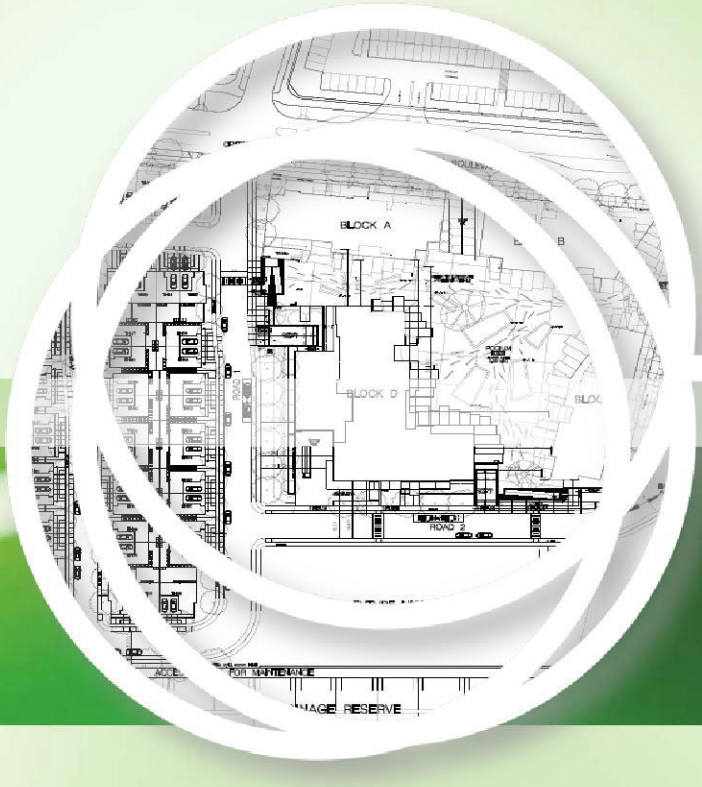

Jordan Springs Residential Subdivision

Mixed Use Site

Transport Impact Assessment

transportation planning, design and delivery

14S1013000 11/03/14

GTAconsultants

Jordan Springs Residential Subdivision

Mixed Use Site

Transport Impact Assessment

Issue: B 11/03/14

Client: C.I.D Group
Reference: 14S1013000
GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	10/03/14	Final	Wayne Johnson Ashish Modessa	Wayne Johnson	Ken Hollyoak	Ken Hollyoak
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1. Introduction

1.1 Background

A development application is to be lodged with Penrith City Council for a mixed use subdivision, known as 'Village Centre Two' (VC2), located on the southern side of Jordan Springs Boulevard within the Jordan Springs development. The mixed use subdivision consists of the following land uses:

- 64 Townhouses (10 – three bedroom, 54 – two bedroom)
- 160 Apartments (17 - three bedroom, 20 – one bedroom, 123 – two bedroom (including 26 adaptable two bedroom))
- 5 Small Office/ Home Office (SOHO) (1 – two bedroom townhouse, 4 – three bedroom townhouses)
- A management office, 9 retail and 5 restaurant land uses.

GTA Consultants was commissioned by C.I.D. Group in July 2013 to undertake a transport impact assessment for the development.

In undertaking this study, consideration was given to previous planning work undertaken for the entire Jordan Springs development which produced an indicative development mix and road system for Jordan Springs.

1.2 Purpose of this Report

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

i existing traffic and forecasted traffic conditions for the entire Jordan Springs site
ii suitability of the proposed parking in terms of supply
iii pedestrian and bicycle requirements
iv the traffic generating characteristics of the proposed development
v suitability of the proposed access arrangements for the site
vi the transport impact of the development proposal on the surrounding road network.

1.3 References

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

- Penrith Council Development Control Plan (DCP) 2010
- Western Precinct St Marys Precinct Plan and Development Control Strategy, JBA, 2009
- plans for the proposed development prepared by Zoabi Tawadros Architecture, Revision [F], dated [3 February 2014]
- other documents and data as referenced in this report.

2. Background to the Proposed Subdivision

The Jordan Springs development has been the subject of numerous studies, which have defined the land use, assessed the traffic generation and its external implications, broadly defined the structure of the road system within the site, and developed a traffic management strategy for the Precinct.

2.1 Previous Studies and Assumptions

The regional traffic and transport implications of the St Marys development site have previously been considered for the site as a whole, including the Jordan Springs (Western Precinct), Central and Ropes Crossing (Eastern) Precincts.

Figure 2.1 shows Jordan Springs (shown as Western Precinct in the figure), Central Precinct, Dunheved and Eastern Precinct within the entire St Marys re-development.

Figure 2.1: Context of Jordan Springs within the St Marys Redevelopment Area

Source: Western Precinct St Marys Precinct Plan and Development Control Strategy (JBA, 2009)

The Central Precinct of the St Marys re-development area has not been constructed. There is no direct road connection between the Eastern Precinct (Ropes Crossing) and Jordan Springs.

Studies of particular relevance to the Jordan Springs subdivision are:

- *St Marys Development Revised Transport Management Plan Traffic Study (Sims Varley, 2004)*
- *St Marys Development Transport Management Study (SKM, 2007)*
- *St Marys Western Precinct Plan Traffic and Transport Report (SKM, 2009)*
- *Western Precinct St Marys Precinct Plan and Development Control Strategy (JBA, 2009).*

The traffic planning management outlined in the previous Traffic and Transport Report and Precinct Plan are briefly reviewed below and form some of the background to the review of the proposed mixed use subdivision.

2.2 SKM Western Precinct Traffic Assessment

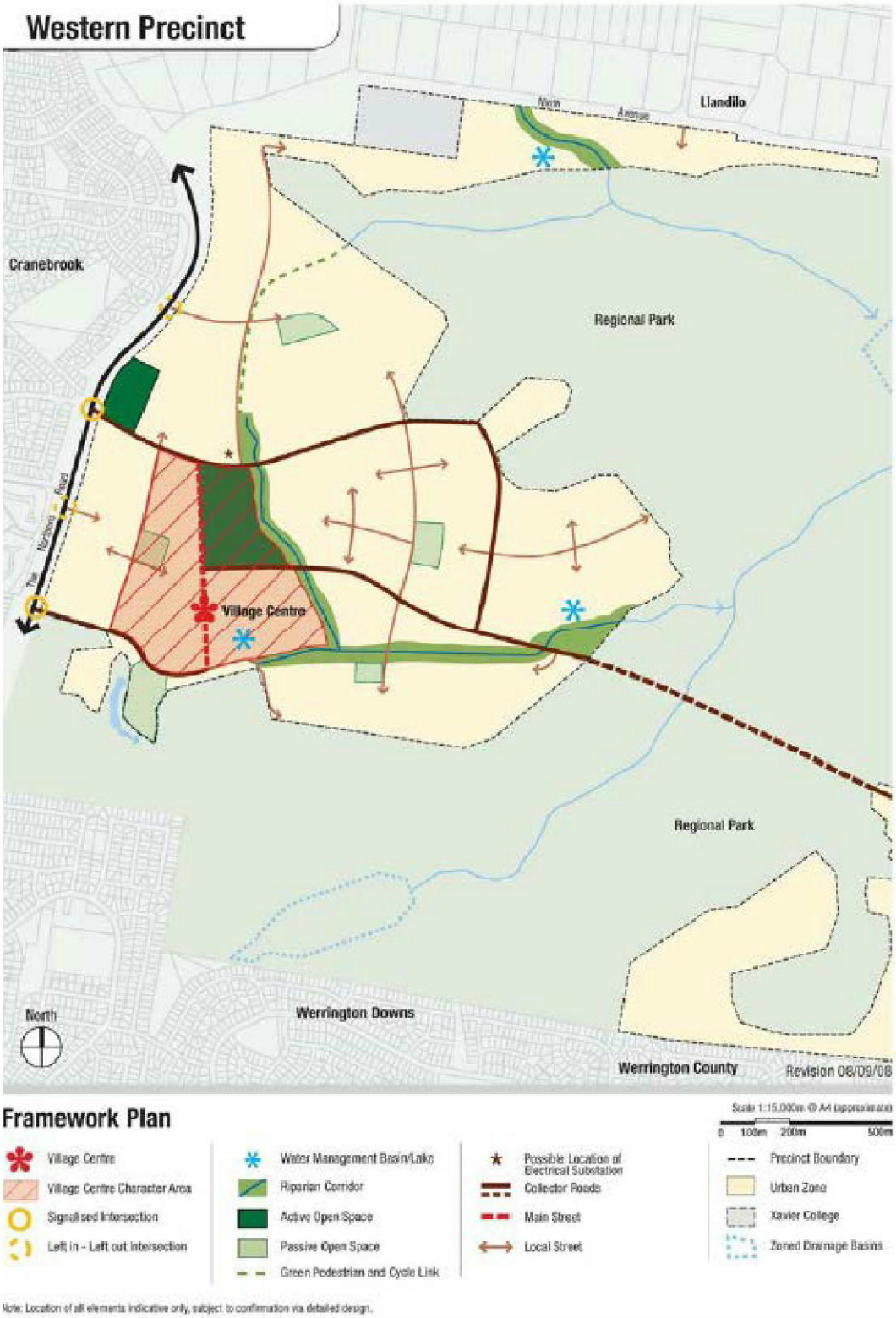
The SKM Western Precinct Plan Traffic and Transport report provides the framework plan for the road network of the Western Precinct.

2.2.1 Framework

The proposed development of Jordan Springs has been defined in the Framework Plan which provides the following key features:

- A Village Centre zone in the southern part of the precinct, which would comprise a mix of retail, commercial, community, open space and residential uses.
- Educational facilities which may include a primary school.
- Mainly residential developments (some 2,450 dwellings) throughout the remainder of the precinct.
- Active and passive open space areas.
- Broad description of the collector road network, including connections to The Northern Road, Ninth Avenue and connections to the Central and Eastern Precinct.

Figure 2.2: Jordan Springs Framework Plan



Source: St Marys Western Precinct Plan Traffic and Transport Report, SKM, May 2009

2.2.2 Road Network

The main collector road system through Jordan Springs consists of a loop around the centre of the Precinct, with two roads (Jordan Springs Boulevard and Greenwood Parkway) leading off in a westerly direction to The Northern Road. The western (north-south oriented) road of the loop would be a "main street" providing access to the Village Centre. Figure 2.2 shows the Framework Plan.

The easterly connection through the Regional Park to the Central Precinct has changed slightly from the Framework Plan. Central Precinct will now connect with Lakeside Parade which is located south of the Village Centre as opposed to north of the Village Centre as indicated in the Framework Plan.

The road connections to The Northern Road for the ultimate St Marys precinct have been designed by SKM consultants, and include:

- Signalised southern intersection (Jordan Springs Boulevard) near the southern boundary of the precinct.
- Left in, left out intersection some 300m north of the southern precinct boundary (Watkin Street).
- Signalised central intersection (Greenwood Parkway) some 600m north of the southern precinct boundary.
- Left in, left out intersection (Village 3C1 – Road 1) some 1km north of the southern precinct boundary.

The Northern Road is currently being upgraded from Andrews Road to Borrowdale Road. The Northern Road will be configured with separate eastbound and westbound carriageways, separated by a median. The carriageways will have two travel lanes in each direction.

The layout of the intersections of The Northern Road with Jordan Springs Boulevard and with Greenwood Parkway/ Borrowdale Way would include traffic signals with dual right turn lanes into the Jordan Springs development.

The treatments are intended to provide access for the entire Jordan Springs development and Central Precincts when connections between these precincts and the Eastern Precinct are complete.

The Northern Road upgrade will be constructed in accordance with the State Development Agreement. The Northern Road upgrade is proposed for completion by mid-2015.

2.2.3 Traffic Flows and Assessment

The SKM Western Precinct Plan Traffic and Transport report presents morning peak hour link flows at representative locations on the primary internal road network of the Jordan Springs (Western Precinct) as a whole. These were developed by dividing the area into twelve sub-areas and applying the assumptions used in the Sims Varley study (2004).

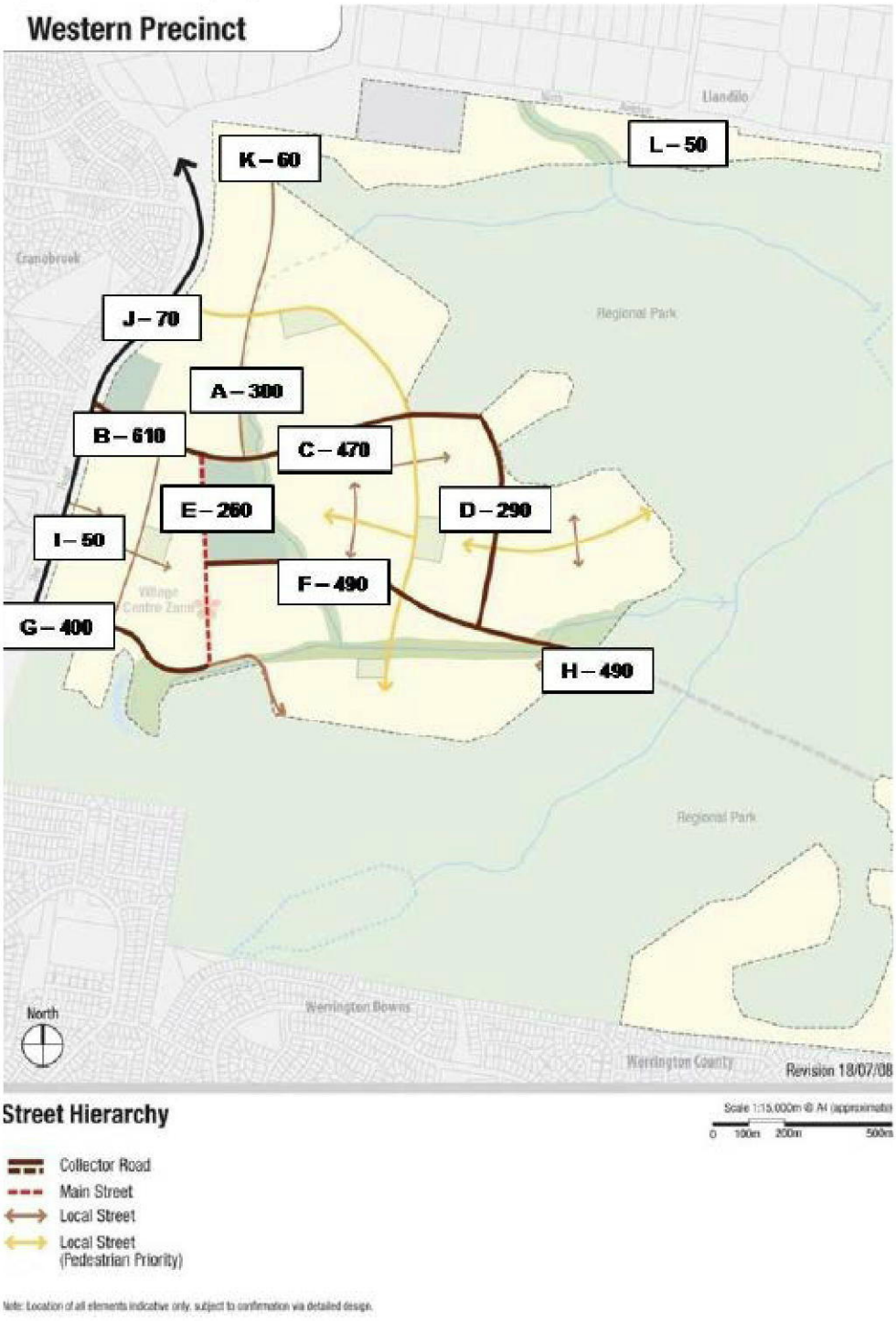
The estimated mid-block two way flows per hour are shown on Figure 2.3. Whilst the road layout for the Jordan Springs Boulevard has altered since the preparation of this plan, the traffic volume estimates are generally still applicable.

