PROPOSED
MIXED USE DEVELOPMENT

1 VILLAWOOD PL, VILLAWOOD

Assessment of Traffic and Parking Implications

October 2015
(Rev E)

Reference 14195

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

1. INTRODUCTION

This report has been prepared to accompany revised plans for a Development Application to Fairfield City Council for a proposed mixed use development in Villawood Place at Villawood (Figure 1).

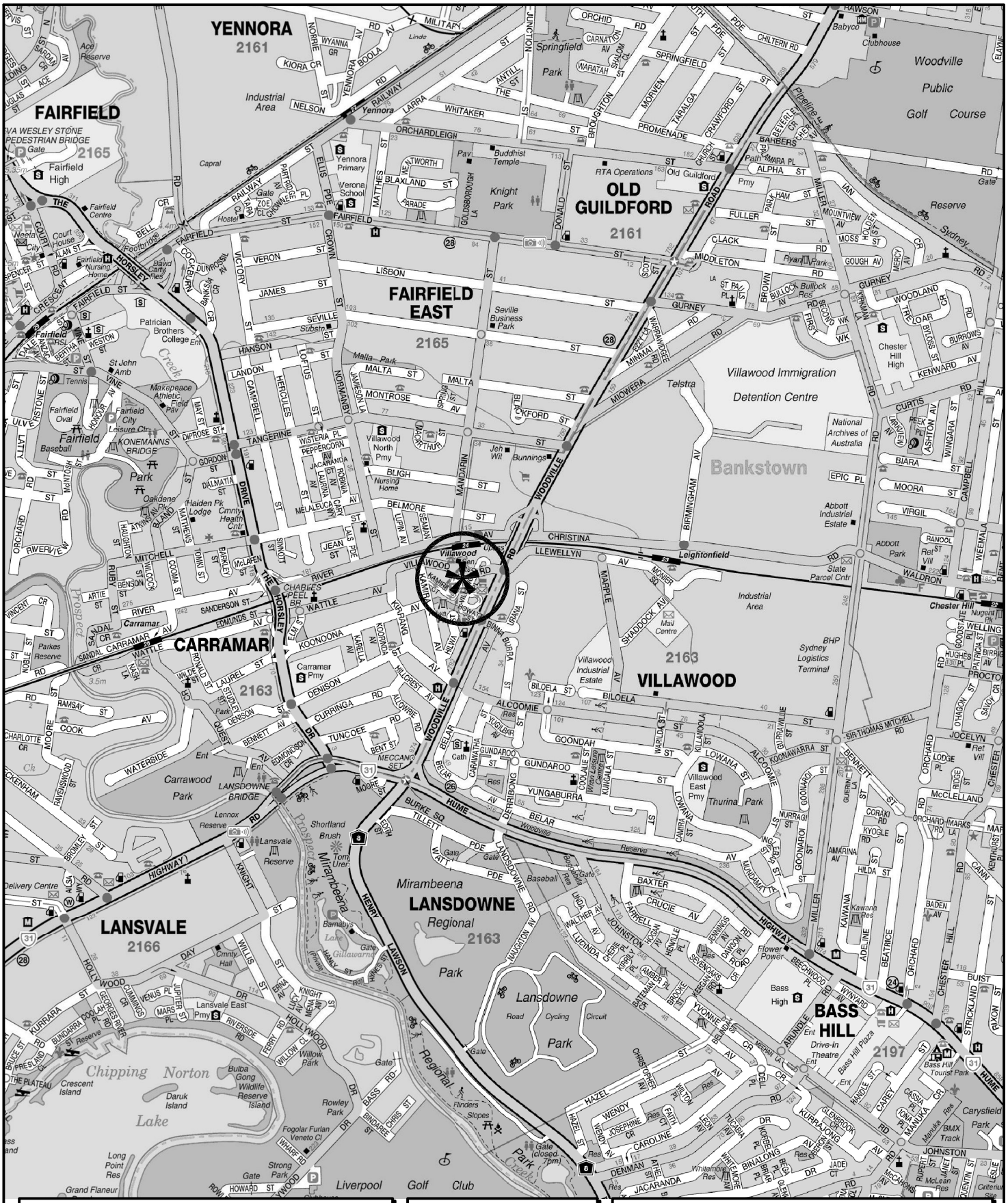
The site is located within the Villawood Town Centre and within close proximity to the railway station and bus services therefore presenting a suitable location for a mixed use development as part of the urban consolidation process.

The proposed development scheme comprises:

* 119 residential apartments
* Retail units (including a cafe)
* Basement car parking

The purpose of this report is to:

* describe the site, its context and the development proposal
* describe the existing road network and conditions on that network
* assess the adequacy of the proposed parking provision
* assess the potential traffic implications
* assess the proposed access and internal circulation and servicing arrangements.



LEGEND

LOCATION

FIG 1

2. PROPOSED DEVELOPMENT SCHEME

2.1 SITE, CONTEXT AND EXISTING USE

The development site (Figure 2) is Lot 4 in DP 1013056 which occupies an area of some 2,324 m^2 with frontages to Villawood Place and Kamira Circuit. The site is located within the Villawood Town Centre just to the south of the Villawood Railway Station. The existing building on the site, which is now vacant, formerly comprised a supermarket and specialty shops (total 1,890 m^2) with 30 on-site car parking.

The surrounding uses comprise a number of industrial properties to the east, a 'KFC' restaurant and Aldi Supermarket to the west. There is a council carpark which adjoins the site to the south west with 76 spaces accessed on Kamira Circuit.

2.2 PROPOSED DEVELOPMENT

It is proposed to demolish the existing building and excavate the site to construct a new 8-storey building with 3 basement levels. The proposed development will comprise:

Residential

12 x 1 bed apartments
95 x 2 bed apartments
12 x 3 bed apartments
Total: 119 apartments

Commercial

8 x retail units (1,137 m^2 GFA)
1 x community centre (184.4 m^2 GFA)

The basement carpark will provide 170 spaces with access on Kamira Circuit.

LEGEND

SITE

FIG 2

Architectural details are provided on the revised plans prepared by Tony Owen Partners, which accompany the Development Application and are reproduced in part in Appendix A.

3. ROAD NETWORK AND TRAFFIC CONDITIONS

3.1 ROAD NETWORK

The road network serving the site (Figure 3) comprises:

- *Hume Highway* – a State Highway and arterial route for both inter and intra state travel

- *Woodville Road* – a State Road and arterial route connecting between Great Western Highway/M4 and Hume Highway

- *Henry Lawson Drive* – a State Road and sub-arterial route connecting between Hume Highway and M5/Milperra Road

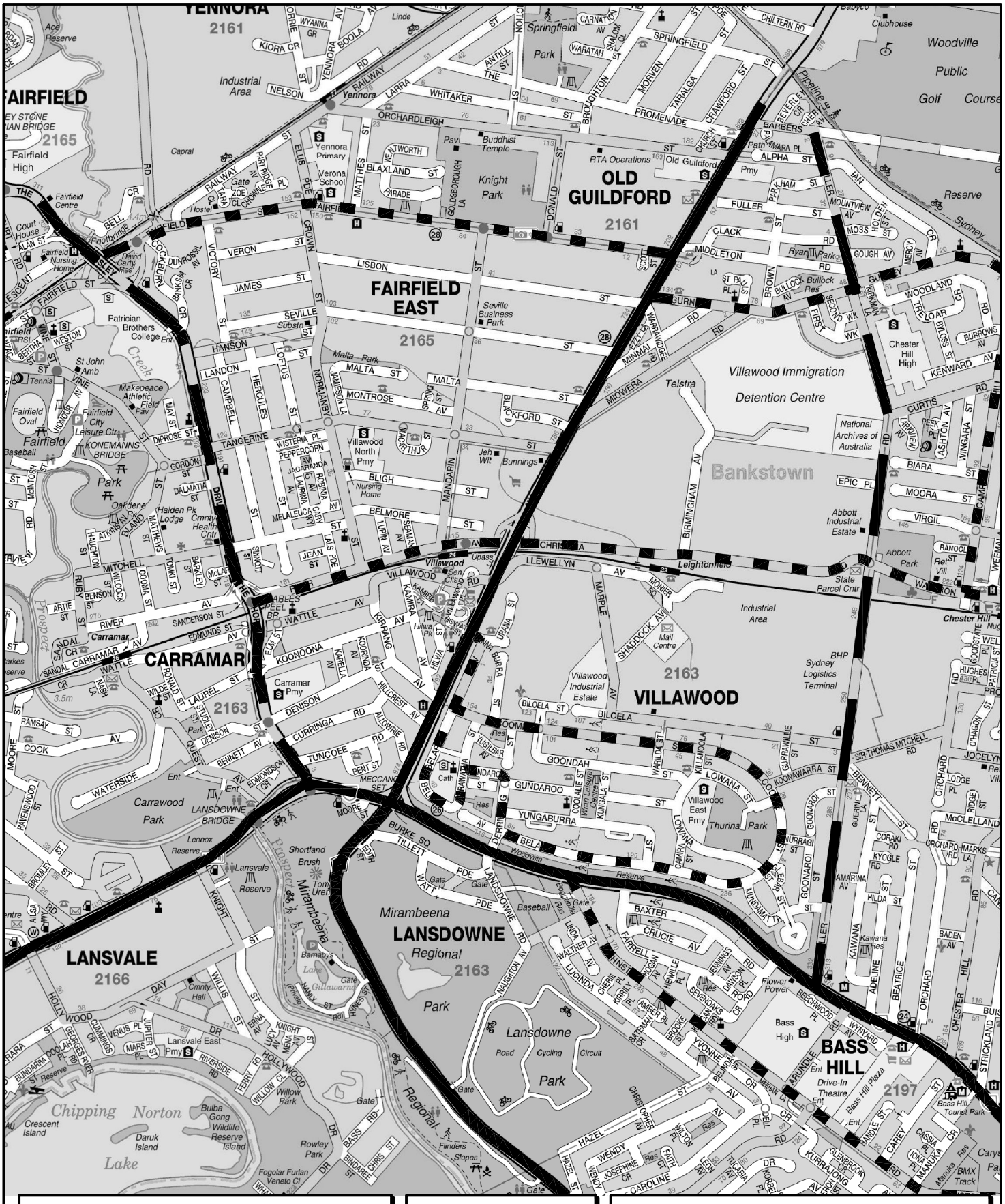
- *Christina Road* – part of a Regional Road and collector route connecting between Carramar and Regents Park which interchanges with Woodville Road (via on/off ramps)

- *The Horsley Drive* – a sub-arterial road connecting between Hume Highway Cumberland Highway

- *Llewellyn Avenue, Villawood Road and Wattle Avenue* – minor collector routes connecting between Villawood and Carramar.

- Villawood Place/Howatt Street– part of a local road system off Woodville Road providing access to the local Villawood shops

- Kamira Circuit– a local one way access road connecting between Kamira Avenue and Villawood Road.



