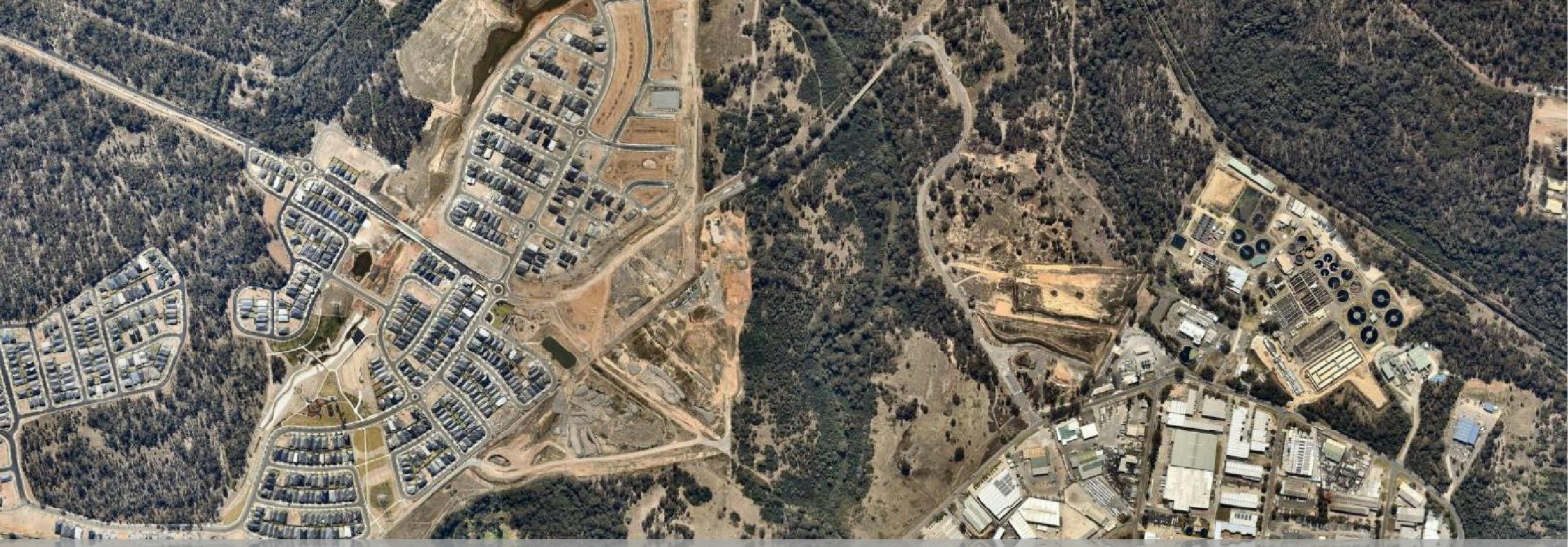

TRAFFIC AND PARKING IMPACT ASSESSMENT OF PROPOSED MIXED USE DEVELOPMENT AT EAST VILLAGE CENTRE SITE, JORDAN SPRINGS

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Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

190261.01FA - 6 November 2019

Development Type: **Proposed Mixed Use Development**

Site Address: **East Village Centre Site, Jordan Springs**

Prepared for: **La Land Pty Limited**

Document reference: **190261.01FA**

Status	Issue	Prepared By	Checked By	Date
Draft	A	ME	TS	9th October 2019
Draft	B	ME	TS	16th October 2019
Draft	C	TS		31st October 2019
Final	A	TS		6th November 2019

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1 INTRODUCTION

McLaren Traffic Engineering was commissioned by *La Land Pty Limited* to provide a traffic and parking impact assessment report for the proposed mixed-use development at East Village Centre Site, Jordan Springs.

1.1 Description and Scale of Development

The proposed mixed-use development incorporates six (6) levels and one (1) basement level consistent with the floor plans and area schedule provided in **Annexure A** to this report. The scale of the proposal relevant to traffic and parking impacts includes:

- 135 residential dwellings across five (5) storeys consisting of:
  - 14 one-bedroom units;
  - 91 two-bedroom units;
  - 19 three-bedroom units;
  - Seven (7) three-bedroom plus study townhouses;
  - Four (4) four-bedroom townhouses.
- Speciality Shops of 1,022m^2 gross floor area (GFA) on the ground floor;
- Supermarket of 930m^2 GFA on the ground floor;
- Medical Centre of 400m^2 GFA on the ground floor;
- Pharmacy of 156m^2 GFA on the ground floor;
- Swim School Centre on the ground floor accommodating up to 14 children over two 30-minute classes and four (4) staff at any one time;
- Childcare Centre on the first floor accommodating a total of 154 children and 27 staff members as per the following:
  - 40 children between 0-2 years old (10 staff, assigned at 1 per 4 children);
  - 48 children between 2-3 years old (10 staff, assigned at 1 per 5 children);
  - 66 children between 3-5 years old (7 staff, assigned at 1 per 10 children).
- Gym of 488m^2 GFA on the first floor;
- Commercial car wash located in the basement, utilising of four (4) car parking spaces;
- Basement and ground floor parking levels with vehicular access via a proposed two-way driveway from a proposed road 'Road 1' along the northern boundary of site, accommodating a total of 358 car spaces including:
  - 165 car parking spaces for residential use including 14 disabled spaces;
  - 27 car parking spaces for residential visitor use;
  - 166 car parking spaces all other uses including four (4) disabled spaces and including four (4) commercial car wash bays, accessible by all users.

1.2 State Environmental Planning Policy (Infrastructure) 2007

The proposed development is of relevant size and capacity under *Clause 104* of the *SEPP (Infrastructure) 2007* to be referred to the Roads and Maritime Services (RMS) as it has a parking capacity of over 200 or more motor vehicles. It is expected that Penrith City Council will consult the RMS as part of the Development Application process.

1.3 Site Description

The subject development involves the construction of a new community village centre as outlined in **Section 1.1**. The *NSW Department of Planning* website contains a *Proposed Zoning Map* for the subject precinct, which zones the area of the site as *Urban Zone*. The *Sydney Regional Environmental Plan No 30—St Marys* states the following regarding "Urban" zoning:

> ***Part 6 – Zoning***
>
> *40 Urban zone*
>
> *(1) The objectives of the Urban zone are:*
>
> *(a) to ensure that buildings and works within the zone are primarily used for residential purposes and associated facilities, and*
>
> *(b) to limit the range and scale of non-residential uses to ensure that they are compatible with residential amenity and primarily serve local residents, and*
>
> *(c) to provide for local retailing and related services, including supermarkets, which will complement established centres in the Blacktown City and Penrith City local government areas and not have a significant adverse effect on the viability of established retail centres, and*
>
> *(d) to provide for medium density residential development in locations which provide optimum access to employment, public transport and services, while ensuring residential amenity, and*
>
> *(e) to promote home based industries where such activities are unlikely to adversely affect the living environment of neighbours, and*
>
> *(f) to ensure that development adjacent to the Regional Park zone does not have a negative impact on biodiversity or conservation within that zone.*

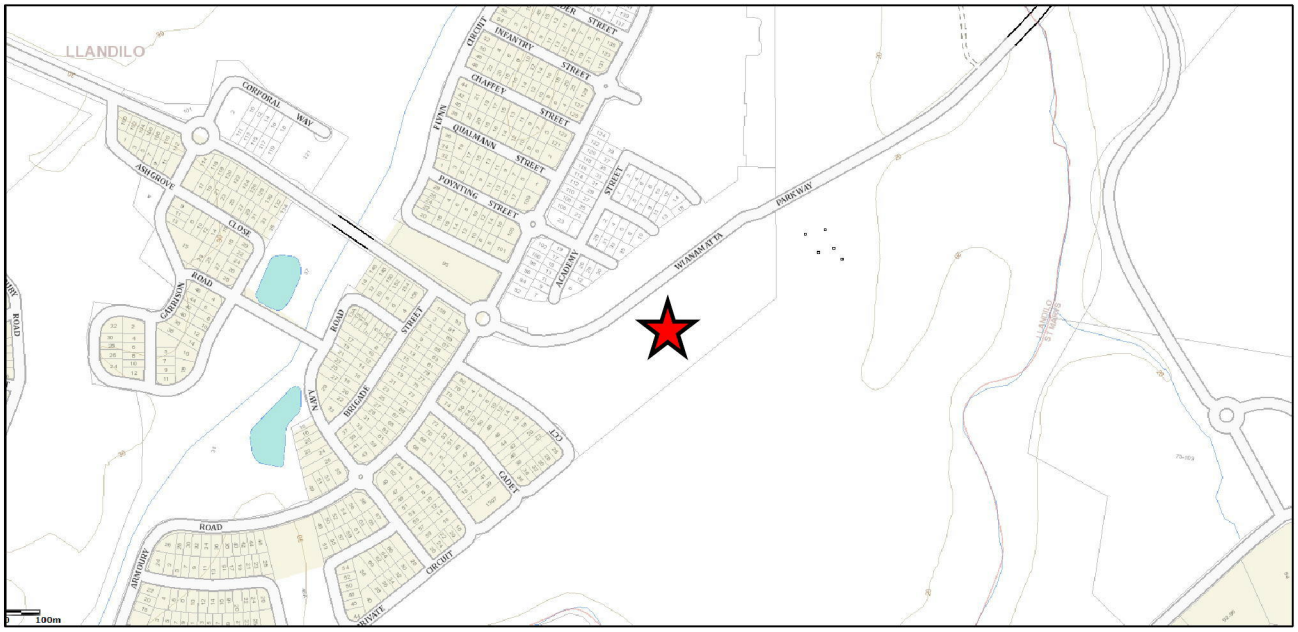
The site is currently vacant and is within a new growth area, the Jordan Springs East subdivision, with subdivision plans reproduced in **Annexure B**. New subdivisions in the area have recently been built, with some lots in the process of construction. The site will have road frontages to proposed and currently unconstructed roads on all sides, 'Road 1' to the north, 'Road 13' to the east and 'Road 27' to the south and west.

1.4 Site Context

The location of the site is shown on an aerial photo and a street map in **Figure 1** and **Figure 2** respectively. The location of the site is also shown on the subdivision plan in **Figure 3**.

