



transport planning
traffic engineering
modelling

Proposed Child Care Centre and Gym

Carramar Village, Carramar
Transport Impact Statement

PREPARED FOR:
FRP Capital

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1 Introduction

This Transport Impact Statement (TIS) has been prepared by Transcore on behalf of FRP Capital with regard to a proposed development to be located within the existing carpark of Carramar Village Shopping Centre, Carramar in the City of Wanneroo.

The Development Application (DA) for the subject site proposes replacement of a portion of the existing carpark at the subject site with a standalone two-storey commercial building and modification of the existing carpark. The development is proposed to comprise mixed commercial land uses including a child care centre on ground floor and a gym on the first floor.

As illustrated in **Figure 1**, the subject site for the proposed development is located within the existing carpark of Carramar Village Shopping Centre and is bound by Carramar Village Shopping Centre to the north, proposed modified carpark of Carramar Village Shopping Centre to the east, Joondalup Drive to the south and Rawlinna Parkway to the west.



Figure 1: Location of the subject site

The Transport Impact Assessment Guidelines (WAPC, Vol 4 – Individual Developments, August 2016) states: “A Transport Impact Statement is required for those developments that would be likely to generate moderate volumes of traffic¹ and therefore would have a moderate overall impact on the surrounding land uses and transport networks”.

Section 6.1 of Transcore’s report provides details of the estimated trip generation for the proposed development. Accordingly, as the total peak hour vehicular trips are estimated to be less than 100 trips, a Transport Impact Statement is deemed appropriate for this development.

Key issues that will be addressed in this report include the traffic generation and distribution of the proposed development, access and egress movement patterns and parking.

¹ Between 10 and 100 vehicular trips per hour



2 Proposed Development

The subject site forms part of the existing car parking area which is located to the southern side of the Carramar Village Shopping Centre adjacent to Joondalup Drive.

The proposal aims to construct a new building foot print over the portion of the existing car park through the rearrangement of existing parking layout. The new building will be located at the south western corner of the Shopping Centre building. The existing car park at the subject site currently comprises 206 car parking bays. The rearrangement of existing parking layout will provide a total of 186 bays at the subject site resulting in the loss of 20 bays.

The proposed development comprises a two-story building which will accommodate a child care centre on the ground floor and a gym on the first floor. The child care centre would accommodate up to 82 children with 16 staff. The total GFA of the gym is approximately 400 m² with 5 staff.

Further, the proposal also includes modifications of the existing kerbs to the southernmost shopfronts and northeast corner of the existing Shopping Centre.

As part of the proposed development, the vehicular access and egress for the proposed development is facilitated via the existing access locations on Cheriton Drive and Rawlinna Parkway which connect to the carpark of existing Shopping Centre and the proposed development.

Pedestrian access to the proposed development is available from the existing footpath network on Joondalup Drive and Rawlinna Parkway abutting the subject site.

According to the information provided, it is anticipated to expand the existing bin storage area of the Shopping Centre which is located adjacent to the existing Shopping Centre's loading dock. Waste collection and deliveries for the proposed development will be accommodated within the site which will also take place from the existing loading dock as per existing arrangements of the Shopping Centre.

The proposed development plan is provided in **Appendix A**.

3 Vehicle Access and Parking

3.1 Access

As part of the proposed development, the vehicular access and egress for the proposed development is facilitated via the existing access locations on Cheriton Drive and Rawlinna Parkway which connect to the carpark of existing Shopping Centre and the proposed development.

Figure 2 shows the locations of the existing crossovers on Cheriton Drive and Rawlinna Parkway for the subject site.