In addition, Halcrow Traffic Consultants prepared a traffic assessment for the entire Western Precinct in order to consider the traffic context of individual proposals within the Western Precinct subdivision. The traffic assessment considered the initial findings of the SKM report and refined the traffic forecasts based on the proposed collector road layout.

The traffic assessment for the completed state of the entire Western Precinct including the Village Centre as provided in previous reports is still applicable. A summary of the traffic assessment is contained in **Appendix A**.

The traffic assessment of the full Western Precinct development assumed indicative retail, community, commercial and educational land uses.

Figure 2.3: Jordan Springs Traffic Forecasts



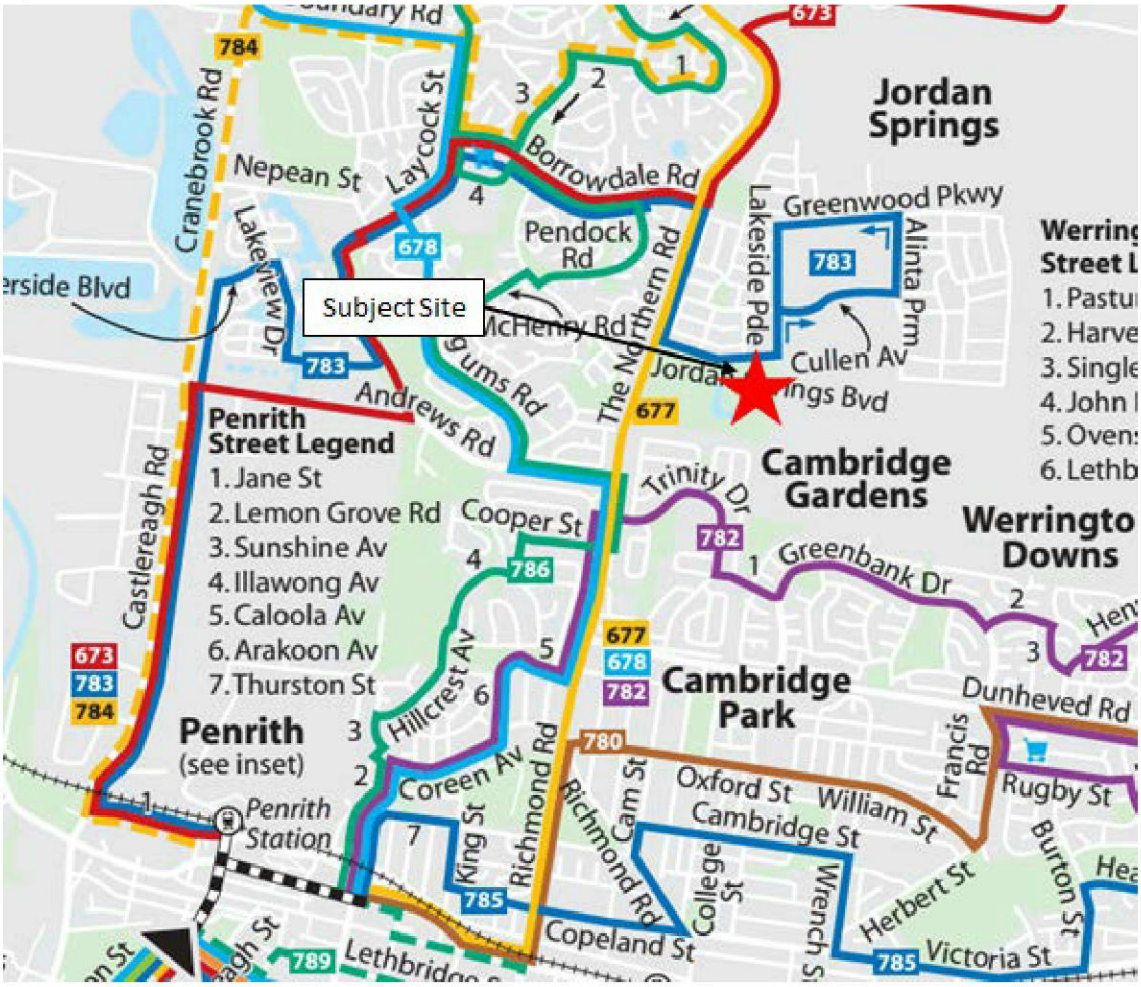
Source: St Marys Western Precinct Plan Traffic and Transport Report, SKM, May 2009

2.2.4 Public Transport

Bus route 783 (Penrith and Jordan Springs Loop) operates within walking distance to the site. Services operate on approximately half hour intervals between 6:42am and 7:44pm on a typical weekday. Additionally, bus services 673, 677 and 786 are within walking distance to the site, these provide alternate access to Penrith Railway Station. Other limited bus services on routes 673 and 677 connect the site to Windsor and Richmond.

A network route is shown in Figure 2.4.

Figure 2.4: Local Bus Network

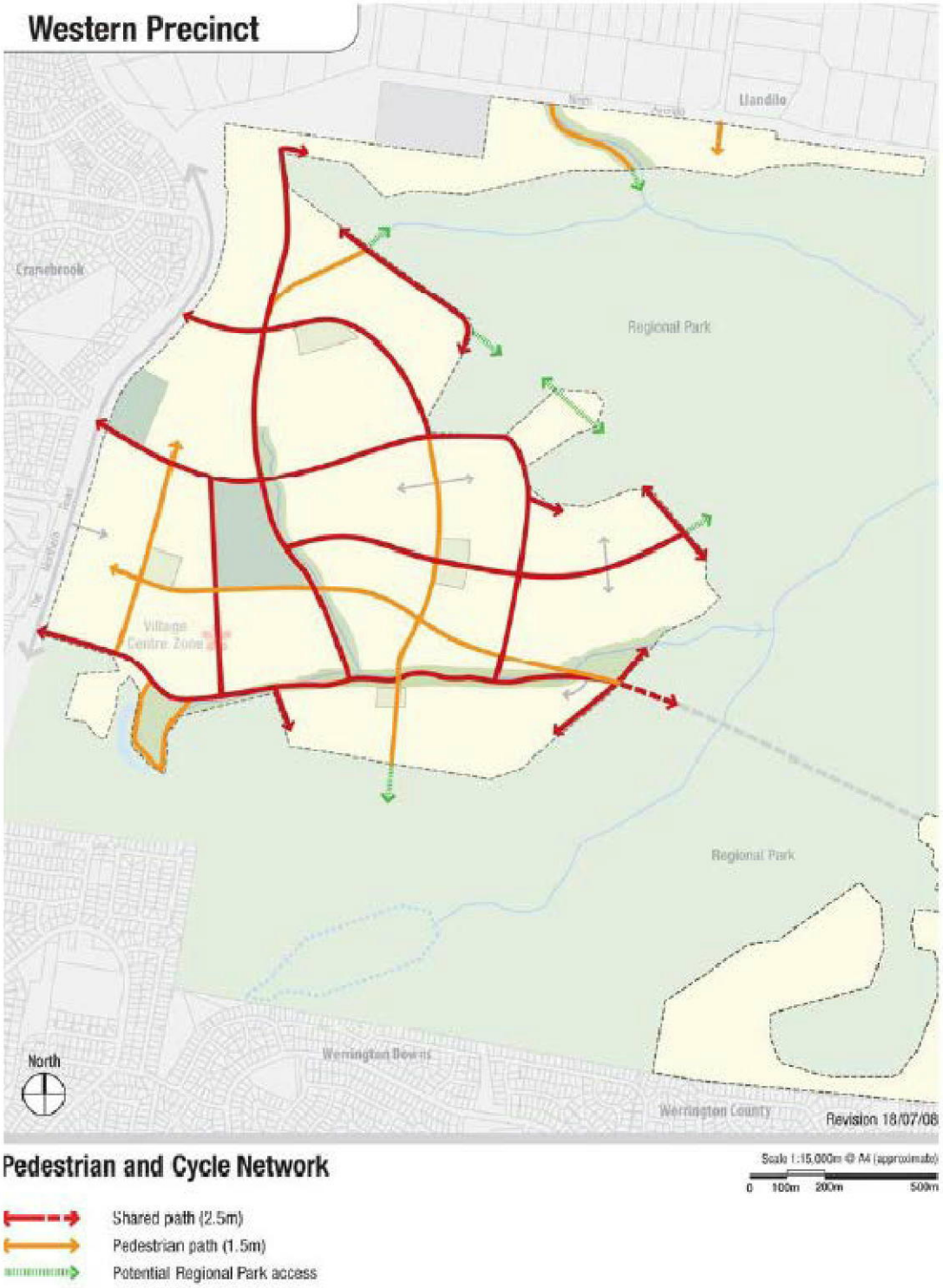


2.2.5 Bicycles and Pedestrians

Pedestrian and cyclist facilities are included in the 'Western Precinct Development Control Strategy', noting that routes would be refined as the project proceeds. Local roads would carry low traffic volumes, and would be suitable for cyclists in mixed traffic conditions. Shared cycle and pedestrian paths are proposed along the major internal roads, as well as a network of pedestrian paths.

Figure 2.5 shows the pedestrian and bicycle network as defined in the Framework Plan.

Figure 2.5: Pedestrian and Cycle Network



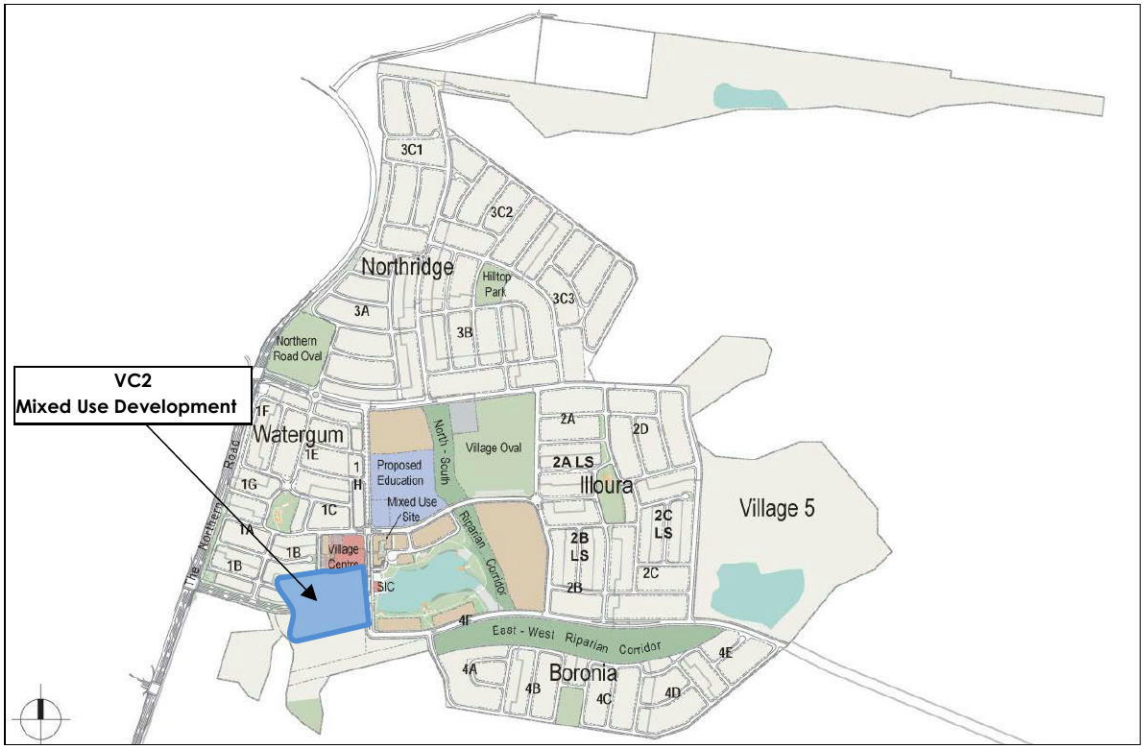
Source: St Marys Western Precinct Plan Traffic and Transport Report, SKM, May 2009

3. Context & History

3.1 Context of Proposal within Jordan Springs

The subject of this report is a mixed use development, known as Village Centre Two (VC2), proposed to be located on the southern side of Jordan Springs Boulevard within the Jordan Springs development. The context of the proposed site within Jordan Springs is shown in Figure 3.1.

Figure 3.1: Context of VC2 Mixed Use Site within Jordan Springs



Basemap Source: Lend Lease

3.2 Historical Jordan Springs Development Applications

Previous development applications have been submitted for the Jordan Springs subdivision. The documents, which describe the traffic impacts of these development applications, are listed below:

- *Western Precinct Villages 1A, 1B and 1C Traffic Assessment (Halcrow, 2009)*
- *Western Precinct Village 1D Builders Display Village Traffic Assessment (Halcrow, 2010)*
- *Western Precinct Villages 1E - 1G Traffic Assessment (Halcrow, 2010)*
- *Western Precinct Main Street Extension (Halcrow 2010)*
- *Western Precinct Village 2 Traffic Assessment (Halcrow, 2011)*
- *Western Precinct Village 3A Traffic Assessment (Halcrow, 2011)*
- *Western Precinct Village 3B Traffic Assessment (Halcrow, 2011)*
- *Jordan Springs – Relocation of the Builders Display Village Car Park Traffic Assessment (Halcrow, 2011)*

- *Jordan Springs Village 4 and Road 21 Traffic Assessment (GTA Consultants, 2012)*
- *Jordan Springs – Builders Display Village Car Park No. 2 Traffic Assessment (GTA Consultants, 2012)*
- *Jordan Springs – North Lake Access Road - Traffic Assessment (GTA Consultants, 2012)*
- *Jordan Springs Village 3C, Stage 1 – Traffic Assessment (GTA Consultants, June 2013).*
- *Jordan Springs Village 3C, Stage 2 – Traffic Assessment (GTA Consultants, June 2013).*

Village 1, Village 2, Village 3A and 3B have been approved by Council and construction is complete. The construction of their roads and infrastructure is also complete including the North Lake Access Road.

The Village Centre, a mixed use site, Village 4 and a number of roads have all been approved and are currently under construction.

