.2 – 2002.

7. Cost of Works

All signal and civil works associated with the proposed development shall be at no cost to the RTA or Council.

It is emphasised that the comments provided above are informal and of a Pre-DA nature. They are not to be interpreted as binding upon the RTA and may change following formal assessment of a submitted development application from the appropriate consent authority.

Any inquiries on this development application can be directed to the nominated Assistant Land Use Planner - Aleks Tancevski on 8849.2313, or facsimile 8849 2918.

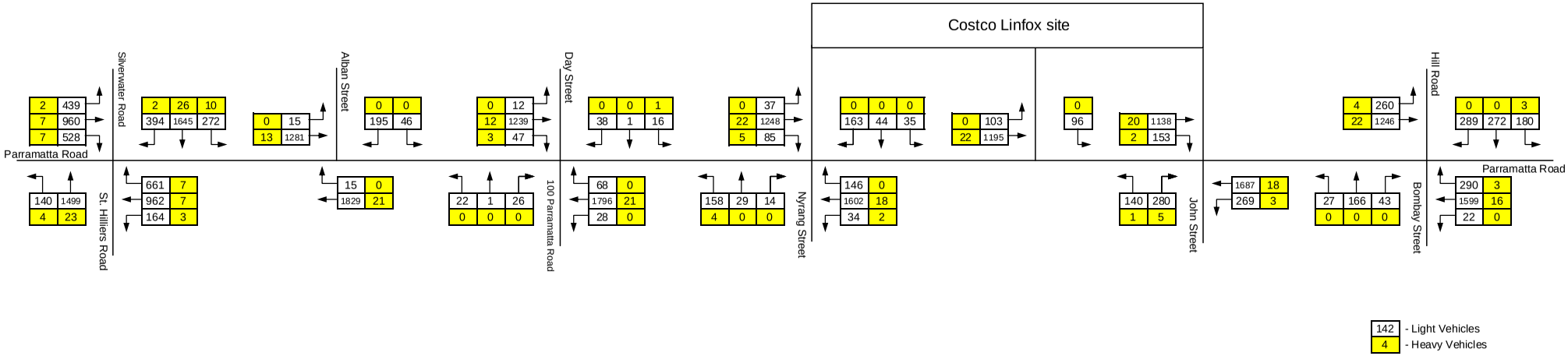
Yours sincerely,

James Hall
A/Senior Land Use Planner
Transport Planning, Sydney Region

2 September 2009

CC Eddie Swat – Department of Planning

Thursday Evening Peak



Saturday Midday Peak

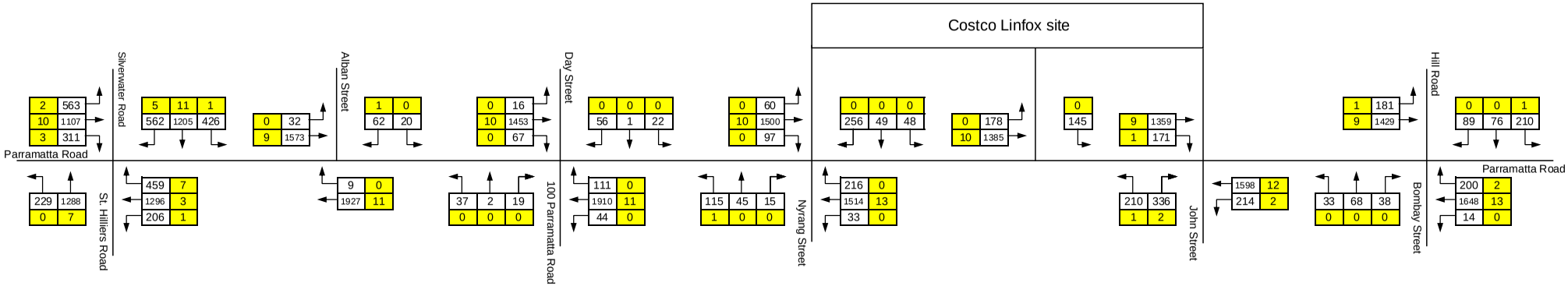


Figure: **Title:**

n/a 2021 Design year traffic flows

Halcrow MWT

ATTACHMENT 2

TYRE
SALES

BICYCLE
COMPOUND

COMM.
LOCKER RM

5.84

5.84

SKETCH da11F
Primary Access Scheme
1:500
ATTACHMENT 3

LANE SUMMARY

Site: SAT PEAK - Fixed Phase Time

CTLCHK Costco Linfox site
Future SAT MD_Parramatta Rd/Costco Access (with coordination)
Signals - Fixed Time Cycle Time = 130 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South	Nyrang St (S)															
Lane 1	116	0	0	116	0.9	213	0.545	100	67.4	LOS E	8.9	62.5	500	–	0.0	0.0
Lane 2	0	45	15	60	0.0	97[1]	0.618	100	59.0	LOS E	4.9	34.1	25	Turn Bay	0.0	14.9
Approach	116	45	15	176	0.6		0.618		64.5	LOS E	8.9	62.5				