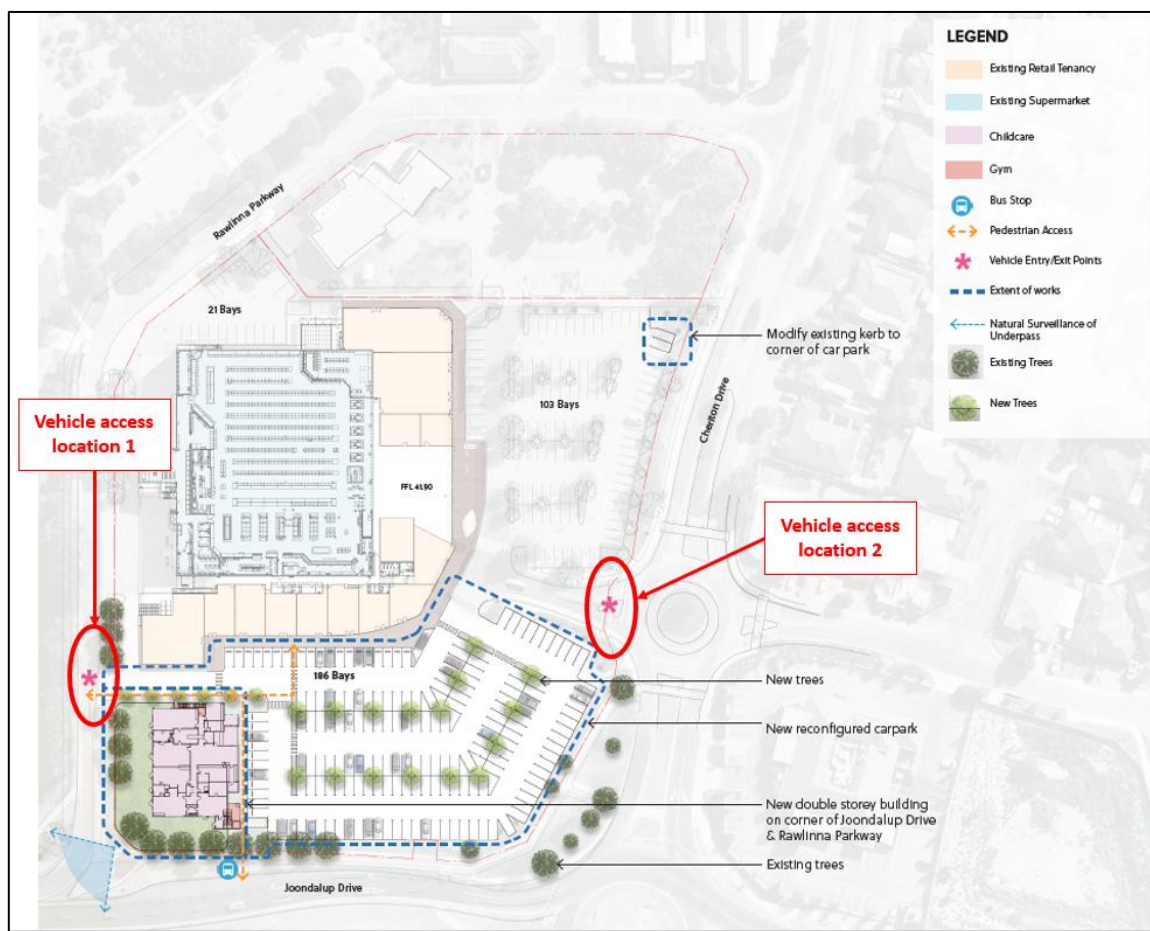


Figure 2: Crossovers Locations

3.2 Parking Supply

The Development Application (DA) for the subject site proposes replacement of a portion of the existing carpark at the subject site with a two-storey commercial building and modification of the existing carpark.

The existing car park at the subject site currently comprises 206 car parking bays. The rearrangement of existing parking layout will provide a total of 186 bays resulting in the loss of 20 bays.

4 Provision for Service Vehicles

According to the information provided, it is anticipated that the existing bin storage area of the Shopping Centre will be expanded adjacent to the existing Shopping Centre's loading dock. Waste collection and deliveries for the proposed development will be accommodated within the site which will also take place from the existing loading dock as per existing arrangements of the Shopping Centre.

It is also anticipated that delivery and service trucks will service the tenancies outside peak operating hours of the existing Shopping Centre and the proposed development for the convenient and safe manoeuvring of the trucks within the site.

5 Hours of Operation

The proposed development comprises a child care centre and a gym.

The child care centre is proposed to operate during weekdays between 6:30AM to 6:30PM.

The gym will operate 24 hours a day 7 days a week.

6 Daily Traffic Volumes and Vehicle Types

6.1 Proposed Development Trip Generation

The proposed development comprises a child care centre and a gym. The trip generation for the proposed development is as follows:

Child Care Centre (CCC)

In order to establish an accurate traffic generation rate for the proposed child care centre, traffic count surveys undertaken by Transcore at similar centres in the Perth metropolitan area were sourced.