4. VC2 – Mixed Use Development Proposal

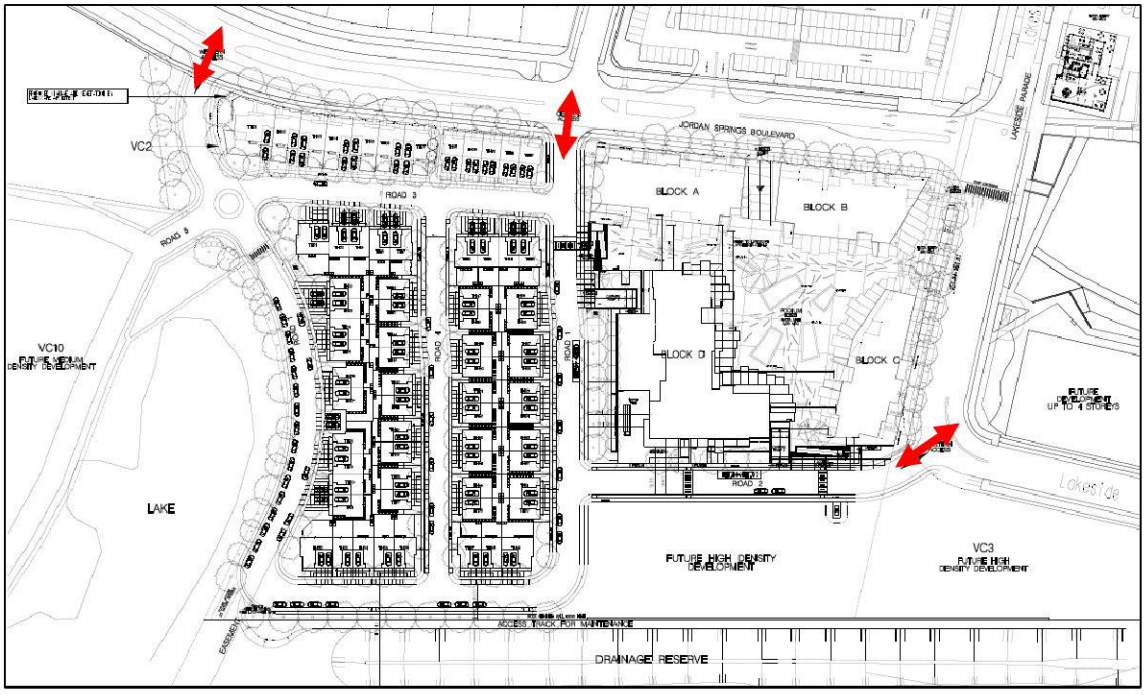
4.1 Development Schedule

The proposed Village Centre Two (VC2) mixed use development on the south side of Jordan Springs Boulevard consists of:

- 64 Townhouses (10 – three bedroom, 54 – two bedroom)
- 160 Apartments (17 - three bedroom, 20 – one bedroom, 123 – two bedroom (including 26 adaptable two bedroom))
- 5 Small Office/ Home Office (SOHO) (1 – two bedroom townhouse, 4 – three bedroom townhouses)
- 5 restaurants
- 9 retail stores
- A management office

The layout of the proposed development is shown below in Figure 4.1. The site layout plan and development schedule are provided in **Appendix B**.

Figure 4.1: VC2 Mixed Use Development - Site Layout



Background Image Source: Zoabi Tawadros Architecture

4.2 Road Network

4.2.1 The Northern Road Widening

As part of the planning for the area and following provisions of the SKM report (detailed in Section 2.2), The Northern Road is currently being updated along the Jordan Springs development frontage. As discussed previously, The Northern Road upgrades will be constructed in accordance with the State Development Agreement.

4.2.2 External Access

As part of the future planning for the area and in accordance with the provisions of the SKM report (detailed in Section 2.2.2), a number of access connections would be provided to The Northern Road, including:

- Northern – Village 3C Stage 1(left in/ left out) access (Road 1)
- Central (north) – Borrowdale Way/ Greenwood Parkway (four-way signalised)
- Central (south) – Watkin Street (left in/ left out) access
- Southern – Jordan Springs Boulevard. (three-way signalised).

The Jordan Springs connections with The Northern Road are proposed to be completed by mid-2015 along with the upgrade of The Northern Road, except for the left in/ left out intersections at Road 1 (Stage 3C1) and Watkin Street, which are to be constructed separately following The Northern Road upgrade.

The proposed layouts of The Northern Road signalised intersections are shown in **Appendix C.**

Our traffic impact assessment assesses traffic generated from the VC2 mixed use development and all other developments that may be constructed and occupied by the end of 2015.

4.2.3 Internal Access

Three accesses will be provided from the proposed mixed use development with roads internal to Jordan Springs. Two separate vehicle accesses will be provided from Jordan Springs Boulevard and a third access will be provided off Lakeside Parade. The accesses include:

- The western access (Road 1) from Jordan Springs Boulevard to the development will accommodate all turning movements. A 35m right turn bay will be constructed for the Jordan Springs Boulevard into Western access (Road 1) movement.
- The central access (Road 1) from Jordan Springs Boulevard to the development will accommodate all turning movements. A 45m right turn bay will be constructed for the Jordan Springs Boulevard into Central access (Road 1) movement.
- An eastern access (Road 2) will be provided off Lakeside Parade and is proposed to accommodate left in/ left out movements only.

The proposed accesses from Jordan Springs Boulevard and Lakeside Parade will be Give Way controlled. In saying that, the safety of the intersection sight distance from these accesses would be assessed as part of the Detailed Design Road Safety Audit.

4.3 Car Parking

The proposed mixed use development will provide a total of 667 car parking spaces, the breakdown as follows:

VC2 - Townhouses

98 off-street car spaces for the Townhouses.

The development proposal also provides on-street car parking for approximately 37 vehicles adjacent to the Townhouse development, lake and drainage reserve.

VC2 – Piazza (Building A to D)

569 off-street car spaces for the Piazza development.

- 307 spaces for residential and residential visitors in the Lower Basement car park
- 262 spaces for commercial in the Upper Basement car park.

The aforementioned car spaces include the following breakdown of accessible spaces:

- 18 accessible spaces - Lower Basement car park
- 14 accessible spaces – Upper Basement car park.

The development proposal also provides on-street car parking for 2 'Authorised Vehicles (Fire/ Police)' spaces on the eastern side of Road 1, adjacent to the Piazza development.

4.4 Loading Zones

The proposed developments propose of two on-street Loading Zones adjacent to the Piazza development, each with capacity to accommodate two light vehicles. One Loading Zone is proposed on the western side of Lakeside Parade and another Loading Zone on the northern side of Road 2.

4.5 Refuse Collection

A refuse collection area is proposed to be located at the south-west corner of the Piazza development and accessed via Road 2.

The refuse collection area includes a manoeuvring area and has been designed to cater for a 10.57m garbage truck to drive into and exit in a forward direction.

Swept paths of garbage trucks entering and exiting the refuse collection area have been included in this review and are provided in **Appendix D**.

This review indicates that the proposed refuse collection area is expected to operate satisfactorily.

4.6 Bicycle Parking

The development proposal provides bicycle parking facilities within the Piazza development basement car park for 14 bicycles within the Lower Basement car park (residents) and for 42 bicycles within the Upper Basement car parks (residential/ commercial visitors).

4.7 Pedestrian Facilities

A 1.5m wide footpath will be provided on both sides of the internal streets within the mixed use development area, except for Roads 3 and 4. The pedestrian footpaths on Roads 3 and 4 are proposed to be 1.2m wide.

A pedestrian ramp is to be provided off Jordan Springs Boulevard, midway between Lakeside Parade and the Central Access, to provide pedestrian access to the Piazza development.

A pedestrian walkway is to be provided off Jordan Springs Boulevard, adjacent to the intersection of Road 3 and Road 4, to provide pedestrian access to the Townhouses.

Mid-block pedestrian crossing facilities are to be provided at the following locations:

- Road 1 (west), south of Road 3
- Road 1 (east), south of Road 3
- Road 2, between Road 1 and Lakeside Parade (two facilities).

Pedestrian pram ramps are provided along the footpaths within the streets of the mixed use development.

4.8 Cross Sectional Layout

The majority of roads within the mixed use development are proposed to be minor local streets.

The St. Marys Western Precinct Plan indicates the following typical geometric characteristics for minor local streets:

- 15.6 m reserve
- 8.0 m carriageways
- 1.5 wide footpaths on both sides of the road.

All local streets within the mixed use development have been designed as per the St Marys Western Precinct Plan except for Roads 3 and 4.

It is noted that Road 3 and Road 4 within the development have 7.0 m carriageways and the footpaths are 1.2m wide.

5. Car Parking

5.1 Parking Requirements

The on-site parking provision requirements for various land uses are set out in the Development Control Strategy (DCS) in the Western Precinct Plan (WPP) for residential land uses and the Penrith City Council's Development Control Plan (DCP) 2010, Part C10 Transport, Access and Parking for all other land uses.

The DCS prevails over the DCP for residential land uses and applies to the development site, an overall rate of 1 to 2 car spaces is required for attached dwellings. There are no requirements for visitor parking under the DCS.

Taking the rates in the DCS into consideration, an acceptable rate of 1 car space per two bedroom townhouses and 2 car spaces per three bedroom townhouses could be applied to the development.

A review of the car parking rates for the proposed mixed use development is summarised in Table 5.1.

Table 5.1: DCP or DCS On-street Car Parking Requirements

Section	Use	DCP or DCS Parking Rate	DCP or DCS Off-Street Parking Requirement
VC2 – Townhouse	2 Bedroom Townhouses (54)	1 space per dwelling	54 car spaces
	3 Bedroom Townhouses (10)	2 spaces per dwelling	20 car spaces
	2 bedroom SOHO (1)	2 spaces per unit	2 car spaces
	3 bedroom SOHO (4)	2 spaces per unit	8 car spaces
	Sub-Total		**84 car spaces**
VC2 – Piazza (Building A to D)	1 Bedroom Apartment (20)	1 space per unit	20 car spaces
	2 Bedroom Apartment (123)	1.5 spaces per unit	185 car spaces [2]
	3 Bedroom Apartment (17)	2 space per unit	34 car spaces
	Visitor Parking	1 space per 5 dwellings	32 car spaces
	Restaurant (1,305m^2 of seating area [1])	Greater 1 space per 5.5m^2 of seating area or 1 per 4 seats + 1 space per employee	219 car spaces
	Retail (1,039m^2 GFA)	1 space per 25m^2	42 car spaces
	Office (75m^2)	1 space per 40m^2	2 car spaces
	Sub-Total		**534 car spaces**
Total			**618 car spaces**

[1] Seating area including both internal and external and excluding walking aisles, entrance to restaurant and 'back of restaurant' areas. These seating areas provided are indicative and may vary depending on owner requirements.
[2] Including 32 accessible car parking spaces + 16 shared spaces.

Application of these parking rates results in the requirement of 618 off-street car spaces or some 84 car spaces for the Townhouses and 534 car spaces for the Piazza development (273 spaces for residential, residential visitors and office, 261 for commercial).

5.2 Adequacy of Parking Supply

Based on the above and the proposed provision of 569 off-street car parking spaces for the Piazza development and 98 off-street car spaces for the Townhouse development, there is sufficient car parking supply for both developments.

Furthermore, there will be an additional 37 on-street car spaces and 2 'Authorised Vehicles' on-street car spaces adjacent to the Townhouse development (including along the park and drainage reserve frontages) and Piazza development, respectively.

It is noted that the car parking provisions for the retail and restaurants components are based on the expectation that customers primarily drive to these uses. Due to the nature of the Jordan Springs development, it is expected that a proportion of customers would walk to the retail and restaurant uses which would reduce demand for off-street car parking.

In addition, the hours of operation of the retail and restaurant facilities are most likely to be independent of each other. The hours of operation of the retail premises are likely to be such that they close at 5:30pm and the restaurant premises are likely to commence operating around or slightly after this time. As such, parking spaces for both uses are likely to be shared, resulting in an increased parking supply for the overall development.

Notwithstanding the aforementioned retail and restaurant operational points, the proposed provision of car parking for the retail, office, restaurant, and residential parking components would be more than adequate for the proposed development.

5.3 Car Parking Layout Review

The car park layouts have been reviewed against the requirements of the Australian Standard for Off Street Car Parking (AS/NZS2890.1:2004). This assessment included a review of the following:

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

The proposed Upper Basement car park within the Piazza development (retail/ restaurant) has been designed with 2.7m wide and 5.4m long car parking spaces and a minimum aisle width of 6.2m. The proposed Lower Basement car park includes minimum 2.4m wide and 5.4m long car parking spaces and 5.8m wide aisles.

The basement car parking dimensions, aisle widths, height clearances and ramp grades have generally been designed in accordance with AS2890.1:2004. Swept paths of a 99th percentile vehicle entering and exiting the car park have been included in this review and are provided in **Appendix D**.

Accessible spaces are 2.4m wide with an adjacent 2.4m wide shared zone. A centrally located bollard will need to be provided within the shared zone.

This review indicates that the proposed car parking layout is expected to operate satisfactorily.

6. Traffic and Transport Assessment – VC2

6.1 Jordan Springs Traffic Generation

A traffic analysis has been undertaken to ensure that the key intersections operate satisfactorily after completion of the VC2 mixed use development and all other approved (or pending approval) developments within Jordan Springs. The following approved developments were assessed in conjunction with the development (approximate numbers only):

- Village One – 249 Residential Lots and 18 Display Homes
- Village Two – 405 Residential Lots and 22 Display Homes
- Village Three A & B – 277 Residential Lots
- Village Three C, Stage 1 – 210 Residential Lots
- Village Three C, Stage 2 – 166 Residential Lots
- Village Four – 291 Residential Lots
- Road 21 (Lakeside Parade) – 9 Residential Lots
- Road 21 (Lakeside Parade) – 20 Apartments
- Mixed Use Site (North Lake Access Road) – 100 Apartments
- Mixed Use Site (North Lake Access Road) – Retail 400m^2
- Village Centre – Retail 4,000m^2
- Village Centre – Medical Centre 2 Practitioners
- Village Centre – Child Care Centre – 120 Places
- Village Centre – Residential Lots (6,8,9) – 36 Residential Lots)
- Village Centre – 28 Apartments.

6.2 Mixed Use Site – Trip Generation

Traffic generation estimates for the proposed mixed use development have been sourced from the *RMS Guide to Traffic Generating Developments* (2002).

The trip generation rates for the proposal are summarised in Table 6.1 and Table 6.2 for the weekday and Saturday peak hours.

Table 6.1: Estimated Development Traffic Generation – Weekday Peak Hour

	Use	Design Generation Rate (Peak Hour)	Traffic Generation Estimate	
			AM Peak Hour	PM Peak Hour
VC2 - Townhouses	2 Bedroom Townhouses (54)	0.4 – 0.5 per dwelling (0.5)	27	27
	3 Bedroom Townhouses (10)	0.5 – 0.65 per dwelling (0.65)	7	7
	2 bedroom SOHO (1)	0.4 – 0.5 per dwelling (0.5)	1	1
	3 bedroom SOHO (4)	0.5 – 0.65 per dwelling (0.65)	3	3
VC2 -Piazza	1 Bedroom Apartment (20)	0.4 – 0.5 per dwelling (0.4)	8	8
	2 Bedroom Apartment (123)	0.4 – 0.5 per dwelling (0.5)	62	62
	3 Bedroom Apartment (17)	0.5 – 0.65 per dwelling (0.65)	11	11
	Restaurant (1,537m^2 GFA)	5 per 100m^2	0	77
	Retail (1,039m^2 GFA)	6 per 100m^2	0	62
	Office (75m^2)	1.6 per 100m^2	1	1
		Total	120 vehicle movements/ hour	259 vehicle movements/ hour

Table 6.1 shows that the proposed development is anticipated to generate 120 and 259 vehicle movements (two-way) during the weekday AM and PM peak hour respectively.

