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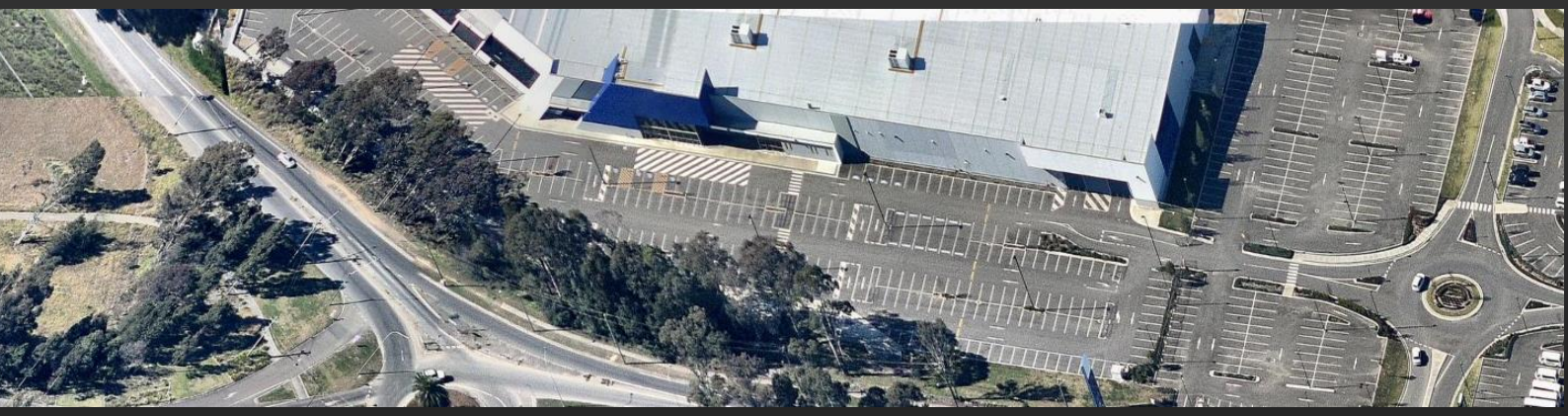
TRAFFIC ENGINEERING

Home Co St Marys

Transport Impact Assessment



200752TIA002C-F

17 December 2020

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DOCUMENT INFORMATION

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[redacted]

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1 INTRODUCTION

onemile**grid** has been requested by Home Consortium to undertake a Transport Impact Assessment of the proposed redevelopment of the previous Masters Home Improvement site at 213 Forrester Rd, St Marys.

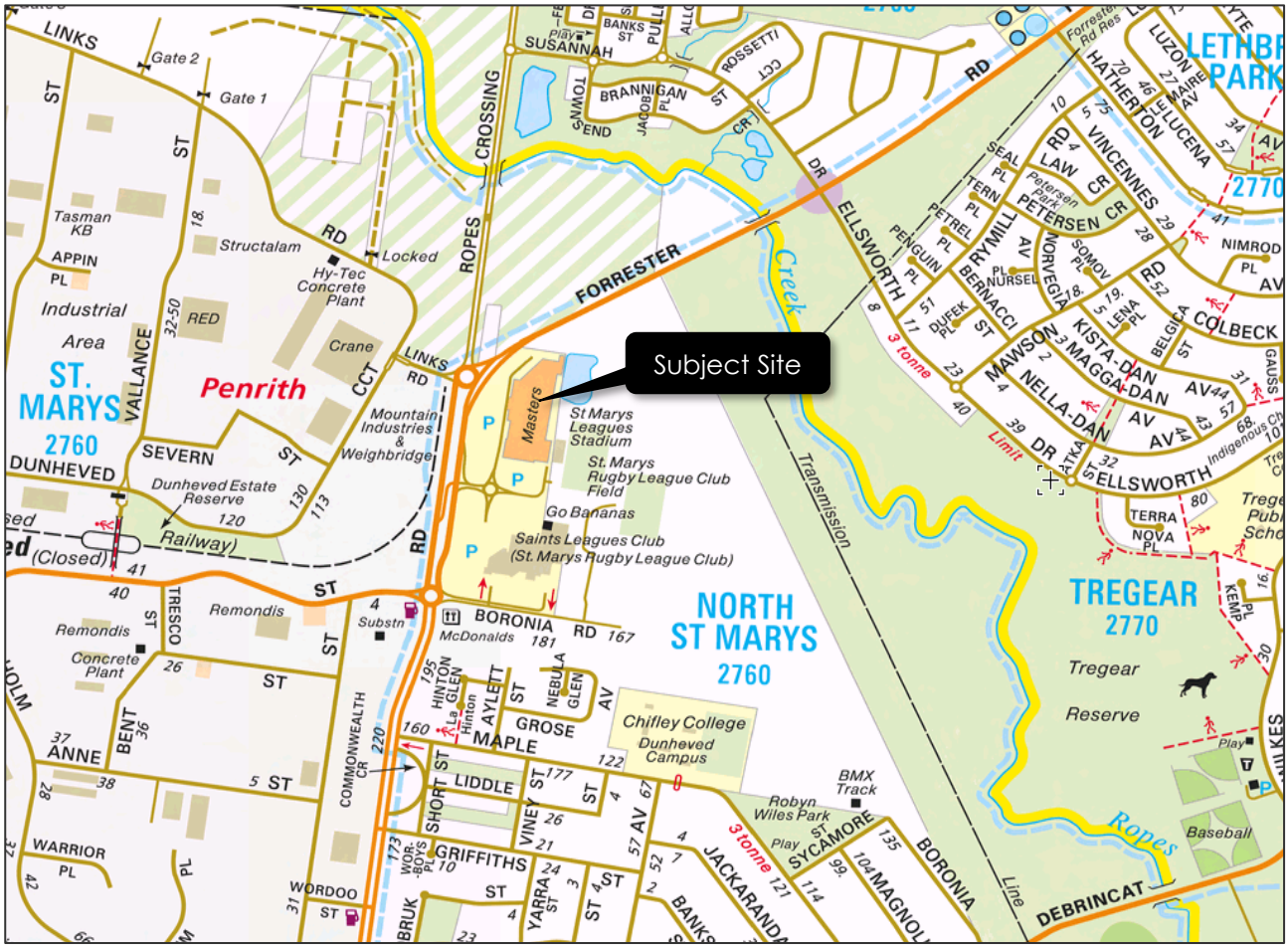
As part of this assessment the subject site has been inspected with due consideration of the development proposal, parking data has been sourced and relevant background reports have been reviewed.