East	Parramatta Rd (E)															
Lane 1	33	744	0	777	0.8	1171	0.664	100	2.8	LOS A	8.2	58.1	500	–	0.0	0.0
Lane 2	0	783	0	783	0.9	1178	0.664	100	2.3	LOS A	8.3	58.4	500	–	0.0	0.0
Lane 3	0	0	216	216	0.0	225	0.961	100	56.6	LOS E	13.4	94.0	106	Turn Bay	0.0	0.8
Approach	33	1527	216	1776	0.7		0.961		9.1	LOS A	13.4	94.0				
North	Costco Access (N)															
Lane 1	48	49	0	97	0.0	216[1]	0.450	100	39.2	LOS C	6.0	42.1	46	Turn Bay	0.0	3.1
Lane 2	0	0	128	128	0.0	140	0.915	100	84.4	LOS F	11.1	78.0	70	Turn Bay	0.0	9.0
Lane 3	0	0	128	128	0.0	140	0.915	100	84.4	LOS F	11.1	78.0	500	–	0.0	0.0
Approach	48	49	256	353	0.0		0.915		72.0	LOS F	11.1	78.0				
West	Parramatta Rd (W)															
Lane 1	60	719	0	779	0.6	937	0.832	100	12.0	LOS A	28.6	201.2	500	–	0.0	0.0
Lane 2	0	791	0	791	0.7	951	0.832	100	11.4	LOS A	28.9	203.7	500	–	0.0	0.0
Lane 3	0	0	97	97	0.0	106	0.911	100	55.0	LOS D	8.5	59.4	60	Turn Bay	0.0	4.8
Approach	60	1510	97	1667	0.6		0.911		14.2	LOS A	28.9	203.7				
Intersection				3972	0.6		0.961		19.3	LOS B	28.9	203.7				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect

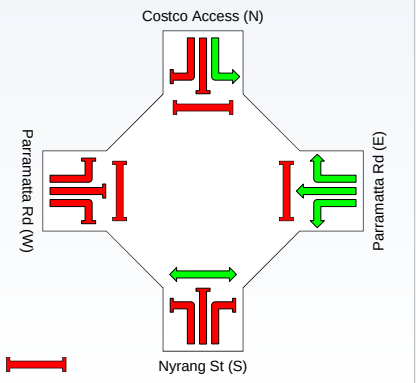
PHASING SUMMARY

Site: SAT PEAK - Fixed Phase Time

CTLCHK Costco Linfox site
Future SAT MD_Parramatta Rd/Costco Access (with coordination)
Signals - Fixed Time Cycle Time = 130 seconds

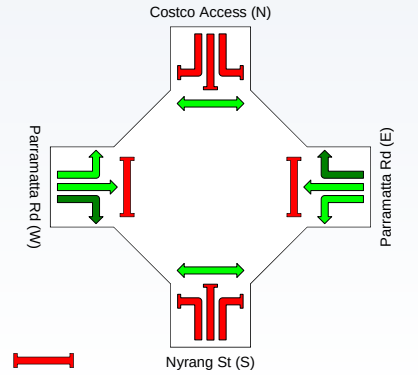
Cycle Time Option: **User-specified Cycle Time**
Phase times specified by the user
Sequence: User Specified Timings
Input Sequence: A1, A, B, B1
Output Sequence: A1, A, B, B1