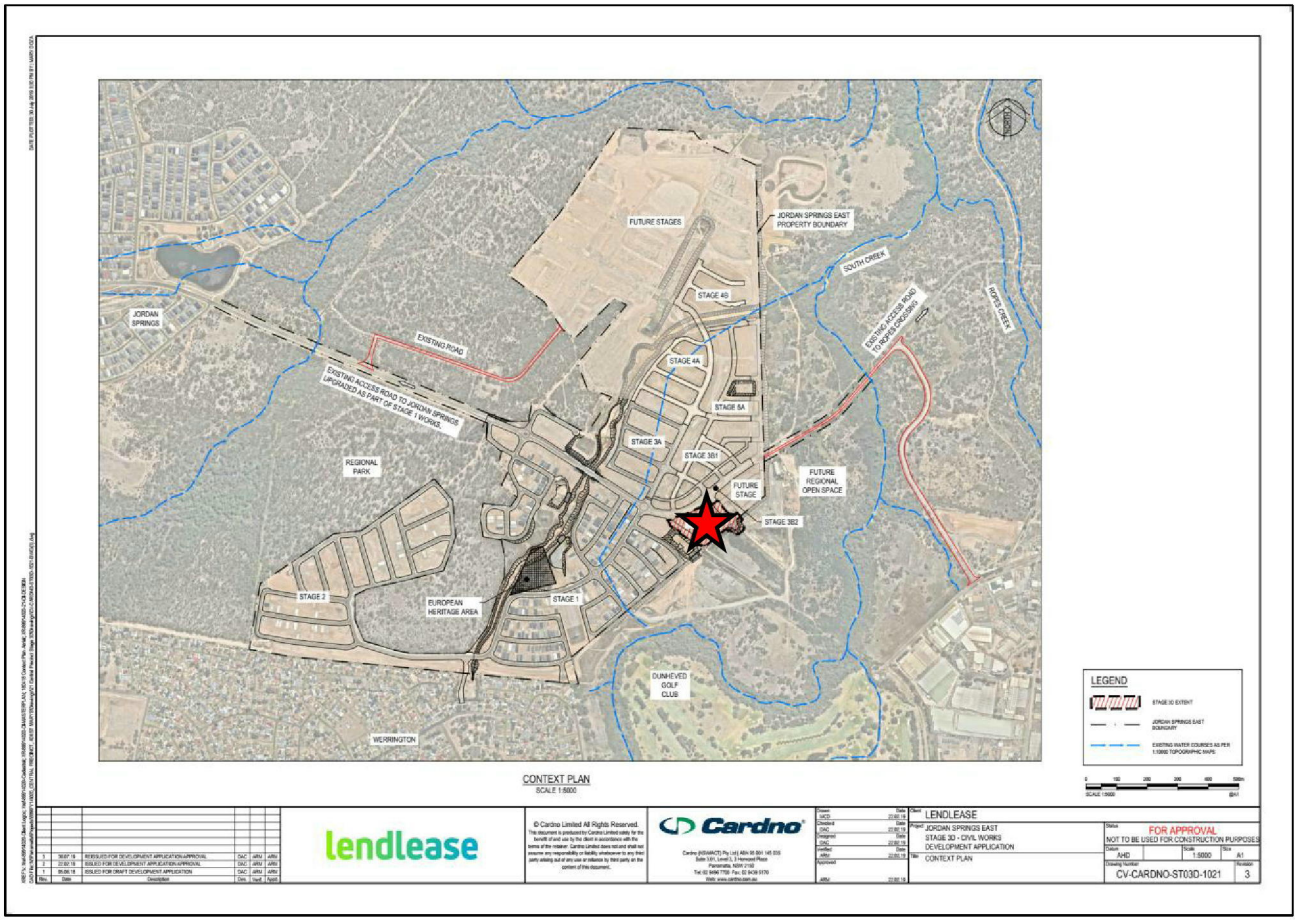
Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP



Site Location

FIGURE 3: SITE CONTEXT – SUBDIVISION PLAN

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 Road Hierarchy

The road network servicing the site has/will have characteristics as described in the following sub-sections.

2.1.1 'Road 1' - Academy Street

- Unclassified and unconstructed proposed COLLECTOR Road;
- Proposed to be approximately 14m - 16 m wide two-way carriageway (one lane in each direction) with a dividing median of up to 3m wide;
- Provides a proposed link the roundabout intersection of Wianamatta Parkway/ Armoury Road in Llandilo to Ropes Crossing Boulevard in Ropes Crossing.

2.1.2 'Road 27'

- Unclassified and unconstructed proposed LOCAL Road;
- Proposed to be approximately 5.7m wide one-way carriageway with indented kerbside parking on both sides of the road;
- Indented 90-degree kerbside parking proposed along the southern edge of the road;
- Indented parallel kerbside parking proposed along the northern edge of the road.

2.1.3 'Road 13'

- Unclassified and unconstructed proposed LOCAL Road;
- Proposed to be approximately 11m wide two-way carriageway (one lane in each direction) with a dividing median of up to 1.2m wide;
- No kerbside parking proposed on either side of the road.

2.1.4 Wianamatta Parkway

- Unclassified COLLECTOR Road;
- Up to approximately 16m wide two-way carriageway (one lane in each direction) with landscaped median of approximately 4m in width and kerbside parking on both sides of the road;
- Default 50km/h speed limit;
- Kerbside parking permitted along both sides of the road.

2.1.5 Armoury Road

- Unclassified LOCAL Road;
- Approximately 11m wide two-way carriageway and kerbside parking on both sides of the road;
- Default 50km/h speed limit;
- Kerbside parking permitted along both sides of the road.

2.1.6 Existing/Proposed Traffic Management

- Roundabout intersection of Wianamatta Parkway/Armoury Road/ 'Road 1' (Academy Street);
- Proposed roundabout intersection of 'Road 27'/'Road 13';
- Proposed four-legged intersection of 'Road 1'/'Road 13'.

2.2 Public Transport

As the subject site is within a new subdivision area no public transport services are available within walking distance of the site. It is expected that as the subdivision is constructed and occupied that public transport facilities (i.e. bus service) shall be provided when demand arises.

The location of the site subject to the surrounding existing public transport network is shown in **Figure 4**.

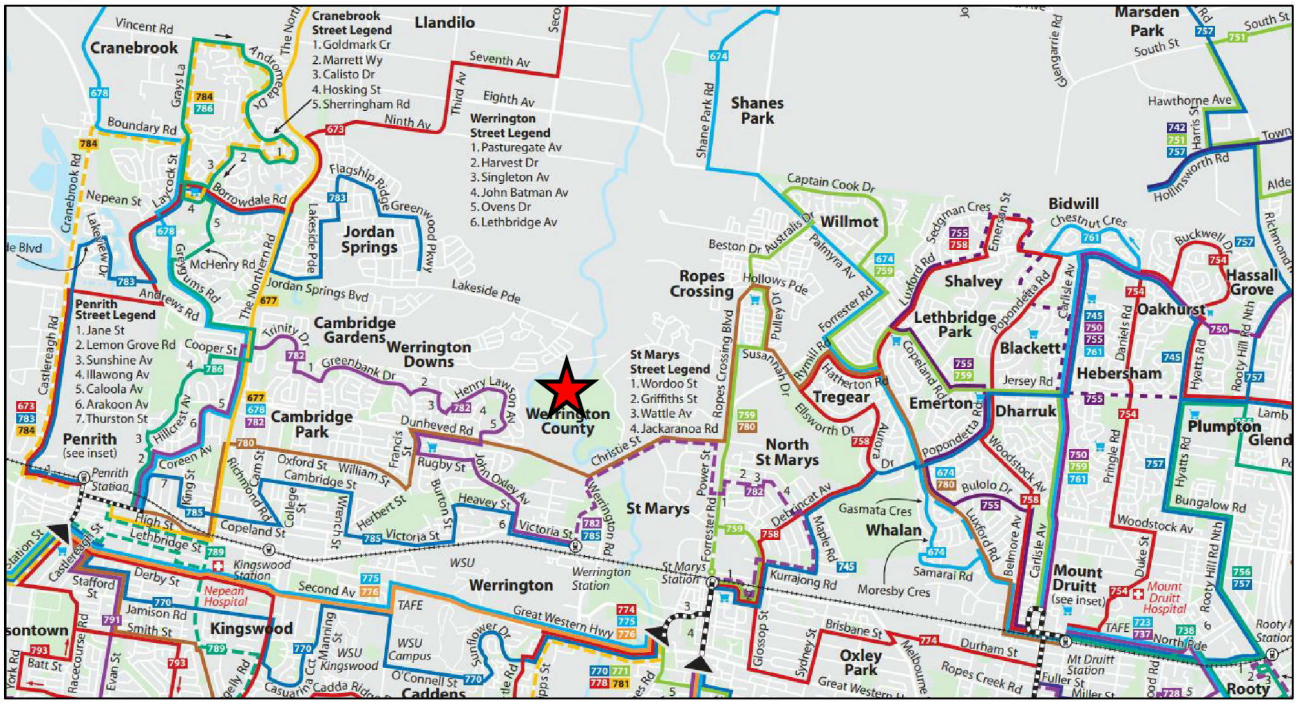


FIGURE 4: PUBLIC TRANSPORT NETWORK MAP

2.3 Future Road and Infrastructure Upgrades

From the Penrith City Council Development Application tracker and website, it appears that there are many approved and in-progress development applications relating to the surrounding subdivision. It is further noted that a link road between Wianamatta Parkway and Ropes Crossing Boulevard is proposed and is to run along the northern boundary of the proposed site, providing connectivity to the east and west.

The approved Lendlease subdivision plan is attached in **Annexure B** for reference and depicts the proposed road network of the East Jordan Springs subdivision area.

3 PARKING ASSESSMENT

3.1 Council DCP Parking Requirements

Reference is made to the *Penrith Development Control Plan 2014 – Part C – City-wide Controls – C10 – Transport, Access and Parking* which designates the following parking rates applicable to the proposed development:

Penrith Development Control Plan 2014

Table C10.2: Car Parking Rates

Residential

Multi Dwelling Housing

On-site resident parking for each dwelling:

2 car spaces per 3 or more bedrooms

Residential Flat Buildings

On-site resident parking for each dwelling:

1 space per 1 or 2 bedrooms

2 spaces per 3 or more bedrooms

1 space per 40 units for service vehicles

In addition, visitor parking is to be provided for developments that have 5 or more dwellings: 1 space per every 5 dwellings, or part thereof.

1 space for car washing for every 50 units, up to a maximum of 4 spaces per building.

Commercial

Child Care Centres/Pre Schools

1 space per 10 children plus 1 per employee plus provision for any dwelling

Fitness Centre including Gym

7 spaces per 100m2 GFA

Health Consulting Rooms/ Medical Centres

3 spaces per health care professional practising at any one time plus

1 space per receptionist/support staff, plus

1 space per associated dwelling

Retail Premises Shop

> *Supermarkets – 1 space per 10m2 of floor area that is to be used for retailing activities*
>
> *Other neighbourhood and specialty shops – 1 space per 30m2 GFA*

Other Uses

> *In accordance with RMS Guidelines or if there are no parking guidelines for a specific use, then a site specific car parking analysis will be required. This may require the applicant to submit a car parking report from a suitably qualified traffic consultant.*

It is noted that as the operations of the medical centre are unknown, a rate of one (1) staff member per 50m^2 GFA has been assumed equating to eight (8) staff. It has been assumed that five (5) staff are professional staff with the remainder three (3) being support staff.