2 EXISTING CONDITIONS

2.1 Site Location

The subject site is located on the southeast side of Forrester Road, as shown in Figure 1.

Figure 1 Site Location



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The site is currently occupied by a vacant building on the eastern portion of the site, which was previously occupied by a Masters Home Improvement store with the western portion of the site comprising an at grade car park, with a total of 367 car spaces. The site has a frontage to Forrester Road of approximately 98 metres, for an overall site area of approximately 5,000 square metres. The

subject site abuts the St Marys Rugby League Club which includes a large car parking area and rugby fields. Of note, the site directly abuts a car parking area.

Site access is via the at-grade car parking area within the St Marys Rugby League Club (SMRLC) car park to the immediate south. Access to the (SMRLC) car parking area is available from Forrester Road via an unsignalised T-intersection which leads into an internal access road. Movements at the Forrester Road intersection are restricted to left in / left out / right in movements only, with the right turn movement not permitted. Once within the site, a central roundabout is provided to distribute traffic to the north (towards the subject site), east and south.

Land use in the immediate vicinity of the site is mixed in nature, and includes industrial uses to the east, the St Marys Rugby League Stadium to the immediate east with their Clubhouse to the immediate south, as well as a public open space area to the north.

An aerial view of the subject site is provided in Figure 2.

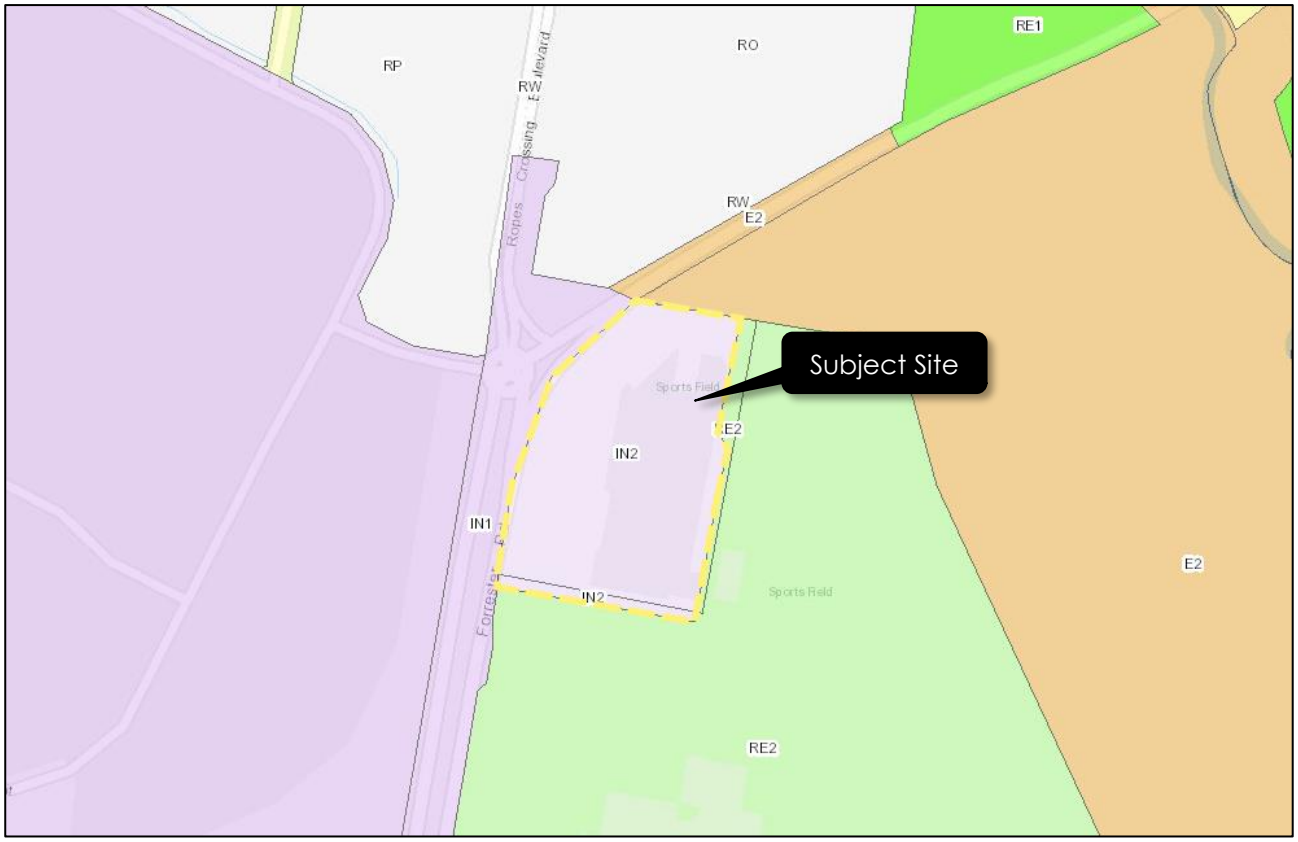
Figure 2 Site Context (2 October 2020)

Copyright Nearmap

2.2 Planning Zones

It is shown in Figure 3 that the site is located within a Light Industrial Zone IN2 and is subject to the Penrith City Development Control Plan.

Figure 3 Planning Scheme Zones



2.3 Road Network

Forrester Road is an arterial road generally aligned north-south, running between Palmyra Avenue, approximately 2.3 km northeast of the subject site, and St Marys Station, approximately 2 km to the south. Forrester Road provides two traffic lanes and a bike lane in each direction, with the traffic streams separated by a grassed central median.

A break in the median is provided opposite the site to provide for right turn movements into the site.

A 60km/h speed limit applies to Forrester Road in the vicinity of the site.

The cross-section of Forrester Road at the frontage of the site is shown in Figure 4 and Figure 5.

Figure 4 Forrester Road, looking south adjacent to the subject site

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Figure 5 Forrester Road, looking north towards the subject site

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2.4 Sustainable Transport

2.4.1 Public Transport

Public transport in the area is generally limited to bus services, with the route 759 and 780 stopping on Forrester Road just south of the site, the route 782 stopping approximately 500m southwest of the site.