ROAD NETWORK

FIG 3

3.2 TRAFFIC CONTROLS

The existing traffic controls which have been applied to the road network serving the site (Figure 4) include:

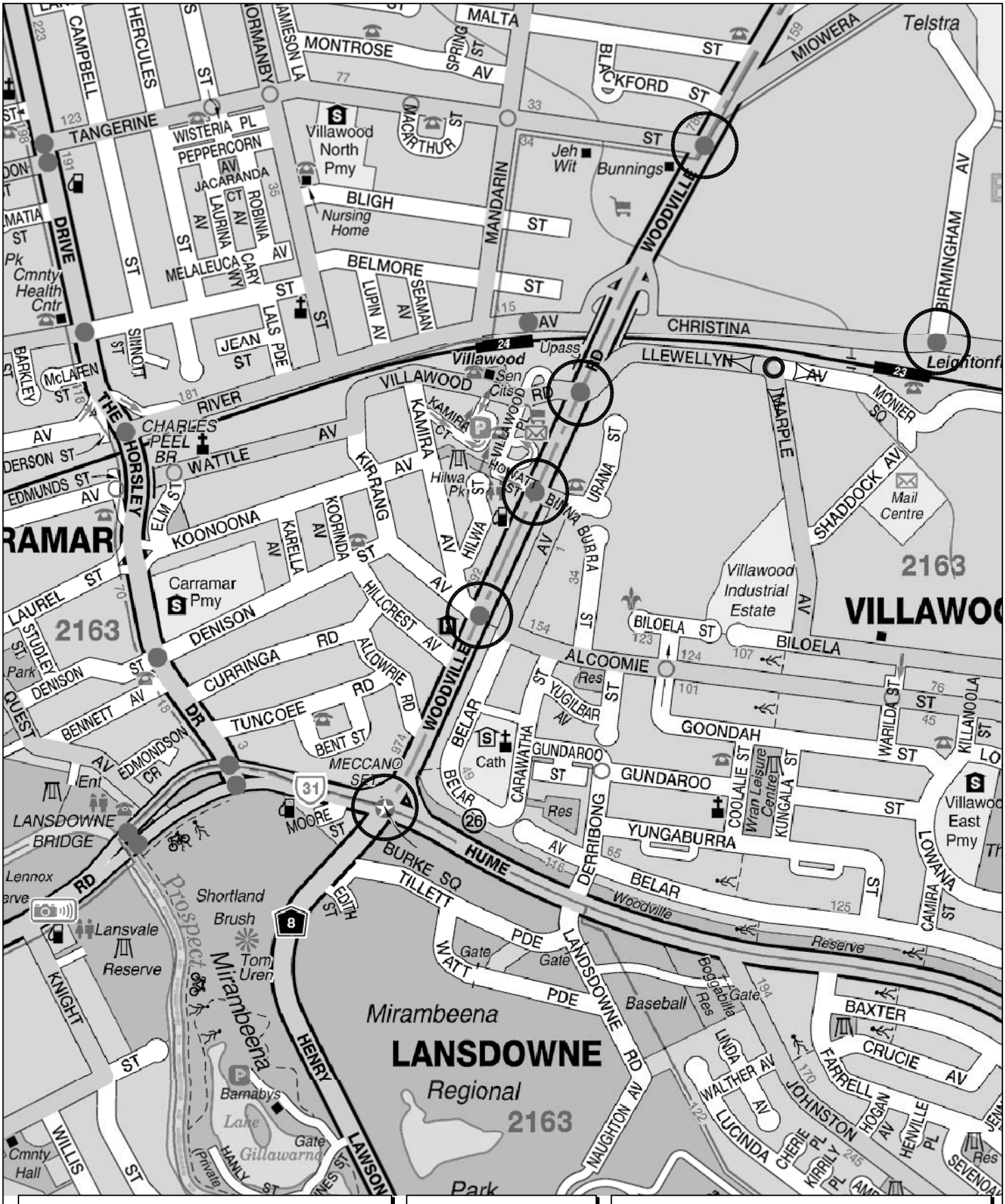
- the traffic signal controls at the Woodville Road, Villawood Road, and Llewellyn Ave intersections
- the pedestrian mid-block traffic signals on River Avenue just to the north of the station
- the other traffic signals along Woodville Road at the Binna Burra Street, Kirang Avenue and Hume Highway intersections
- the roundabout at the Llewellyn Avenue and Marple Avenue intersection
- the sections of NO STOPPING restrictions along Villawood Road including along the site frontage
- the one way restriction in the Kamira Circuit carpark
- the marked pedestrian crossings at Villawood Road and Villawood Place along the site frontages.

3.3 TRAFFIC CONDITIONS

An indication of traffic conditions on the road system serving the site is provided by data published by the Roads and Maritime Services (RMS). The RMS data[1] is expressed in terms of average annual daily traffic (AADT) and the following flows which are consistent with the function of the roads are summarised in the following:

Woodville Road, south of Christina Road	44,255
Hume Highway east of Woodville Road	48,616

[1] *Traffic Volume Data for Sydney Region*
Roads and Maritime Services



LEGEND

- TRAFFIC SIGNAL CONTROL
- ROUNDABOUT
- RESTRICTED TURNING MOVEMENT
- LIGHT TRAFFIC

TRAFFIC CONTROLS

FIG 4

0640.156.VV.0968

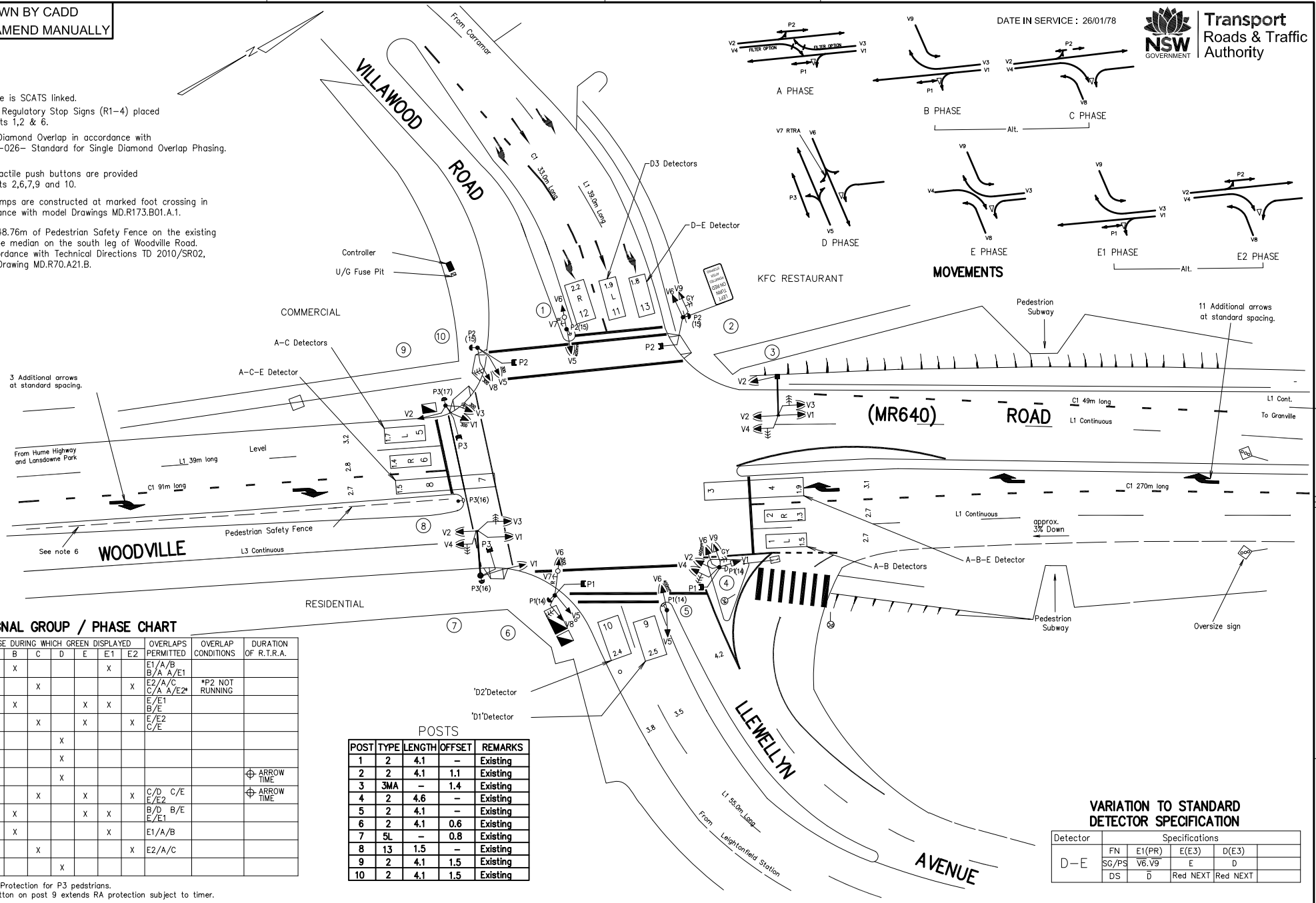
DRAWN BY CADD
DO NOT AMEND MANUALLY

DATE IN SERVICE : 26/01/78

NSW GOVERNMENT | Transport Roads & Traffic Authority

NOTES

1. This site is SCATS linked.
2. Special Regulatory Stop Signs (R1–4) placed on posts 1,2 & 6.
3. Single Diamond Overlap in accordance with TS–TN–026– Standard for Single Diamond Overlap Phasing.
4. Audio tactile push buttons are provided on posts 2,6,7,9 and 10.
5. Kerb ramps are constructed at marked foot crossing in accordance with model Drawings MD.R173.B01.A.1.
6. Install 48.76m of Pedestrian Safety Fence on the existing concrete median on the south leg of Woodville Road. In accordance with Technical Directions TD 2010/SR02, Model Drawing MD.R70.A21.B.



SIGNAL GROUP / PHASE CHART

SIGNAL GROUP	PHASE DURING WHICH GREEN DISPLAYED							OVERLAPS PERMITTED	OVERLAP CONDITIONS	DURATION OF R.T.R.A.
	A	B	C	D	E	E1	E2			
V1	X	X				X		E1/A/B B/A A/E1		
V2	X		X				X	E2/A/C C/A A/E2*	*P2 NOT RUNNING	
V3		X			X	X		E/E1 B/E		
V4			X		X		X	E/E2 C/E		
V5				X						
V6				X						
V7				X						⊕ ARROW TIME
V8			X		X		X	C/D C/E E/E2		⊕ ARROW TIME
V9		X			X	X		B/D B/E E/E1		
P1	X	X				X		E1/A/B		
P2	X		X				X	E2/A/C		
P3				X						

⊕ R.T.R.A. Protection for P3 pedstrians.
Push button on post 9 extends RA protection subject to timer.

POSTS

POST	TYPE	LENGTH	OFFSET	REMARKS
1	2	4.1	–	Existing
2	2	4.1	1.1	Existing
3	3MA	–	1.4	Existing
4	2	4.6	–	Existing
5	2	4.1	–	Existing
6	2	4.1	0.6	Existing
7	5L	–	0.8	Existing
8	13	1.5	–	Existing
9	2	4.1	1.5	Existing
10	2	4.1	1.5	Existing

VARIATION TO STANDARD DETECTOR SPECIFICATION

Detector	Specifications				
D–E	FN	E1(PR)	E(E3)	D(E3)	
	SG/PS	V6.V9	E	D	
	DS	D	Red NEXT	Red NEXT	

A ORIGINAL ISSUE

B Issue J/04223 \ 10.77
Added 'E' corner of intersection
T.C. Plan No.:0013.0026.MM0349

C Issue J/04259 22.12.77
W.A.E.
Add 2 x 20m 'No Stopping' signs to post 1 & 6.
Drawn: DK Checked: TTL

D Issue J/03179 22-6-87
U/G fuse pit approaching note added.
Drawn: C.L. Checked: J.K.

E Issue J/03536 3-7-92
Added – Detector numbering
Added – Filter option
Removed – Pedestrian lantern on post 6
Job No. 7170
Drawn: C.L. Checked: G.R.

F Issue J/03475 22/7/99
Added new type 2 post & buttons to posts 2,6,8 & 9
Drawn: C.L. Checked: G.R.

G Issue J/ 94778 10/5/2011
REDRAWN INTO ELECTRONICALLY
Add – Ped crossing across
Add – Left turn 6 approach
Add – Left turn 6 post 4
Add – Arrows to post 1 & 6, for continuous and southeast
Add – Arrows to post 6 & 7, for continuous and southeast
Del – Outback median on south
Add – Outback median on south
Add new type 2 post & buttons to post 9 to suit on site conditions.
Drawn: C.L. Checked: J.V.