No parking rate within the DCP is applicable to swim school and commercial car wash uses. The parking requirements of each of these uses are discussed in **Section 3.2.4** and **Section 3.2.7** respectively.

Table 3 presents the parking requirements of the proposal according to the car parking rates outlined within Council's DCP 2014.

TABLE 1: DCP PARKING RATES

Land Use	Type	Scale	Rate	Parking Required
Residential	1-bedroom	14 dwellings	1 per dwelling	14
	2-bedroom	91 dwellings	1 per dwelling	91
	3-bedroom	30 dwellings	2 per dwelling	60
SUB-TOTAL				**165**
Residential	Visitors	135 dwellings	1 per 5 dwellings	27
SUB-TOTAL				**27**
Retail / Commercial	Specialty Shop	1022m^2 GFA	1 per 30m^2	34.07
	Supermarket	930m^2 GFA	1 per 10m^2	93.00
	Pharmacy	156m^2 GFA	1 per 30m^2	5.20
	Medical Centre	5 professional staff	3 spaces per staff	15
		3 support staff	1 space per staff	3
	Swim School	14 children	2 per child	28.00
		4 staff	1 per staff	4.00
	Gymnasium	488m^2 GFA	7 per 100m^2	34.16
	Childcare Centre	154 children	1 per 10 children	15.40
		27 staff	1 per employee	27
	Car Wash	2 staff	1 per staff	2.00
SUB-TOTAL				**261**
TOTAL				**453**

As shown, the proposal requires a total of 453 parking spaces based on a strict application of the Penrith City Council Development Control Plan.

3.2 Actual Parking Demand

The parking demands of mixed-use developments are markedly different to those of isolated premises, to which the DCP directly applies. For shopping centre or town centre uses, the most appropriate and relevant source of car parking demand data is the *RMS Guide to Traffic Generating Developments 2002* (RMS Guide). For those uses that have not been provided with car parking rates in the RMS Guide or where newer research is available, alternative sources of car parking demand have been used.

3.2.1 Examination of Parking Rates for Application

The parking rates utilised are from the *Roads and Maritime Services (RMS) Guide to Traffic Generating Developments (RMS Guide)*. These rates were developed through a thorough study of 16 locations in the Sydney region; whereby the sites selected to had range of sizes, geographical locations and public transport characteristics. The peak parking demand formula provided within the *RMS Guide* presents an R^2 Value of 0.97, representing a high degree of accuracy within the model.

Considering that the most recent study of shopping centres in the Sydney region commissioned by the RMS did not include any sites of less than 20,000m^2 GLFA (the proposed centre will have approximately 6,400m^2), the rates provided in the RMS Guide to Traffic Generating Developments 2002 are considered to be the best available source of data for the estimation of parking demands for the proposed shopping centre.

It should be noted that neither the 1995 nor the 2011 studies are recent enough to include shopping centre developments with residential units on the same site; which is the most recent and prominent trend in the development of town centre sites in NSW. Considering the efficiencies that are gained for both residents and commercial premises in having potential customers/staff living on-site, it is likely that the car parking demand and traffic generation for these sites will be lower than those expressed in either study.

3.2.2 Review of Nearby Similar Development

Recent small-scale shopping centre developments in the Penrith LGA have been examined to provide a context for the generally accepted rates of car parking demand. Whilst each site is inherently different in its environmental context, it is reasonable to assume that shopping centres are broadly similar within an LGA and should be assessed similarly. The three traffic reports reviewed were:

- Jordan Springs Town Centre (Colston Budd Hunt and Kafes)
- Caddens Precinct Centre (Colston Budd Rogers and Kafes)
- Cranebrook Village Shopping Centre Redevelopment (Transport and Traffic Planning Associates)

For each of the above sites, the RMS car parking rates were utilised to calculate the parking demands. The two reports by Colston Budd et al used the rates provided in the 2002 RMS Guide to Traffic Generating Developments, whereas the TTPA report used the aggregated rate provided in the latest 2011 study commissioned by the RMS.

Notwithstanding that it was accepted by Council, it should be noted that McLaren Traffic Engineering does not agree with the approach used by TTPA considering that:

- Aggregated rates should be used only for the purposes of planning, where finer detail of uses is not available;
- Application of the 2002 RMS Guide rates would result in a parking demand of 280 spaces, 36 spaces more than that calculated using the aggregated approach.

In summary, it is clear that the use of the rates provided in the RMS Guide are generally accepted within the Penrith City Council LGA for shopping centre developments and that it is reasonable to apply these rates to the subject site.

The parking demands of each of the relevant land uses is examined in the subsections below.

3.2.3 Shopping Centres

The Roads and Maritime Services *Guide to Traffic Generating Developments 2002* provides the following with regards to the peak parking demands of Shopping Centre Developments:

> *Shopping Centres*
>
> *Peak Parking = 24A(S) 40 A(F) + 42 A(SM) + 45 A(SS) + 9 A(OM)*
>
> *Where:*
>
> *A(S): Slow Trade GLFA, includes major Department stores such as David Jones and Grace Brothers, furniture, electrical and utility goods stores.*
>
> *A(F): Faster Trade GLFA, includes discount department stores such as K-Mart and Target, together with larger specialist stores such as Fosseys.*
>
> *A(SM): Supermarket GLFA, includes stores such as Franklins and large fruit markets.*
>
> *A(SS): Speciality Shops and Secondary retail GLFA, includes speciality shops and take-away stores such as McDonalds. These stores are grouped since they tend not be primary attractors to the centre.*
>
> *A(OM): Offices, medical GLFA.*

For the purposes of calculating the park parking demand of the land uses associated with the "Shopping Centre" parking demand, the relevant land-uses proposed have been summarised into the relevant categories above in **Table 2**.

TABLE 2: LAND-USES AND AREAS – SHOPPING CENTRE

Land Use	Equivalent Category	GLFA
Specialty Shop	A (SS)	1022m^2 GLFA
Supermarket	A (SM)	930m^2 GLFA
Pharmacy	A (SS)	156m^2 GLFA
Medical Centre	A (OM)	400m^2 GLFA

3.2.4 Swim School

Neither Council's DCP or the Roads and Maritime Services *Guide to Traffic Generating Developments 2002* designate rates applicable to swim school developments and as such, a first principles assessment of the proposed swim school is suitable. The expected operations of the swim school as advised by the client are as follows:

- Two (2) separate classes of up to seven (7) students each to be run concurrently;
- Classes run for approximately 30 minutes with no gap between each class;
- Classes for children aged between three (3) months and six (6) years old;
- Up to four (4) staff onsite at any one time;
- Hours of operation of 8:00am – 7:30pm, Monday to Friday and 8:30am – 3:30pm, Saturday.

As part of the first principles parking assessment, the following parking rates have been applied to the swim school:

- Two (2) car parking spaces per child in the swim school;
    - This is a conservative rate that accounts for:
        - One (1) vehicle per child;
        - The crossover of classes (i.e. children arriving to class prior to commencement and staying onsite after class to get changed or similar).
- One (1) car parking space per staff member on-site at any one time;
    - This is a conservative rate that assumes all staff drive to the swim school.

3.2.5 Gymnasiums

The Roads and Maritime Services *Guide to Traffic Generating Developments 2002* states the following with regards to the peak parking demands of gymnasiums.

> *Gymnasiums*
>
> *Metropolitan regional (Central Business District) Centres*
>
> *3 spaces per 100m^2 GFA*
>
> *Metropolitan sub-regional areas*
>
> *Minimum provision – 4.5 spaces per 100m2 GFA*
>
> *Desirable provision – 7.5 spaces per 100m2 GFA*

These parking rates are based on surveys undertaken in 1993 and whilst surveys were completed in 2013 indicating that parking demands of gymnasiums have reduced in the intervening years, the more recent surveys were limited in their scope and cannot be applied to the subject site. Therefore, the RMS rates provided above have been applied.

3.2.6 Childcare Centres

The Roads and Maritime Services *Guide to Traffic Generating Developments 2002* states that childcare centres should provide parking at a rate of 1 space per 4 children. The surveys used to inform this parking requirement were completed in 1992, since which time the childcare industry has changed significantly, with a trend towards larger centres.

Traffic and parking surveys of childcare centres were undertaken in 2013 to determine the contemporary traffic generation and parking demands of childcare centres. The results of the surveys indicate the following:

- *Centres with 20 to 35 children – 1 space per 4 children*
- *Centres with 40 to 65 children – 1 space per 5 children*
- *Centres with 70 to 100 children – 1 space per 6 children*

As indicated, there is a marked difference between the parking demands of small centres and that of large centres. The proposed centre will include a total of 154 children and on this basis, the peak parking demands of the centre will be calculated as 1 per 6 children. It should be noted that the research did not include any child care centres located in a town centre complex and that there is likely to be a further discount to parking demand based on trip sharing with the nearby shops.

3.2.7 Commercial Car Wash

Council's DCP and the Roads and Maritime Services *Guide to Traffic Generating Developments 2002* do not designate parking rates applicable to commercial car wash developments and as such, a first principles assessment of the proposed commercial car wash is suitable.

The proposed plans detail four (4) car parking spaces to be utilised as commercial car wash bays, run and operated by a business. The business is expected to operate on a first come, first served basis, where cars arrive at the car wash and are washed while they access the Jordan Springs East Village Centre development. As the car wash has capacity for four (4) cars, any more vehicles are to be turned away by staff.

The car wash itself is not expected to generate any parking demand, but rather will be utilised by users of the site with the main purpose of visiting being another use of the site (i.e. supermarket, retail, gym etc).

The client has advised that a maximum of two (2) staff are required to run the proposed commercial car wash business at any one time. A conservative rate of one (1) car parking space per staff has been applied accordingly.

3.2.8 Parking Demand

Table 3 presents the parking requirements of the proposal according to the car parking rates outlined within Council's DCP 2014 for the residential component of the proposed development and the RMS Guide 2002 or more recent supplements where applicable for the commercial component of the proposed development.

TABLE 3: APPROPRIATE PARKING RATES

Land Use	Type	Scale	Rate	Parking Required
Residential	1-bedroom	14 dwellings	1 per dwelling	14
	2-bedroom	91 dwellings	1 per dwelling	91
	3-bedroom	30 dwellings	2 per dwelling	60
SUB-TOTAL				**165**
Residential	Visitors	135 dwellings	1 per 5 dwellings	27
SUB-TOTAL				**27**
Retail / Commercial	Specialty Shop	1022m^2 GLFA	45 per 1000m^2 GLFA	45.99
	Supermarket	930m^2 GLFA	42 per 1000m^2 GLFA	39.06
	Pharmacy	156m^2 GLFA	45 per 1000m^2 GLFA	7.02
	Medical Centre	400m^2 GLFA	9 per 1000m^2 GLFA	3.60
	Swim School	14 children	2 per child	28.00
		4 staff	1 per staff	4.00
	Gymnasium	488m^2 GFA	4.5 per 100m^2 GFA	21.96
	Childcare Centre	154 children	1 per 6 children	25.67
	Car Wash	2 staff	1 per staff	2.00
SUB-TOTAL				**177**
TOTAL				**369**

As shown above, strict application of the applicable parking rates requires a total **369** car parking spaces with **165** for residential use, **27** for residential visitor use and **177** for all other uses. The proposed plans detail a total of **358** car parking spaces, with **165** for residential use, **27** for residential visitor use, and **166** for all other uses including four (**4**) commercial car wash bays. This parking provision results in a shortfall of **11** car parking spaces for commercial use, with the required parking quantum for residential use and residential visitor use being met individually.