Table 1 Public Transport Provision

Mode	*Route No*	*Route Description*	*Nearest Stop/Station*
Train		Main Western Line	St Marys Station (2 km)
		Ropes Creek Line	
Bus	759	St Marys to Mount Druitt via Ropes Crossing	St Marys Rugby League Club (200m)
	780	Mount Druitt to Penrith via Ropes Crossing	
	782	St Marys to Penrith via Werrington	Christie Street opp Power Street (500m)

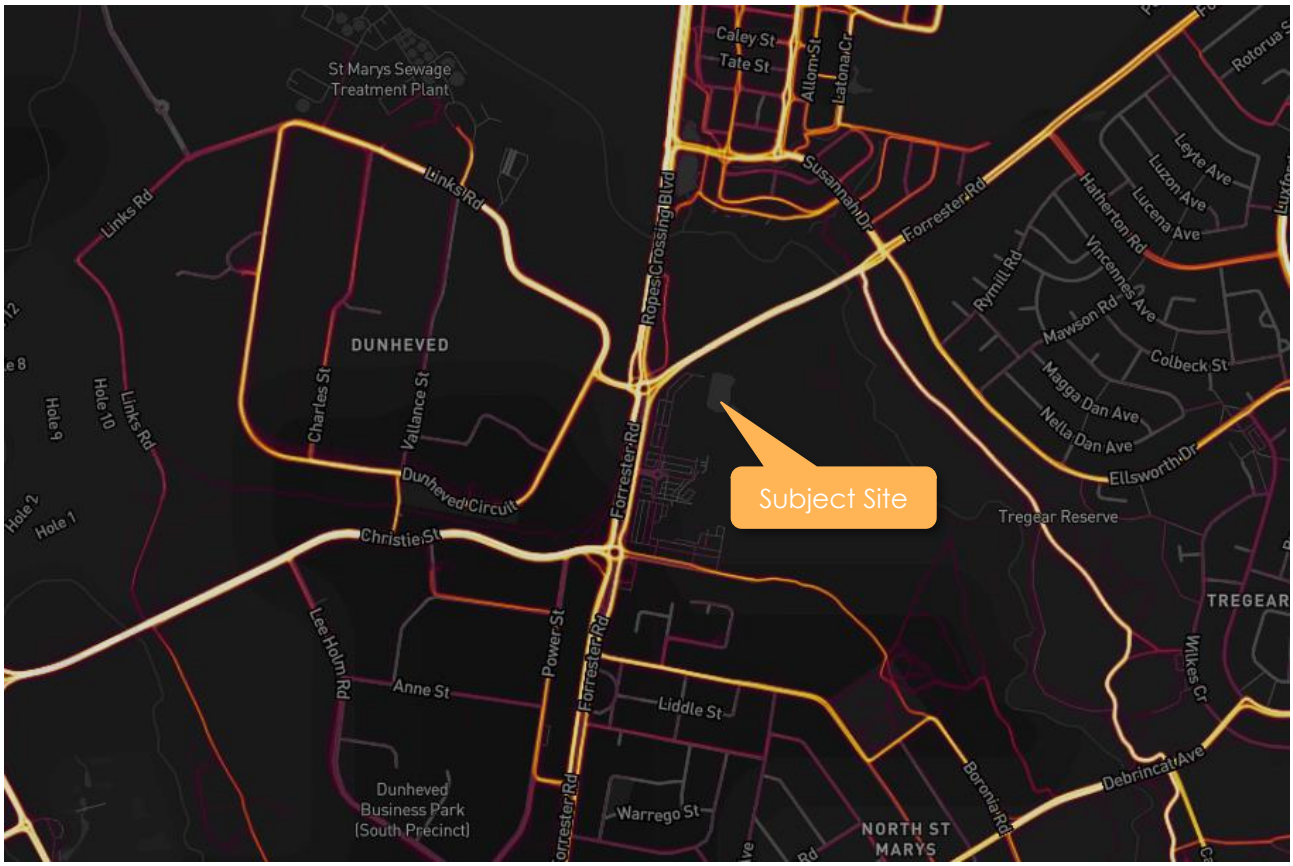
2.4.2 Bicycle Facilities

Strava is a social network and training tool for cyclists, runners and swimmers. Users record their physical activity using a dedicated GPS device or utilise the mobile app, and upload the file to their profile.

Strava anonymised this information and makes it available through their "Global Heatmap" tool, showing aggregated all public activities over the last two years across the world.

A view of the cycling heatmap in proximity to the study area is provided below in Figure 6. Routes of higher usage are brighter in colour.

Figure 6 Strava Cycling Heatmap



As shown above, primary routes in and out of the study area comprise:

- Forrester Road;
- Christie Street; and
- Ropes Crossing Boulevard.

It is noted that this information includes all cycling activities recorded on the platform, inclusive of weekend trips, and all trips throughout the day. Additionally, the data is skewed towards sports cyclists, given that the bulk of commuter and recreational cyclists will not be tracking their rides.

3 DEVELOPMENT PROPOSAL

3.1 General

The application seeks to modify the existing building, to provide a mixed-use development, operated by Home Co, within the existing building.

The proposed modifications propose to divide the building into 14 smaller tenancies ranging in size form 150 m^2 to 2,448 m^2. A central mall to provide pedestrian access to the new tenancies is proposed through the centre of the building and includes five small kiosks. Additionally, an outdoor plaza area will be added at the entrance to the Home Co centre.

A view of the proposed tenancy break up is provided in Table 2 with the proposed site layout included below in Figure 7.