The total weekday morning peak movements are less than the afternoon peak movements because retail and restaurant movements are not included within the morning peak period.

Table 6.2: Estimated Development Traffic Generation – Saturday Peak Hour

	Use	Design Generation Rate (Peak Hour)	Traffic Generation Estimate (Peak Hour)
VC2 - Townhouses	2 Bedroom Townhouses (54)	0.45 per dwelling	24
	3 Bedroom Townhouses (10)	0.60 per dwelling	6
	2 bedroom SOHO (1)	0.45 per dwelling	1
	3 bedroom SOHO (4)	0.60 per dwelling	2
VC2 -Piazza	1 Bedroom Apartment (20)	0.35 per dwelling	7
	2 Bedroom Apartment (123)	0.45 per dwelling	55
	3 Bedroom Apartment (17)	0.60 per dwelling	10
	Restaurant (1,537m^2 GFA)	7.5 per 100m^2	115
	Retail (1,039m^2 GFA)	7.5 per 100m^2	78
	Office (75m^2)	-	0
		Total	298 vehicle movements/ hour

Table 6.2 shows that the proposed development is anticipated to generate 298 vehicle movements (two-way) during the Saturday peak hour.

6.3 Trip Forecasting

The trip rate calculations for all developments within the Jordan Springs that may be constructed and occupied by the end of Year 2015 are shown in Table 6.3.

Table 6.3: Internal Jordan Springs Trip Forecasting.

Development	Lot Type	Number/Gross Leasable Floor Area	AM/PM Trip Rate	AM Peak Movements	PM Peak Movements	Saturday Trip Rate	Saturday Movements
Village 1A to 1C	Residential lots	109	0.75	82	82	0.68	74
Village 1D	Display Homes	18	1	18	18	2.66	48
Village 1E to 1G	Residential lots	140	0.75	105	105	0.68	95
Village 2A	Residential lots	75		56	56		51
	Display Homes	22	1	22	22	2.66	59
Village 2B	Residential lots	70	0.75	53	53	0.68	48
	Living Streets lots	24		18	18		16
Village 2C	Residential lots	111		83	83		75
	Living Streets lots	23		17	17		16
Village 2D	Residential lots	102		77	77		69
Village 3A	Residential lots	139		104	104		95
Village 3B	Residential lots	138		104	104		94
Village 3C1	Residential lots	210		158	158		143
Village 3C2	Residential lots	166		125	125		113
Village 4	Residential lots	291		218	218		199
Road 21 (Lakeside Parade)	Residential lots	9		7	7		6
	Apartments	20	0.50	10	10	0.45	9
Mixed Use Site	Apartments	100		50	50		45
	Retail (Retail/Commercial)	400	6 trips/100m^2	0	24	7.5 trips /100m^2	30
Village Centre	Retail	4,000		0	240		300
	Medical Centre	2 Practitioners	5.8 movements /practitioner	12	12	5.8 movements /practitioner	12
	Child Care Centre	120 Places	0.7 movements / child	84	84	-	0
	Residential lots (6, 8,9)	36	0.75	27	27	0.68	24
	Apartment (7)	28	0.50	14	14	0.45	13
VC2 Townhouses (Jordan Springs Boulevard)	2 Bedroom Townhouses	54	0.50	27	27	0.45	24
	3 Bedroom Townhouses	10	0.65	7	7	0.60	6
	2 bedroom SOHO	1	0.50	1	1	0.45	1
	3 bedroom SOHO	4	0.65	3	3	0.60	3

Development	Lot Type	Number/Gross Leasable Floor Area	AM/PM Trip Rate	AM Peak Movements	PM Peak Movements	Saturday Trip Rate	Saturday Movements
VC2 Piazza (Jordan Springs Boulevard)	1 Bedroom Apartment	20	0.4	8	8	0.35	7
	2 Bedroom Apartment	123	0.5	62	62	0.45	55
	3 Bedroom Apartment	17	0.65	11	11	0.60	10
	Restaurant	1,537	5 trips/100m^2	0	77	7.5 trips /100m^2	115
	Retail	1,039	6 trips/100m^2	0	62	7.5 trips /100m^2	78
	Office	75	1.6 trips/100m^2	1	1	-	0
Total				**1564**	**1967**		**1933**

The total traffic generated from all of the approved developments within Jordan Springs is estimated to be:

- 1,564 vehicle movements per hour during the weekday morning peak
- 1,967 vehicle movements per hour during the weekday afternoon peak
- 1,933 vehicle movements per hour during the weekend peak hour.

In reality, and as recognised in the SKM report, 25% of the residential trips and 50% of the retail trips will be contained within Jordan Springs. No containment reduction was provided for office trips, therefore 25% has been adopted for this assessment.

Based on the above, the total traffic generated from the approved developments within Jordan Springs that would access The Northern Road is estimated to be:

- 1,160 vehicle movements per hour during the weekday morning peak
- 1,369 vehicle movements per hour during the weekday afternoon peak
- 1,328 vehicle movements per hour during the weekend peak hour.

6.4 Intersection Operation

The operation of the following intersections was assessed using the SIDRA intersection modelling program:

- The Northern Road and Jordan Springs Boulevard Intersection
- Jordan Springs Boulevard and Mixed Use Western Access (Road 1)
- Jordan Springs Boulevard and Mixed Use Central Access (Road 1)
- Jordan Springs Boulevard and Lakeside Parade.

Background traffic volumes were based on traffic surveys collected on Saturday 30 April 2011 and Monday 2 May 2011. The traffic surveys indicate the peak period occurred at the following times:

- 7:45 to 8:45am on a weekday
- 4:30 to 5:30pm on a weekday
- midday to 1pm on a Saturday.

An annual traffic growth rate of 2% and 4% has been applied to the surveyed local roads and The Northern Road traffic volumes respectively, to determine the anticipated background traffic in 2015.

Results of the SIDRA analysis at completion of the proposed development are shown below in Table 6.4.

Table 6.4: Traffic Analysis Results – AM, PM and Saturday Peak – Including VC2

Intersection	Level of Service	Vehicle Delay (seconds)*	Level of Service	Vehicle Delay (seconds)*	Level of Service	Vehicle Delay (seconds)*
	Thursday AM		Thursday PM		Saturday Midday	
The Northern Road/ Jordan Springs Boulevard	B	22	B	25	B	24
Jordan Springs Boulevard/ Road 1 Western Access	A	8	A	8	A	8
Jordan Springs Boulevard/ Road 1 Central Access	A	10	A	12	A	12
Jordan Springs Boulevard/ Lakeside Parade	A	8	A	9	A	8

* Reported delay is the average delay for signalised intersections and highest vehicle delay for roundabouts / priority intersections.

The results indicate that the intersections would operate satisfactorily and accommodate the estimated traffic flows from all approved (and pending approval) developments within Jordan Springs, in conjunction with the estimated VC2 mixed use development traffic.

6.5 Intersection Controls

The intersections within the mixed use development are proposed to be all tee intersections, with the exception of the Road 5/ Road 1/ Road 3 four-way roundabout.

A review of intersection sight distances would be undertaken at the detailed design stage to ensure sufficient sight distances were available for the design vehicle speeds, and to identify any locations which may require "Stop" control rather than "Give Way" control.

6.6 Traffic Management

The proposed layout of the roads within the subdivision comprises a permeable modified right angle grid street system, which would promote connectivity and ease of movement for bicycles and pedestrians, while limiting the potential for through traffic intrusion. This is consistent with the subdivision design principles set out in the Development Control Strategy.

The layout of the road system within the mixed use development would tend to discourage high vehicle speeds, as road lengths are limited and pedestrian crossing facilities provided, such that there would be insufficient road length for drivers to build up inappropriate speeds.

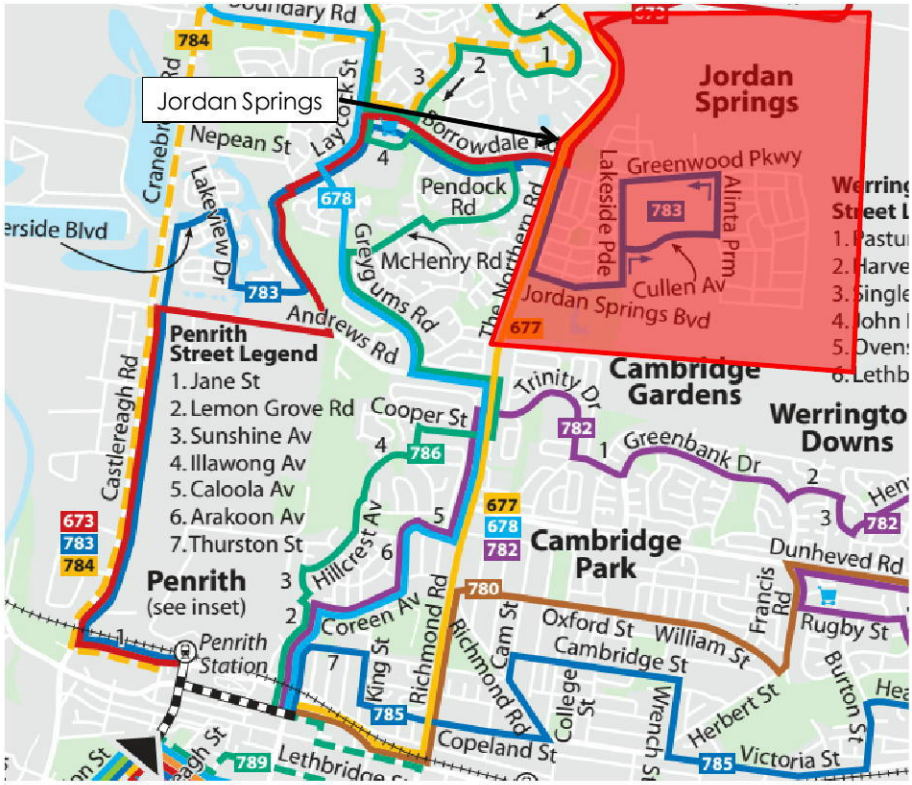
6.7 Public Transport

As indicated previously, transport management strategies for the site have concluded that bus services would be the most effective form of public transport for the site.

As of current, the route 783 bus is operating within Jordan Springs. There are stops located along Jordan Springs Boulevard in the vicinity of the development site.

This service operates between Jordan Springs and Penrith Railway Station. The local operating bus network is shown in Figure 6.1.

Figure 6.1: Existing Bus Network



Source: Busways Region 1 Bus Network Map Effective 6 October 2013

7. Summary and Conclusions

- A development application is to be lodged with Penrith City Council for a mixed use development on the south side of Jordan Springs Boulevard within the Jordan Springs development. The mixed use subdivision will consist of the following land uses:
  - 64 Townhouses (10 – three bedroom, 54 – two bedroom)
  - 160 Apartments (17 - three bedroom, 20 – one bedroom, 123 – two bedroom (including 26 adaptable two bedroom))
  - 5 Small Office/ Home Office (SOHO) (1 – two bedroom townhouse, 4 – three bedroom townhouses)
  - A management office, 9 retail and 5 restaurant land uses.
- The proposed development generates a Blacktown DCP/ Western Precinct Plan parking requirement of 618 spaces.
- The proposed mixed use development will provide a total of 667 car parking spaces, the breakdown of the car parking spaces is as follows:
  - 98 off-street car spaces for the Townhouses
  - 569 off-street car spaces for the Piazza development (Building A to D)
    - 307 spaces for residential and residential visitors in the Lower Basement car park
    - 262 spaces for commercial in the Upper Basement car park
    - The aforementioned parking spaces will include 32 accessible spaces.
- The proposed development is considered appropriate and accords with the parking rates outlined within the Blacktown DCP/ Western Precinct Plan.
- The development will comprise 56 bicycle spaces within the Piazza development basement car park which is satisfactory for a development of this nature.
- The forecasted traffic volume for the mixed use development during the weekday AM and PM peak hour is estimated to be 120 movements per hour and 259 movements per hour respectively whilst the Saturday peak hour traffic volume is estimated to be 298 movements per hour.
- The combined forecasted traffic volume for all of the approved Jordan Springs developments, including the VC2 Mixed Use development, during the weekday AM and PM peak hour is estimated to be 1,564 movements per hour and 1,967 movements per hour respectively, whilst the Saturday peak hour traffic volume is estimated to be 1,933 movements per hour.
- The combined forecasted traffic volume for all of the approved Jordan Springs developments, including the VC2 Mixed Use development, which is forecasted to travel to/ from The Northern Road during the weekday AM and PM peak hour is estimated to be 1,160 movements per hour and 1,369 movements per hour respectively, whilst the Saturday peak hour traffic volume is estimated to be 1,328 movements per hour.
- Traffic modelling indicates that the proposed signal arrangement at the intersection of The Northern Road and Jordan Springs Boulevard would operate satisfactorily and accommodate the estimated traffic flow for all approved (and pending approval) developments within Jordan Springs, in conjunction with the estimated VC2 mixed use development traffic.

- Traffic modelling indicates that the Western Access and Central Access with Jordan Springs Boulevard and Eastern Access with Lakeside Parade would operate well within capacity.
- The intersections within the mixed use development are proposed to be all tee intersections with the exception of the Road 1/ Road 3 and Road 5 roundabout.

Appendix A

Western Precinct Traffic Forecasts

In order to assess the implications of the proposed subdivisions within the context of the Western Precinct, forecasts of evening peak hour traffic for the internal collector road system were developed for full development of the Western Precinct, based on the current dwelling yield plan and the current internal road system layout.

Land Use Mix for Western Precinct

Since the production of the SKM Precinct Plan, the land use mix in the Western Precinct has changed.

The SKM study assumed the following land use mix for the Western Precinct as a whole:

- 2,446 residential dwellings
- 3.4ha retail
- 4.9ha education.

The current land use mix for the Western Precinct as a whole includes:

- 2,490 residential dwellings
- 7,500m^2 retail GLFA
- 2,000 m^2 commercial GLFA
- 4.9ha education.

This assessment examines commercial land use as well as residential, retail and educational land use which were not previously examined in detail as part of the SKM Western Precinct Plan.

The SKM report also relied on a collector road layout which favoured movements to the northern collector road from the central precinct. A revised collector road layout directly connects the Central Precinct with Jordan Springs Boulevard.

Therefore the values calculated in this report vary from those contained in the Precinct Plan. The variance largely is reflected in higher traffic volumes along Jordan Springs Boulevard.

Traffic Assessment

Western Precinct was divided into Villages 1 to 6 according to the dwelling yield plan, with additional zones for retail/commercial and education/community facilities, and the following assumptions used for evening peak hour traffic conditions:

Land Use

- Western Precinct 2,446 dwellings
- Village Centre 7,500m^2 GLFA retail
- Village Centre 2,000 m^2 commercial.