H Issue J/ 94778 10/5/2011
W.A.E.
ADDED 'ADAPTIVE MARKUP' WERE REQUIRED ON POST 3 & 4
300mm. RD
JV 26-03-2014

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	△	STD POSIT	VD001-5
GAS VALVE	#	PRES. DETECT	VC005-17
SEWER MANHOLE	Ⓢ	VEH. GROUP OP	TS-TN-019
TELECOM PIT	◪	DET. LOGIC OP	TS-TN-020
ELECT LIGHT POLE	○	PED. MOVEMNT OP	TS-TN-021
POWER POLE	○	CABLE INSTALL	SHEET 9
STAY POLE	⊘	CABLE CHART	SHEET 10
TELEPHONE BOX	⊠	SURVEYOR:	RTA SURVEY
TELECOM PILLAR	◍	DATE :	1974

U.B.D. Ref. Map 250 J1
I.S.G. CO-ORDS E: 279 800 N: 1 249 500
TRACED HN 29–4–74
DRAWN SK 20–8–74
CHECKED DT 21–10–76
PASSED AWA 14–12–76
FOR ORIGINAL SIGNATURES REFER TO SHEET 1 ISSUE H

THIS PLAN HAS BEEN TAKEN TO THE SITE OF THE WORK AND COMPARED WITH THE SITUATION

DESIGN PREPARED BY
ROAD DESIGN ENGINEERING
ENGINEERING TECHNOLOGY SERVICES
NETWORK SERVICES DIRECTORATE

RTA ACCEPTANCE
RECOMMENDED
B.H.BUTCHER
FOR ORIGINAL SIGNATURE REFER TO SHEET 1 ISSUE H
POSITION DIVISIONAL ENGINEER

ROADS AND MARITIME SERVICES

FAIRFIELD COUNCIL AREA
TRAFFIC SIGNALS AT
WOODVILLE ROAD AND VILLAWOOD RD,
AND LLEWLLYN AVENUE
VILLAWOOD

DESIGN LAYOUT TCS No 968

EXISTING ☒ PROPOSED ☐
CADD FILE: VV0968_1J.dgn
SCALE 5 0 (1:200) 5 10
ISSUE J
FILE 156 TS 163
SUPERSEDES SHEET/ISSUE 1/I
REGN. 0640.156.vv.0968
SHEET 1

$DATES $TIMES $FILES

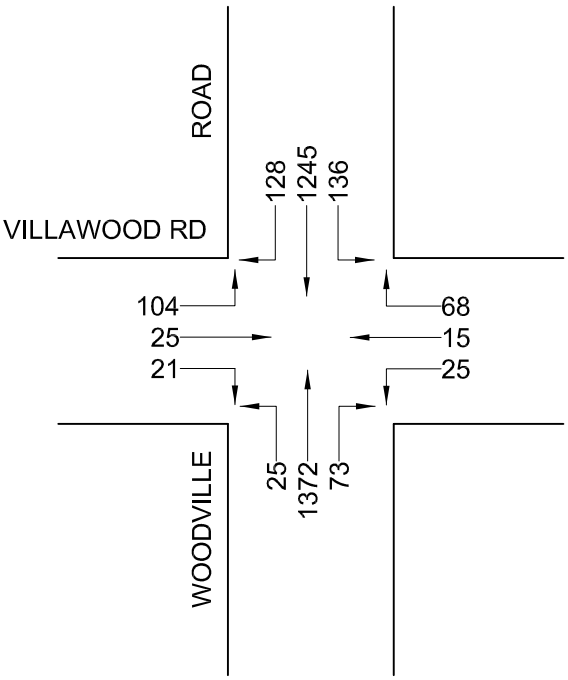
Recent traffic surveys undertaken at the Villawood Road/Woodville Road intersection during the morning and afternoon peak periods (Figure 5) indicate the following:

	Movement	AM	PM
Woodville Road			
North	Left	136	52
	Through	1245	1602
	Right	128	215
Llewellyn Road			
East	Left	25	125
	Through	15	105
	Right	68	130
Woodville Road			
South	Left	25	61
	Through	1372	1068
	Right	73	35
Villawood Road			
West	Left	104	126
	Through	25	25
	Right	21	102

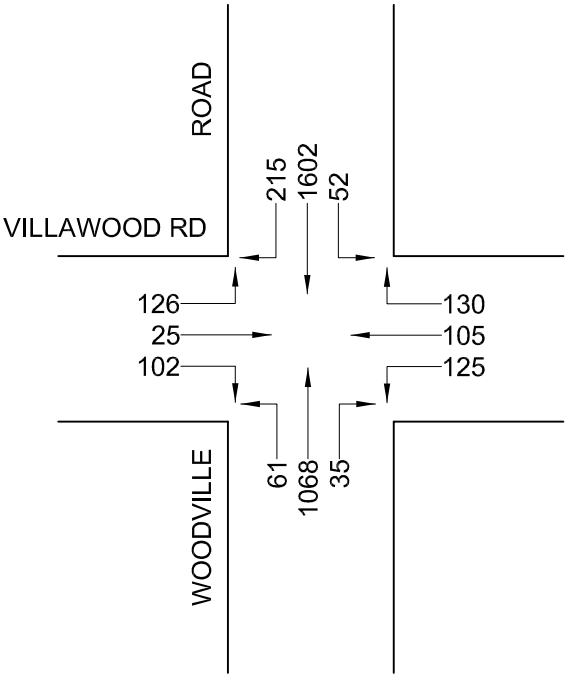
Assessment of operation performance of the above intersection using SIDRA indicates satisfactory peak hour levels of service as follows:

AM			PM		
DS	**LOS**	**AVD**	**DS**	**LOS**	**AVD**
0.649	B	17.7s	0.775	B	25.0s

It is apparent that the current intersection is operating within capacity and while there are some vehicle queues along Woodville Road during the peak hours this is entirely consistent with the arterial function of Road.

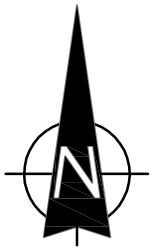


AM PEAK



PM PEAK

LEGEND



PEAK TRAFFIC VOLUMES

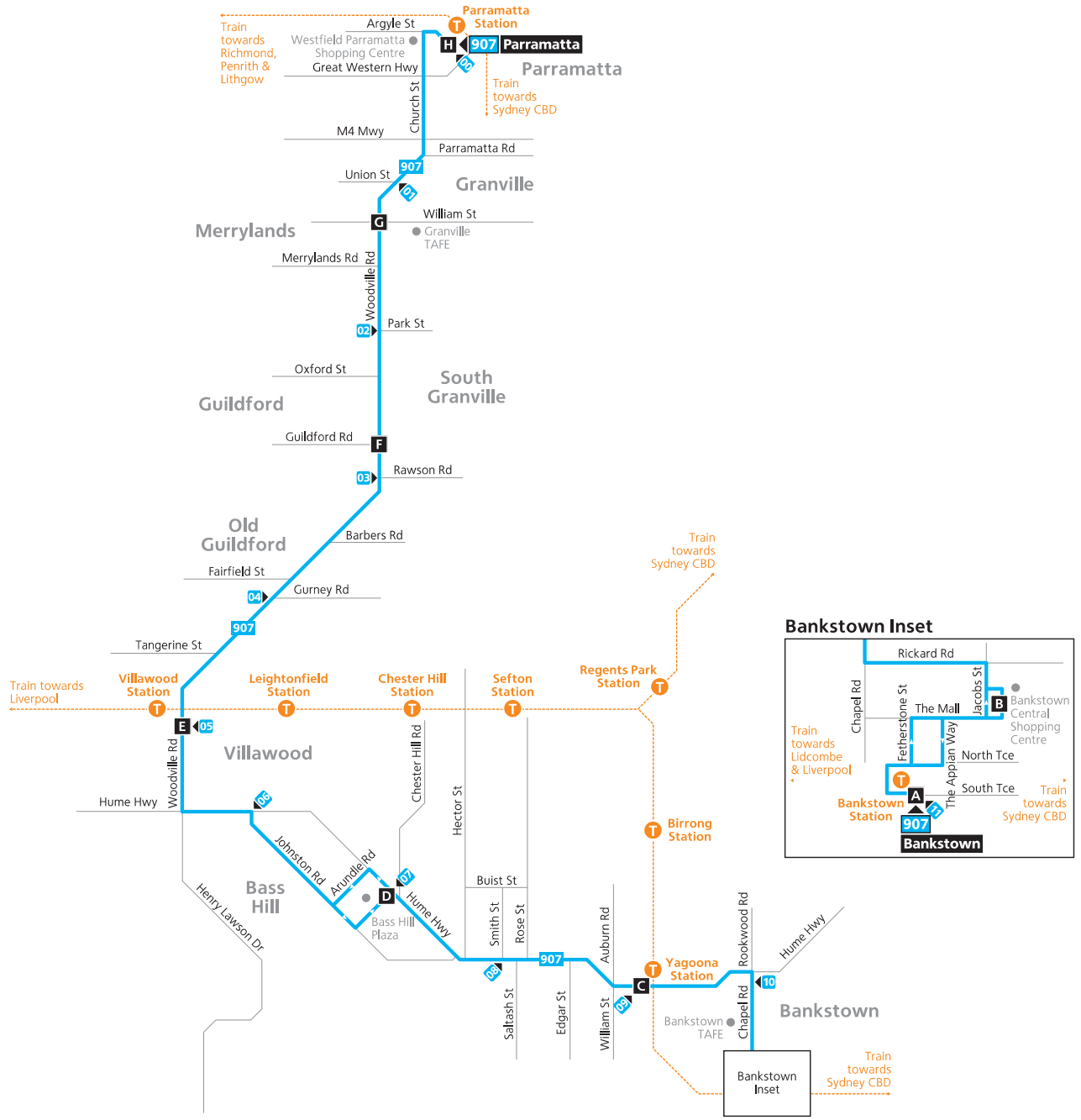
FIG 5

3.4 TRANSPORT SERVICES

Villawood Railway Station (100 metres to the north along Villawood Place) provides high frequency train services while bus services (route 907) along Woodville Road connecting Bankstown and Parramatta. As a result the site is considered to be well serviced by public transport.

Bus route map

907



Diagrammatic Map
Not to Scale
North

Legend

- Bus route
- 907 Bus route number
- A Timing point
- 04 Section point
- T Train line/station

Transport

4. PARKING

Fairfield City Council's Development Control Plan details the following parking criteria:

Residential (Shop Top Housing)	
1-2 beds	1 space
3 beds or more	1 space
Visitors	1 space per 4 dwellings
Commercial/Retail	
Shops	1 space per 40 m^2

It is understood from Council's correspondence dated 24 February 2015 that parking requirements associated with commercial development would be provided at a rate of 1 space per 63 m^2 up to a limit of 1,890 m^2. Application of this along with DCP criteria to the proposed development scheme would indicate a requirement of:

119 x apartments	119 spaces
Visitors	30 spaces
Commercial (1,137 m^2)	18 spaces
Community (185 m^2)	3 spaces
Total	**170 spaces**

Having regard to the above it is proposed to provide 170 spaces in the basement according to the specified allocation. It is apparent that the proposed provision of parking spaces will be compliant with the Council's criteria, and will be appropriate for the locality of the site.

5. TRAFFIC

An indication of the potential traffic generation of the proposed development is provided by the RMS Development Guidelines (technical Direction TDT 2013/4b) indicates a generation during the on-street peak traffic periods of:

119 apartments @
AM 0.19 (23 vtph)
PM 0.15 (18 vtph)

The projected distribution of the residential component is:

AM		PM	
IN	**OUT**	**IN**	**OUT**
6	17	12	6

The traffic generation criteria contained in RMS' Development Guidelines for retail uses is for large regional shopping centres and is not applicable for small retail space in a mixed use development which is largely convenience and ancillary. It is more appropriate to apply a 'parking space' turnover and surveys of comparable developments (ie small supermarkets within town centre locations) has established parking space turnover rates as follows:

AM	**PM**
20%	50%

Council's parking requirement for the non-residential component of 21 spaces would reflect a turnover i.e. a 'visitation' equivalent to a peak of some 5 and 11 vtph distributed in the following:

	AM		PM	
	IN	**OUT**	**IN**	**OUT**
Retail	5	5	11	11

As a result the total projected movements (without discount in relation to the generation of former uses) are as follows:

	AM		PM	
	IN	**OUT**	**IN**	**OUT**
Retail	5	5	11	11
Residential	6	17	12	6
Total	**11**	**22**	**23**	**17**

Whilst in reality not all the projected traffic would access the site via the Villawood Road/Woodville Road intersection, a conservative SIDRA assessment assuming 100% access movements via the key intersection was undertaken. The assessment indicates minor delays on the signal operation with no perceptible traffic or safety implications on the surrounding traffic network as follows:

	AM			PM		
	DS	**LOS**	**AVD**	**DS**	**LOS**	**AVD**
Existing	0.649	B	17.7s	0.775	B	25.0s
Development	0.650	B	17.9s	0.785	B	26.1s

Details of the SIDRA output are provided in Appendix B while a guide to interpret SIDRA results is provided overleaf.