Table 2 Proposed Tenancy Composition

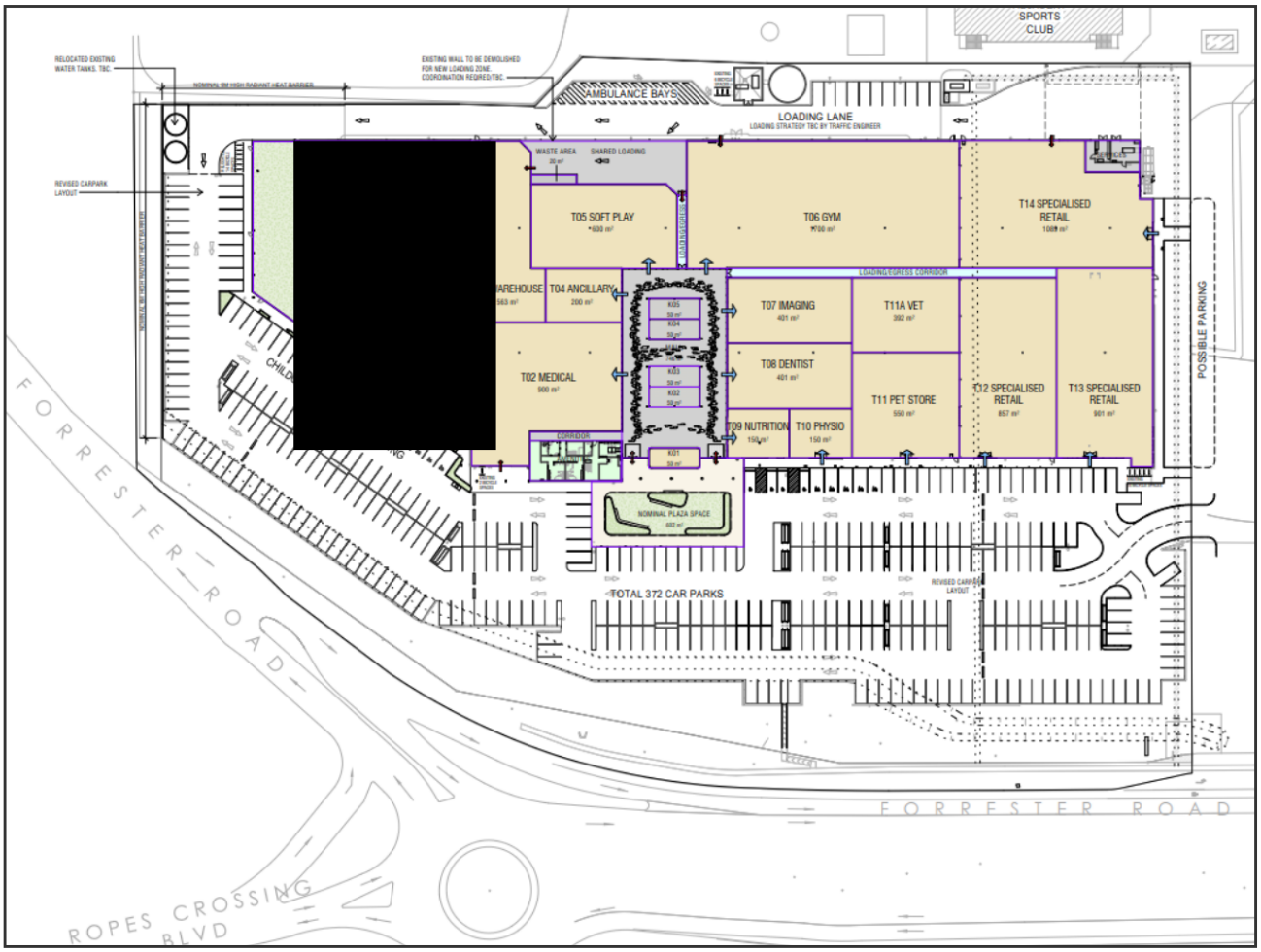
Tenancy	*Use*	*Area*	*Patrons / Staff*
K1 – K5	Kiosks	250 m^2	5 staff
1	Child Care	2,448 m^2	138 children / 27 staff
2	Medical Centre	900 m^2	9 practitioners / 2 support staff
3	Warehouse	563 m^2	4 staff
4	Pharmacy (Shop)	200 m^2	3 staff
5	Soft Play	600 m^2	100 patrons / 10 staff
6	Gym	1,700 m^2	170 patrons / 10 staff
7	Imaging	401 m^2	5 practitioners / 2 support staff
8	Dentist	401 m^2	5 practitioners / 2 support staff
9	Nutrition	150 m^2	3 practitioners / 1 support staff
10	Physio	150 m^2	3 practitioners / 1 support staff
11	Pet Store	550 m^2	5 staff
11A	Vet	392 m^2	3 practitioners / 1 support staff
12	Specialised Retail	857 m^2	9 staff
13	Specialised Retail	901 m^2	10 staff
14	Specialised Retail	1,089 m^2	11 staff

3.2 Parking and Access

Some minor modifications are proposed to the existing at-grade car park to facilitate the addition of an open air plaza area at the main building entrance. The additional plaza will result in displacement of a number of accessible spaces, which will be relocated along the building boundary to the south. The final proposal seeks to provide a total of 372 car spaces (an increase of 5 spaces).

A total of 32 bicycle parking spaces have been provided in ground-mounted hoops, in a number of locations surrounding the development.

Figure 7 Proposed Site Layout



4 DESIGN ASSESSMENT

4.1 Public Car Park

4.1.1 Car Parking Spaces

The car park is generally in accordance with the existing conditions, with some modifications proposed to accommodate the new plaza area, remove trolley bays, and improve circulation.

All standard car spaces have been designed with a length of 5.4 metres a minimum width of 2.6 metres and are accessed from two-way aisles of no less than 6.6 metres in accordance with the Australian Standard for Off-Street Car Parking AS2890.1.

4.1.2 Accessible Parking

The accessible bays are provided with a length of 5.4 metres and a width of 2.4 metres, and an adjacent shared area of the same dimensions, in accordance with the Australian Standards.

4.1.3 Bicycle Parking Facilities AS2890.3

Bicycle parking is proposed to be provided in on-ground bicycle hoops. The bicycle hoops have been designed in accordance with the Australian Standards; specifically, they are provided at one metre centres, with an envelope of 1.8 metres provided for bicycles and a 1.5 metre access aisle.

In addition, all bicycle parking spaces proposed have been provided as on-ground hoops exceeding the Australian Standard requirement for 20% of spaces being provided on-ground.

4.1.4 Access Points

Similar to the above, the accessways are to remain generally in accordance with the existing conditions, with no change to the access locations or grades.

Nevertheless, all modified accessways are proposed as two-way roads, with a minimum width of 6.6 metres, exceeding the requirements of the Australian Standards.

4.1.5 Internal Roadways

The internal roadways through the site are generally in accordance with the originally approved design, with only minor modifications towards the site access with a slight realignment of the driveway to ensure a high level of circulation.

onemile**grid** has provided design input through out the car park to ensure that this location and others have been designed to provide for safe and efficient access throughout. Of note, along the new bend in the internal roadway, two vehicles can pass.

4.2 Loading

4.2.1 Service Areas

The loading vehicle service area is provided on the eastern side of the building and has been designed with a length of 17.5 metres and a minimum width of 3.7 metres, exceeding the requirements of the Australian Standards for 12.5 m length Heavy Rigid Vehicles (HRVs).