Traffic Generation

- Residential 0.75 trips per dwelling in evening peak
- Retail 6 trips per 100m^2 GLFA in evening peak
- Commercial 2 trips per 100m^2 GLFA evening peak.

Traffic Distribution

- Residential 75% inbound in evening peak
- 25% of retail trips are pass-by traffic
- 50% of retail trips are generated from within the Western Precinct
- 25% of residential trips are contained within the Western Precinct (to/from retail, education and community facilities)

- Directional distribution on the external road system based on the assumptions used by SKM regarding the design of the access intersections: 70% to/from the south, 20% to/from the north and 10% to/from the west.

It is expected that some traffic generated by the Central Precinct would use Western Precinct roads to access the external road system. Detailed analysis of the Central Precinct is beyond the scope of this study. The SKM Traffic and Transport Plan report (2009) indicates that the Central Precinct is estimated to generate some 983 vehicle movements per hour, and for the purpose of allowing for Central Precinct through traffic within Western Precinct, it was assumed that 50 per cent of the Central Precinct traffic would travel through the Western Precinct. This traffic was assumed to use both the southern and northern collector roads to travel between The Northern Road and the Central Precinct.

The evening peak hour was chosen as the retail activity is expected to be higher during the evening peak than the morning peak. This will result in a more robust assessment of future traffic volumes and their implications on road and intersection designs.

The results of the assessment found that the general layout of the intersections reflect those reported in the SKM report.

Appendix B

VC2 Mixed Use Site

WESTERN ACCESS

PROPOSED SIGNAGE AND VEGETATION BY LANDSCAPE ARCHITECT

VC2

CENTRAL ACCESS

JORDAN SPRINGS BOULEVARD

ROAD 3

ROAD 5

ROAD 1

ROAD 4

ROAD 1

ROAD 2

BLOCK A

BLOCK B

BLOCK C

BLOCK D

RAMP 5%

X RL38.00 ACCESS

X RL38.30 ACCESS

DISABLED RAMP

STEPS

CARPARK RAMP 1

CARPARK RAMP 2

X RL38.70

X RL38.05

X RL38.60

X RL37.60

X RL37.50

ACCESS

DISABLED RAMP

REFER TO LANDSCAPE ARCHITECTS DETAILS

PODIUM RL38.00 PIAZZA MAIN 2,230 MSQ

PIAZZA ENTRY 336 MSQ

TEMP. CROSSING

LAKESIDE PARADE

Town Square

PIAZZA ENTRY 330 MSQ

Lakeside

FUTURE DEVELOPMENT UP TO 4 STOREYS

EASTERN ACCESS

Lakeside

VC10
FUTURE MEDIUM DENSITY DEVELOPMENT

LAKE

FUTURE HIGH DENSITY DEVELOPMENT

VC3
FUTURE HIGH DENSITY DEVELOPMENT

TH01 TH02 TH03 TH04 TH05 TH06 TH07 TH08 TH09 TH10 TH11 TH12

TH13 TH14 TH15 TH16 TH17 TH18 TH19 TH20 TH21

TH22 TH23 TH24 TH25 TH26 TH27 TH28 TH29 TH30 TH31 TH32 TH33 TH34 TH35 TH36

TH37 TH38 TH39 TH40 TH41 TH42 TH43 TH44 TH45 TH46 TH47 TH48 TH49 TH50 TH51 TH52 TH53 TH54 TH55 TH56 TH57 TH58 TH59

TH60 TH61 TH62 TH63 TH64 TH65 TH66 TH67 TH68 TH69

SERVICE VEHICLE ACCESS WITH LOCKABLE GATE

ROCK RETAINING WALL 900mm HIGH

ACCESS TRACK FOR MAINTENANCE

DRAINAGE RESERVE

EASEMENT TO SYDNEY WATER

NATURE RESERVE

1) CONTRACTOR TO VERIFY AND CONFIRM ALL DIMENSIONS AND BASE WORK ON SITE PRIOR TO COMMENCING WORKS.
2)WRITTEN DIMENSIONS TO TAKE PRECEDENCE OVER SCALED DIMENSIONS.
3)ALL ANOMALIES TO BE REFERRED TO THE DESIGNER FOR CLARIFICATION BEFORE COMMENCEMENT OF WORKS.
4)DRAWINGS TO BE READ IN CONJUNCTION WITH ALL APPLICABLE CONSULTANT DRAWINGS AND SPECIFICATIONS.

REVISION	AMENDMENTS	DATE
F	FOR DA REV 1	3 FEB 2014
E	FOR DA	23 FEB 2014

CID GROUP

KEY

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Nom. Architect: Ramy Tawadros #9209

NORTH

PROJECT
MIXED USE DEVELOPMENT
JORDAN SPRINGS BLVD (SOUTHERN ENTRY)

DRAWING	DRAWING No.	DRAWN	CHECKED
SITE PLAN	A 1000	PS	RT, JR, PS

ISSUE	DATE	SCALE
FOR DA	15 JUL 2013	1:500 @ A1

Jordan Springs VC2 (13040)

TOWN HOUSE SCHEDULE

Date: 14.11.13

Town House Jordan Springs VC2

Key:

2 Bed

3 Bed

GENERAL									CAR PARKING		
UNIT No.	UNIT TYPE	SITE AREA m2	PRIVATE OPEN SPACE m2	GROUND FLOOR PLAN m2	FIRST FLOOR PLAN m2	SECOND FLOOR PLAN m2	OVERALL FLOOR PLAN m2	BEDS	GARAGE	TANDEM	STREET
1	Townhouse	269.58	68.89	78.00	39.00		117.00	3+Study	1	1	
2	Townhouse	147.86	31.00	57.00	54.00		111.00	3	1	1	
3	Townhouse	146.93	31.00	57.00	39.00		96.00	3+Study	1	1	
4	Townhouse	144.55	31.00	57.00	54.00		111.00	3	1	1	
5	Townhouse	139.55	31.00	57.00	39.00		96.00	3+Study	1	1	
6	Townhouse	136.60	28.59	57.00	54.00		111.00	3	1	1	
7	Townhouse	138.80	29.13	57.00	39.00		96.00	3+Study	1	1	
8	SOHO	124.83	13.45	37.18	59.22		96.40	2	2		
9	SOHO	113.21	17.82	35.53	69.13	42.00	146.66	3	2		
10	SOHO	111.21	17.82	35.53	69.13	42.00	146.66	3	2		
11	SOHO	111.39	17.82	35.53	69.13	42.00	146.66	3	2		
12	SOHO	109.56	17.82	39.31	69.13	42.00	150.44	3	2		
13	Townhouse	160.27	42.42	48.26	45.34		93.60	2+Study	1	1	
14	Townhouse	157.22	41.76	44.94	45.34		90.28	2+Study	1	1	
15	Townhouse	160.14	41.76	44.94	45.34		90.28	2+Study	1	1	
16	Townhouse	169.41	42.42	48.26	45.34		93.60	2+Study	1	1	
17	Townhouse	154.66	35.28	48.26	45.34		93.60	2+Study	1	1	
18	Townhouse	151.70	35.35	44.94	45.34		90.28	2+Study	1	1	
19	Townhouse	154.73	41.58	44.94	45.34		90.28	2+Study	1	1	
20	Townhouse	160.19	42.91	44.94	45.34		90.28	2+Study	1	1	
21	Townhouse	233.22	65.34	69.15	70.44		139.59	3	2		
22	Townhouse	191.98	24.21	44.94	45.34		90.28	2+Study	1	1	
23	Townhouse	145.29	20.88	44.94	45.34		90.28	2+Study	1	1	
24	Townhouse	131.60	20.88	44.94	45.34		90.28	2+Study	1		1
25	Townhouse	140.82	24.21	44.94	45.34		90.28	2+Study	1		1
26	Townhouse	148.50	20.85	48.26	45.34		93.60	2+Study	1		1
27	Townhouse	154.54	54.72	48.26	45.34		93.60	2+Study	1		1
28	Townhouse	155.69	53.66	48.26	45.34		93.60	2+Study	1		1
29	Townhouse	126.10	20.88	44.94	45.34		90.28	2+Study	1		1
30	Townhouse	138.52	20.88	44.94	45.34		90.28	2+Study	1	1	
31	Townhouse	198.59	27.13	48.26	45.34		93.60	2+Study	1	1	
							0.00				
32	Townhouse	198.22	55.61	69.15	70.44		139.59	3+Study	2		
33	Townhouse	134.68	41.20	44.94	45.34		90.28	2+Study	1		1
34	Townhouse	134.68	41.20	44.94	45.34		90.28	2+Study	1		1
35	Townhouse	148.60	55.12	44.94	45.34		90.28	2+Study	1		1
36	Townhouse	154.55	56.00	48.26	45.34		93.60	2+Study	1		1
37	Townhouse	143.38	25.71	44.94	45.34		90.28	2+Study	1		1
38	Townhouse	135.01	24.21	44.94	45.34		90.28	2+Study	1		1
39	Townhouse	135.01	24.21	44.94	45.34		90.28	2+Study	1		1
40	Townhouse	134.71	21.21	44.94	45.34		90.28	2+Study	1		1
41	Townhouse	132.59	24.21	44.94	45.34		90.28	2+Study	1		1
42	Townhouse	132.45	24.21	44.94	45.34		90.28	2+Study	1		1
43	Townhouse	137.63	21.21	44.94	45.34		90.28	2+Study	1		1
44	Townhouse	134.63	24.21	44.94	45.34		90.28	2+Study	1		1
45	Townhouse	132.65	24.21	44.94	45.34		90.28	2+Study	1		1
46	Townhouse	135.98	25.71	44.94	45.34		90.28	2+Study	1		1
47	Townhouse	135.01	24..21	44.94	45.34		90.28	2+Study	1		1
48	Townhouse	134.36	24..21	44.94	45.34		90.28	2+Study	1		1
49	Townhouse	139.65	24..21	44.94	45.34		90.28	2+Study	1		1
50	Townhouse	135.98	24..21	44.94	45.34		90.28	2+Study	1		1
51	Townhouse	135.01	24..21	44.94	45.34		90.28	2+Study	1		1
52	Townhouse	135.01	24..21	44.94	45.34		90.28	2+Study	1		1

Jordan Springs VC2 (13040)

UNIT No.	UNIT TYPE	SITE AREA m2	PRIVATE OPEN SPACE m2	GROUND FLOOR PLAN m2	FIRST FLOOR PLAN m2	SECOND FLOOR PLAN m2	OVERALL FLOOR PLAN m2	BEDS	GARAGE	TANDEM	STREET
53	Townhouse	135.01	24..21	44.94	45.34		90.28	2+Study	1		1
54	Townhouse	135.01	24..21	44.94	45.34		90.28	2+Study	1		1
55	Townhouse	135.01	24..21	44.94	45.34		90.28	2+Study	1		1
56	Townhouse	135.01	24..21	44.94	45.34		90.28	2+Study	1		1
57	Townhouse	137.02	38.46	48.26	45.34		93.60	2	1		1
58	Townhouse	131.33	37.86	44.94	45.34		90.28	2	1		1
59	Townhouse	201.66	59.46	69.15	70.44		139.59	3+Study	2		
60	Townhouse	132.59	24..21	44.94	45.34		90.28	2+Study	1		1
61	Townhouse	132.59	24..21	44.94	45.34		90.28	2+Study	1		1
62	Townhouse	132.59	24..21	44.94	45.34		90.28	2+Study	1		1
63	Townhouse	132.59	24..21	44.94	45.34		90.28	2+Study	1		1
64	Townhouse	132.59	24..21	44.94	45.34		90.28	2+Study	1		1
65	Townhouse	132.59	24..21	44.94	45.34		90.28	2+Study	1		1
66	Townhouse	132.59	24..21	44.94	45.34		90.28	2+Study	1		1
67	Townhouse	132.59	24..21	44.94	45.34		90.28	2+Study	1		1
68	Townhouse	138.90	24..21	44.94	45.34		90.28	2+Study	1		1
69	Townhouse	134.84	24..21	44.94	45.34		90.28	2+Study	1		1
		10,011.54	1,636.47	3,267.17	3,313.42	168.00	6,748.59		77	19	42