Discussions with the respective centre managers revealed that the peak drop-offs and pick-ups for each of these centres occur between the hours of 7:00AM– 10:00AM and 3:00PM–6:00PM.

From the total number of children at each of the centres on the surveyed days, the following average generation rates were established for the morning and afternoon surveyed periods:

- ✚ 7:00AM–10:00AM: 1.58 trips per child (52% in / 48% out); and,
- ✚ 3:00PM–6:00PM: 1.67 trips per child (47% in / 53% out).

From this information, the traffic generation rate for the combined period of 7:00AM–10:00AM and 3:00PM–6:00PM was calculated as 3.25 trips per child. To convert this figure to a daily generation rate, this figure was increased to 3.5 trips per child to account for any trips outside of the surveyed times. It was assumed that the daily in and out split for vehicle trips was 50/50.

Furthermore, the following peak hour generation rates were established from the surveys for the Child Care Centres:

- ✚ AM peak hour: 8:00AM – 9:00AM: 0.75 trips per child (52% in / 48% out); and,
- ✚ PM peak hour: 3:00PM – 4:00PM: 0.60 trips per child (55% in/ 45% out);

Comparison of the six-hour generation rates and the peak hour generation rates confirms that the distribution of traffic from these centres is spread over the peak periods and that full concentration of traffic does not occur in the peak hour. The AM peak hour represents 47% of the 3-hour AM peak period traffic generation and the typical school PM and road network PM peak hours represent 36% and 29% of the 3-hour PM peak period traffic generation, respectively. As such, childcare centres operate quite differently to schools as their peak period is spread out.

Accordingly, the following number of trips was estimated for the proposed child care centre, assuming a maximum scenario of 82 children being present (i.e., centre at full capacity):

- + AM peak hour: 62 trips generated (32 in / 30 out);
- + PM peak hour: 49 trips generated (27 in / 22 out); and,
- + Daily traffic generation: 288 trips generated (144 in / 144 out).

Gym

The traffic volumes likely to be generated by the proposed gym development have been estimated in accordance with the ITE Trip Generation Manual (11th Edition) which provides peak hour trip rates and directional traffic split for different types of land uses.

Accordingly, the trip generation rates used to estimate the traffic generation of proposed gym are:

Health/Fitness Club (492) – 1000 Sq Ft GFA

- + Weekday AM peak hour: $1.31\text{vph per }1000\text{sqft.GFA}/0.929 = 1.41/100\text{m}^2\text{ GFA}$
- + Weekday PM peak hour: $3.45\text{vph per }1000\text{sqft. GFA}/0.929 = 3.71/100\text{m}^2\text{ GFA}$

The total GFA of the gym is 400m^2 . Accordingly, it is estimated that the traffic generations of proposed gym are

- + Weekday AM peak hour: $(1.41 \times 400 / 100\text{m}^2\text{ GFA}) = 6\text{vph}$
- + Weekday PM peak hour: $(3.71 \times 400 / 100\text{m}^2\text{ GFA}) = 15\text{vph}$

For commercial development of various types, the peak hour traffic generation is typically in the order of 10% to 20% of total daily traffic generation. This would indicate daily traffic generation in the range of 5 to 10 times the peak traffic generation. Assuming conservatively that daily traffic generation is 10 times the afternoon peak hour traffic generation an upper estimate of daily trip generation of the gym would be 150 ($15 \times 10 = 150$) trips.

Accordingly, the proposed gym would conservatively generate a total of approximately 150 vehicular trips per regular weekday with about 6 trips during typical weekday AM peak hour and 15 trips during the typical weekday PM peak hour. These totals include both inbound and outbound vehicle movements.

The traffic generation and peak hour split detailed in **Table 1** was based on the following directional split assumptions for peak hour periods referenced from ITE Trip Generation Manual:

- + Morning (AM) peak split estimated at 46%/54% for inbound/outbound trips associated with health/ fitness club; and,
- + Afternoon (PM) peak split estimated at 52%/48%, for inbound/outbound trips associated with health/ fitness club.

Table 1. Estimated peak hour trips for the proposed gym

Land Use	AM Peak			PM Peak		
	Traffic Split	In	Out	Traffic Split	In	Out
Health/ Fitness Club (492)	46% in	3		52% in	8	
	54% out		3	48% out		7
Total		6			15	

Therefore, the proposed development (CCC + Gym) would generate a total of approximately **438**vpd with about **68**vph and **64**vph during AM and PM peak periods respectively. These totals include both inbound and outbound vehicle movements.