Phase A1



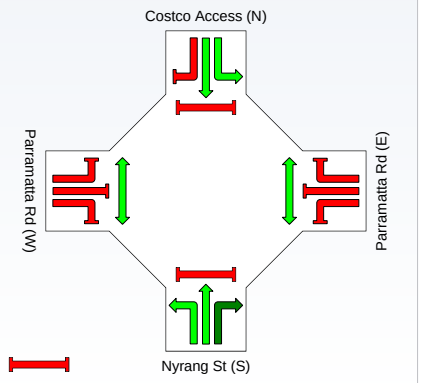
Green Time = 9 sec
Yellow Time = 4 sec
All-Red Time = 2 sec
Phase Time = 15 sec
Phase Split = 11 %

Phase A



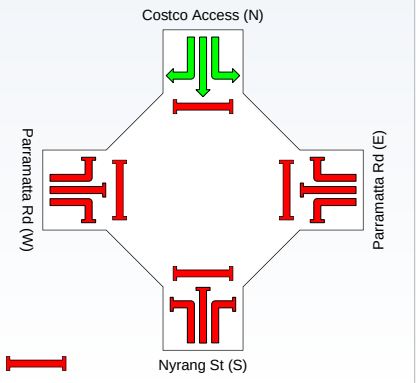
Green Time = 64 sec
Yellow Time = 4 sec
All-Red Time = 3 sec
Phase Time = 71 sec
Phase Split = 54 %

Phase B

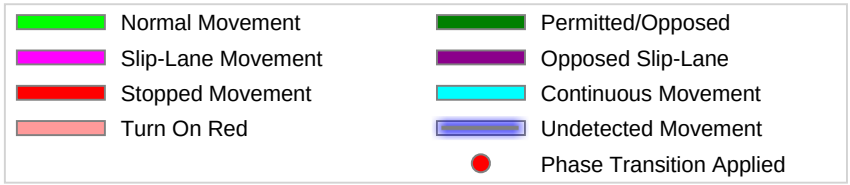


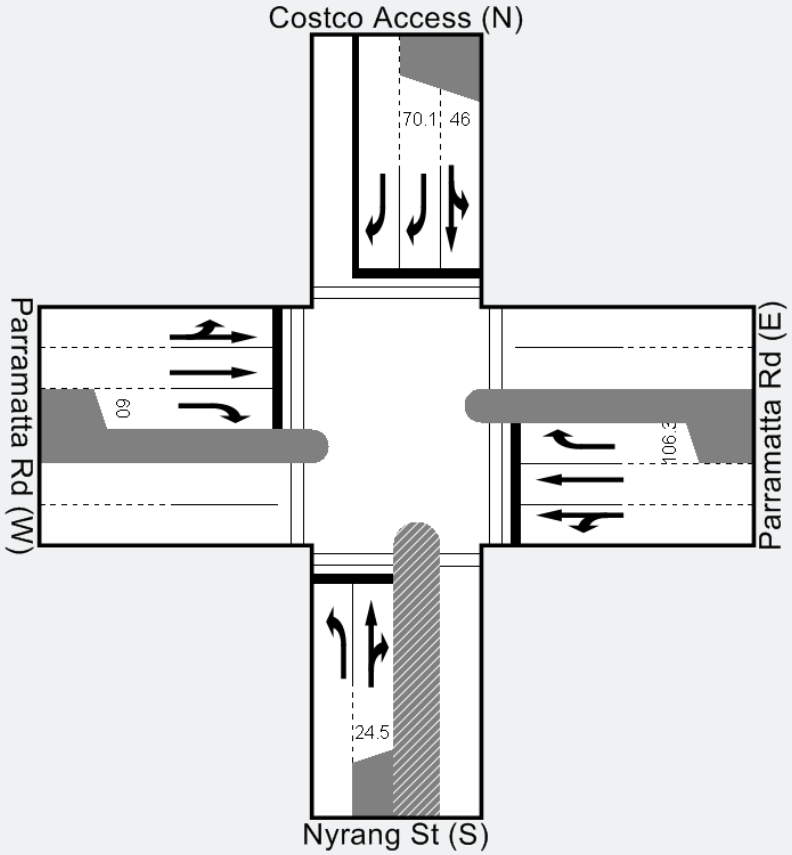
Green Time = 20 sec
Yellow Time = 4 sec
All-Red Time = 3 sec
Phase Time = 27 sec
Phase Split = 20 %