6. ACCESS, INTERNAL CIRCULATION AND SERVICING

ACCESS

Access to the basement carpark will involve a 5.5 metre wide combined ingress/egress driveway. The design of the access driveway will accord with the requirements of AS2890.1 and it will be located where good sight distance is available particularly for egressing drivers.

INTERNAL CIRCULATION

The proposed carpark is to be provided on 3 basement levels and the internal circulation arrangements both within and between each level, including ramp grades, aisle widths and parking bay dimensions will accord with the requirements of AS 2890.1 and 6. Details of concurrent car passing where ramps or circulation roads intersect with parking aisles are provided in Appendix C.

SERVICING

Refuse removal will be undertaken by an 8.8m MRV at the designated garbage storage area during off peak hours. The service vehicle will undertake 1 reverse movement to enter the loading dock and exit forwards. Occasional servicing activities including retail deliveries, small furniture and tradespersons vehicles movements including infrequent need for larger service vehicles will also be satisfied by use of the loading area. Small service vehicles (eg. service personnel) will also be able to use the visitor spaces. Although the heavy vehicles will only be reversing onto the docking area outside of core business hours, it is advised that such maneuver be supervised by a 'spotter' to ensure safety of other road users at all times.

Details of satisfactory internal circulation are provided on the turning path assessment in Appendix C.

8. ISSUES

The traffic and parking issues raised by Council are responded to in the following:

* Small car spaces
  There are no small car spaces in the revised plans.

* Wider parking bays
  All parking bays adjacent to walls etc leave +300mm width in the revised plans.

* Head Room
  The head room clearances in the revised plans comply with AS2890.1

* Vehicle Passing
  In section 2.5.2 of AS2890.1 the requirements for concurrent vehicle passing only relate to “Intersections between circulation roadways and ramps with parking aisles” (ie not for parking aisle with parking aisle)
  The ability for 99th and 85th percentile cars to pass at the specified locations within the basement levels is shown on the relevant turning path diagram in Appendix B.

* Corner Splays
  A 3m x 3m splay has been provided at the Kamira Court intersection and a 2m x 2.5m splay at the car park egress

7. SERVICE DOCK MANAGEMENT PLAN

- Access for the service dock will be located on Kamira Circuit and the roller shutter access will remain open between 6.30am and 11.00pm (7 days).

- The service dock will provide for:

  - retail deliveries
  - refuse removal (retail and residential apartment)
  - deliveries and removals for residential apartments
  - emergency and maintenance vehicles

- Service personnel and other small vehicles (couriers and small van deliveries) will also be able to use the retail/visitor parking spaces.

- The Building Manager will supervise the dock activity. Should a vehicle arrive that cannot be accommodated in the dock due to the presence of other vehicles the Building Manager will direct the driver to depart and contact him by mobile phone to confirm the ability to return.

- The Building Manager will ensure that drivers do not “overstay” in the loading dock.

- The loading dock will accommodate access and manoeuvring for up to an 8.8m truck with a height clearance of 4.5m.

- Residents requiring deliveries or removals will organize times for these activities with the Building Manager.

- Refuse removal times will be directed by the Building Manager for non-peak times.

- No “out of hours” retail delivery will be permitted.

9. CONCLUSION

The proposed mixed use development on the site formerly occupied by a supermarket and specialty shops in Villawood Place at Villawood represents an appropriate redevelopment outcome which will be consistent and compatible with the planning for development in the area. The assessment of the potential traffic, transport and parking implications of the development scheme has concluded that:

- the proposed vehicle access, internal circulation and servicing arrangements will be suitable and appropriate

- there will not be any unsatisfactory traffic implications

- the proposed parking provision will be adequate and appropriate to the circumstances.

APPENDIX A

ARCHITECTURAL PLANS

GF BUILDING CORNER HAS BEEN AMENDED W/. 3mX3m SPLAY CORNER.

MINOR ADJUSTMENT TO SUBSTATION AND OSD TANK.

GARBAGE HOLDING AREA ENLARGED TO ACCOMMODATE THE NUMBER OF CONTAINERS AS PER WASTE MANAGEMENT REPORT.

COMBINED DIESEL PUMP & SPRINKLER VALVE PUMP ROOM ADDED.

SUPPORT COLUMNS OF AWNING DELETED.

LIFT CORE #1 MOVED TO ALIGN WITH BASEMENT LEVELS.

FIRE STAIR #2 DELETED.

Rev.	Description	Date
A	DA SUBMISSION	03.10.14
B	DA RE-SUBMISSION	27.04.15
C	DA ADDITIONAL INFORMATION	09.06.15
D	GROUND FL CHANGES	25.08.15
E	DA ADDITIONAL INFORMATION	02.10.15

TONY OWEN PARTNERS

FOR DA SUBMISSION

OCTOBER 2014

Consultants

Client

Architects

tony owen ptnrs

Project:
VILLAWOOD

Project address:
1 Villawood Place, Villawood

Key plan

Scale: 1:125 @ A1

Date: OCT 2015

Drawing title:
GROUND FLOOR PLAN

Project no. 923 | Dwg #. A103

Drawn: WT

Drawing status:
FOR INFORMATION

Rev.	Description	Date
A	CHANGES TO FIRE STAIRS STORAGE CAGES AMENDED TO SUIT NEW FS 1 STAIR PRESS SHAFT OF FS2 AND FS3.	31.07.15
B	GARBAGE CHUTE, CARDOBEC ROOMS AND GREASE ARRESTOR REPOSITIONED.	07.08.15
C	DOCUMENT AMENDED, MECH RISER REPOSITIONED. FS2 MOVED, FS3 SP RISER RELOCATED. COLD & GAS ROOM ACCUMULATED.	25.08.15
D	ISSUED FOR INFO (BASIX)	04.09.15

DISCLAIMER

"THESE DRAWINGS ARE PRELIMINARY DRAWINGS AND ARE SUBJECT TO CHANGE WITHOUT NOTICE DURING THE COURSE OF THE PROPOSED DEVELOPMENT AND IN CONSULTATION WITH COUNCIL. SUBMISSION OF THE DRAWINGS DOES NOT CONSTITUTE A REPRESENTATION OR WARRANTY BY THE DEVELOPER OR ITS SERVANTS, AGENTS OR CONTRACTORS THAT THE DRAWINGS ARE FINAL NOR THAT THE PROPOSED DEVELOPMENT WILL TAKE PLACE IN ACCORDANCE WITH THESE DRAWINGS."

NOTES:

DRAWINGS MADE TO A LARGER SCALE AND THOSE SHOWING PARTICULAR DETAIL OF WORKS SHALL TAKE PRECEDENCE OVER DRAWINGS MADE TO A SMALLER SCALE AND FOR MORE GENERAL PURPOSES

WHERE ANY DISCREPANCY EXISTS BETWEEN FIGURED AND SCALED DIMENSIONS,THE FIGURED DIMENSIONS SHALL PREVAIL

BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITMENTS

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA)

ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS,THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES AND MODIFICATIONS ISSUED BY THE ARCHITECT.

THE GENERAL CONTRACTOR SHALL REVIEW ALL DOCUMENTS AND VERIFY ALL DIMENSIONS AND FIELD CONDITIONS AND SHALL CONFIRM THAT WORK IS BUILDABLE AS SHOWN, ANY CONFLICTS OR OMISSIONS, ETC., SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT FOR CLARIFICATION PRIOR TO THE PERFORMANCE OF ANY WORK IN QUESTION.

ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT, THE ARCHITECT SHALL BE NOTIFIED FOR CLARIFICATION PRIOR TO PROCEEDING WITH CONSTRUCTION.

DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN PARTITION LOCATIONS, DIMENSIONS AND TYPES. IN CASE OF CONFLICT, NOTIFY ARCHITECT OR WRITTEN CLARIFICATION PRIOR TO PROCEEDING WITH CONSTRUCTION.

BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITMENTS

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E: williams@cmce.com.au

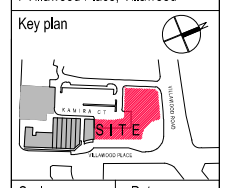
Client
GRANDVIEW

BEFORE CARRYING OUT ANY WORK ENSURE THAT THE DRAWINGS USED CARRY THE LATEST AMENDMENT No.

Project:
MAPLE Villawood

Project address:
1 Villawood Place, Villawood

Key plan



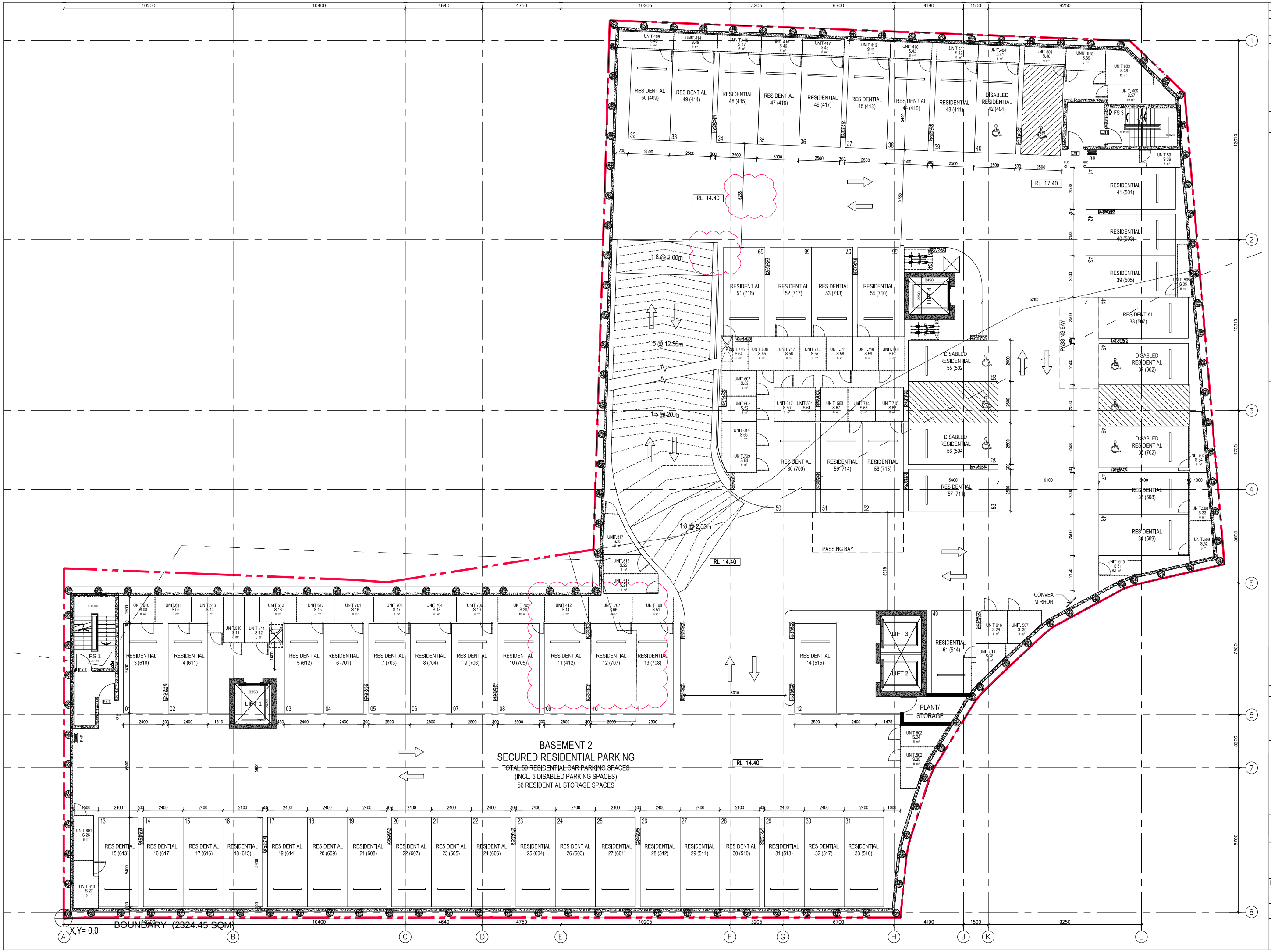
Scale:	Date:
1:100 @ A1 1:200 @ A3	AUG 2015