6.2 Traffic Flow

Based on the general spatial distribution of existing residential developments in the immediate area, permeability of the local road network and the assumption that all traffic attracted to the proposed development would arrive/depart via Rawlinna Parkway and Cheriton Drive access locations, the traffic distribution adopted for this analysis is as follows:

Inbound Traffic

Access Location 1

- ✚ 10% from the west of Joondalup Drive via Rawlinna Parkway; and,
- ✚ 10% from the north of Rawlinna Parkway.

Access Location 2

- ✚ 15% from the north of Cheriton Drive;
- ✚ 5% from the east of Innesvale Way; and,
- ✚ 60% from the east of Joondalup Drive via Cheriton Drive.

Outbound Traffic

Access Location 1

- ✚ 10% to the north of Rawlinna Parkway.

Access Location 2

- ✚ 15% to the north of Cheriton Drive;
- ✚ 5% to the east of Innesvale Way;
- ✚ 10% to the west of Joondalup Drive via Cheriton Drive; and,
- ✚ 60% to the east of Joondalup Drive via Cheriton Drive.

Figure 3 illustrates trip generation and traffic distribution over the local road network for the proposed development.

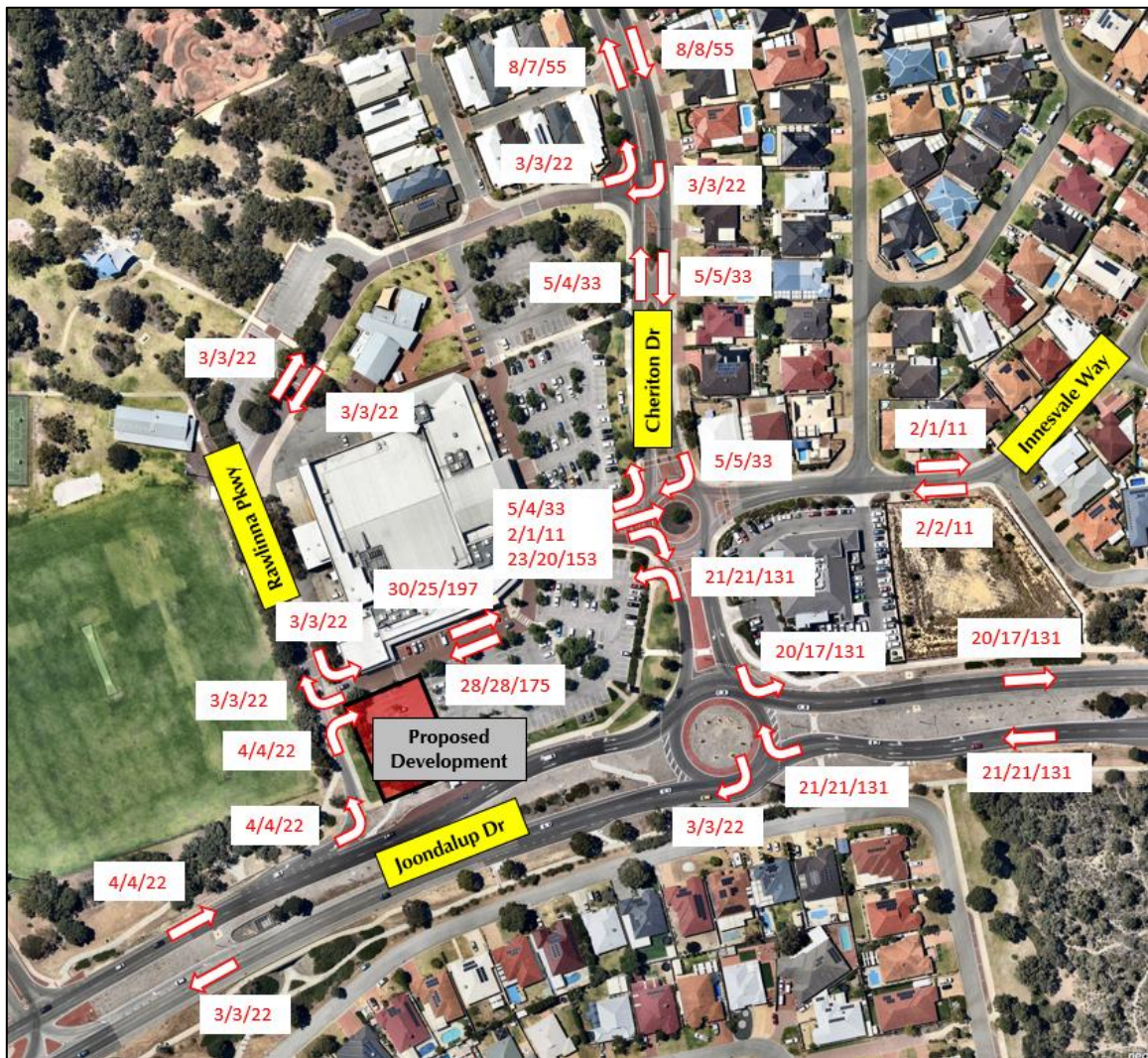


Figure 3: Estimated traffic movements for the subject site AM Peak/PM Peak/Total daily trips

6.3 Impact on Surrounding Roads

The WAPC Transport Impact Assessment Guidelines (2016) provides guidance on the assessment of traffic impacts:

“As a general guide, an increase in traffic of less than 10 per cent of capacity would not normally be likely to have a material impact on any particular section of road but increases over 10 per cent may. All sections of road with an increase greater than 10 per cent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 per cent of capacity. Therefore, any section of road where development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis.”

It is clear that the traffic increase from the proposed development would be significantly less than the critical threshold (100vph per lane) with the most pronounced traffic increases being 41vph on Joondalup Drive (east of the subject site) during the morning peak hour.

As detailed in **Section 6.1**, the proposed development will not increase traffic on any lanes on the surrounding road network by more than 100vph, therefore the impact of the development traffic on the surrounding road network will not be significant and does not require further assessment.



7 Traffic Management on the Frontage Streets