Furthermore, the service area has been designed so vehicles can enter and exit in a forward direction, with no requirement to undertake turning or corrective manoeuvres.

4.2.2 Design Vehicle Turning Paths

Swept paths have been prepared with a 12.5m length SRV, in accordance with the Australian Standards, as attached in Appendix A.

5 LOADING

As the development was previously designed as a large bulky goods retailer, the existing building provides significant provision for loading and unloading, designed for a use with loading requirements which exceed those of the proposed development.

In this regard, at the rear of the building a number of standard car spaces are provided for deliveries by small vans and utility vehicles, an area is provided for ambulances, and a shared loading area, for vehicles up to 12.5m length HRVs is provided. Swept paths are included attached.

Based on the foregoing, the provision for loading is therefore considered appropriate for the proposed use.

6 BICYCLE PARKING

The bicycle parking requirements for the subject site are identified in the Planning Guidelines for Walking and Cycling (NSW Government, 2004), which specifies the following requirements for the proposed development (based on staff numbers).

Table 3 Suggested Bicycle Parking Provision

Component	*No.*	*Rate*	*Requirement*	*Total*
Childcare centre	27	0.03 – 0.05	per staff member for staff	1
		0.05 – 0.1	per staff member for visitors	1 – 3
Health and medical centres	28	0.05 – 0.1	per practitioner for staff	1 – 3
	9	0.05 – 0.1	per staff member for visitors	1
Warehouse	4	0.03 – 0.05	per staff member for staff	None req
		0.05 – 0.1	per staff member for visitors	None req
Gym	10	0.03 – 0.05	per staff member for staff	0 – 1
		0.05 – 0.1	per staff member for visitors	1 – 2
Retail	43	0.03 – 0.05	per staff member for staff	1 – 2
		0.05 – 0.1	per staff member for visitors	2 - 4
Total			**Staff**	**3 – 7**
			Visitor	**5 – 10**

Table 4 Table 3 – Minimum locker, shower and change room provision

Staff	*No.*	*Lockers*	*Showers*	*Changerooms*
0 - 12	4 – 9	1 per 3 racks	1	None req

There are currently 32 bicycle parking spaces provided around the perimeter of the building in the form of ground mounted hoops. Considering the requirement for 8 to 17 bicycle spaces, the above requirements are satisfied.

Additionally, the provision of bicycle facilities (in the form of lockers and showers) meets the requirements of the Planning Guidelines and is therefore considered appropriate.

7 CAR PARKING

7.1 Statutory Car Parking Requirements

7.1.1 Penrith City DCP – C10

The car parking provision requirements relevant to the proposal are generally set out in Section C10 of the Penrith City Development Control Plan 2014 (DCP 2014), which specifies the following requirements for the different components of the proposed development. For assessment purposes, it is noted that the kiosks, pharmacy and pet store have all been assessed under the 'retail premises shop' land use.

Table 5 Table C10 – Car Parking Rates

Use	*No/Area*	*Rate*	*Requirement*	*Total*
Child care centre	138	1	per 10 children, plus	14
	27	1	per employee	27
Fitness centre / Gym	1,700 m^2	7	per 100m^2 gross floor area	119
Health consulting / Medical centres	28	3	per health care professional practising, plus	84
	9	1	per receptionist/ support staff	9
Retail premises shop	3,847 m^2	1	per 30m^2 gross floor area	128
Warehouses	563 m^2	1	per 100m^2 of gross floor area	5
Soft Play Centre	No rate listed – to the satisfaction of Council			
Total				**386**

Based on the above calculations, a total of 386 parking spaces are required for the proposed development, plus some provision for the soft play centre.

In this regard, it is noted that a soft play centre (recreational facility) is not included within Section C10 of the DCP, and as such, the following clause is noted:

"In the absence of specific requirements relevant to particular developments, the parking requirements in the RTA's "Guide to Traffic Generating Developments" (as updated) and Australian Standard AS 2890.1 and 2 – 2004 should be referred to as a guide. In the absence of all data, the applicant should revert to the use of first principles."

The RTA Guide to Traffic Generating Developments does not include a car parking rate for recreational facilities such as the proposed soft play centre. As such, a car parking demand assessment has been undertaken and is outlined below.

7.1.2 Proposed Car Parking Provision

It is proposed to provide a total of 372 car parking spaces on-site, which equates to a shortfall of just 14 spaces, plus some provision of car parking for the soft play centre, when compared to the Development Control Plan requirements.

Nevertheless, it is noted that the Development Control Plan states that:

Council has the discretion to waive or reduce the number of car spaces required for a particular site if the reduced provision can be justified in a Traffic Impact Statement in terms of:

i. Proximity to public transport nodes;
ii. Opportunity to share parking with another use; or
iii. An empirical assessment of car parking.

An assessment of the likely parking demands and the appropriateness of reducing the car parking provision below them is set out below.

7.2 Empirical Assessment

7.2.1 Child Care Centre

7.2.1.1 Staff

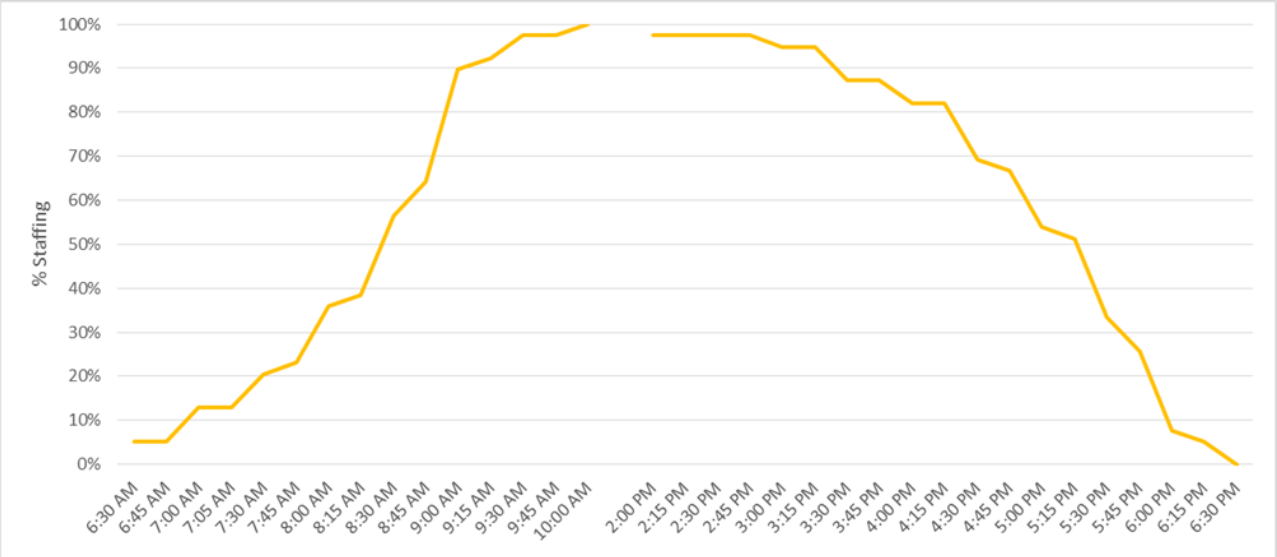
To determine the likely car parking demands generated by staff of the child-care centre, a review of the 2016 Census has been undertaken, in which workers were questioned on their methods of travel to work.