Phase B1

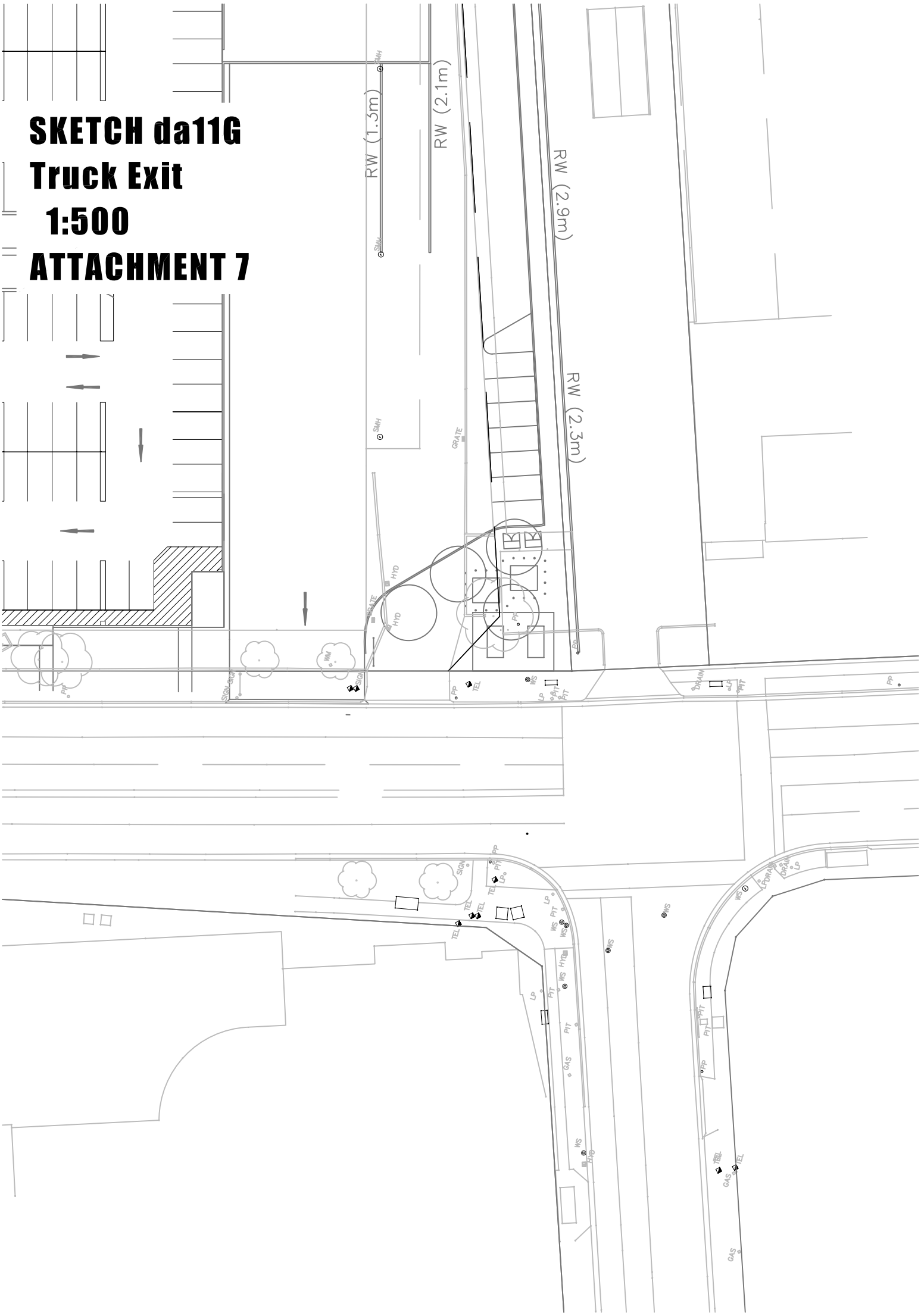


Green Time = 10 sec
Yellow Time = 4 sec
All-Red Time = 3 sec
Phase Time = 17 sec
Phase Split = 13 %