It is noted that Council's DCP requires one (1) car wash bay for every 50 residential units, resulting in a requirement of three (**3**) car wash bays. A commercial car wash business is proposed within the commercial / visitor area of the proposed basement car parking area, which contains the provision of four (**4**) car wash bays. These car wash bays can be used by both commercial and residential users of the site, meeting Council DCP requirements.

3.3 Car Parking Shortfall

As outlined, the proposed car parking provision results in a shortfall of **11** commercial car parking spaces from the expected parking demand.

The Lendlease Subdivision *Pavement, Signage & Linemarking Plan* (Drawing Number: CV-CARDNO-ST03D-1701, Revision 5) of the Jordan Springs East area dated 22nd February 2019, as reproduced in **Annexure B**, details the layout of the proposed 'Road 27', which borders the southern and western boundary of the subject site. This plan shows that there are 16 kerbside parking spaces proposed along the frontage of the site to 'Road 27'. The signage plan details a 2-hour parking restriction for all spaces, implying they are intended to be used for the commercial premises.

As such, it is acceptable for commercial users of the development to utilise the proposed kerbside parking along 'Road 27' to access the proposed development. The shortfall of **11** car parking spaces of the proposed onsite car park can easily and adequately be absorbed within the proposed 16 kerbside spaces fronting the site, with the remining spaces available for other users in the area. This is an acceptable outcome and typical of a commercial town centre precinct.

It is noted that the 2-hour parking restriction is consistent with the principles discussed in the *Austroads Guide to Traffic Management Part 11 – Parking* for a short to medium stay area, typical of a commercial town centre locality.

Further, an additional 38 kerbside parking spaces are proposed along 'Road 27', providing additional on-street parking capacity for other users of the subdivision.

Therefore, the proposed shortfall of **11** onsite car parking spaces is acceptable and supportable with the proposed car parking supply in the area able to meet the needs of the development.

3.4 Disabled Parking

3.4.1 Residential Use

The *Penrith Development Control Plan 2014 – Part D – Land Use Controls – D2 – Residential Development* states the following relating to disabled car parking requirements for residential developments:

> *2.5.20 Accessibility and Adaptability*
>
> *3) 10% of all dwellings or a minimum one dwelling, whichever is greater, must be designed in accordance with the Australian Adaptable Housing Standard (AS4299-1995), to be capable of adaptation for people with a disability or elderly residents.*

As such, a total of 14 dwellings are to be designed accessible. It is common practice to provide a minimum of one (1) disabled car parking spaces to each accessible or adaptable unit and as such, the provision of **14** disabled residential car parking spaces is required. A total of **14** disabled car parking spaces have been provided within the residential car parking area of the proposed development, meeting Council requirements.

3.4.2 Commercial/Retail Uses

According to the *Building Code of Australia* (BCA), the retail/commercial uses of the proposed development fall into the following Class categories and require disabled parking as per the following:

- Specialty Shops: Class 6
- Supermarket: Class 6
- Pharmacy: Class 6
- Medical Centre: Class 5
- Swim School Class 6
- Gymnasium: Class 6
- Childcare Centre: Class 9b

The BCA requires one (1) disabled space per 100 carparking spaces for a Class 5 building and one (1) disabled space per 50 car parking spaces for Class 6 and Class 9b buildings.

For a conservative result, a rate of one (1) disabled space per 50 carparking spaces has been applied to the retail/commercial portion of the proposed carpark and as such, the commercial car parking allocation requires a provision of four (**4**) disabled car parking spaces (rounded up from 3.54). Four (**4**) disabled carparking spaces have been provided within the retail/commercial carparking area, meeting relevant BCA requirements.

It is noted that residential visitors have access to the retail/commercial disabled spaces if required.

3.5 Bicycle Parking Requirements

Reference is made to the *Penrith Development Control Plan 2014 – Part C – City-wide Controls – C10 – Transport, Access and Parking* which states the following regarding bicycle parking:

> *Bicycle parking in accordance with the suggested bicycle parking provision rates for different land use types in the document 'Planning Guidelines for Walking and Cycling' (NSW Government 2004). Bicycle parking spaces should comply with AS2890.3:1993 Bicycle Parking Facilities.*

As such, reference is made to the NSW Government *Planning Guidelines for Walking and Cycling* document which specifies the following bicycle parking rates applicable to the proposed development:

> ***Table 1. Suggested bicycle parking provision rates for different land-use types***
>
> *Residential housing and casual accommodation*
>
> ***1-bedroom units/flats and bedsitters***
>
> | | |
> |---|---|
> | *Resident (Long-term use)* | *20–30%U* |
> | *Visitor (Short-term use)* | *5–10%U* |
>
> ***2- or more bedroom units/flats***
>
> | | |
> |---|---|
> | *Resident (Long-term use)* | *20–30%U* |
> | *Visitor (Short-term use)* | *5–10%U* |
>
> *Where: U = Units and Apartments*
>
> *Office, commercial and industry*
>
> ***Retail shops***
>
> | | |
> |---|---|
> | *Staff (Long-term use)* | *3–5%S* |
> | *Customer/visitor (Short-term use)* | *5–10%S* |
>
> *Food, entertainment and recreation*
>
> ***Gyms, indoor sport/recreation***
>
> | | |
> |---|---|
> | *Staff (Long-term use)* | *3–5%S* |
> | *Customer/visitor (Short-term use)* | *5–10%S* |
>
> ***Swimming pools***
>
> | | |
> |---|---|
> | *Staff (Long-term use)* | *3–5%S* |
> | *Customer/visitor (Short-term use)* | *5–10%S* |
>
> *Health, education, community and cultural facilities*

Health and medical centres

Staff (Long-term use) *5–10%P*

Customer/visitor (Short-term use) *5–10%S*

Childcare centres

Staff (Long-term use) *3–5%S*

Visitor (Short-term use) *5–10%S*

Where: S = Staff, P=Practitioners, professionals

By applying the application rates to the proposed development, the resulting bicycle parking provision is summarised in **Table 4**.

TABLE 4: BICYCLE PARKING PROVISION RECOMMENDATION

Land Use	Type	Scale	Rate	Bicycle Spaces Recommended
Residential				
Residential	1-bedroom	14 units	20-30%	3 - 4
	2 or more bedroom	121 units	20-30%	24 - 36
Resident Sub-Total				**27 - 40**
Staff				
Commercial	Retail (1)	24 staff	3-5%	1 – 1
	Supermarket (1)	19 staff	3-5%	1 – 1
Recreation	Gym (1)	10 staff	3-5%	0 – 1
	Swim School	4 staff	3-5%	0 - 0
Health, Education	Medical Centre (1)	8 staff	5-10%	0 – 1
	Childcare Centre	27 staff	3-5%	1 – 1
Other	Car Wash	2 staff	3-5%	0 - 0
Staff Sub-Total				**3 – 5**
Visitor				
Residential	Visitors	135 units	5-10%	7 – 14
Commercial	Retail (1)	24 staff	5-10%	1 – 2
	Supermarket (1)	19 staff	5-10%	1 – 2
Recreation	Gym (1)	10 staff	5-10%	1 – 1
	Swim School	4 staff	5-10%	0 – 0
Health, Education	Medical Centre (1)	8 staff	5-10%	0 – 1
	Childcare Centre	27 staff	5-10%	1 – 3
Visitor Sub-Total				**11 – 23**
Total				**41 - 68**

Notes (1) A staff rate of one per 50m^2 has been assumed.

As shown, a provision of **41** – **68** bicycle parking spaces is recommended for the proposed development, with **14** – **28** for staff and visitor use. The proposed plans detail a total **30** publicly accessible bicycle parking spaces which can be readily utilised for staff and visitors of the proposed development. This exceeds the range of the bicycle guideline recommended provision and should be looked upon favourably by Council.

It is noted the commercial car wash use does not require any visitor bicycle parking as it attracts only visiting cars and as such, the provision of nil (0) visitor bicycle spaces is acceptable.

The proposed plans detail a total of **40** bicycle spaces for residential use. This satisfies the residential bicycle parking requirement as outlined within the NSW Government *Planning Guidelines for Walking and Cycling*. This bicycle parking provision should be looked upon favourably as it promotes alternate travel modes for residents.

3.6 Motorcycle Parking Requirements

The Penrith Council DCP does not provide rates for motorcycle parking and as such, does not require this facility. Motorcycles will be able to park in the proposed on-site car parking spaces if required.

3.7 Servicing & Loading

Reference is made to the *Penrith Development Control Plan 2014* which does not explicitly outline requirements for servicing and loading vehicle. It is noted that within *Part C10 – Transport, Access and Parking* of Councils DCP, it is stated:

> *Where relevant, development shall provide on-site loading facilities to accommodate the anticipated heavy vehicle demand for the site.*

A loading bay able to accommodate an Australian Standard 12.5m Heavy Rigid Vehicle (HRV) is proposed for servicing and loading purposes. This loading bay is adjacent to the proposed supermarket and can be accessed by the pharmacy, medical centre and other retail tenancies. To ensure forward entry and exit from the loading area, a 12.5m diameter turntable is proposed.

This provision can adequately meet the heavy vehicle demand for the proposed development, whereby vehicles up to 12.5m in length can access site for servicing and loading purposes.

It is noted that most general deliveries can be conducted to the site by an Australian Standard B99 Vehicle (i.e. Toyota HiAce Van) or smaller. This size vehicle can temporarily use on-site visitor or commercial parking areas for these types of deliveries. This is an acceptable outcome and is common practice in developments of a similar nature.

For waste collection, the DCP sets out the following requirements within *Part C5 – Waste Management*:

5.2.2.4 – Residential Flat Buildings

5) On-site collection is required to service the development.

a) The route must be designed to allow collection vehicles to enter and exit the site in a forward direction with limited manoeuvring and reversing on-site;

b) The route of travel (including vehicle manoeuvring areas) for the waste collection point is to satisfy the typical dimensions of heavy rigid vehicle. This also includes adequate vehicle clearance for the vehicle. Australian Standard AS2890.2 Parking Facilities: Off-Street Commercial Vehicle Facilities provides typical dimensions and turning circles.