The data suggest that 66.5% of work journeys to Penrith were undertaken by car drivers, with the remainder of trips by public transport, walking, cycling or passenger trips (which would not generate parking demands). It is considered that this data is representative or parking rates likely to be attracted in this location particularly with regard to the likely staff demographic.

Based on the 27 staff proposed as part of the development, it is expected that a demand for 18 car spaces will be generated when all staff are on-site. In this regard, it is noted that staff intensities throughout the day vary depending on shift start and finish times, the requirement for support staff and other operational variations. In order to understand the staffing requirements of the proposed centre over a typical weekday, the applicant has provided a staff attendance profile for a similar facility (148 places) currently operating in Maidstone (Victoria). It is understood that the staffing requirements for the proposed facility will not be materially different.

A view of the staffing requirements (as a proportion of the maximum number on-site) over a typical weekday are shown below.

Figure 8 Staffing Profile



It is noted that parking demands prior to 9:00am and beyond 4:30pm would be significantly lower than those during the middle of the day.

7.2.1.2 Parents

Long day care centres such as the proposed, open early in the morning and close in the early evening and largely cater to parents who work full-time and require all-day child care. As such, a significant proportion of pick-up and drop-off activity occurs prior to 8:00am and after 4:00pm as

parents are on their way to and from work. Surveys undertaken by other firms indicate that the absolute peak parking demands associated with parents occur for short periods with demands spread across a 2-hour period rather than having a specific peak.

In order to estimate the likely parking demands associated with the proposed use, reference is made to parking surveys undertaken by other traffic engineering consultancies at various child care-centres with similar characteristics to the proposed across suburban Melbourne.

Results of the surveys are presented below in Table 3.

Table 6 Visitor Parking Generation

Location	*Consultant*	*Peak Parking*	
		AM Peak	*PM Peak*
Short St, Vermont	Ratio	0.12/Child	0.12/Child
St Johns Ave & Grace Park Ave, Springvale	Cardno	0.16/Child	
Buckley St, Noble Park	Cardno	0.09/Child	0.11/Child
Bond St, Ringwood	Cardno	0.09/Child	0.12/Child
Average		**0.12/Child**	**0.12/Child**

As indicated above, the surveyed child-care centres attract parent parking demands between 0.09 and 0.16 vehicles per child, with average parking generation rates of 0.12 during both the AM and PM peak.

Assuming that the proposed centre will attract parent parking demands equivalent to the average rates above, we can expect peak pick-up and drop-off parking demands of 17 car spaces during the respective AM and PM peaks.

7.2.1.3 Total

Assuming that peak parent drop-off activity occurs prior to 9:00am, we can expect that no more than 64% of staff would be on-site (see Figure 6) and thus would generate parking demands 64% of the maximum estimated demand. This equates to an estimated 12 spaces of staff parking demand. Superimposing the maximum drop-off parking demands outlined above, we can estimate peak site parking demand for 29 car spaces during the AM peak.

Similarly, conservatively assuming that the peak collection activity occurs at 4:30pm during the PM peak, we can expect that no more than 69% of staff would be on-site, contributing to no greater than 9 spaces of parking demand. Adding the 18 spaces of pick-up parking estimated above, we can expect parking demands no greater than 29 spaces during the PM peak.

It is reiterated that peak pick-up and drop-off parking demands occur only briefly, with the remainder of parking remaining largely unutilised during the day.

7.2.2 Health Consulting / Medical Centres

For purposes of this assessment, the rate of 3 car spaces per practitioner, as outlined within the DCP will be adopted. However, similarly to the child care centre, based on the 2016 Journey to Work data, it will be assumed that only 66.5% of receptionists / support staff drive to work, equivalent to a demand of 6 spaces.

7.2.3 Warehouse

For the purposes of this assessment, the DCP rate will be adopted for the warehouse component of tenancy 3 equating to a demand for 5 spaces.

7.2.4 Soft Play Centre

Funtopia is a new format indoor play space for children. Similar to the proposed soft play centre, these play centres are becoming increasingly popular, with a number of new centres opening across Australia.

Funtopia have an existing facility in Maribyrnong, Victoria (98 Hampstead Rd) which will be largely similar to the proposed soft play centre which is to be introduced at the subject site. Soft play centres require patrons to book in advance with limited 'walk-ins' permitted. This ensures the operators can manage patronage across the day, further ensuring that maximum occupancies are not exceeded.

To determine the likely car parking generation characteristics of the centre, interview travel surveys undertaken by the Traffix Group have been sourced. The Traffix Group undertook mode of travel surveys of patrons arriving at the site to establish the existing mode of travel characteristics and parking generation rates of patrons. The surveys were undertaken on a weekday and weekend and revealed car parking generation rates of 0.26 – 0.27 spaces per patron.

Application of the upper rate of 0.27 spaces per patron to the 100 patrons equates to a demand for 27 car spaces. With regard to staff, due to the nature of the operation, a number of staff are dropped off or catch public transport. In light of this it will be assumed that of the 10 staff, 40% drive equating to a demand for 4 spaces.

As such, it is expected that the proposed Chipmunks use will generate a demand for up to 33 car parking spaces.

7.2.5 Gym

It has been our experience that the driver ratio at gymnasiums vary depending on the type of product offered, the location and proximity to residential catchments and the availability of public transport. These factors result in a driver ratio range of 0.5 – 0.8 spaces per patron.