Costco Access (N)
70.1
46
Parramatta Rd (W)
60
Parramatta Rd (E)
106.3
24.5
Nyrang St (S)

SKETCH da11G
Truck Exit
1:500
ATTACHMENT 7



Appendix D Detailed Main Access Assessment

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Halcrow MWT

Technical Note

To	Ken Moon – Roads and Traffic Authority (RTA), NSW	**Project**	Costco development, Linfox site 19-21 Parramatta Road, Auburn
From	Bruce Masson		
Date	16 September 2009	**Ref**	CTLCHKtn05

Copy	Aleks Tancevski – RTA	Patrick Noone – Costco Wholesale
	James Hall – RTA	Nicholas Deeks – Costco Wholesale
	Andrew Duggan – JBA Urban Planning	

INTRODUCTION

This Technical Note (TN) has been prepared in response to comments received from the RTA via telephone regarding Costco access information provided by Halcrow via an email dated 09/09/09. In summary, the RTA has expressed a concern that the proposed phasing plan includes right-turn movements from Parramatta Road filtering through oncoming movements (i.e. without a green arrow).

As such, this TN puts forward a proposal with two variations on the previous scheme; these can be summarised as follows:

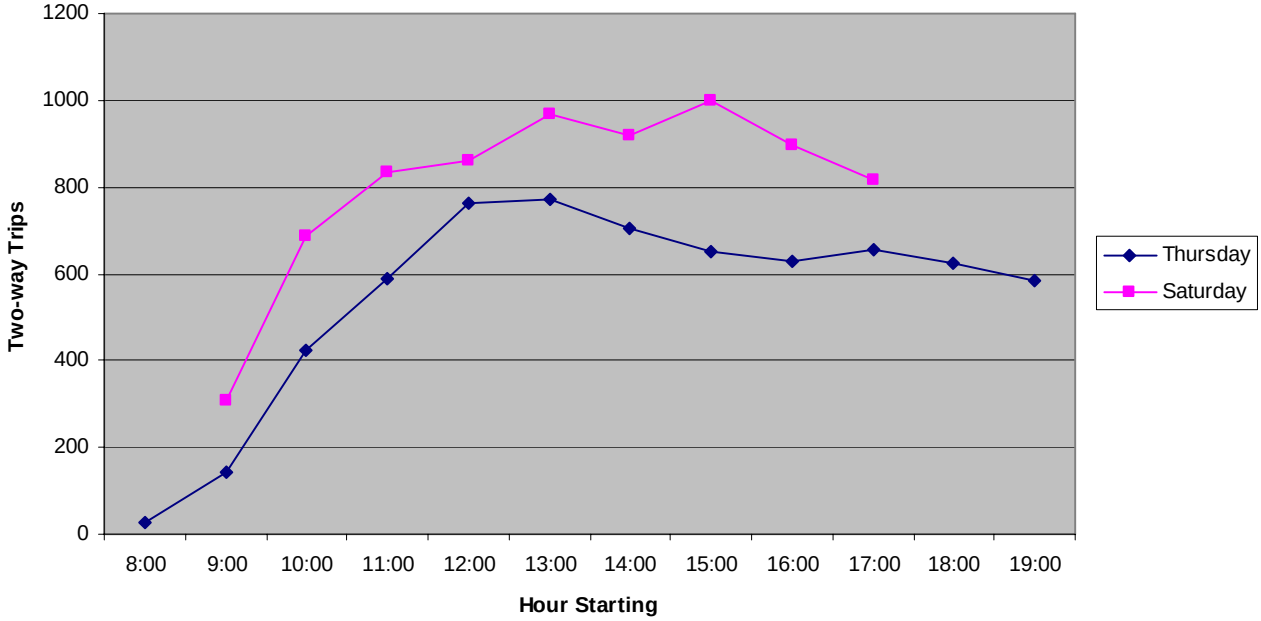
1. Costco traffic generation reduced by 10% to take in to account that the Costco peak (3-4pm) does not occur at exactly the same time as the on-road traffic peak (12-1pm); and
2. Removal of the pedestrian crossing across the western approach of Parramatta Road.