Rawlinna Parkway is constructed as a single carriageway with 6.0m wide two-way lanes to the north and 4.0m wide one-way lane to the south of the existing Shopping Centre crossover on Rawlinna Parkway. It features pedestrian paths on both sides of the road.

It is classified as an *Access Road* in the Main Roads WA Functional Road Hierarchy and operates under the default built up speed limit of 50km/h.



Figure 4: Southbound view along Rawlinna Parkway

Joondalup Drive, north of the subject site, is constructed as a dual divided carriageway with landscaped median and shared paths and on road cycle lanes on both sides of the road in the immediate vicinity of the subject site as shown in **Figure 5**.

Joondalup Drive is classified as *Distributor A* in the Main Roads WA Metropolitan Functional Road Hierarchy and operates under the speed limit of 70km/h.

Traffic count data obtained from Main Roads WA indicates that Joondalup Drive (East of Wanneroo Road) carried approximately 27,646 vehicles on a typical weekday in 2021/22. The morning and afternoon peaks are between 8:00am to 9:00am and 4:00pm to 5:00pm with traffic volumes of 2,204vph and 2,445vph respectively.



Figure 5: Westbound view along Joondalup Drive

Cheriton Drive is a two-way divided road with landscaped median at the centre in the vicinity of the subject site. Pedestrian paths are available on both sides of the road as shown in **Figure 6**. It forms a roundabout intersection with Joondalup Drive to the south.

Cheriton Drive is classified as *Local Distributor* in the Main Road WA Functional Road Hierarchy and operates under the default built up speed limit of 50km/h.



Figure 6: Northbound view along Cheriton Drive

8 Public Transport Access

According to the current Transperth bus network map, the subject site is served by Transperth bus route 467 which traverses along Joondalup Drive adjacent to the subject site. The nearest bus stop is located on Joondalup Drive fronting the subject site. The nearest bus stop is accessible from the subject site via existing footpaths in the vicinity of the subject site.

This bus routes provides links to Whitfords Train Station, Wanneroo Shopping Centre, Carramar Village Shopping Centre, Lakeside Joondalup Shopping Centre and Joondalup Train Station.

The public transport services available in the vicinity of the subject site are illustrated in the relevant Transperth service map (see **Figure 7**).