Due to the catchment areas surrounding the site, it is expected that the gymnasium will generate a demand for 0.6 spaces per patron which equates to a peak demand for 102 car spaces.

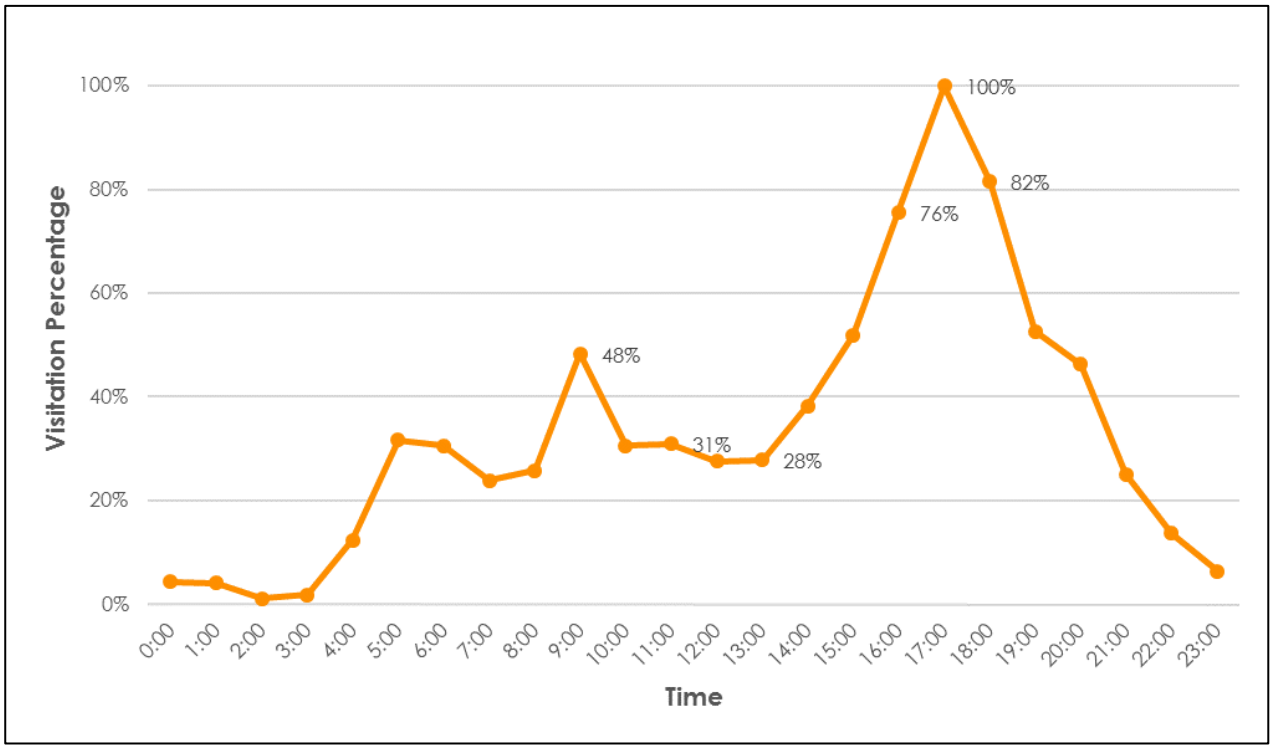
Notwithstanding the above, it is noted that patronage at gymnasiums fluctuates across the day with peak activity on a weekday occurring in the evening after 5pm. Demands during the day are considerably lower than the peak periods, whilst on weekends patronage across the day is lower than during the week.

In this regard, visitation data from the existing Derrimut 24:7 Gymnasium in Corio (Victoria) has been sourced to understand the fluctuation of patronage across the day. The data has been provided for the 24-hour period of 3 full weeks (including 1 during school holidays) as follows:

- 30 June – 7 July 2014 (School Holidays)
- 14 July – 21 July 2014
- 28 July – 4 August 2014

A review of the visitation data indicates that across the 3-week period, peak activity consistently occurred at 5:00pm with a localised peak at 9:00am for the morning classes. Either side of the peak periods, visitation levels were markedly lower. A summary of the occupancy profile across the day is shown in Figure 9.

Figure 9 Derrimut 24:7 Corio – Visitation Profile



In addition to the above patronage profile, a review of the visitation profile at the Anytime Fitness in St Marys has been undertaken which exhibits similar characterises to the above on a weekday, whilst on the weekend peak activity typically occurs in the morning (at a reduced level) with demands after midday significantly reduced.

In light of the above, it will be assumed that peak gym attendance occurs between 5:00PM and 7:00PM when the gym is fully occupied and is 50% full between 6:00AM and 8:00AM.

7.2.6 Retail

While standalone retail uses in suburban area typically generate car parking demands at the rates listed within the DCP, it has been our experience that restricted retail uses which are collocated with complimentary uses and with parking provided as a shared resource, will generate reduced parking demands, as visitors will visit more than one use as part of a single trip.

In this regard, it is anticipated that the retail uses will generate car parking demands at no more than 2.0 spaces per 100m^2. Of note, car parking surveys undertaken by Cardno at the Frankston Power Centre (restricted retail centre) on an annual basis over the past three years on a Friday and Saturday demonstrate that the site is currently generating car parking at a much lower rate (in the order of 1.40 spaces per 100 square metre).

Based on the above, for the purposes of this assessment it will be conservatively assumed that the restricted retail components of the development generate a demand for 2.0 spaces per 100 square metres of floor area which equates to a demand for 77 car spaces.

7.2.7 Total Car Parking Demand

Based on the above assessment, a total aggregate car parking demand assuming that each use peaks at the same time of 398 spaces is projected as shown in Table 7.

Table 7 Total Aggregate Car Parking Demand

Use	*No/Area*	*Rate*	*Car Parking Measure*	*Total*
Child Care Centre	138	0.12	to each child	17
	27	0.66	to each staff member	18
Health Consulting / Medical Centres	28	3	to each practitioner	84
	9	0.66	to each support staff member	6
Warehouse	563 m^2	1	per 100m^2 of gross floor area	5
Soft Play Centre	100	0.27	to each patron	27
	10	0.40	to each staff member	4
Gym	170	0.60	to each patron	102
Specialised Retail	3,690 m^2	2.0	per 100m^2 of gross floor area	77
Total				**340**

It is noted that the above assessment is conservative in nature as each use is expected to peak at different times across the day and importantly across the week. This is acknowledged by C10 of the DCP which notes a reduced parking provision may be acceptable if there is an "opportunity to share parking with another use", such would be the case with uses peaking at different times.