APARTMENT SCHEDULE

High Rise Jordan Springs VC2

Date: 07.03.14

Key: 1 Bed / 2 Bed / 3 Bed

GENERAL INFORMATION					APARTMENT AREAS			SEPP 65 INFORMATION					STORAGE			CARPARKING		
Building	LEVEL	UNIT No.	UNIT TYPE	BEDS	UNIT AREA m2	BALCONY m2	TOTAL	South Single asp.	Cross Vent'n	< 8m Kit. From a Win.	Natural Vent'n Kit.	Min. Req. Sunlight. Hrs	STORAGE VOLUME m3			CAR SPACE		
													In Unit	Basement	Total	Numbers	Location	Type
A1	1	A1-101	Apartment	2+Study	103	63	166		●	⊙	⊙	2	8	0	8	1.5	CP2	
23 A		A1-102	Apartment	2	80	40	120			⊙		6	15	5	20	1.5	CP2	
1 C		A1-103	Apartment	2	90	43	133			⊙		6	14	4	18	1.5	CP2	
		A1-104	Retail 4		128		128										CP1	
	2	A1-201	Apartment	1	63	18	81		●	⊙	⊙	2	0	6	6	1.0	CP2	
		A1-202	Apartment	2	80	30	110			⊙		6	15	5	20	1.5	CP2	
		A1-203	Apartment	2	90	30	120			⊙		6	14	4	18	1.5	CP2	
		A1-204	Apartment	2	93	22	115		●	⊙		6	2	6	8	1.5	CP2	
		A1-205	Apartment	2	82	20	102	◆	●	⊙			10	8	18	1.5	CP2	Disabled
		A1-206	Apartment	2	82	20	102	◆	●	⊙			10	8	18	1.5	CP2	
	3	A1-301	Apartment	1	63	18	81		●	⊙	⊙	2	0	6	6	1.0	CP2	
		A1-302	Apartment	2	80	30	110			⊙		6	15	5	20	1.5	CP2	
		A1-303	Apartment	2	90	30	120			⊙		6	14	4	18	1.5	CP2	
		A1-304	Apartment	2	93	22	115		●	⊙		6	2	6	8	1.5	CP2	
		A1-305	Apartment	2	82	20	102	◆	●	⊙			10	8	18	1.5	CP2	Disabled
		A1-306	Apartment	2	82	20	102	◆	●	⊙			10	8	18	1.5	CP2	Disabled
	4	A1-401	Apartment	2+Study	90	51	141		●	⊙	⊙	6	5	5	10	1.5	CP2	
		A1-402	Apartment	2	90	30	120			⊙		6	14	8	22	1.5	CP2	
		A1-403	Apartment	2	93	22	115		●	⊙		6	2	6	8	1.5	CP2	
		A1-404	Apartment	2	82	20	102	◆	●	⊙			10	8	18	1.5	CP2	Disabled
		A1-405	Apartment	2	82	41	123		●	⊙	⊙	2	10	8	18	1.5	CP2	
	5	A1-501	Apartment	3	122	77	199		●	⊙	⊙	6	0	10	10	2.0	CP2	
		A1-502	Apartment	2	93	23	116		●	⊙		6	2	6	8	1.5	CP2	
		A1-503	Apartment	2	93	82	175		●	⊙	⊙	2	7	4	11	1.5	CP2	
					1,725	772	2,898	5	16		6	18				34.0		4.6 Visitors
A2	1	A2-101	Retail 1		163	34	197										CP1	
15 A		A2-102	Retail 2		60	13	73										CP1	
3 C		A2-103	Retail 3		90		90										CP1	
	2	A2-201	Apartment	2	83	30	113			⊙		6	0	8	8	1.5	CP2	
		A2-202	Apartment	1	62	13	75		●	⊙	⊙	6	0	6	6	1.0	CP2	
		A2-203	Apartment	2	82	24	106		●	⊙			4	4	8	1.5	CP2	
	3	A2-301	Apartment	2	83	30	113			⊙		6	0	8	8	1.5	CP2	
		A2-302	Apartment	1	62	13	75		●	⊙	⊙	6	0	6	6	1.0	CP2	
		A2-303	Apartment	2	82	24	106		●	⊙			4	8	12	1.5	CP2	
	4	A2-401	Apartment	2	83	30	113			⊙		6	0	8	8	1.5	CP2	
		A2-402	Apartment	1	62	13	75		●	⊙	⊙	6	0	6	6	1.0	CP2	
		A2-403	Apartment	2	82	24	106		●	⊙			4	4	8	1.5	CP2	
	5	A2-501	Apartment	2	83	23	106			⊙		6	0	8	8	1.5	CP2	
		A2-502	Apartment	1	62	13	75		●	⊙	⊙	6	0	6	6	1.0	CP2	
		A2-503	Apartment	2	82	23	105		●	⊙			4	4	8	1.5	CP2	
	6	A2-601	Apartment	2	83	57	140		●	⊙		6	0	8	8	1.5	CP2	
		A2-602	Apartment	1	62	13	75		●	⊙	⊙	3	0	6	6	1.0	CP2	
		A2-603	Apartment	2	82	40	122		●	⊙	⊙	2	0	8	8	1.5	CP2	
					1,448	417	1,865	0	11		6	11				20.0		3 Visitors
B1	1	B1-101	Retail 5		204		204										CP1	
15 A		B1-102	Restaurant 2		227		227										CP1	
2 C	2	B1-201	Apartment	1	62	13	75		●	⊙	⊙	6	0	6	6	1.0	CP2	
		B1-202	Apartment	2	83	30	113			⊙		6	0	8	8	1.5	CP2	
		B1-203	Apartment	2	82	24	106		●	⊙			4	8	12	1.5	CP2	
	3	B1-301	Apartment	1	62	13	75		●	⊙	⊙	6	0	6	6	1.0	CP2	
		B1-302	Apartment	2	83	30	113			⊙		6	0	8	8	1.5	CP2	
		B1-303	Apartment	2	82	24	106		●	⊙			4	8	12	1.5	CP2	
	4	B1-401	Apartment	1	62	13	75		●	⊙	⊙	6	0	6	6	1.0	CP2	
		B1-402	Apartment	2	83	30	113			⊙		6	0	8	8	1.5	CP2	
		B1-403	Apartment	2	82	24	106		●	⊙			4	8	12	1.5	CP2	
	5	B1-501	Apartment	1	62	13	75		●	⊙	⊙	6	0	6	6	1.0	CP2	
		B1-502	Apartment	2	83	23	106			⊙		6	0	8	8	1.5	CP2	
		B1-503	Apartment	2	82	24	106		●	⊙			4	8	12	1.5	CP2	
	6	B1-601	Apartment	1	62	13	75		●	⊙	⊙	6	0	6	6	1.0	CP2	
		B1-602	Apartment	2	83	23	106			⊙		6	0	8	8	1.5	CP2	
		B1-603	Apartment	2	82	24	106		●	⊙		2	4	8	12	1.5	CP2	
					1,566	321	1,887	0	10		5	11				20.0		3 Visitors
B2	1	B2-101	Retail 6		125		125										CP1	
21 A		B2-102	Restaurant 1		320		320										CP1	
2C	2	B2-201	Apartment	1	63	18	81		●	⊙		3	0	6	6	1.0	CP2	
		B2-202	Apartment	2	80	24	104			⊙		6	18	0	18	1.5	CP2	
		B2-203	Apartment	2	87	26	113		●	⊙	⊙	6	3	8	11	1.5	CP2	Disabled
		B2-204	Apartment	2+Study	92	22	114		●	⊙			0	8	8	1.5	CP2	
		B2-205	Apartment	1	65	11	76	◆		⊙			8	6	14	1.0	CP2	Disabled
	3	B2-301	Apartment	1	63	18	81		●	⊙		3	0	6	6	1.0	CP2	
		B2-302	Apartment	2	80	24	104			⊙		6	18	0	18	1.5	CP2	
		B2-303	Apartment	2	87	26	113		●	⊙	⊙	6	3	8	11	1.5	CP2	
		B2-304	Apartment	2+Study	92	22	114		●	⊙			0	8	8	1.5	CP2	
		B2-305	Apartment	1	65	11	76	◆		⊙			8	6	14	1.0	CP2	Disabled
	4	B2-401	Apartment	1	63	18	81		●	⊙		3	0	6	6	1.0	CP2	
		B2-402	Apartment	2	80	24	104			⊙		6	18	0	18	1.5	CP2	
		B2-403	Apartment	2	87	26	113		●	⊙	⊙	6	3	8	11	1.5	CP2	
		B2-404	Apartment	2+Study	92	22	114		●	⊙			0	8	8	1.5	CP2	
		B2-405	Apartment	1	65	11	76	◆		⊙			8	6	14	1.0	CP2	Disabled
	5	B2-501	Apartment	1	63	16	79		●	⊙		3	0	6	6	1.0	CP2	
		B2-502	Apartment	3	127	46	173		●	⊙	⊙	6	10	0	10	2.0	CP2	
		B2-503	Apartment	3	130	32	162		●	⊙	⊙		7	4	11	2.0	CP2	
	6	B2-601	Apartment	1	63	16	79		●	⊙		3	0	6	6	1.0	CP2	
		B2-602	Apartment	3	127	46	173		●	⊙	⊙	6	10	0	10	2.0	CP2	
		B2-603	Apartment	3	130	32	162		●	⊙	⊙		7	4	11	2.0	CP2	
					2,246	491	2,737	3	15		7	13				29.5		4.2 Visitors
C	1	C101	Restaurant 3		205		205										CP1	
29 A		C102	Apartment	2	82	42	124		●	⊙		2	10	8	18	1.5	CP2	Disabled
3 C		C103	Apartment	3	110	100	210		●	⊙		2	10	10	20	2.0	CP2	
		C104	Retail 8		147		147										CP1	
		C107	Retail 7		145		145										CP1	
	2	C201	Apartment	3	110	47	157		●	⊙		2	2	10	12	2.0	CP2	
		C202	Apartment	2	82	21	103		●	⊙		2	8	8	16	1.5	CP2	
		C203	Apartment	2	82	21	103		●	⊙		2	10	8	18	1.5	CP2	Disabled
		C204	Apartment	2	82	21	103		●	⊙		2	10	8	18	1.5	CP2	Disabled
		C205	Apartment	2	90	30	120		●	⊙	⊙		0	8	8	1.5	CP2	
		C206	Apartment	2	90	30	120			⊙		2	15	8	23	1.5	CP2	
		C207	Apartment	2	86	32	118		●	⊙		3	5	5	10	1.5	CP2	
	3	C301	Apartment	3	110	47	157		●	⊙		2	2	8	10	2.0	CP2	
		C302	Apartment	2	82	21	103		●	⊙		2	8	8	16	1.5	CP2	
		C303	Apartment	2	82	21	103		●	⊙		2	10	8	18	1.5	CP2	Disabled
		C304	Apartment	2	82	21	103		●	⊙		2	10	8	18	1.5	CP2	
		C305	Apartment	2	90	30	120		●	⊙	⊙		0	8	8	1.5	CP2	
		C306	Apartment	2	90	30	120			⊙		2	15	5	20	1.5	CP2	
		C307	Apartment	2	86	32	118		●	⊙		3	5	5	10	1.5	CP2	
	4	C401	Apartment	3	110	47	157		●	⊙		2	2	8	10	2.0	CP2	
		C402	Apartment	2	82	21	103		●	⊙		2	8	8	16	1.5	CP2	
		C403	Apartment	2	82	21	103		●	⊙		2	10	8	18	1.5	CP2	

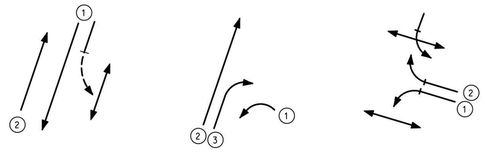
Building	LEVEL	UNIT No.	UNIT TYPE	BEDS	UNIT AREA m2	BALCONY m2	TOTAL	South Single asp.	Cross Vent'n	< 8m Kit. From a Win.	Natural Vent'n Kit.	Min. Req. Sunlight. Hrs	STORAGE VOLUME m3			CAR SPACE		
													In Unit	Basement	Total	Numbers	Location	Type
		C404	Apartment	2	82	21	103		●	⊙		2	10	8	18	1.5	CP2	
		C405	Apartment	2	90	30	120		●	⊙	⊙		0	8	8	1.5	CP2	
		C406	Apartment	2	90	30	120			⊙		2	15	5	20	1.5	CP2	
		C407	Apartment	2	86	32	118		●	⊙		3	5	5	10	1.5	CP2	
	5	C501	Apartment	3	127	78	205		●	⊙		6	0	10	10	2.0	CP2	
		C502	Apartment	2	82	21	103			⊙		2	10	8	18	1.5	CP2	
		C503	Apartment	2	82	21	103			⊙		2	10	8	18	1.5	CP2	
		C504	Apartment	2	90	30	120		●	⊙	⊙	2	0	8	8	1.5	CP2	
		C505	Apartment	2	90	30	120			⊙		2	15	5	20	1.5	CP2	
		C506	Apartment	2	86	32	118		●	⊙		3	5	5	10	1.5	CP2	
					3,112	960	4,072	0	23		4	26				46.0		5.8 Visitors
D1	1	D1-101	Restaurant 4		151												CP1	
23 A		D1-102	Retail 9		160												CP1	
2 C		D1-105	Mgt Office		75												CP1	
	2	D1-201	Apartment	3+Study	125	25	150		●	⊙		2	4	7	11	2.0	CP2	
		D1-202	Apartment	2	87	24	111			⊙		2	6	5	11	1.5	CP2	
		D1-203	Apartment	3+Study	117	102	219		●	⊙			5	5	10	2.0	CP2	
		D1-204	Apartment	2	85	87	172			⊙		2	3	5	8	1.5	CP2	
		D1-205	Apartment	2	85	34	119			⊙		2	3	5	8	1.5	CP2	
		D1-206	Apartment	2	83	18	101		●	⊙	⊙	3	3	5	8	1.5	CP2	
	3	D1-301	Apartment	3+Study	125	25	150		●	⊙		2	4	7	11	2.0	CP2	
		D1-302	Apartment	2	87	24	111			⊙		2	6	5	11	1.5	CP2	
		D1-303	Apartment	3+Study	117	34	151		●	⊙			5	5	10	2.0	CP2	
		D1-304	Apartment	2	85	34	119			⊙		2	3	5	8	1.5	CP2	
		D1-305	Apartment	2	85	34	119			⊙		2	3	5	8	1.5	CP2	
		D1-306	Apartment	2	83	18	101		●	⊙	⊙	3	3	5	8	1.5	CP2	
	4	D1-401	Apartment	3+Study	125	25	150		●	⊙		2	4	7	11	2.0	CP2	
		D1-402	Apartment	2	87	24	111			⊙		2	6	5	11	1.5	CP2	
		D1-403	Apartment	3+Study	117	34	151		●	⊙			5	7	12	2.0	CP2	
		D1-404	Apartment	2	85	34	119			⊙		2	3	5	8	1.5	CP2	
		D1-405	Apartment	2	85	34	119			⊙		2	3	5	8	1.5	CP2	
		D1-406	Apartment	2	83	18	101		●	⊙	⊙	3	3	5	8	1.5	CP2	
	5	D1-501	Apartment	2+Study	104	70	174		●	⊙	⊙	3	3	8	11	2.0	CP2	
		D1-502	Apartment	2	87	24	111			⊙		3	6	4	10	1.5	CP2	
		D1-503	Apartment	3+Study	117	34	151		●	⊙			5	5	10	2.0	CP2	
		D1-504	Apartment	2	85	34	119			⊙		2	3	7	10	1.5	CP2	
		D1-505	Apartment	2	85	80	165		●	⊙	⊙	3	3	7	10	1.5	CP2	
					2,610	870	3,094	0	12		5	19				38.5		4.6 Visitors
D2	1	D2-101	Restaurant 5		372												CP1	
34 A	2	D2-201	Apartment	2+Study	90	24	114		●	⊙		2	0	8	8	1.5	CP2	
1 C		D2-202	Apartment	2+Study	127	24	151			⊙		3	10	0	10	1.5	CP2	
		D2-203	Apartment	2	85	20	105			⊙		3	10	8	18	1.5	CP2	
		D2-204	Apartment	2+Study	93	26	119		●	⊙	⊙	6	3	8	11	1.5	CP2	
		D2-205	Apartment	2	82	16	98	◆	●	⊙			10	8	18	1.5	CP2	Disabled
		D2-206	Apartment	2	82	16	98	◆	●	⊙			10	8	18	1.5	CP2	Disabled
		D2-207	Apartment	2	90	46	136		●	⊙	⊙	2	8	0	8	1.5	CP2	
	3	D2-301	Apartment	2+Study	90	24	114		●	⊙		2	0	8	8	1.5	CP2	
		D2-302	Apartment	2+Study	127	24	151			⊙		3	10	0	10	1.5	CP2	
		D2-303	Apartment	2	85	20	105			⊙		3	10	8	18	1.5	CP2	
		D2-304	Apartment	2+Study	93	26	119		●	⊙	⊙	6	3	8	11	1.5	CP2	
		D2-305	Apartment	2	82	16	98	◆	●	⊙			10	8	18	1.5	CP2	Disabled
		D2-306	Apartment	2	82	16	98	◆	●	⊙			10	8	18	1.5	CP2	Disabled
		D2-307	Apartment	2	90	46	136		●	⊙	⊙	2	8	0	8	1.5	CP2	
	4	D2-401	Apartment	2+Study	90	24	114		●	⊙		2	0	8	8	1.5	CP2	
		D2-402	Apartment	2+Study	127	24	151			⊙		3	10	0	10	1.5	CP2	
		D2-403	Apartment	2	85	20	105			⊙		3	10	8	18	1.5	CP2	
		D2-404	Apartment	2+Study	93	26	119		●	⊙	⊙	6	3	8	11	1.5	CP2	
		D2-405	Apartment	2	82	16	98	◆	●	⊙			10	8	18	1.5	CP2	Disabled
		D2-406	Apartment	2	82	16	98	◆	●	⊙			10	8	18	1.5	CP2	Disabled
		D2-407	Apartment	2	90	46	136		●	⊙	⊙	2	8	0	8	1.5	CP2	
	5	D2-501	Apartment	2+Study	90	24	114		●	⊙		2	0	8	8	1.5	CP2	
		D2-502	Apartment	2+Study	127	24	151			⊙		3	10	0	10	1.5	CP2	
		D2-503	Apartment	2	85	20	105			⊙		3	10	8	18	1.5	CP2	
		D2-504	Apartment	2+Study	93	26	119		●	⊙	⊙	6	3	8	11	1.5	CP2	
		D2-505	Apartment	2	82	16	98	◆	●	⊙			10	8	18	1.5	CP2	
		D2-506	Apartment	2	82	16	98	◆	●	⊙			10	8	18	1.5	CP2	
		D2-507	Apartment	2	90	46	136		●	⊙	⊙	2	8	0	8	1.5	CP2	
	6	D2-601	Apartment	2+Study	90	82	172		●	⊙		6	0	8	8	1.5	CP2	
		D2-602	Apartment	2+Study	127	74	201		●	⊙		3	10	0	10	1.5	CP2	
		D2-603	Apartment	2	85	41	126			⊙		6	10	8	18	1.5	CP2	
		D2-604	Apartment	2+Study	90	65	155		●	⊙	⊙	3	0	8	8	1.5	CP2	
		D2-605	Apartment	2	82	16	98	◆	●	⊙			10	8	18	1.5	CP2	
		D2-606	Apartment	2	90	46	136		●	⊙	⊙	2	8	0	8	1.5	CP2	
					3,532	1,012	4,172	9	25		10	25				51.0		6.8 Visitors
Total Apartment		160	1 Bed	20=13%	16,239	4,843	20,725	17	112		43	123				239.0	Total Car Spaces	
Total Commercial		14	2 Bed	123=77%				10%	70%		27%	77%				32.0	Total Visitor Spaces	
Total Products		174	3 Bed	17=10%				Req. Max. 10%	Req. Min. 60%		Req. Min. 25%	Req. Min. 70%				271.0	Grand Total	