5.2.4. Non-Residential Development Controls

10) Swept paths demonstrating adequate manoeuvring area are to be provided with the application.

The client has advised that the proposed waste collection operations will take place within the proposed commercial loading area by Council's waste collection vehicle. Residential and commercial waste receptacles will be taken to the loading dock on the day of collection and returned to their usual location after being emptied. Waste collection operations can be completed under an Operational Waste Management Plan (OWMP) if required.

Swept path testing as depicted in **Annexure C** shows that vehicles up to a 12.5m length Heavy Rigid Vehicle (HRV) can access and exit the loading dock in a forward direction, with the utilisation of the turntable facility.

3.8 Car Park Design & Compliance

The car parking layout as depicted in **Annexure A,** has been generally assessed to achieve the relevant clauses and objectives of *AS2890.1:2004*, *AS2890.2:2002* and *AS2890.6:2009*. The proposed car park design is to achieve:

- Minimum 6.3m combined two-way left in/left out driveway facilitating access to a local road;
    - A minimum 6m width entry splay at the property boundary for ease of manoeuvring into site from the road frontage;
    - Left in/left out access conditions is enforced by a median within the proposed 'Road 1' carriageway;
- Minimum 5.8m width parking aisles for residential areas;
- Minimum 6.2m width parking aisles for commercial areas;
- Compliant ramp grades not exceeding 20% for public developments and no grade change greater than 12.5%;
- Minimum 5.4m length, 2.4m width parking spaces for residential use;

- Minimum 5.4m length, 2.6m width parking spaces for visitor and commercial use;
- Minimum 5.4m length, 2.4m width disabled spaces with adjacent associated 5.4m length, 2.4m width shared space;
- Minimum headroom of 2.2m for general circulation and 2.5m headroom clearance provided over disabled and adaptable parking areas;
- Minimum 0.3m clearance to high objects from vehicular accessible areas;
- Pedestrian sight triangle as per *Figure 3.3* of *AS2890.1:2004* to be available at the property boundary along the access driveway;
- Columns located outside of the car parking envelope;
- Minimum 1m blind aisle provided where applicable;
- Minimum bicycle parking envelope of 0.5m width, 1.8m length and 1.2m height provided including a clear access width of 1.5m as specified in *AS2890.3:2015*.

Whilst the plans have been assessed to generally comply with the relevant standards, it is usual and expected that a design certificate be required at the Construction Certificate stage to account for any changes following the development application.

4 TRAFFIC ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

4.1 Traffic Generation and Impact

Traffic generation rates for the relevant land uses are provided in the *Roads and Maritime Services (RMS) Guide to Traffic Generating Developments (2002)* and recent supplements and are as follows:

RMS Guide

3.3 Residential

3.3.2 Medium density residential flat building.

Larger units and town houses (three or more bedrooms):

Weekday peak hour vehicle trips = 0.5-0.65 per dwelling.

3.3.3 High density residential flat building.

Metropolitan Sub-Regional Centres

Peak Hour Vehicle Trips = 0.29 trips per unit.

3.6 Retail

3.6.1 Shopping centres.

Thursday: V(P) = 155 A(SM) + 46 A(SS) + 22 A(OM)

(vehicle trips per 1000m2).

where:

A(SM): Supermarket GLFA

A(SS): Specialty shops, secondary retail GLFA

A(OM): Office, medical GLFA:

3.8 Recreational and tourist facilities

3.8.2 Gymnasiums.

Metropolitan Sub Regional Areas

Evening Peak Hour Vehicle Trips = 9 trips per 100m2 GFA

3.11 Health and community services

3.11.3 Child care centres

Long Day Care

7.00am-9.00am 0.8 peak vehicle trips / child

4.00pm-6.00pm 0.7 peak vehicle trips / child

The RMS Guide 2002 does not specify traffic generation rates for swim school developments. As such, a first principles assessment of the proposed swim school is suitable. The client advised expected operations of the proposed swim school are detailed in **Section 3.2.4**. For conservative analysis, the following traffic generation rates have been applied:

- One (1) inbound and one (1) outbound vehicle movement per child to the swim school in any one hour;
    - It is noted there is expected to be up to 28 children per hour accessing the swim school, with seven (7) children per class and four (4) classes per hour;
- All staff arrive prior to swim school opening (8:00am) and depart after closing (7:30pm);
    - One (1) inbound vehicle trip per staff member prior to opening (during the AM peak hour period);
    - One (1) outbound vehicle trip per staff member after closing (after the PM peak hour period).

It is noted that the proposed commercial car wash is not expected to generate any visitor traffic, with users of the car wash accessing site for one of the other commercial facilities. For conservative analysis, a rate of one (1) vehicle movement per staff member during the AM peak hour period (inbound) and PM peak hour period (outbound) has been applied.

Applying these site-specific traffic generation rates to the subject site results in the estimated traffic generation as summarised in **Table 5**.

TABLE 5: RMS ESTIMATED PEAK HOUR TRAFFIC GENERATION

Land Use	Scale	Peak Period	Rate	Traffic Generation	Trip Distribution (2)
Residential Medium Density	11 town-houses	AM	0.65 trips per dwelling	7.15	1 in / 6 out
		PM	0.65 trips per dwelling	7.15	6 in / 1 out
Residential High Density	124 units	AM	0.29 trips per unit	35.96	7 in / 29 out
		PM	0.29 trips per unit	35.96	29 in / 7 out
Specialty Shop	1022m^2 GLFA	AM	50% of PM rate (1)	23.51	12 in / 12 out
		PM	4.6 trips per 100m^2	47.01	23 in / 24 out
Supermarket	930m^2 GLFA	AM	50% of PM rate (1)	72.08	36 in / 36 out
		PM	15.5 trips per 100m^2	144.15	72 in / 72 out
Pharmacy	156m^2 GLFA	AM	50% of PM rate (1)	3.59	2 in / 2 out
		PM	4.6 trips per 100m^2	7.18	3 in / 4 out
Medical Centre	400m^2 GLFA	AM	50% of PM rate (1)	4.40	2 in / 2 out
		PM	2.2 trips per 100m^2	8.80	4 in / 5 out
Swim School	28 children	AM	2 trips per child	56.00	28 in / 28 out
		PM	2 trips per child	56.00	28 in / 28 out
	4 staff	AM	1 inbound trip per staff	4.00	4 in / 0 out
		PM	N/A	0	0
Gymnasium	488m^2 GFA	AM	50% of PM rate (1)	21.96	11 in / 11 out
		PM	9 per 100m^2	43.92	22 in / 22 out
Childcare Centre	154 children	AM	0.8 per child	123.20	62 in / 61 out
		PM	0.7 per child	107.80	54 in / 54 out
Car Wash	2 staff	AM	1 inbound trip per staff	2.00	2 in / 0 out
		PM	1 outbound trip per staff	2.00	0 in / 2 out
TOTAL		**AM**		**354**	**167 in / 187 out**
		PM		**460**	**241 in / 219 out**

Notes: 1) 50% of PM rate adopted as a conservative traffic generation estimate in absence of AM period rates.
2) Assumed traffic distribution of 50% inbound / 50% outbound in both AM and PM peak, except for residential where 20% inbound / 80% outbound in the AM peak and vice versa in the PM peak applied.

As shown above the estimated traffic generation associated with the proposed development is in the order of **354** vehicle trips (167 in, 187 out) during the AM peak hour period and **460** vehicle trips (241 in, 219 out) during the PM peak hour period.
As the proposed development is located within a new subdivision precinct with little existing road infrastructure, a full traffic impact assessment cannot be made. It is expected that the original subdivision plan would have taken into account the traffic volumes associated with community facilities that the proposed East Village Centre contains. As such, it is expected that the infrastructure (i.e. roads and intersections) in the East Jordan Springs subdivisions have been designed to readily accommodate and absorb the associated traffic while maintaining adequate traffic flow conditions in the area.

It should be noted that the traffic generation estimated above in **Table 5** is generally consistent with the traffic generation envisaged for the site as provided in the *Jordan Springs East - Internal Road and Intersection Assessment With Rezoning* Report by WSP which supported the rezoning application for the Jordan Springs East precinct.

5 CONCLUSION

The traffic and parking impacts of the subject Proposed Mixed Use Development at East Village Centre Site, Jordan Springs as depicted on plans reproduced in **Annexure A** for reference, have been assessed.

Based on an assessment of the proposed uses of the subject site against the requirements of the Penrith DCP and the RMS Guide where relevant, the proposal is expected to demand **369** car parking spaces, with **165** for residential use, **27** for residential visitor use and **177** for commercial use. The proposed plans detail a provision of **358** car parking spaces, with **165** for residential use, **27** for residential visitor and **166** for retail/commercial use, including four (**4**) commercial car wash bays.

Although the onsite car parking provision results in a shortfall of **11** car parking spaces, it is expected that the 16 proposed on-street 2-hour time restricted kerbside parking fronting the site on 'Road 27' can be utilised by commercial visitors. As such, the car parking quantum proposed meets the expected parking demands of the proposal as per the DCP and the RMS Guide.

The proposed plans detail a provision of **30** publicly accessible bicycle parking spaces, which can be used by residential visitors and commercial users. This provision satisfies the *NSW* Government *Planning Guidelines for Walking and Cycling* recommendation of 14 – 28 staff/visitor bicycle parking spaces.

The proposed plans detail a provision of **40** bicycle parking spaces for residential use. This provision satisfies the *NSW* Government *Planning Guidelines for Walking and Cycling* recommendation of 27 - 40 residential bicycle parking spaces.