Notwithstanding, the provision of 372 spaces comfortably accommodates the above demand despite being conservative and assuming all uses peak at the same time.

8 TRAFFIC

The subject site has been approved to operate as a Masters Home Improvement Centre. In relation to traffic generation, it was projected as noted within the Colston Budd Hunt & Kafes report 340 and 640 vehicle movements during the weekday and weekend peak respectively.

This level of traffic is comparable to what would be generated during the weekdays and about half of what would be generated on the weekend. In this regard, it is not expected that the proposed adjustments to the building uses will have an impact on the surrounding road network.

Notwithstanding the above, assuming that each car space 'turns over' across the peak hours, it can be estimated that the site will generate a total of 372 vehicle movements. This level of traffic as noted above is comparable to the weekday estimates for the previous use and much less than the weekend estimation. It is therefore quite clear that the level of traffic generated by the proposal will be accommodated by the surrounding road network.

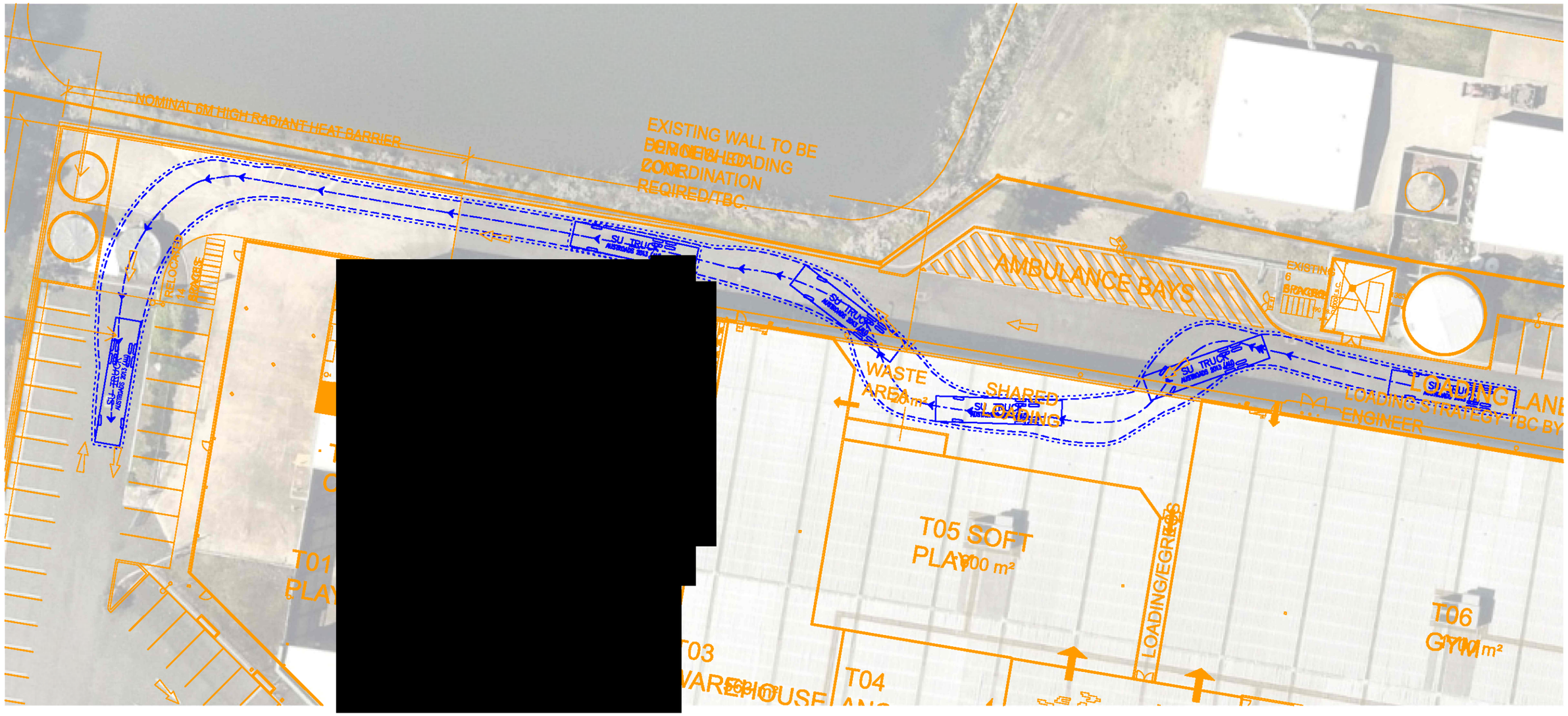
9 CONCLUSIONS

It is proposed to reconfigure the existing building, to provide a mixed-use development with 14 tenancies comprising a range of uses.

Considering the analysis presented above, it is concluded that:

- The proposed car parking, bicycle parking and access design is considered appropriate;
- The proposed provision of bicycle parking exceeds the recommendations of the Planning Guidelines, and is therefore considered appropriate;
- The proposed provision of 372 car parking spaces satisfies the demand generated by the proposed development based on a car parking demand assessment;
- It is anticipated that the traffic volumes generated by the development will be well within the capacity of nearby intersections having been assessed as part of previous applications; and
- There are no traffic engineering reasons which would preclude a permit from being issued for this proposal.

Appendix A Swept Path Diagrams



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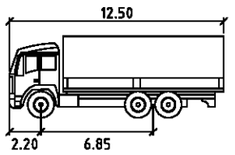

SU TRUCK	meters
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Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH LEGEND

- – – – – DESIGN VEHICLE SWEPT PATHS SHOWN DASHED
- - - - - - - - 300mm CLEARANCE ENVELOPE SHOWN DOTTED

Aerial Photography
Aerial photography provided by Nearmap

onemilegrid
TRAFFIC ENGINEERING
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Email: info@onemilegrid.com.au Web: www.onemilegrid.com.au
Phone (03) 9939 8260

Scale
1:400 @ A3
0 2 4 8

Drawing Title
HOMECO, 213 FORRESTER ROAD, ST MARYS
12.5M TRUCK ACCESS
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
DK	VG	NA

Project Number	Drawing Number	Revision
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