Appendix C

Signal Intersection Layout of The Northern Road and Jordan Springs Boulevard

0154.358.VV.4396

DRAWN BY CADD
DO NOT AMEND MANUALLY



A PHASE | B & D PHASES (Z+ Introduces D Phase) | C PHASE

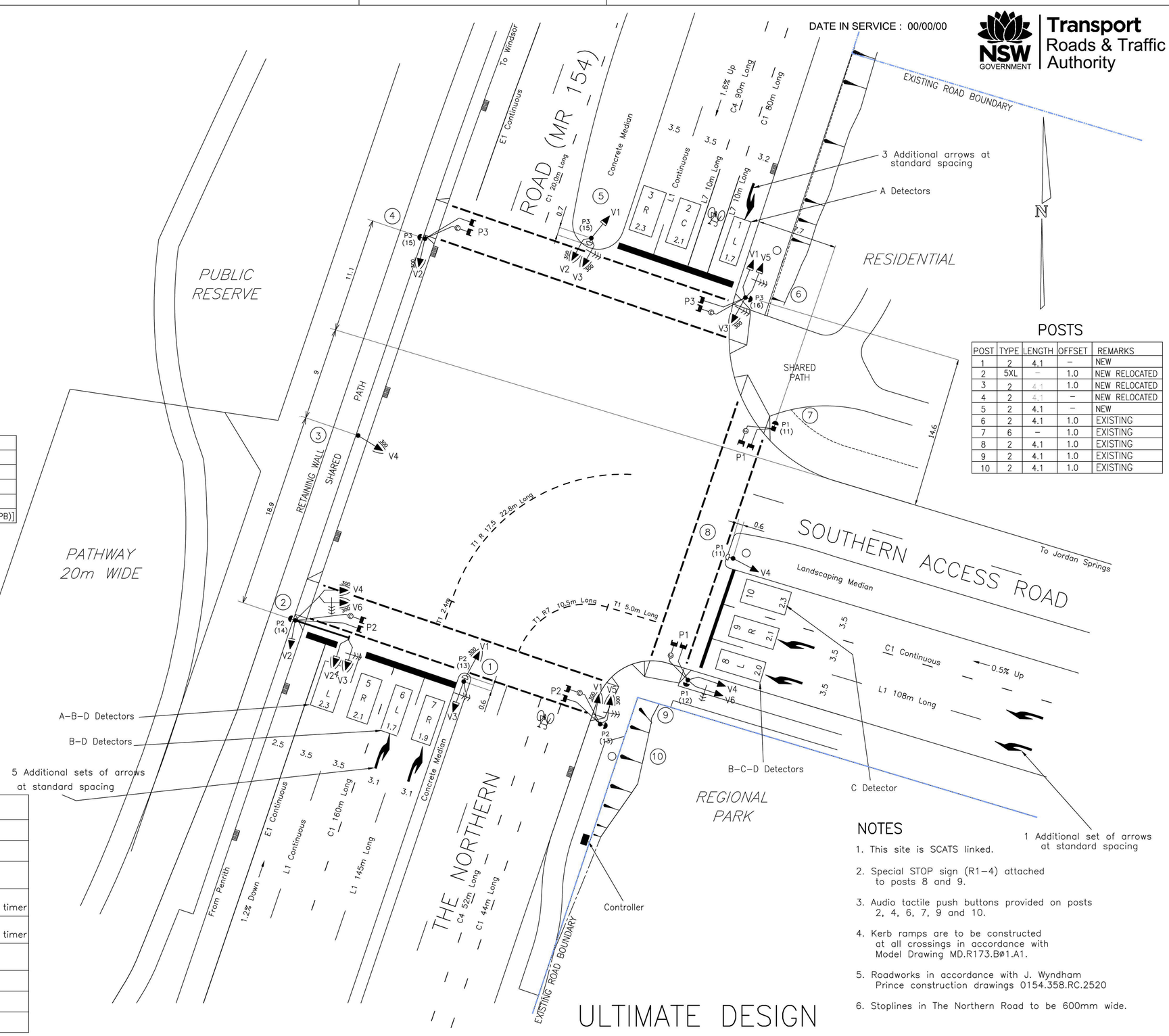
MOVEMENTS

DETECTOR SPECIFICATION

Detector		Specifications			
A	FN	A(L)	A(E1)		
	SG/PS	$\overline{A}$	A		
	DS	–	–		
A–B–D	FN	A(L)	A(E2)		
	SG/PS	$\overline{V2}$	A		
	DS	–	$\overline{B(NEXT)}.\overline{D(NEXT)}$		
cont. A–B–D	FN	B(E2)		D(E2)	
	SG/PS	B		D	
	DS	$\overline{A(NEXT)}.\overline{D(NEXT)}$		$\overline{A(NEXT)}.B(NEXT)$	
B–C–D	FN	B(PR)	B(CL)	D(PR)	D(CL)
	SG/PS	$\overline{B}.\overline{C}.\overline{D}$	C	$\overline{B}.\overline{C}.\overline{D}$	C
	DS	$\overline{C}$+P2(PB)	B–C–D(NG)	Z+$\overline{C}$+P2(PB)	Z+.B–C–D(NG)
cont. B–C–D	FN	B(E1)		C(E1)	D(E1)
	SG/PS	B		C	D
	DS	$\overline{C(NEXT)}$+P2(PB)].$\overline{D(NEXT)}$		$\overline{B(NEXT)}.\overline{D(NEXT)}$	$\overline{B(NEXT)}.[\overline{C(NEXT)}$+P2(PB)]
B–D	FN	B(L)	D(L)	B(E3)	D(E3)
	SG/PS	$\overline{B}/\overline{D}$	$\overline{B}/\overline{D}$	B	D
	DS	–	Z+	$\overline{D(NEXT)}$	$\overline{B(NEXT)}$
C	FN	C(L)	C(E2)		
	SG/PS	$\overline{C}$	C		
	DS	–	–		
P1 P.B.	FN	A(PB)	C(L)		
	SG/PS	$\overline{P1(WALK)}$	A.P1(WALK)		
	DS	–	$\overline{B}.\overline{C}.\overline{D}$		
P2 P.B.	FN	C(PB)	A(L)		
	SG/PS	$\overline{P2(WALK)}$	C.P2(WALK)		
	DS	–	$\overline{A}.\overline{B}.\overline{D}$		
P3 P.B.	FN	C(PB)	A(L)		
	SG/PS	$\overline{P3(WALK)}$	C.P3(WALK)		
	DS	–	$\overline{A}.\overline{B}.\overline{D}$		

SIGNAL GROUP/PHASE CHART

SIGNAL GROUP	PHASES WHEN GREEN A	B	C	D	STANDARD TABLE	REMARKS
V1	X				1	
V2	X	X		X	3	
V3		X		X	34	
V4			C		74	Timed Red protection for 'P3' ped. PB on Post 2 extends RA subject to timer
V5	C		C		79	Timed R.A. protection for 'P1' ped. PB on Post 5 extends RA subject to timer
V6		X	C	X	15	R.A. protection for 'P2' ped Walk & Clearance (Full Protection)
P1	X				2	
P2			X		2	
P3			X		2	



POSTS

POST	TYPE	LENGTH	OFFSET	REMARKS
1	2	4.1	–	NEW
2	5XL	–	1.0	NEW RELOCATED
3	2	4.1	1.0	NEW RELOCATED
4	2	4.1	–	NEW RELOCATED
5	2	4.1	–	NEW
6	2	4.1	1.0	EXISTING
7	6	–	1.0	EXISTING
8	2	4.1	1.0	EXISTING
9	2	4.1	1.0	EXISTING
10	2	4.1	1.0	EXISTING

NOTES

1. This site is SCATS linked.
2. Special STOP sign (R1–4) attached to posts 8 and 9.
3. Audio tactile push buttons provided on posts 2, 4, 6, 7, 9 and 10.
4. Kerb ramps are to be constructed at all crossings in accordance with Model Drawing MD.R173.B01.A1.
5. Roadworks in accordance with J. Wyndham Prince construction drawings 0154.358.RC.2520
6. Stoplines in The Northern Road to be 600mm wide.

A ORIGINAL ISSUE

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	○		
STAY POLE	⊘		
TELEPHONE BOX	⚿	SURVEYOR : Insight Surveying	
TELECOM PILLAR	◍	DATE : 2010	

U.B.D. Ref. Map 144 D13
I.S.G. CO-ORDS E: 274 314 N: 1 266 866
DESIGNED : JS
CHECKED : CT
CT
SITE CHECKED
RW
RECOMMENDED

DESIGN APPROVAL	RTA ACCEPTANCE
APPROVED	RECOMMENDED
R. WEST	POSITION
POSITION DIRECTOR	DATE
DATE 15.9.11	ACCEPTED
DESIGN PREPARED BY	POSITION
TRANSPORT AND TRAFFIC PLANNING ASSOCIATES	DATE

ROADS AND TRAFFIC AUTHORITY OF NEW SOUTH WALES

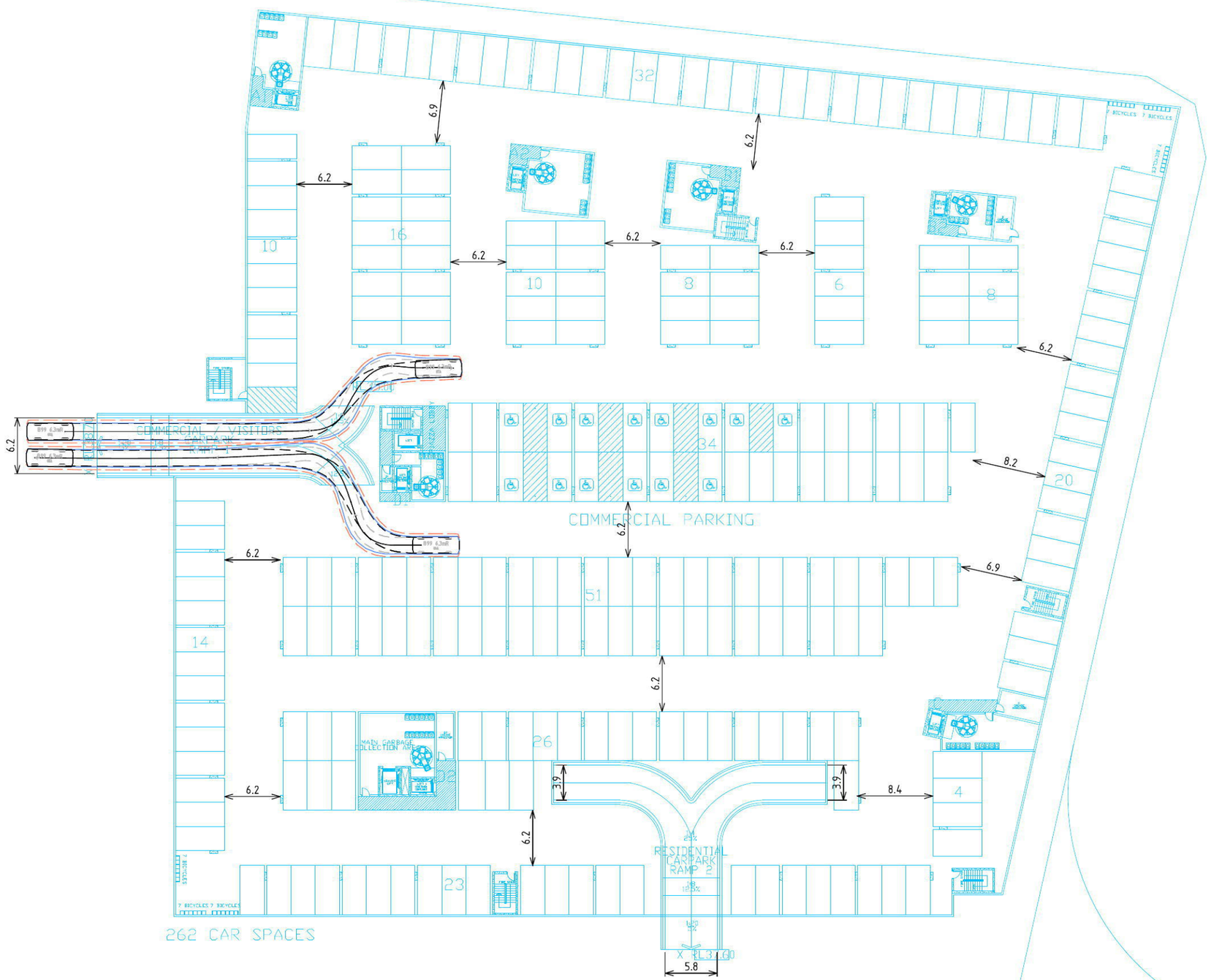
PENRITH COUNCIL AREA
TRAFFIC SIGNALS AT THE INTERSECTION OF THE NORTHERN ROAD (MR 154) AND SOUTHERN ACCESS ROAD
CRANEBROOK

DESIGN LAYOUT TCS No 4396

EXISTING ☐ PROPOSED ☒
CADD FILE: VV4396_1A.dgn
SCALE 5 0 (1:200) 5 10
ISSUE A
FILE 358 TS 373
SUPERSEDES SHEET/ISSUE 1A
REGN. 0154.358.VV.4396
SHEET 1

Appendix D

Compliance Review and Swept Path Assessment



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY. SUBJECT TO CHANGE WITHOUT NOTIFICATION

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

PLOTTED BY : Barry Li ON 11/03/2014 AT 9:21:49 AM

AMENDMENTS

ISSUE	DATE	DESCRIPTION	BY	CHK.	APP.
P2	11.03.14	LOWER CAR PARK BASE PLAN UPDATED	BLL	WPJ	KJH
P1	20.02.14	INITIAL ISSUE	RAF	WPJ	KJH

GENERAL NOTES

1. ALL DIMENSIONS AND RADII ARE IN METRES
2. BASE INFORMATION OBTAINED FROM CID GROUP DATED 19 FEBRUARY 2014
3. GTA CONSULTANTS DOES NOT TAKE ANY RESPONSIBILITY FOR THE ACCURACY OF THE EXISTING CONDITIONS BASE ON WHICH THE SETOUT DETAIL IS BASED. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE EXISTING CONDITIONS INCLUDING UNDERGROUND SERVICES SHOULD BE VERIFIED ON SITE.