ANALYSIS

As part of the Transport Assessment, daily traffic profiles have been developed on the basis of the data provided by Costco for their Chingford, London store. Similar to the proposed Auburn store, the Chingford store is located off a Regional Arterial Road (A406 North Circular) and is located in a fairly industrial area of north London. It is considered that in time the traffic generation characteristics of the proposed store would be in line with that of the Chingford store.

Based on the data, the following Diagram 1 presents the predicted daily traffic profile for the proposed Auburn store.

Diagram 1 – Predicted Daily Vehicle Traffic Profiles



The current assessment assumed that the peak traffic generation of the store occurred at the exact same time as the peak on-road traffic period between 12-1pm. However, the profile assessment concludes the peak traffic generation occurs during the 3-4pm hour and the traffic generation during the 12-1pm hour is 86% of the peak hour traffic generation.

The UK TRICS database also supports this finding. An assessment of all Saturday surveys of Discount Club/Wholesale retail stores on the database concluded that the busiest peak hour is between 2-3pm, the second busiest between 3-4pm and the 12-1pm peak is 70% of the 2-3pm peak.

Therefore, the Costco traffic generation during the 12-1pm on-road traffic peak has been reduced by 10%; the resultant flows are appended at **Attachment 1**. These flows have been modelled using SIDRA 3.2 Intersection. The phasing plan has been amended with the removal of the right-turn filter and the inclusion of a diamond lead phase. A full SIDRA file of the model will accompany this TN. In the meantime, please find attached a SIDRA generated Phasing Summary and Movement Summary for the Saturday Peak analysis (**Attachments 2** and **3** respectively).

The Phasing Summary shows the phase plan incorporating the RTA's requests.

The results presented in the Movement Summary conclude that the intersection would operate adequately in terms of delays and queues. The following results are worth noting:

- The Level of Service (LOS) of the west and east approaches of Parramatta Road is LOS B and A respectively;
- The 95th percentile queue on the Parramatta Road west approach is 142m. The distance between the proposed intersection and the Day Street intersection is approximately 200m;
- The 95th percentile queue for the right-turn bay on Parramatta Road east approach is 98m. The length of the proposed turn bay is 106m.

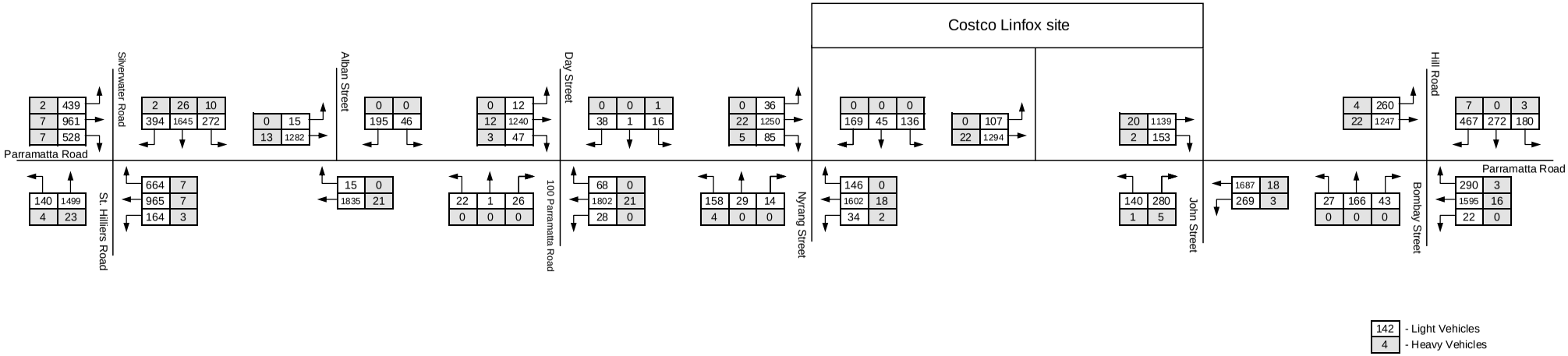
SUMMARY

The analysis concludes that the latest access proposal would work effectively in terms of delays and queues.