Drawing title:
GA PLAN BASEMENT 1

Project no.	Drawing no.	Rev
923	A1103	D

Drawn: AM

Drawing status:
FOR INFORMATION



Rev.	Description	Date
A	CHANGES TO FIRE STAIRS	31.07.15
	STORAGE CAGES AMENDED TO SUIT REV FS 1, AND STAIR PRESSURISATION RISER TO FS 2 AND FS 3	
B	DOCUMENT AMENDED, MECH RISERS REPOSITIONED	07.08.15
C	FS2 MOVED, FS3 SP RISER RELOCATED, CARPARK EXHAUST RISER REVISED	25.08.15
D	ISSUED FOR INFO (BASIX)	07.09.15

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NOTES:

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WHERE ANY DISCREPANCY EXISTS BETWEEN FIGURED AND SCALED DIMENSIONS.THE FIGURED DIMENSIONS SHALL PREVAIL

BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITMENTS

ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODE OF AUSTRALIA (BCA)

ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS,THE DRAWINGS, ALL ADDENDUMS, FINISHES SCHEDULES AND MODIFICATIONS ISSUED BY THE ARCHITECT.

THE GENERAL CONTRACTOR SHALL REVIEW ALL DOCUMENTS AND VERIFY ALL DIMENSIONS AND FIELD CONDITIONS AND SHALL CONFIRM THAT WORK IS BUILDABLE AS SHOWN. ANY CONFLICTS OR OMISSIONS, ETC., SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT FOR CLARIFICATION PRIOR TO THE PERFORMANCE OF ANY WORK IN QUESTION.

ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION W/ ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN ARCHITECTS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS / EQUIPMENT, THE ARCHITECT SHALL BE NOTIFIED FOR CLARIFICATION PRIOR TO PROCEEDING WITH CONSTRUCTION.

DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN PARTITION LOCATIONS, DIMENSIONS AND TYPES. IN CASE OF CONFLICT, NOTIFY ARCHITECT OR WRITTEN CLARIFICATION PRIOR TO PROCEEDING WITH CONSTRUCTION.

BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITMENTS

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Client
GRANDVIEW

BEFORE CARRYING OUT ANY WORK ENSURE THAT THE DRAWINGS USED CARRY THE LATEST AMENDMENT No.

Project:
MAPLE Villawood

Project address:
1 Villawood Place, Villawood

Key plan

Scale:
1:100 @ A1
1:200 @ A3

Date:
SEPT 2015

Drawing title:
GA PLAN BASEMENT 2

Project no.	Drawing no.	Rev
923	A1102	D

Drawn: AM

Drawing status:
FOR INFORMATION

CARPARK CALCULATION			
			DCP CAR PARKING SPACES REQUIRED
COMMERCIAL RETAIL COMMUNITY ROOM PARKING	1/63sqm PROPOSED GROSS LEASABLE AREA	RETAIL 1130.0sqm COMMUNITY ROOM 184.4sqm	18 3
RESIDENTIAL PARKING	1 per UNIT PROPOSED	TOTAL 119 UNITS	119
RESIDENTIAL VISITOR PARKING	1/4 per UNIT PROPOSED	TOTAL 119 UNITS	30
		TOTAL REQUIRED	170

PROPOSED CAR PARKING SPACES					
CAR PARKING LEVEL	ALLOCATION				CAR PARKING SPACES PROPOSED
BASEMENT 03 SECURED RESIDENTIAL PARKING	RESIDENTIAL	58	DISABLED ACCESS	(7)	58
BASEMENT 02 SECURED RESIDENTIAL PARKING	RESIDENTIAL	59	DISABLED ACCESS	(5)	59
BASEMENT 01 RESIDENTIAL, RESIDE & COMMUNITY ROOM PARKING	RESIDENTIAL RES. VISITORS RETAIL COMM. ROOM	2 30 18 3	 DISABLED ACCESS DISABLED ACCESS DISABLED ACCESS	 (3) (2) (1)	53
	TOTAL PROPOSED				170

LEGEND

CAR BAYS ARE NUMBERED SEQUENTIALLY & ALSO INDICATE UNIT ALLOCATION.

RESIDENTIAL
XX (XXX)
XX

- USER TYPE
- UNIT NUMBER IN BRACKETS
- BAY NUMBER IN USER GROUP IN PARENTHESIS SPECIFIC APARTMENT TO WHICH CAR BAY IS ALLOCATED.
- NUMBER OF CAR BAY ON THIS FLOOR.

LIFT CORE MOVED TO INCREASE DRIVEWAY WIDTH AND TO REPLACE SMALL CAR PARK SPACES TO REGULAR CAR PARK SPACES.

FIRE STAIR #2 DELETED.

BASEMENT 3
SECURED RESIDENTIAL PARKING
TOTAL 58 RESIDENTIAL CAR PARKING SPACES
(INCL. 7 DISABLED PARKING SPACES)
63 RESIDENTIAL STORAGE SPACES

NOTE

TYPICAL NOTE ALL BASEMENT STORES.

ALL STORAGE CAGES INDICATE VOLUME OF STORAGE IN BASEMENT & APARTMENT NUMBER TO WHICH STORE IS ALLOCATED.

BOUNDARY (2324.45 SQM)

X,Y= 0,0

Rev.	Description	Date
A	DA SUBMISSION	03.10.14
B	DA RE-SUBMISSION	27.04.15
C	DA ADDITIONAL INFORMATION	19.06.15
D	GROUND FL CHANGES	25.08.15
E	DA ADDITIONAL INFORMATION	02.10.15

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BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITMENTS

TONY OWEN PARTNERS

FOR DA SUBMISSION

OCTOBER 2014

Consultants

Client

Architects

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Project: VILLAWOOD

Project address: 1 Villawood Place, Villawood

Key plan

Scale: 1:100 @ A1

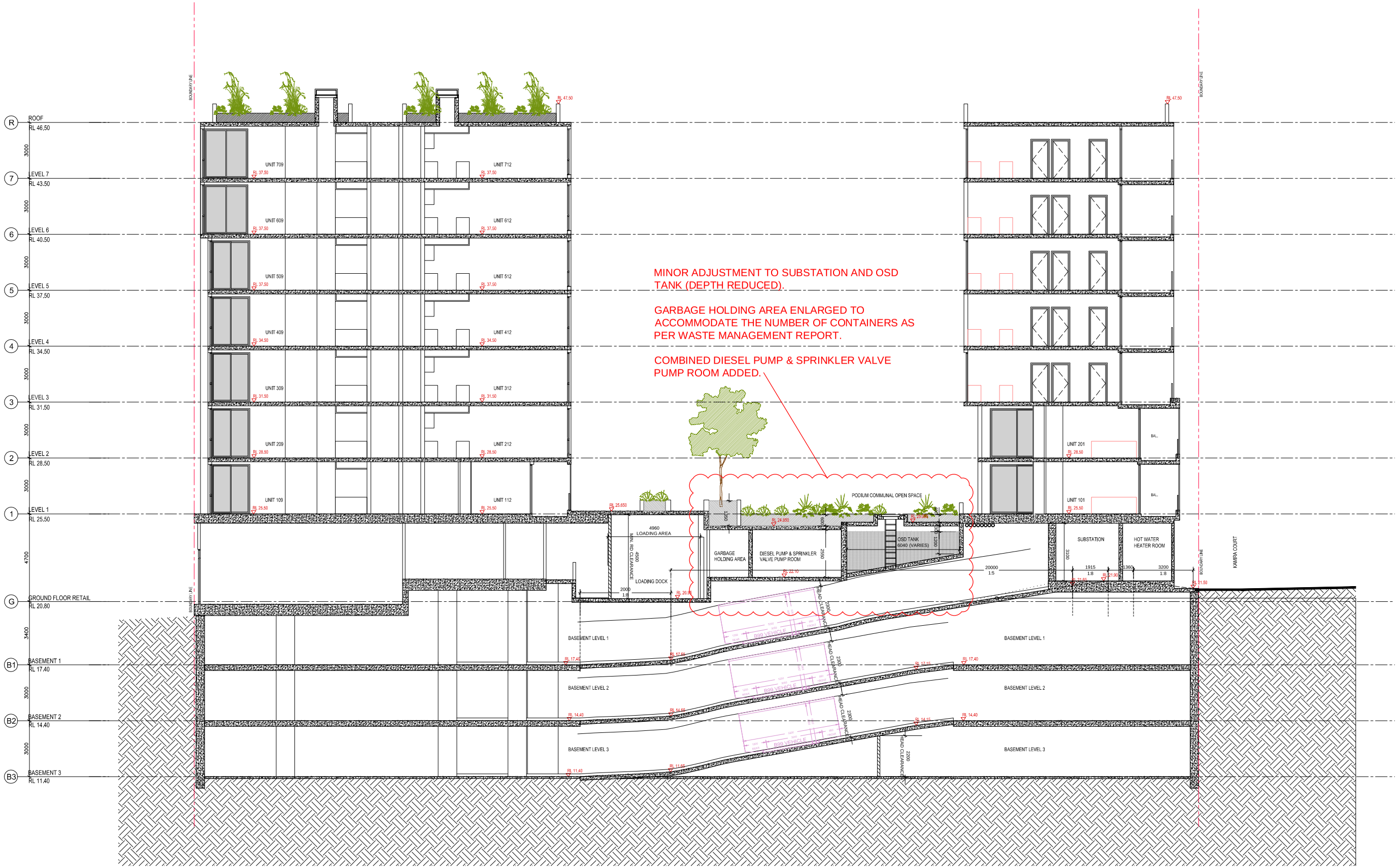
Date: OCT 2015

Drawing title: BASEMENT LEVEL 3 PLAN

Project no. 923 | Dwg #. A100

Drawn: WT

Drawing status: FOR INFORMATION



Rev.	Description	Date
A	DA SUBMISSION	03.10.14
B	DA RE-SUBMISSION	27.08.15
C	DA ADDITIONAL INFORMATION	09.08.15
D	GROUND FL CHANGES	25.08.15
E	DA ADDITIONAL INFORMATION	01.10.15

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BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITMENTS

TONY OWEN PARTNERS

FOR DA SUBMISSION

OCTOBER 2014

Consultants

Client

Architects

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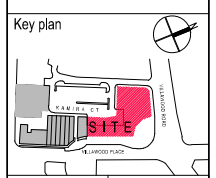
Project:
VILLAWOOD

Project address:
1 Villawood Place, Villawood

Key plan



Scale:

Date:
OCT 2015

Drawing title:
RAMP SECTION

Project no. 923 | Dwg #. A350

Drawn: WT

Drawing status:
FOR INFORMATION

APPENDIX B

SIDRA OUTPUT

MOVEMENT SUMMARY

Site: VILLAWOOD AND WOODVILLE AM

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: WOODVILLE											
1	L	25	2.0	0.501	15.8	LOS B	17.3	122.9	0.47	1.00	43.5
2	T	1372	2.0	0.501	7.5	LOS A	17.3	123.1	0.47	0.43	47.9
3	R	73	2.0	0.226	16.0	LOS B	1.6	11.7	0.45	0.75	41.6
Approach		1470	2.0	0.501	8.1	LOS A	17.3	123.1	0.47	0.45	47.5
East: LLWELLYN											
4	L	25	2.0	0.454	60.6	LOS E	6.0	42.5	0.96	0.79	22.6
5	T	15	2.0	0.454	52.3	LOS D	6.0	42.5	0.96	0.77	22.8
6	R	68	2.0	0.454	60.4	LOS E	6.0	42.5	0.96	0.79	22.7
Approach		108	2.0	0.454	59.3	LOS E	6.0	42.5	0.96	0.79	22.7
North: WOODVILLE											
7	L	136	2.0	0.285	8.3	LOS A	0.5	3.7	0.20	0.64	48.7
8	T	1245	2.0	0.446	7.1	LOS A	14.5	103.1	0.44	0.40	48.5
9	R	128	2.0	0.462	20.4	LOS B	4.3	30.6	0.63	0.79	38.5
Approach		1509	2.0	0.462	8.3	LOS A	14.5	103.1	0.43	0.45	47.5
West: VILLAWOOD											
10	L	104	2.0	0.325	55.5	LOS D	5.4	38.5	0.92	0.78	23.7
11	T	25	2.0	0.173	58.2	LOS E	1.4	10.1	0.97	0.69	22.3
12	R	21	2.0	0.158	66.5	LOS E	1.2	8.5	0.97	0.71	21.2
Approach		150	2.0	0.325	57.5	LOS E	5.4	38.5	0.93	0.76	23.1
All Vehicles		3237	2.0	0.501	12.2	LOS A	17.3	123.1	0.49	0.48	43.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	53	6.0	LOS A	0.1	0.1	0.32	0.32
P7	Across W approach	53	7.7	LOS A	0.1	0.1	0.36	0.36
All Pedestrians		106	6.9	LOS A			0.34	0.34

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: VILLAWOOD AND WOODVILLE PM

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: WOODVILLE											
1	L	61	2.0	0.535	26.5	LOS B	20.7	147.3	0.69	0.94	36.2
2	T	1068	2.0	0.535	18.2	LOS B	20.8	148.1	0.69	0.62	38.1
3	R	35	2.0	0.173	42.0	LOS C	1.6	11.5	0.81	0.77	27.8
Approach		1164	2.0	0.535	19.4	LOS B	20.8	148.1	0.69	0.64	37.6
East: LLWELLYN											
4	L	125	2.0	0.757	52.6	LOS D	20.0	142.2	0.97	0.89	24.8
5	T	105	2.0	0.757	44.4	LOS D	20.0	142.2	0.97	0.87	25.0
6	R	130	2.0	0.757	52.5	LOS D	20.0	142.2	0.97	0.89	24.9
Approach		360	2.0	0.757	50.2	LOS D	20.0	142.2	0.97	0.88	24.9
North: WOODVILLE											
7	L	52	2.0	0.109	8.0	LOS A	0.2	1.3	0.12	0.62	49.1
8	T	1602	2.0	0.757	22.1	LOS B	35.7	253.8	0.84	0.77	35.5
9	R	215	2.0	0.737	46.3	LOS D	12.8	91.3	1.00	0.94	26.4
Approach		1869	2.0	0.757	24.5	LOS B	35.7	253.8	0.83	0.78	34.4
West: VILLAWOOD											
10	L	126	2.0	0.197	37.3	LOS C	5.1	36.3	0.74	0.78	29.6
11	T	25	2.0	0.061	37.3	LOS C	1.1	7.9	0.80	0.58	28.5
12	R	102	2.0	0.530	58.8	LOS E	5.6	39.9	0.95	0.80	22.9
Approach		253	2.0	0.530	45.9	LOS D	5.6	39.9	0.83	0.76	26.4
All Vehicles		3646	2.0	0.757	26.9	LOS B	35.7	253.8	0.80	0.74	33.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	53	14.5	LOS B	0.1	0.1	0.49	0.49
P7	Across W approach	53	17.1	LOS B	0.1	0.1	0.53	0.53
All Pedestrians		106	15.8	LOS B			0.51	0.51

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: VILLAWOOD AND WOODVILLE AM DEV

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: WOODVILLE											
1	L	28	2.0	0.502	15.8	LOS B	17.3	123.3	0.47	1.00	43.5
2	T	1372	2.0	0.502	7.5	LOS A	17.4	123.6	0.47	0.43	47.9
3	R	73	2.0	0.226	16.0	LOS B	1.6	11.7	0.45	0.75	41.6
Approach		1473	2.0	0.502	8.1	LOS A	17.4	123.6	0.47	0.46	47.4
East: LLWELLYN											
4	L	25	2.0	0.455	60.6	LOS E	6.0	42.5	0.96	0.79	22.6
5	T	15	2.0	0.455	52.4	LOS D	6.0	42.5	0.96	0.77	22.8
6	R	68	2.0	0.455	60.4	LOS E	6.0	42.5	0.96	0.79	22.7
Approach		108	2.0	0.455	59.4	LOS E	6.0	42.5	0.96	0.79	22.7
North: WOODVILLE											
7	L	136	2.0	0.285	8.3	LOS A	0.5	3.7	0.20	0.64	48.7
8	T	1245	2.0	0.446	7.1	LOS A	14.5	103.1	0.44	0.40	48.5
9	R	136	2.0	0.492	20.9	LOS B	4.8	34.1	0.66	0.80	38.1
Approach		1517	2.0	0.492	8.4	LOS A	14.5	103.1	0.44	0.46	47.4
West: VILLAWOOD											
10	L	119	2.0	0.371	56.0	LOS D	6.2	44.5	0.93	0.79	23.6
11	T	25	2.0	0.173	58.2	LOS E	1.4	10.1	0.97	0.69	22.3
12	R	28	2.0	0.211	66.9	LOS E	1.6	11.5	0.97	0.72	21.1
Approach		172	2.0	0.371	58.1	LOS E	6.2	44.5	0.94	0.77	23.0
All Vehicles		3270	2.0	0.502	12.6	LOS A	17.4	123.6	0.50	0.48	43.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	53	6.0	LOS A	0.1	0.1	0.32	0.32
P7	Across W approach	53	7.7	LOS A	0.1	0.1	0.36	0.36
All Pedestrians		106	6.9	LOS A			0.34	0.34

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: VILLAWOOD AND WOODVILLE PM DEV

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: WOODVILLE											
1	L	65	2.0	0.545	27.2	LOS B	21.2	150.8	0.70	0.93	35.8
2	T	1068	2.0	0.545	19.0	LOS B	21.3	151.7	0.70	0.63	37.6
3	R	35	2.0	0.162	42.7	LOS D	1.6	11.6	0.81	0.77	27.5
Approach		1168	2.0	0.545	20.1	LOS B	21.3	151.7	0.70	0.65	37.1
East: LLWELLYN											
4	L	125	2.0	0.757	52.6	LOS D	20.0	142.3	0.97	0.89	24.8
5	T	105	2.0	0.757	44.4	LOS D	20.0	142.3	0.97	0.87	25.0
6	R	130	2.0	0.757	52.5	LOS D	20.0	142.3	0.97	0.89	24.9
Approach		360	2.0	0.757	50.2	LOS D	20.0	142.3	0.97	0.88	24.9
North: WOODVILLE											
7	L	52	2.0	0.109	8.0	LOS A	0.2	1.3	0.12	0.62	49.1
8	T	1602	2.0	0.768	22.9	LOS B	36.3	258.7	0.85	0.78	35.0
9	R	234	2.0	0.775	51.9	LOS D	14.3	102.0	1.00	0.99	24.7
Approach		1888	2.0	0.775	26.1	LOS B	36.3	258.7	0.85	0.80	33.6
West: VILLAWOOD											
10	L	135	2.0	0.206	36.7	LOS C	5.4	38.6	0.73	0.78	29.9
11	T	25	2.0	0.061	37.3	LOS C	1.1	7.9	0.80	0.58	28.5
12	R	110	2.0	0.572	59.2	LOS E	6.1	43.4	0.96	0.80	22.8
Approach		270	2.0	0.572	45.9	LOS D	6.1	43.4	0.83	0.77	26.4
All Vehicles		3686	2.0	0.775	28.0	LOS B	36.3	258.7	0.81	0.76	32.8

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	Across E approach	53	15.0	LOS B	0.1	0.1	0.50	0.50
P7	Across W approach	53	17.6	LOS B	0.1	0.1	0.54	0.54
All Pedestrians		106	16.3	LOS B			0.52	0.52

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

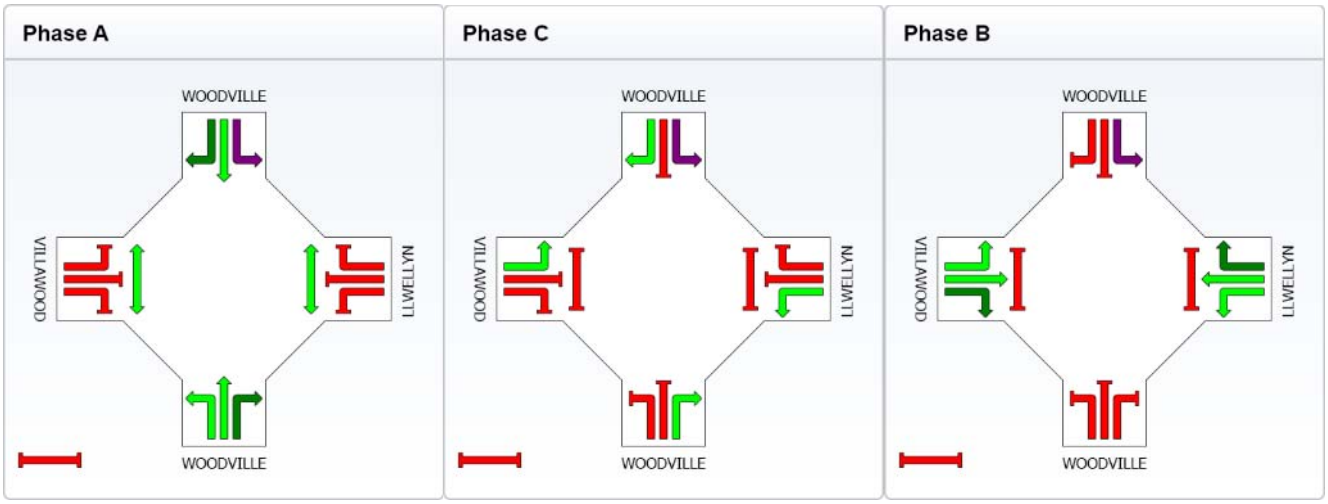
Site: VILLAWOOD AND WOODVILLE AM

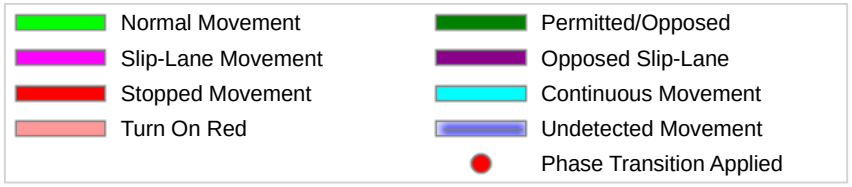
New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, C, B
Output Sequence: A, C, B

Phase Timing Results

Phase	A	C	B
Green Time (sec)	87	6	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	93	12	15
Phase Split	78 %	10 %	13 %