DESIGNED: R.FLETCHER	DESIGN CHECK: W.JOHNSON
DRAWN: R.FLETCHER	DRAFTING CHECK: C.WARD
APPROVED BY: K.HOLLYOAK	DATE APPROVED FOR INITIAL ISSUE: 20 FEBRUARY '14
SCALE A3 Hor. 0 5 10 Ver.	1:500
CAD FILE NO.	14S1013000-07-P2.dgn

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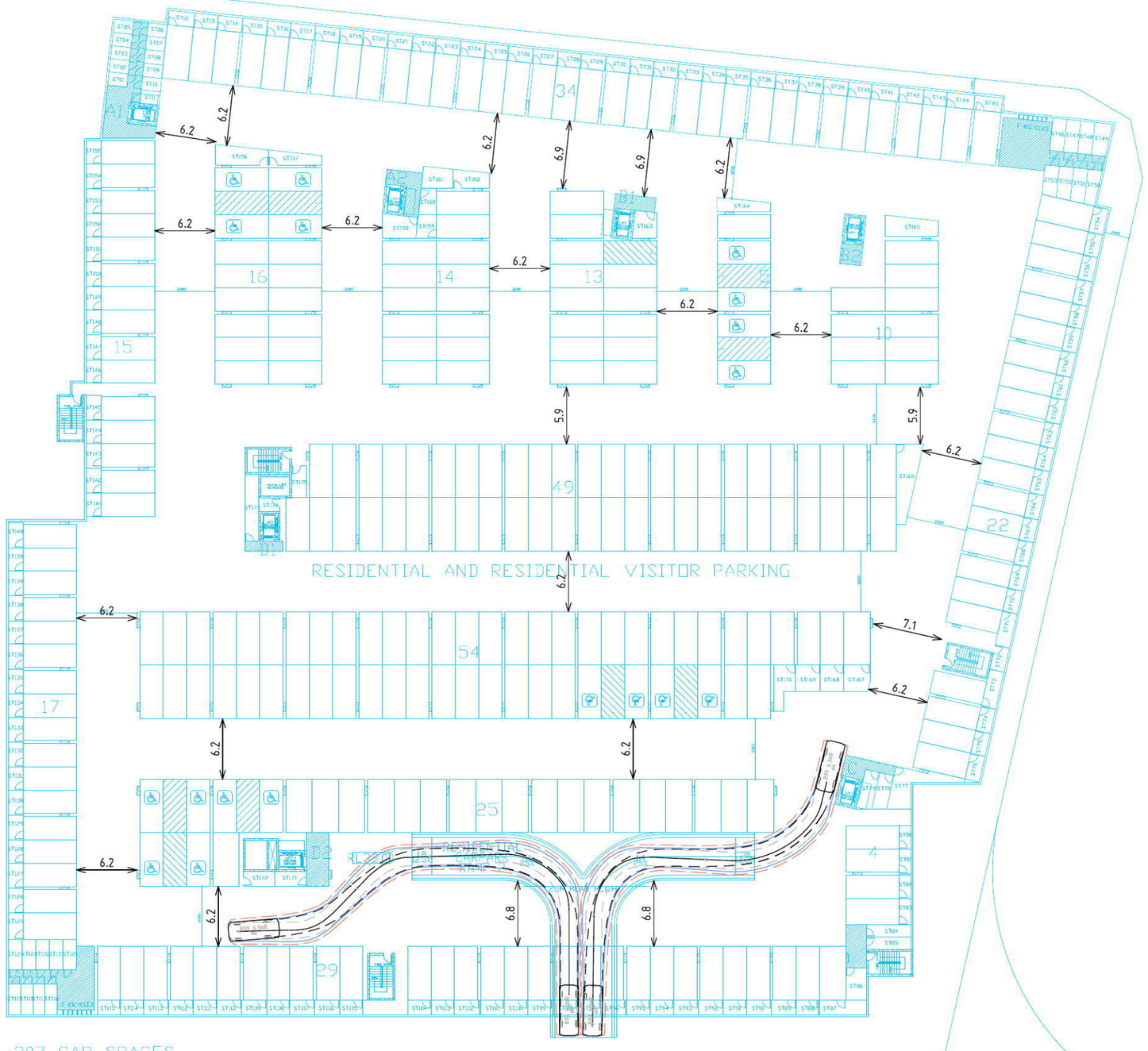
Townsville 07 4722 2765
Quality ISO 9001

CLIENT CID GROUP

JORDAN SPRINGS
SK14D SITE
STAGE 1
CAR PARKING
COMPLIANCE REVIEW

SYDWAY REF.	DRAWING NO.	SHEET	ISSUE
-	14S1013000-07	01 OF 02	P2



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PLOTTED BY : Barry Li ON 11/03/2014 AT 9:24:50 AM

AMENDMENTS

ISSUE	DATE	DESCRIPTION	BY	CHK.	APP.
P2	11.03.14	LOWER CAR PARK BASE PLAN UPDATED	BLL	WPJ	KJH
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DESIGNED R.FLETCHER	DESIGN CHECK W.JOHNSON
DRAWN R.FLETCHER	DRAFTING CHECK C.WARD
APPROVED BY K.HOLLYOAK	DATE APPROVED FOR INITIAL ISSUE 20 FEBRUARY '14
SCALE A3 Hor. 0 5 10 Ver. 1:500	CAD FILE NO. 14S1013000-07-P2.dgn

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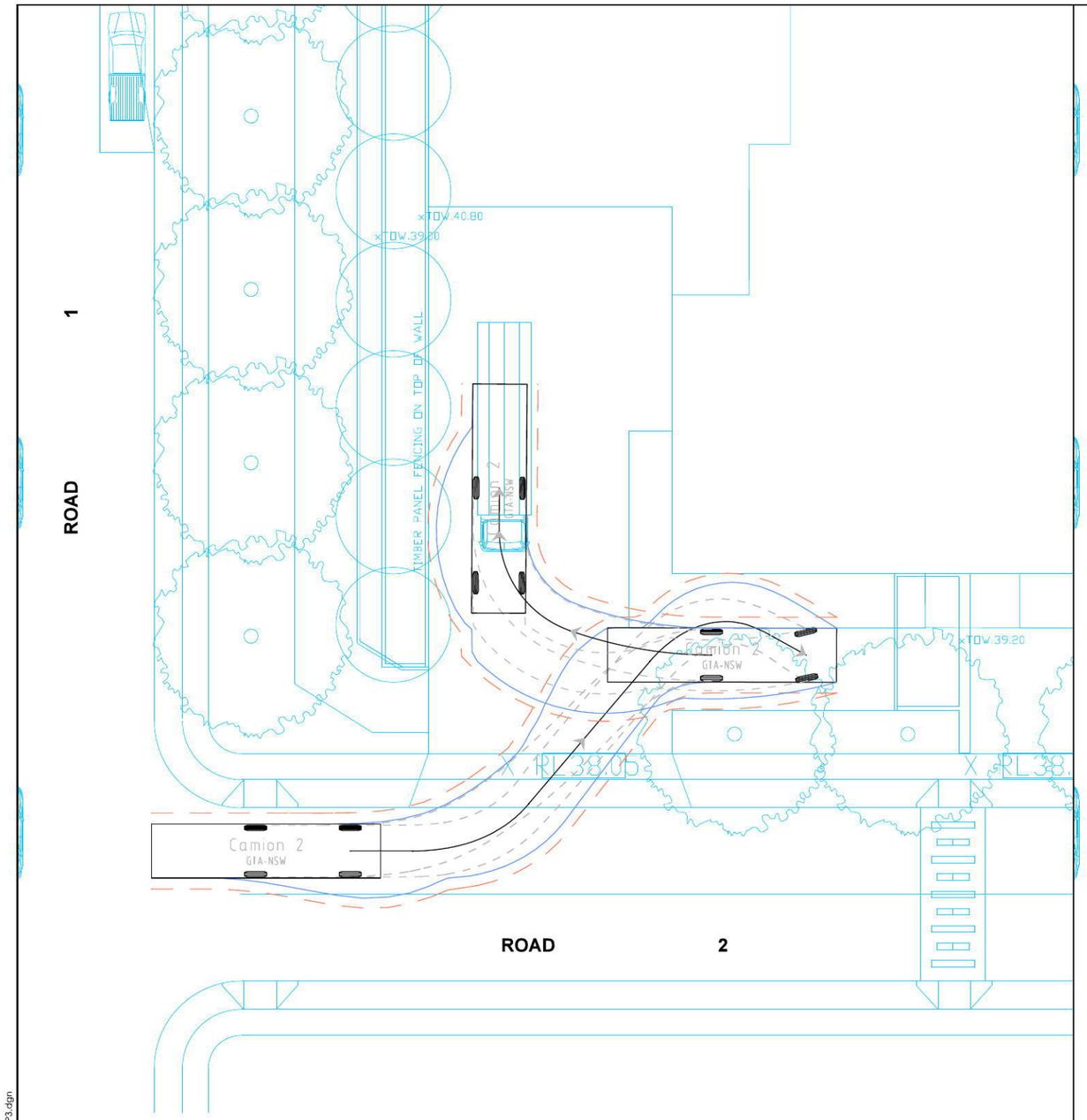
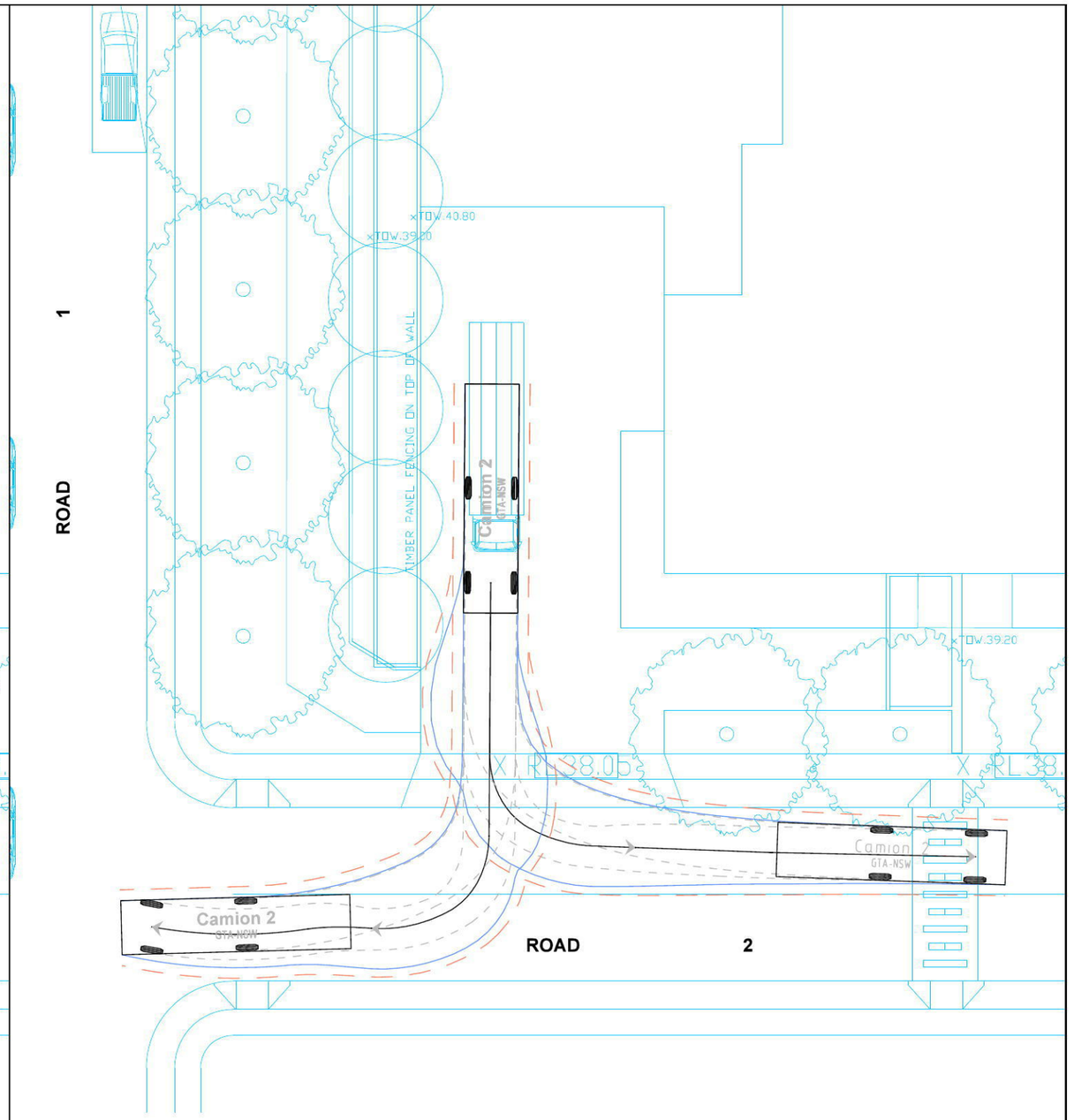
CLIENT CID GROUP

JORDAN SPRINGS
SK14D SITE
STAGE 1
CAR PARKING
COMPLIANCE REVIEW

SYDWAY REF.	DRAWING NO.	SHEET	ISSUE
-	14S1013000-07	02 OF 02	P2

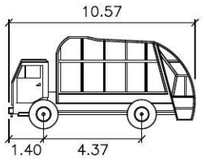




SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



Camion 2 — meters

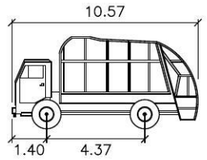
Width	: 2.50
Track	: 2.39
Lock to Lock Time	: 6.0
Steering Angle	: 41.8

N

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



Camion 2 — meters

Width	: 2.50
Track	: 2.39
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N

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SK14D SITE, JORDAN SPRINGS
SWEPT PATH ASSESSMENT
CAMION 2 - 10.57m GARBAGE TRUCK

DATE: 10.03.2014
SCALE: 1:250@A3
0 2.5 5 7.5
APPROVED: WPJ
DRAWING NO. 14S1013000-02-03-P3
SHEET: 01 OF 01

PLOTTED BY: rebecca.fletcher ON 10/03/2014 AT 11:50:24 AM 14S1013000-02-P3.dgn

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