Halcrow

September 2009

Thursday Evening Peak



Saturday Midday Peak

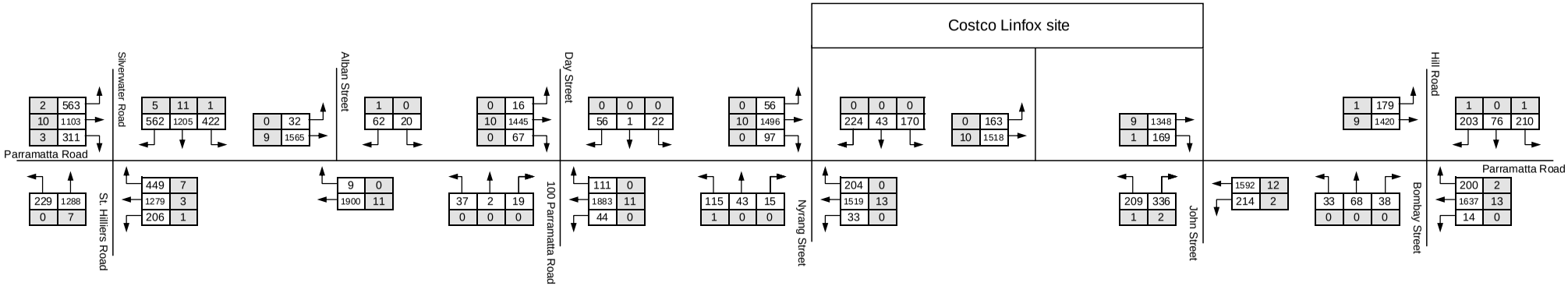


Figure: n/a **Title:** 2021 Design year traffic flows (Sat. 10% reduction)

Halcrow MWT

ATTACHMENT 1

ATTACHMENT 2

SIDRA INTERSECTION

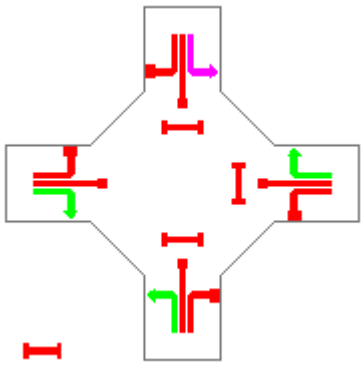
Phasing Summary

Costco Primary Signalised Access_Version 1

Saturday Peak Assessment

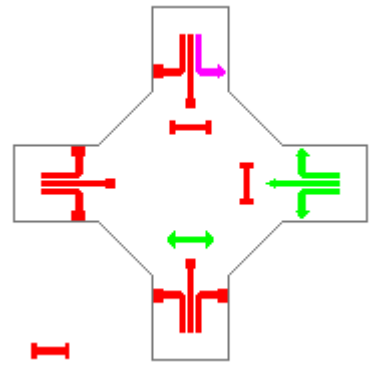
C = **130** seconds
Cycle Time Option: **User-specified cycle time**
Phase times determined by the program.

Phase A1



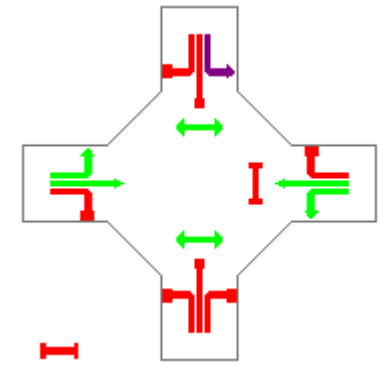
Green Time = **10** seconds
Phase Time = **16** seconds
Phase Split = **12** %

Phase A2



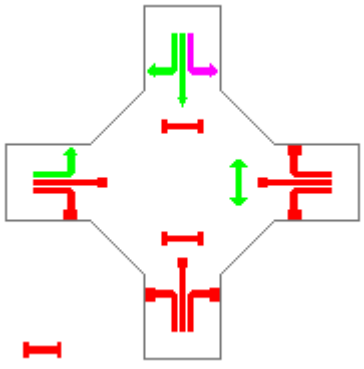
Green Time = **5** seconds
Phase Time = **11** seconds
Phase Split = **8** %