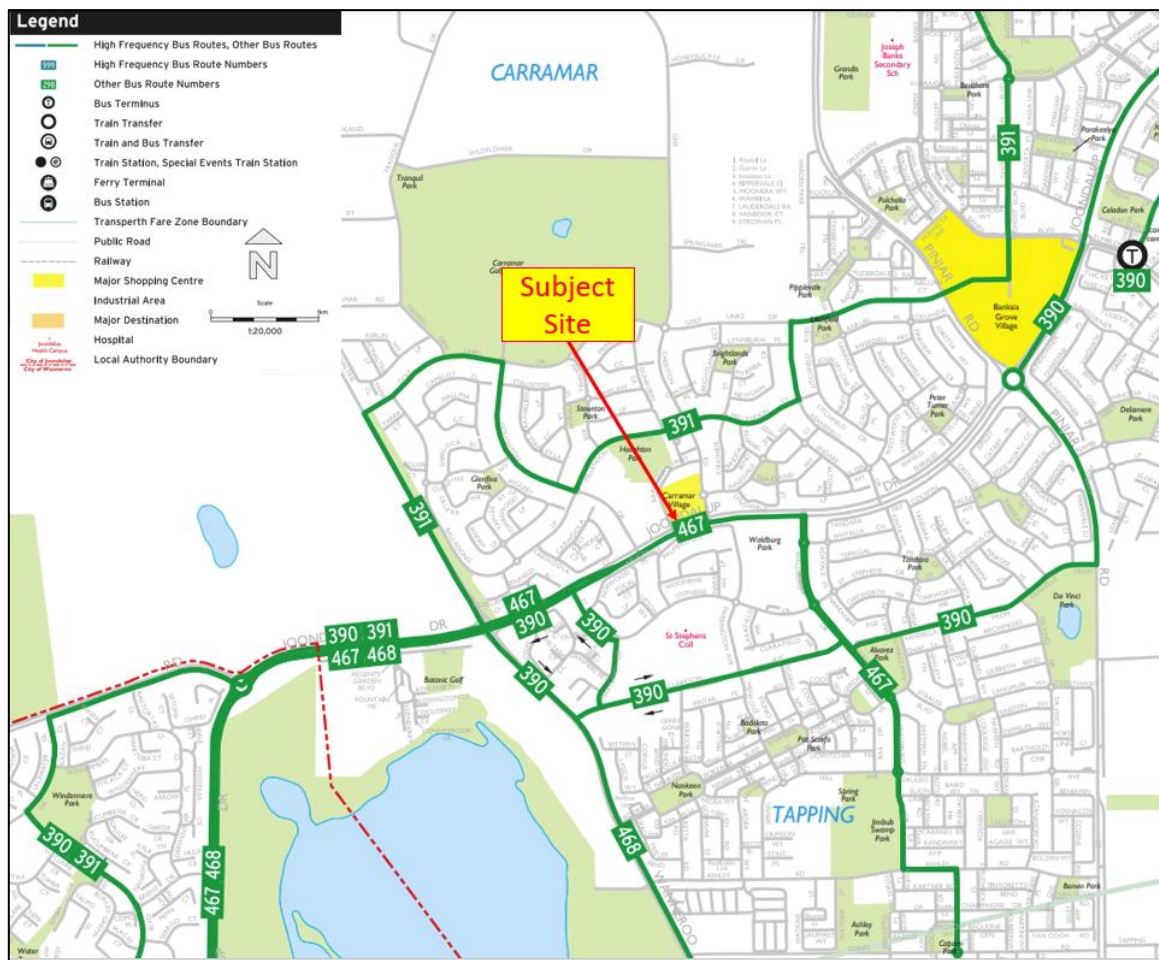


Figure 7: Public transport services (Transperth Maps)

9 Pedestrian Access

Pedestrian access to the proposed development is available directly from the existing path network on Rawlinna Parkway, Joondalup Drive and Cheriton Drive abutting the subject site.

10 Cycle Access

According to the current Department of Transport Bike Maps, the subject site has direct access to the existing bike path network within the locality via the “bicycle lane or sealed shoulder” on Joondalup Drive, shared paths on Joondalup Drive and Cheriton Drive. Further, western side of Cheriton Drive is classified as a good road riding environment.

Figure 8 shows the existing cyclist connectivity to the subject site.