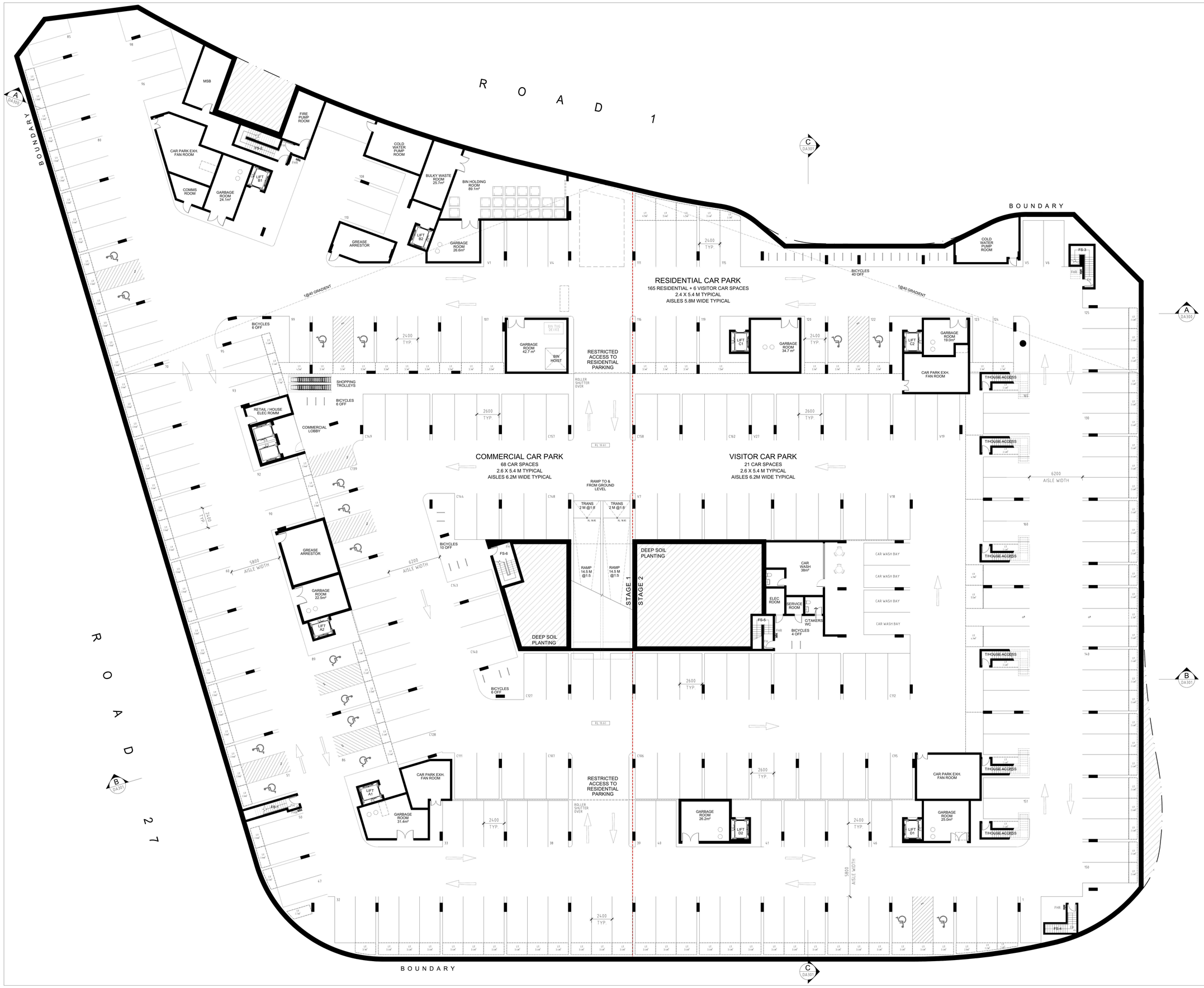
The parking areas of the site have been assessed against the relevant sections of *AS2890.1:2004*, *AS2890.2:2018* and *AS2890.6:2009* and have been found to satisfy the objectives of each standard.

The traffic generation due to the proposed development has been estimated to be some **354** trips (167 in, 187 out) in the AM peak hour period and **460** trips (241 in, 219 out) in the PM peak hour period. It is expected that the subdivision road plan has taken into account the traffic associated with community facilities provided by the development and as such, the traffic impact of the development can be readily accommodated within the proposed road network.

In view of the foregoing, the subject Proposed Mixed Use Development at East Village Centre Site, Jordan Springs (as depicted in **Annexure A**) is fully supportable in terms of its traffic and parking impacts.

ANNEXURE A: PROPOSED PLANS

(2 SHEETS)



GENERAL NOTES:

- ALL WORKS TO COMPLY WITH BUILDING CODE OF AUSTRALIA, REQUIREMENTS OF RELEVANT STATUTORY AUTHORITIES / LOCAL GOVERNMENT & RELEVANT AUSTRALIAN BUILDING STANDARDS
- CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK - SHOULD A DISCREPANCY BE IDENTIFIED PLEASE CONFIRM WITH ARCHITECT PRIOR TO PROCEEDING (DO NOT SCALE FROM DRAWINGS)
- DRAWINGS FOR THE PURPOSES OF DA ONLY - FURTHER CONSULTANT / AUTHORITY COORDINATION WILL BE REQUIRED AT CC STAGE WHICH MAY IMPACT ON DESIGN AND PLANNING LAYOUTS
- COPYRIGHT OF DESIGN SHOWN HEREON IS RETAINED BY PBD ARCHITECTS AND AUTHORITY IS REQUIRED FOR ANY REPRODUCTION

LEGEND:

AW	AWNING
AH	ACCESS HATCH
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
GC	GARBAGE CHUTE
GW	GREEN WALL
HW	HIGHLIGHT WINDOW
MV	MECHANICAL RISER TO FUTURE DETAIL
MB	MAILBOX TO FUTURE DETAIL
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

MATERIALS LEGEND:

AFG	ALUMINIUM FRAMED GLAZING
AFL	ALUMINIUM ELLIPTICAL FIXED LOUVERS
AW	AWNING TO FUTURE DETAILS
BC	BATTEN CLADDING (TO FUTURE DETAIL)
FB	FACE BRICK
GB	FRAMELESS TOUGHENED GLASS BALUSTRADE (TO BCA/AUSTRALIAN STANDARDS)
MF	METAL FENCING (TO FUTURE SELECTION)
PC	COMPOSITE PANEL CLADDING
PSx	PRIVACY SCREEN (TO FUTURE SELECTION)
PTx	PAINT FINISH TYPEx
RD	ROLLER DOOR
RP	RIVER PEBBLES
RW	RENDERED WALL/SELECTED PAINT FINISH
TC	TIMBER CLADDING

ISSUE	DATE	DESCRIPTION
A	11.10.19	ISSUE FOR DA

SCALE 1:200 @ A1
SCALE 1:400 @ A3
0 1 2 5m

CLIENT:
LA LAND Pty Ltd

ARCHITECT:
PBD | ARCHITECTS
ABN 36 147 035 550
P - 02 9698 8140 E - info@pbdarchitects.com.au W - www.pbdarchitects.com.au
Level 2, 52 Albion Street, Surry Hills NSW 2010

PROJECT:
JORDAN SPRINGS
EAST VILLAGE CENTRE

May 2019

DRAWING TITLE:
BASEMENT PLAN

SCALE:	DRAWING NO:	ISSUE:
1:200 @ A1	DA100	A
PROJECT NO: 1909		

GENERAL NOTES:

- ALL WORKS TO COMPLY WITH BUILDING CODE OF AUSTRALIA, REQUIREMENTS OF RELEVANT STATUTORY AUTHORITIES / LOCAL GOVERNMENT & RELEVANT AUSTRALIAN BUILDING STANDARDS
- CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK - SHOULD A DISCREPANCY BE IDENTIFIED PLEASE CONFIRM WITH ARCHITECT PRIOR TO PROCEEDING (DO NOT SCALE FROM DRAWINGS)
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LEGEND:

AW	AWNING
AH	ACCESS HATCH
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
GC	GARBAGE CHUTE
GW	GREEN WALL
HW	HIGHLIGHT WINDOW
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MB	MAILBOX TO FUTURE DETAIL
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

MATERIALS LEGEND:

AFG	ALUMINIUM FRAMED GLAZING
AFL	ALUMINIUM ELLIPTICAL FIXED LOUVERS
AW	AWNING TO FUTURE DETAILS
BC	BATTEN CLADDING (TO FUTURE DETAIL)
FB	FACE BRICK
GB	FRAMELESS TOUGHENED GLASS BALUSTRADE (TO BCA/AUSTRALIAN STANDARDS)
MF	METAL FENCING (TO FUTURE SELECTION)
PC	COMPOSITE PANEL CLADDING
PSx	PRIVACY SCREEN (TO FUTURE SELECTION)
PTx	PAINT FINISH TYPEx
RD	ROLLER DOOR
RP	RIVER PEBBLES
RW	RENDERED WALL/SELECTED PAINT FINISH
TC	TIMBER CLADDING

ISSUE	DATE	DESCRIPTION
A	11.10.19	ISSUE FOR DA

SCALE 1:200 @ A1
SCALE 1:400 @ A3

0 1 2 5m

CLIENT:
LA LAND Pty Ltd

ARCHITECT:
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Level 2, 52 Albion Street, Surry Hills NSW 2010

PROJECT:
JORDAN SPRINGS
EAST VILLAGE CENTRE

May 2019

DRAWING TITLE:
GROUND FLOOR PLAN

SCALE:	DRAWING NO:	ISSUE:
1:200 @ A1	DA101	A
PROJECT NO: 1909		

ANNEXURE B: SUBDIVISION PLANS – STAGE 3D CIVIL WORKS

(3 SHEETS)

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LENDLEASE

JORDAN SPRINGS EAST STAGE 3D - CIVIL WORKS DEVELOPMENT APPLICATION

SCHEDULE OF DRAWINGS

DRAWING No.	DESCRIPTION
CV-CARDNO-ST03D-1001	COVER SHEET & DRAWING SCHEDULE
CV-CARDNO-ST03D-1011	GENERAL NOTES & LEGENDS
CV-CARDNO-ST03D-1021	CONTEXT PLAN
CV-CARDNO-ST03D-1031	GENERAL ARRANGEMENT PLAN
CV-CARDNO-ST03D-1041	DEVELOPMENT APPLICATION STAGING PLAN AND ROAD HIERARCHY PLAN
CV-CARDNO-ST03D-1101	EROSION AND SEDIMENTATION CONTROL PLAN
CV-CARDNO-ST03D-1131	EROSION AND SEDIMENTATION CONTROL DETAILS
CV-CARDNO-ST03D-1251	TYPICAL ROAD CROSS SECTIONS AND PAVEMENT TYPES SHEET 1
CV-CARDNO-ST03D-1252	TYPICAL ROAD CROSS SECTIONS AND PAVEMENT TYPES SHEET 2
CV-CARDNO-ST03D-1301	CIVIL WORKS AND STORMWATER DRAINAGE PLAN
CV-CARDNO-ST03D-1351	ROAD LONGITUDINAL SECTIONS SHEET 1 ROAD 013 & 027
CV-CARDNO-ST03D-1352	ROAD LONGITUDINAL SECTIONS SHEET 2 ROAD 028
CV-CARDNO-ST03D-1601	CIVIL WORKS DETAILS SHEET 1
CV-CARDNO-ST03D-1602	CIVIL WORKS DETAILS SHEET 2
CV-CARDNO-ST03D-1701	PAVEMENT, SIGNAGE & LINEMARKING PLAN
CV-CARDNO-ST03D-2201	STORMWATER DRAINAGE DETAILS SHEET 1
CV-CARDNO-ST03D-2202	STORMWATER DRAINAGE DETAILS SHEET 2
CV-CARDNO-ST03D-2301	INTERNAL STORMWATER CATCHMENT PLAN