PHASING SUMMARY

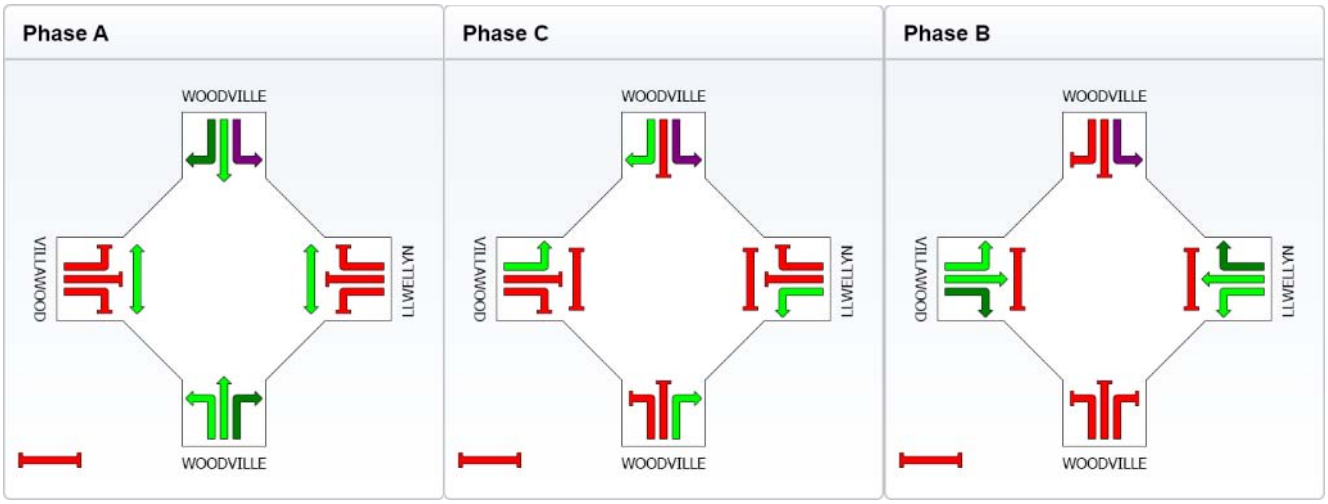
Site: VILLAWOOD AND WOODVILLE PM

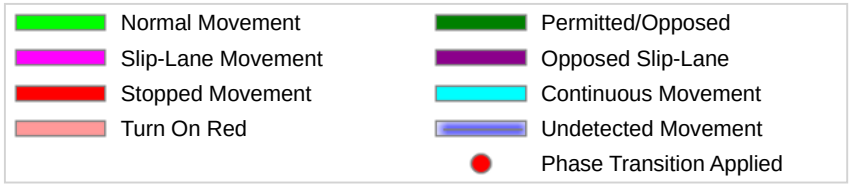
New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, C, B
Output Sequence: A, C, B

Phase Timing Results

Phase	A	C	B
Green Time (sec)	66	7	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	72	13	35
Phase Split	60 %	11 %	29 %





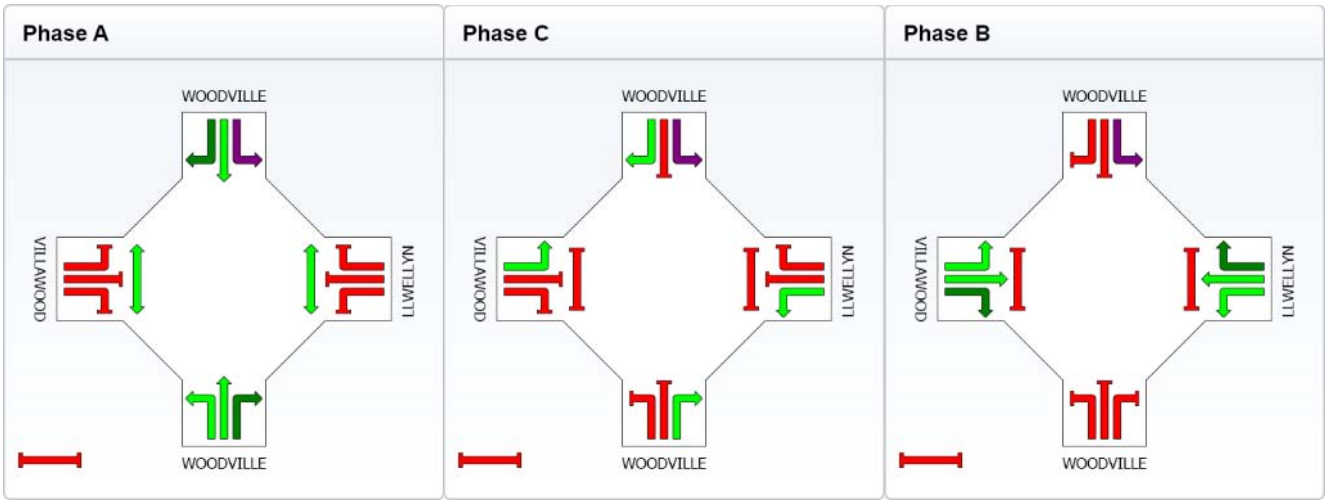
PHASING SUMMARY

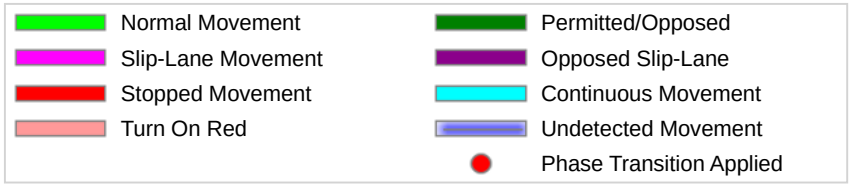
New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, C, B
Output Sequence: A, C, B

Phase Timing Results

Phase	A	C	B
Green Time (sec)	87	6	9
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	93	12	15
Phase Split	78 %	10 %	13 %





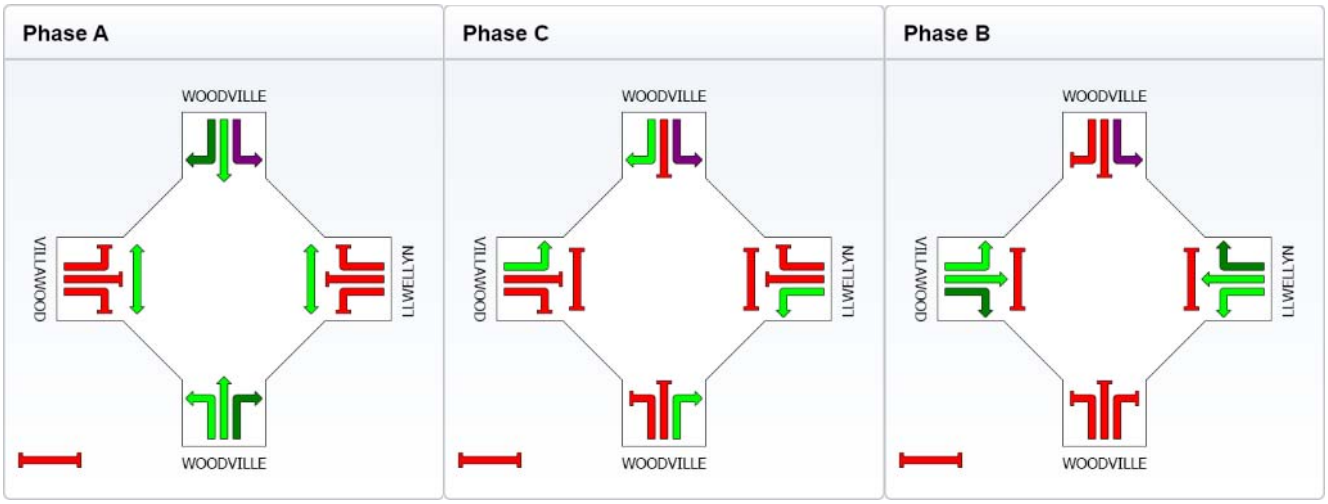
PHASING SUMMARY

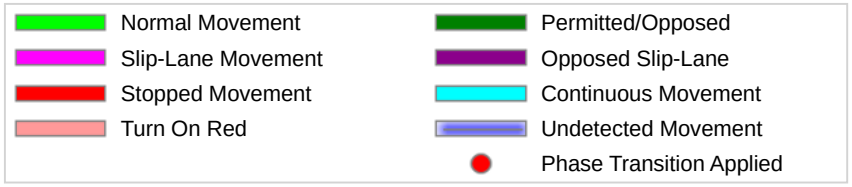
New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)

Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, C, B
Output Sequence: A, C, B

Phase Timing Results

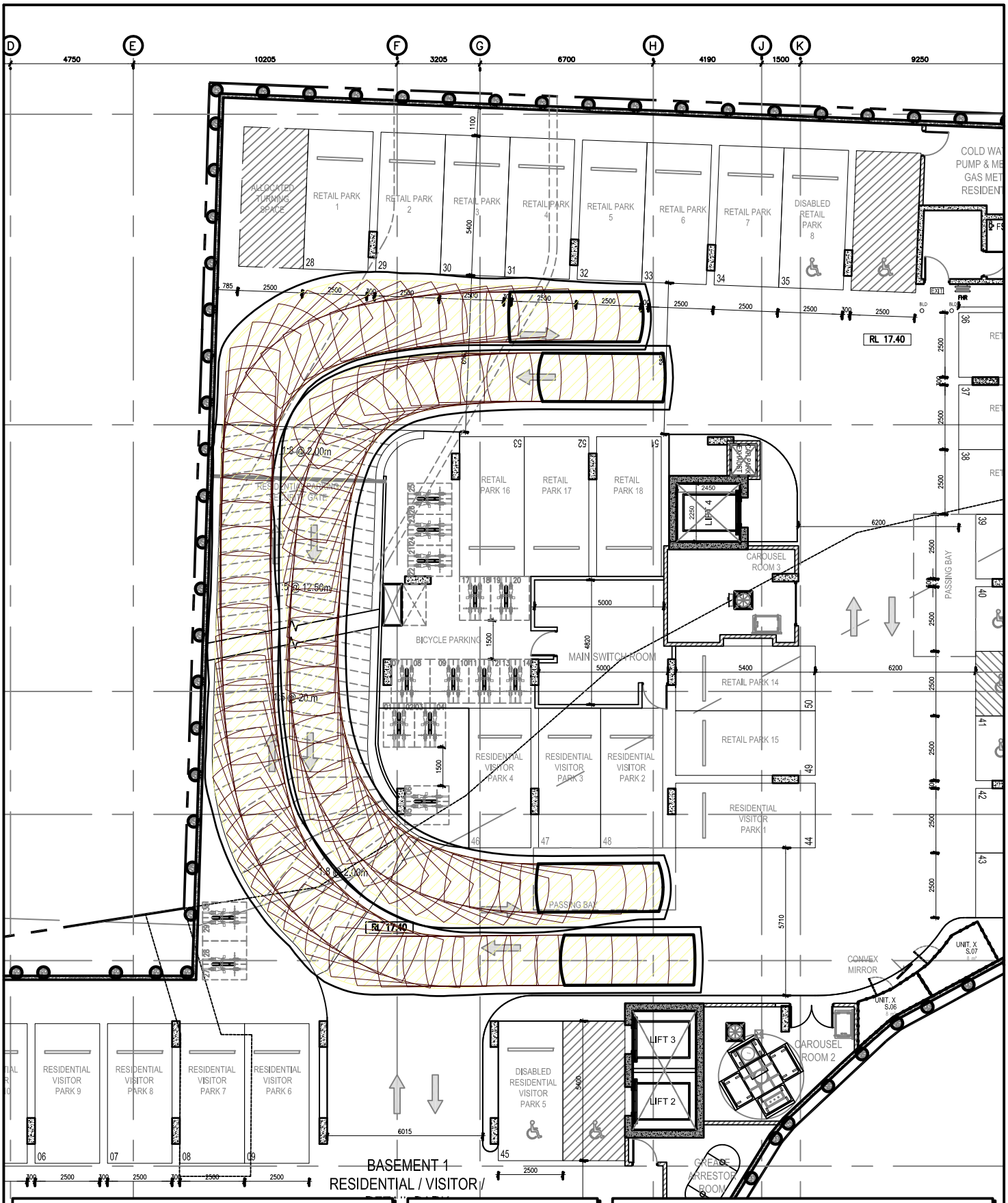
Phase	A	C	B
Green Time (sec)	65	8	29
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	71	14	35
Phase Split	59 %	12 %	29 %