Phase A



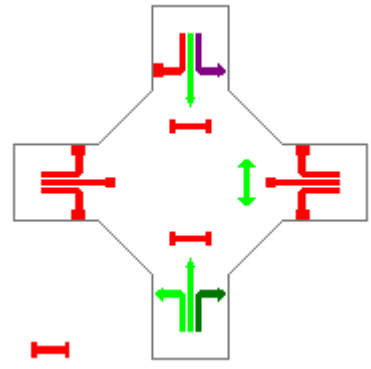
Green Time = **68** seconds
Phase Time = **74** seconds
Phase Split = **57** %

Phase B1



Green Time = **11** seconds
Phase Time = **17** seconds
Phase Split = **13** %

Phase B



Green Time = **6** seconds
Phase Time = **12** seconds
Phase Split = **9** %

Normal Movement	Permitted/Opposed
Slip-Lane	Opposed Slip-Lane
Stopped Movement	Continuous
Turn On Red	

ATTACHMENT 2

Site: M3=M2 w Sat 2021_no Ped X-ing
C:\Documents and Settings\TretheweyP\My Documents_SHORTCUTS\Work from home\Costco\SIDRA\Linfox Site\MAIN COSTCO ACCESS_SIDRA 3_V01.aap
Processed Sep 15, 2009 10:05:10PM

A0379, Unregistered, Large Office
Produced by SIDRA Intersection 3.2.2.1563

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ATTACHMENT 3

SIDRA INTERSECTION

Movement Summary

Costco Primary Signalised Access_Version 1

Saturday Peak Assessment

Signalised - Fixed time **Cycle Time = 130 seconds**

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Nyrang St (S)										
1	L	116	0.9	0.371	59.4	LOS E	58	0.93	0.79	21.4
2	T	43	0.0	0.718	74.0	LOS E	38	1.00	0.83	17.3
3	R	15	0.0	0.717	79.8	LOS E	38	1.00	0.83	17.8
Approach		**174**	**0.6**	**0.718**	**64.8**	**LOS E**	**58**	**0.95**	**0.80**	**19.9**
Parramatta Rd (E)										
4	L	33	0.0	0.666	9.7	LOS A	58	0.15	0.69	46.1
5	T	1532	0.8	0.666	2.3	LOS A	59	0.15	0.14	56.5
6	R	204	0.0	0.777	58.8	LOS E	98	0.98	0.87	21.6
Approach		**1769**	**0.7**	**0.777**	**8.9**	**LOS A**	**98**	**0.24**	**0.23**	**48.0**
Costco Access (N)										
7	L	170	0.0	0.553	5.6	LOS A	13	0.17	0.56	37.8
8	T	43	0.0	0.276	48.6	LOS D	23	0.88	0.65	20.9
9	R	224	0.0	0.728	71.6	LOS E	64	1.00	0.88	18.0
Approach		**437**	**0.0**	**0.728**	**43.7**	**LOS D**	**64**	**0.67**	**0.73**	**23.0**
Paramatta Rd (W)										
10	L	56	0.0	0.778	12.6	LOS B	132	0.40	0.70	42.9
11	T	1506	0.7	0.778	6.7	LOS A	142	0.42	0.38	50.6
12	R	97	0.0	0.682	70.3	LOS E	55	1.00	0.80	19.7
Approach		**1659**	**0.6**	**0.777**	**10.7**	**LOS B**	**142**	**0.45**	**0.42**	**46.3**
All Vehicles		**4039**	**0.6**	**0.778**	**15.8**	**LOS B**	**142**	**0.40**	**0.39**	**40.2**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
P1	50	19.9	LOS B	0	0.55	0.55
P3	50	54.5	LOS E	0	0.92	0.92
P5	50	22.2	LOS C	0	0.58	0.58

ATTACHMENT 3

All Peds	**150**	**32.2**	**LOS D**	**0**	**0.68**	**0.68**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue
- Density for continuous movement

SIDRA SOLUTIONS

Site: M3=M2 w Sat 2021_no Ped X-ing
C:\Documents and Settings\TretheweyP\My Documents_SHORTCUTS\Work from home\Costco\SIDRA\Linfox Site\MAIN COSTCO ACCESS_SIDRA 3_V01.aap
Processed Sep 15, 2009 10:05:10PM

A0379, Unregistered, Large Office