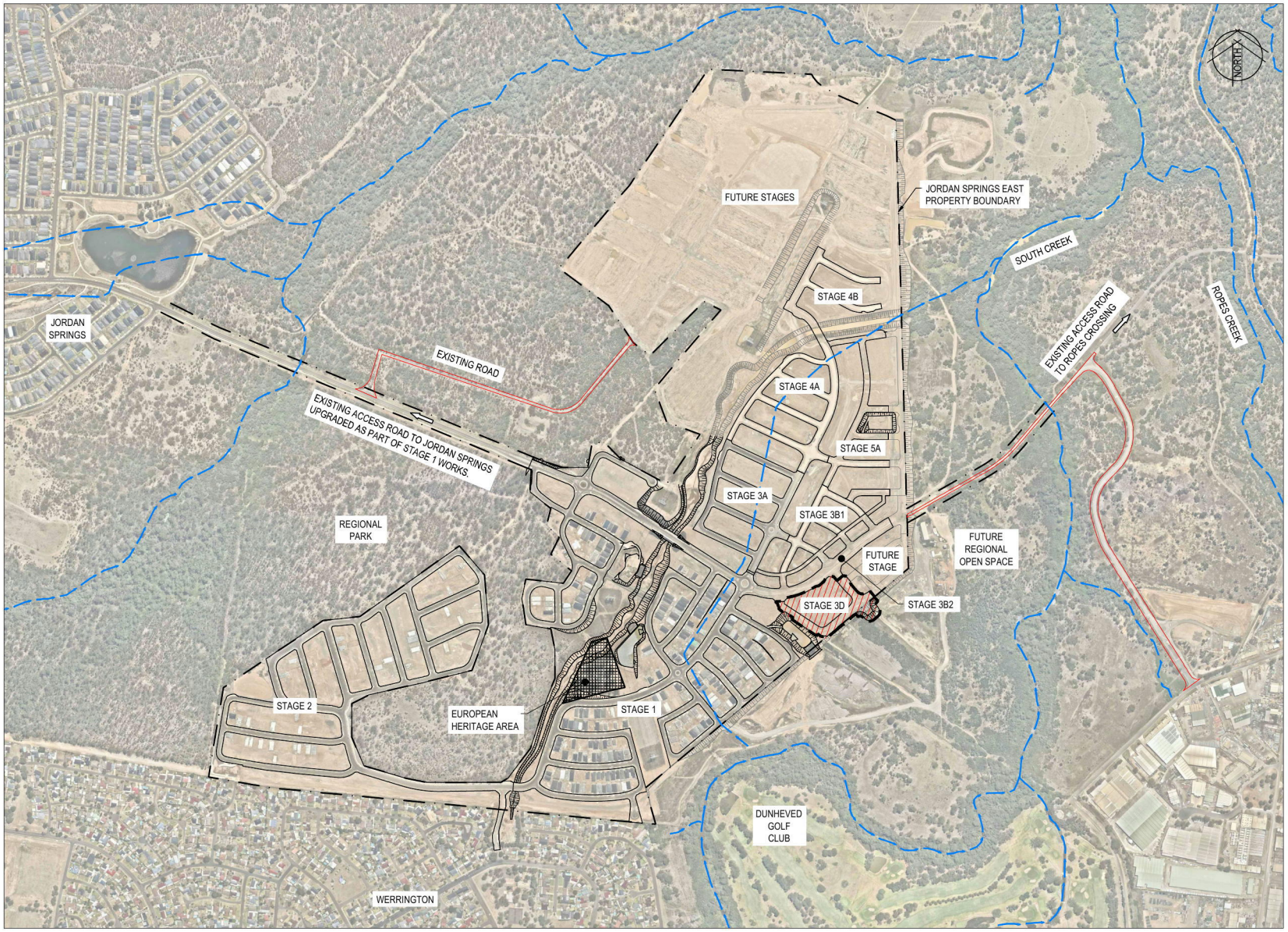
Rev.	Date	Description	Des.	Verif.	Appd.
3	30.07.19	REISSUED FOR DEVELOPMENT APPLICATION APPROVAL	DAC	ARM	ARM
2	22.02.19	ISSUED FOR DEVELOPMENT APPLICATION APPROVAL	DAC	ARM	ARM
1	05.06.18	ISSUED FOR DRAFT DEVELOPMENT APPLICATION	DAC	ARM	ARM

Drawn	MCD	Date 22.02.19
Checked	DAC	Date 22.02.19
Designed	DAC	Date 22.02.19
Verified	ARM	Date 22.02.19
Approved	ARM	22.02.19

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Scale	Size
AHD		A1

Drawing Number: CV-CARDNO-ST03D-1001
Revision: 3



CONTEXT PLAN
SCALE 1:5000

LEGEND
- STAGE 3D EXTENT
- JORDAN SPRINGS EAST BOUNDARY
- EXISTING WATER COURSES AS PER 1:10000 TOPOGRAPHIC MAPS

0 100 200 300 400 500m
SCALE 1:5000 @A1

Rev.	Date	Description	Des.	Verif.	Appd.
3	30.07.19	REISSUED FOR DEVELOPMENT APPLICATION APPROVAL	DAC	ARM	ARM
2	22.02.19	ISSUED FOR DEVELOPMENT APPLICATION APPROVAL	DAC	ARM	ARM
1	05.06.18	ISSUED FOR DRAFT DEVELOPMENT APPLICATION	DAC	ARM	ARM

lendlease

Cardno
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Suite 3.01, Level 3, 3 Horwood Place
Parramatta, NSW 2150
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

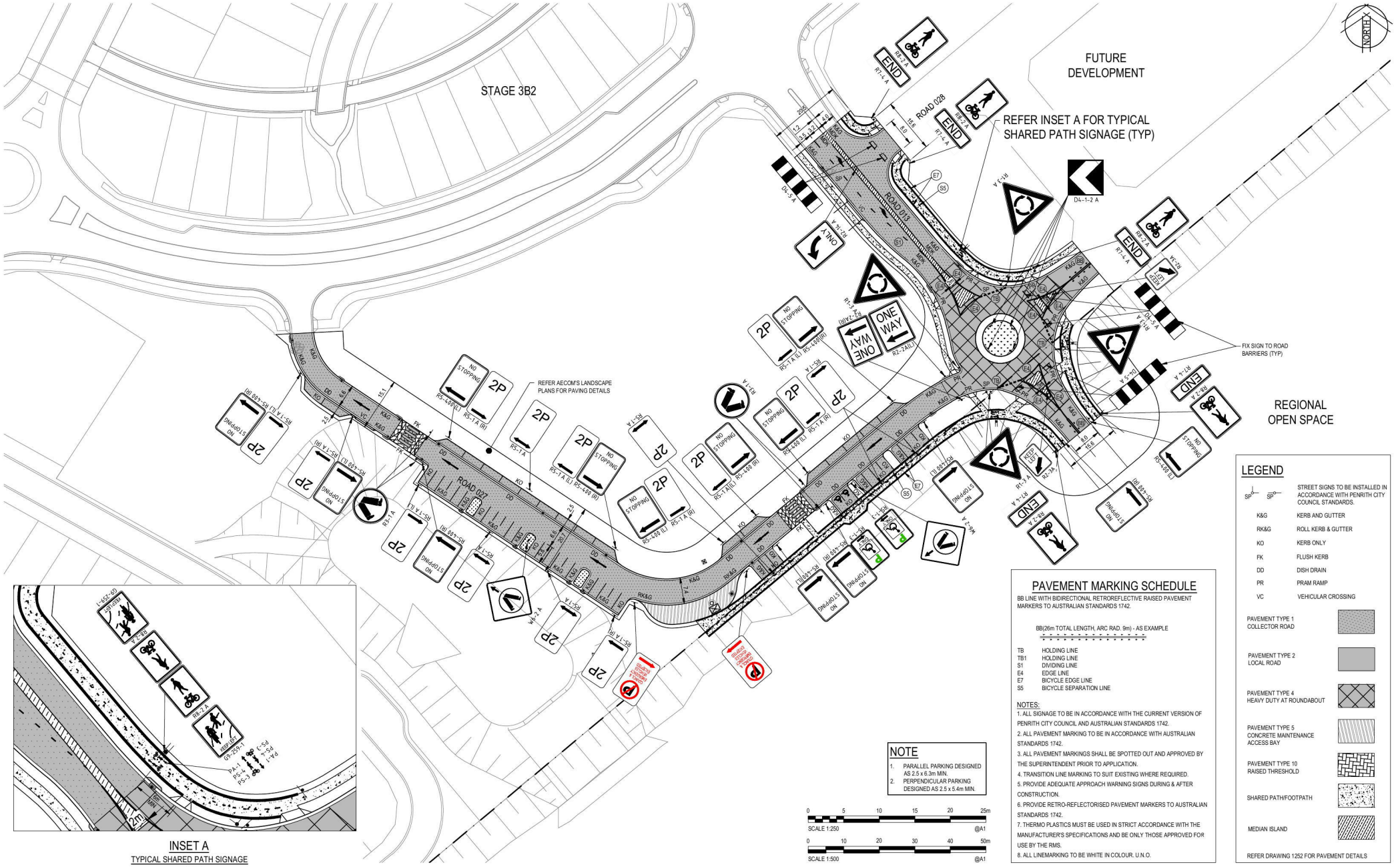
		Date
Drawn	MCD	22.02.19
Checked	DAC	22.02.19
Designed	DAC	22.02.19
Verified	ARM	22.02.19
Approved	ARM	22.02.19

Client: LENDLEASE
Project: JORDAN SPRINGS EAST
STAGE 3D - CIVIL WORKS
DEVELOPMENT APPLICATION
Title: CONTEXT PLAN

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Scale	Size
AHD	1:5000	A1

Drawing Number: CV-CARDNO-ST03D-1021
Revision: 3



INSET A
TYPICAL SHARED PATH SIGNAGE
SCALE 1:250

NOTE
1. PARALLEL PARKING DESIGNED AS 2.5 x 6.3m MIN.
2. PERPENDICULAR PARKING DESIGNED AS 2.5 x 5.4m MIN.

SCALE 1:250 @A1
SCALE 1:500 @A1

PAVEMENT MARKING SCHEDULE

BB LINE WITH BIDIRECTIONAL RETROREFLECTIVE RAISED PAVEMENT MARKERS TO AUSTRALIAN STANDARDS 1742.