APPENDIX C

TURNING PATH ASSESSMENT



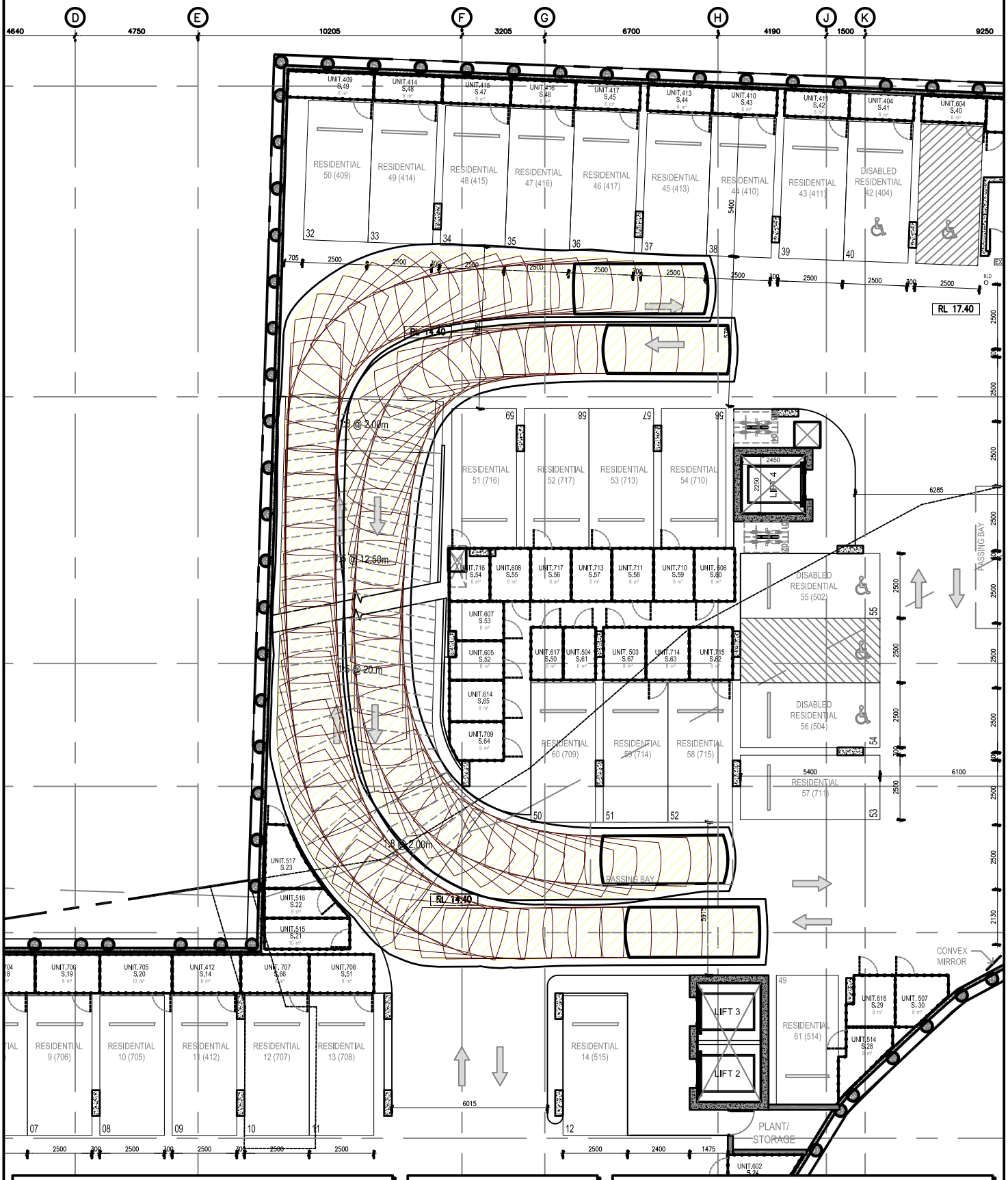
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V9.21 in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

N

SWEPT PATH ANALYSIS OF A 99th AND AN 85th PERCENTILE VEHICLE PASSING (BASEMENT 1)

SP 1

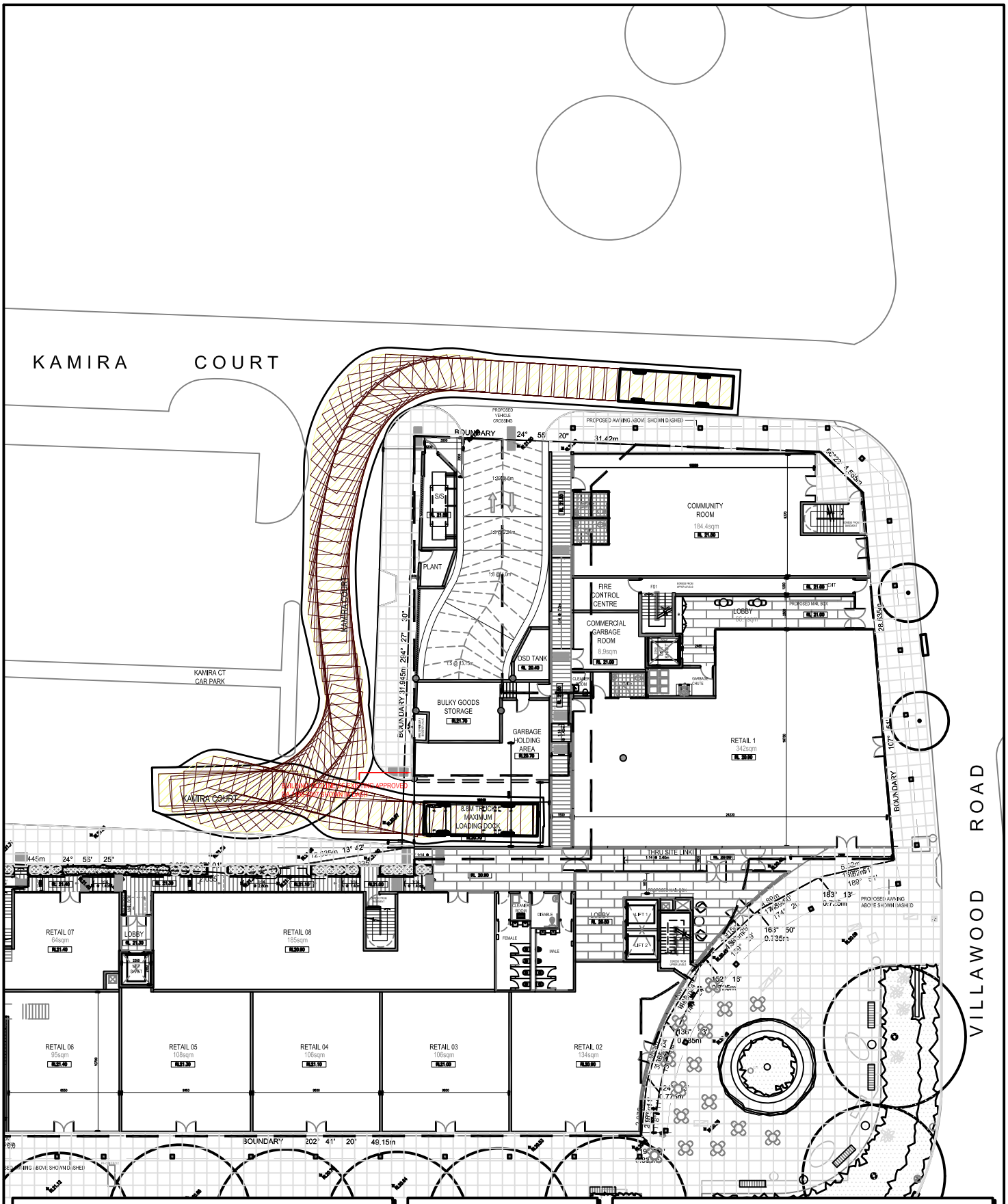


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V9.21 in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF A 99th AND AN 85th PERCENTILE VEHICLE PASSING (BASEMENT 2)

SP 2

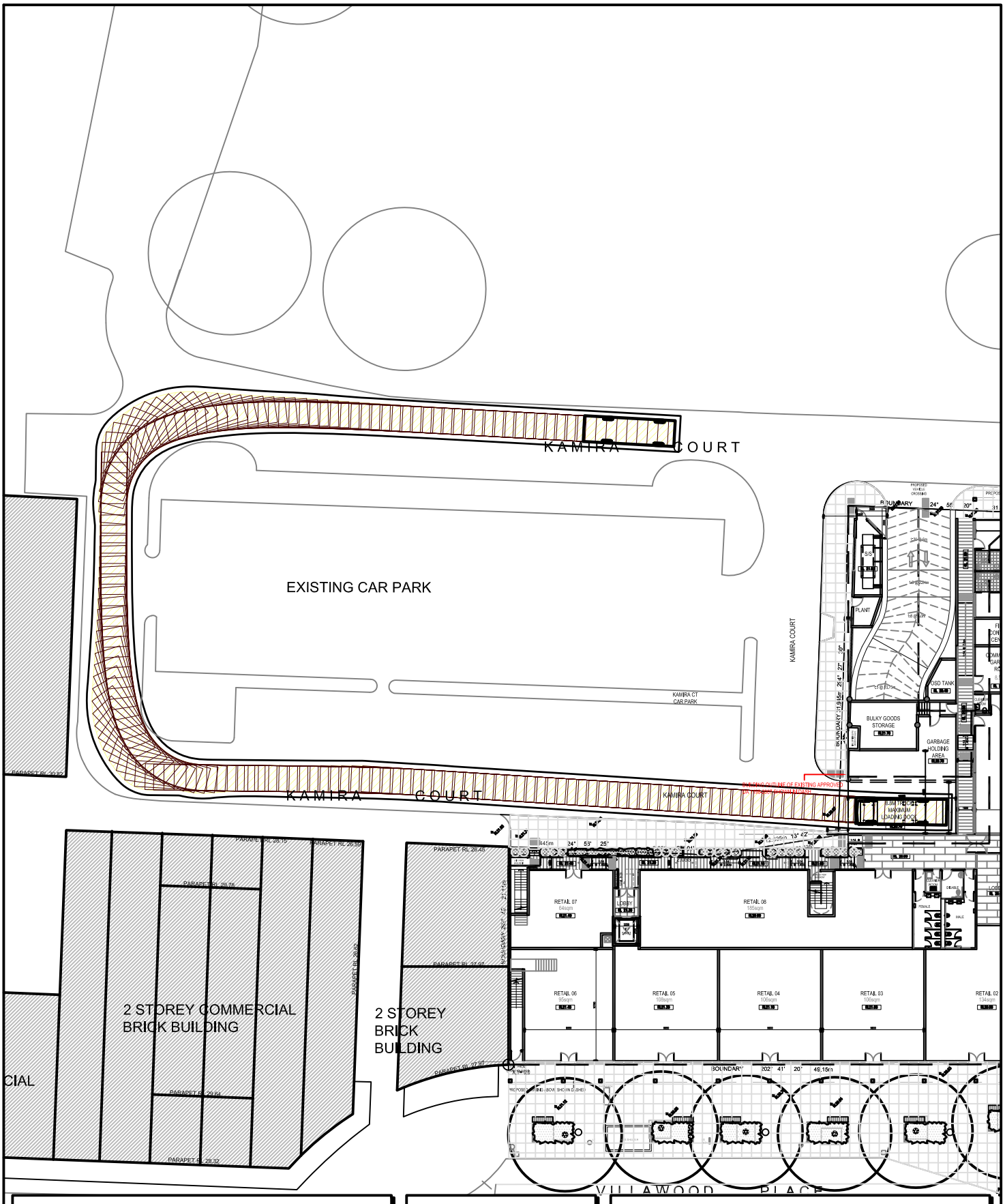


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V9.21 in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF AN 8.8m RIGID VEHICLE ENTERING THE SITE

SP 3



LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V9.21 in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF AN 8.8m RIGID VEHICLE EXITING THE SITE

SP 4