BB(26m TOTAL LENGTH, ARC RAD. 9m) - AS EXAMPLE

TB	HOLDING LINE
TB1	HOLDING LINE
S1	DIVIDING LINE
E4	EDGE LINE
E7	BICYCLE EDGE LINE
S5	BICYCLE SEPARATION LINE

NOTES:
1. ALL SIGNAGE TO BE IN ACCORDANCE WITH THE CURRENT VERSION OF PENRITH CITY COUNCIL AND AUSTRALIAN STANDARDS 1742.
2. ALL PAVEMENT MARKING TO BE IN ACCORDANCE WITH AUSTRALIAN STANDARDS 1742.
3. ALL PAVEMENT MARKINGS SHALL BE SPOTTED OUT AND APPROVED BY THE SUPERINTENDENT PRIOR TO APPLICATION.
4. TRANSITION LINE MARKING TO SUIT EXISTING WHERE REQUIRED.
5. PROVIDE ADEQUATE APPROACH WARNING SIGNS DURING & AFTER CONSTRUCTION.
6. PROVIDE RETRO-REFLECTORISED PAVEMENT MARKERS TO AUSTRALIAN STANDARDS 1742.
7. THERMO PLASTICS MUST BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND BE ONLY THOSE APPROVED FOR USE BY THE RMS.
8. ALL LINEMARKING TO BE WHITE IN COLOUR. U.N.O.

LEGEND

SP	STREET SIGNS TO BE INSTALLED IN ACCORDANCE WITH PENRITH CITY COUNCIL STANDARDS.
K&G	KERB AND GUTTER
RK&G	ROLL KERB & GUTTER
KO	KERB ONLY
FK	FLUSH KERB
DD	DISH DRAIN
PR	PRAM RAMP
VC	VEHICULAR CROSSING

PAVEMENT TYPE 1 COLLECTOR ROAD
PAVEMENT TYPE 2 LOCAL ROAD
PAVEMENT TYPE 4 HEAVY DUTY AT ROUNDABOUT
PAVEMENT TYPE 5 CONCRETE MAINTENANCE ACCESS BAY
PAVEMENT TYPE 10 RAISED THRESHOLD
SHARED PATH/FOOTPATH
MEDIAN ISLAND

REFER DRAWING 1252 FOR PAVEMENT DETAILS

Rev.	Date	Description	Des.	Verif.	Appd.
5	30.07.19	REISSUED FOR DEVELOPMENT APPLICATION APPROVAL	DAC	ARM	ARM
4	15.05.19	REISSUED FOR DEVELOPMENT APPLICATION APPROVAL	DAC	ARM	ARM
3	22.02.19	ISSUED FOR DEVELOPMENT APPLICATION APPROVAL	DAC	ARM	ARM
2	14.06.18	REISSUED FOR DRAFT DEVELOPMENT APPLICATION	DAC	ARM	ARM
1	05.06.18	ISSUED FOR DRAFT DEVELOPMENT APPLICATION	DAC	ARM	ARM

lendlease

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		Date
Drawn	MCD	22.02.19
Checked	DAC	22.02.19
Designed	DAC	22.02.19
Verified	ARM	22.02.19
Approved	ARM	22.02.19

Client: LENDLEASE
Project: JORDAN SPRINGS EAST
STAGE 3D - CIVIL WORKS
DEVELOPMENT APPLICATION
Title: PAVEMENT, SIGNAGE & LINEMARKING PLAN

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

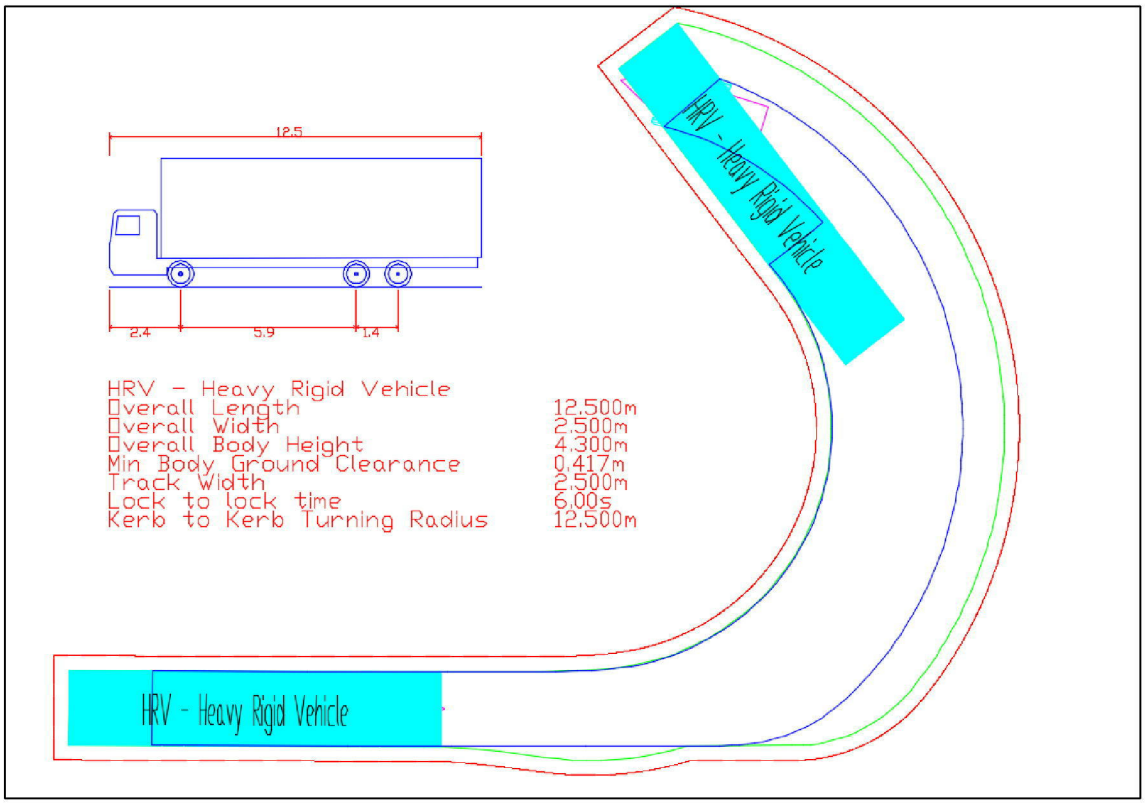
Datum	Scale	Size
AHD	AS SHOWN	A1

Drawing Number: CV-CARDNO-ST03D-1701
Revision: 5

DATE PLOTTED: 30 July 2019 5:00 PM BY: MARY DOZA
REF's: XR-89914020-21-CH-PAVEMENT; XR-89914020-21-CH-DESIGN; XR-89914020-21-CH-LINEMARKING & SIGNAGE; Xref-89914020-Client Logos; XR-89914020-21-CH-ROAD C... XR-89914020-CH-MASTERPLAN; XR-89914020-21-CH-DRAINAGE; XR-89914020-22-CH-DESIGN
CAD File: N:\Parramatta\Projects\89\PFY14020_CENTRAL PRECINCT, ADJ ST MARYS\3Drawings\21 Central Precinct Stage 3D\Drawings\CV-CARDNO-ST03D-1701-DWG[5].dwg

ANNEXURE C: SWEPT PATH TESTING

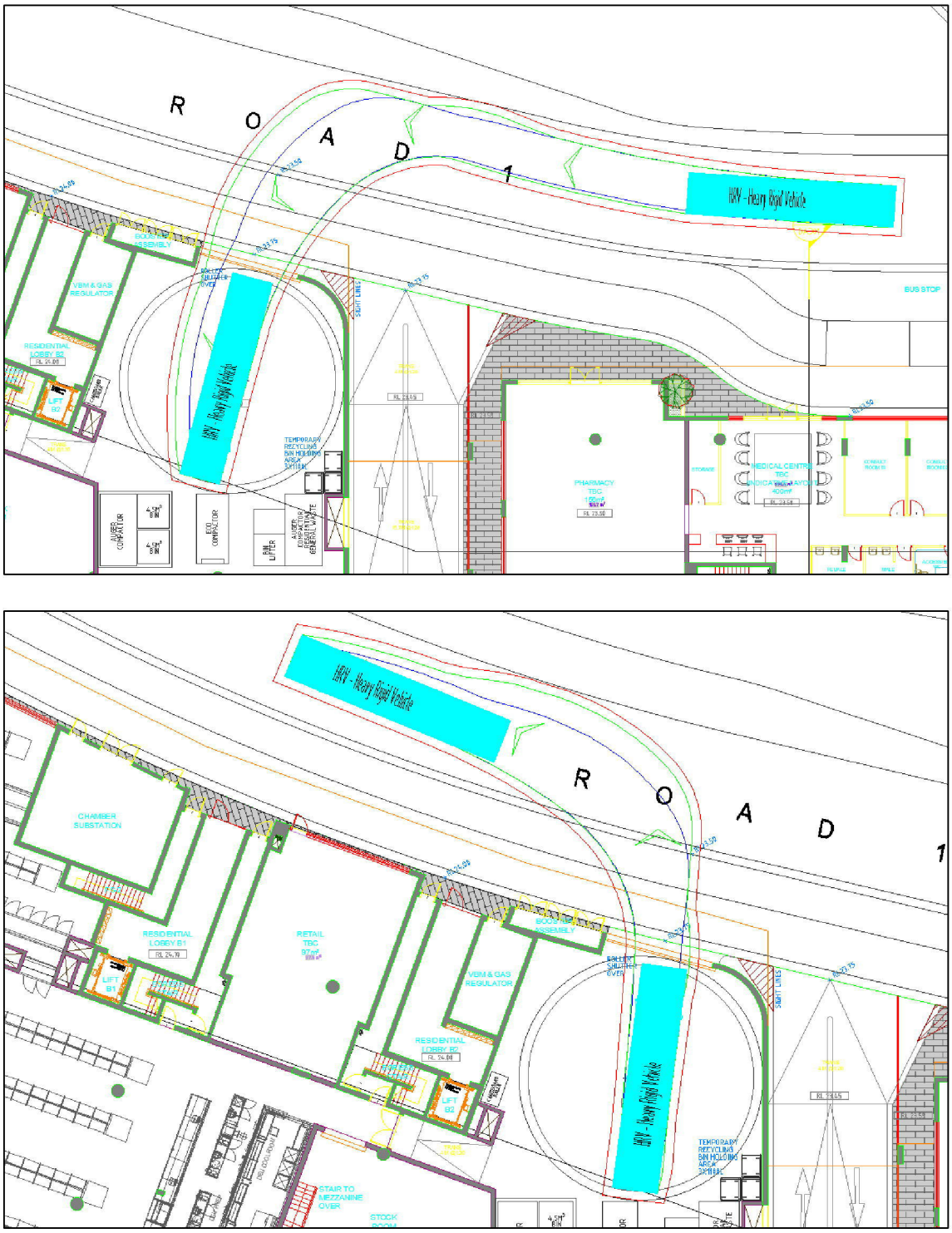
(2 SHEETS)



AUSTRALIAN STANDARD HEAVY RIGID VEHICLE (HRV)

Blue – Tyre Path
Green – Vehicle Body
Red – 500mm Clearance

All tests performed at 10km/h forward and 5km/h reverse.



12.5M LENGTH HRV ENTRY AND EXIT FROM PROPOSED LOADING DOCK

Successful

Forward entry and forward exit achieved with use of proposed turntable.