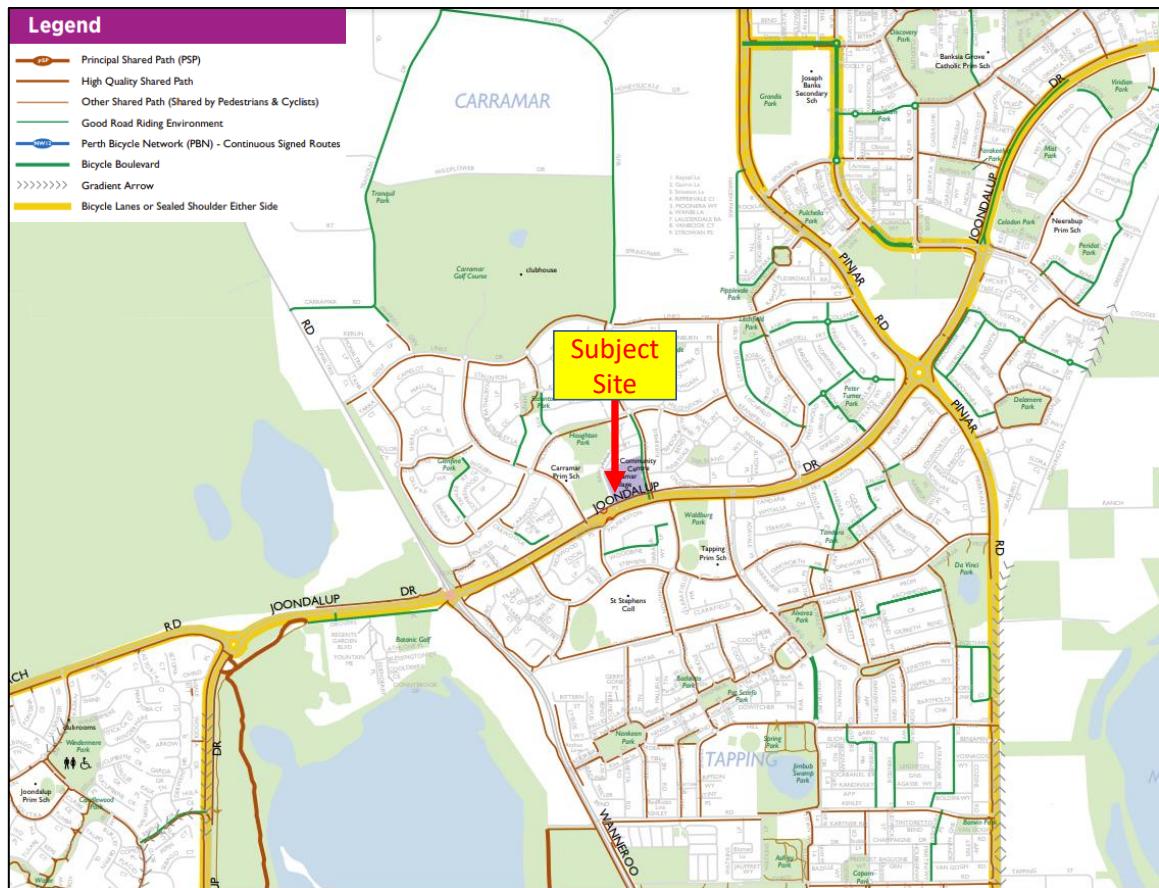


Figure 8: Extract from Perth Bicycle Network (Department of Transport)

11 Site Specific Issues

No site-specific issues have been identified for the proposed development. The impact on the parking numbers as a result of the proposed development will be addressed in the planning report.



12 Safety Issues

No particular safety issues have been identified for the proposed development.



13 Conclusions

This Transport Impact Statement (TIS) has been prepared by Transcore on behalf of FRP Capital with regard to a proposed development to be located within the existing carpark of Carramar Village Shopping Centre, Carramar in the City of Wanneroo.

The Development Application (DA) for the subject site proposes replacement of a portion of the existing carpark at the subject site with a two-storey commercial building and modification of the existing carpark. The development is proposed to comprise a child care centre on ground floor and a gym on the first floor. The child care centre would accommodate up to 82 children with 16 staff. The total GFA of the gym is approximately 400 m² with 5 staff.

The newly building will be located at the south western corner of the Shopping Centre building. The existing car park at the subject site currently comprises 206 car parking bays. The rearrangement of existing parking layout will provide a total of 186 bays at the subject site resulting in the loss of 20 bays.

Waste collection and deliveries for the proposed development will be accommodated within the shopping centre site which and will take place at the existing loading dock as per existing arrangements of the Shopping Centre.

The traffic analysis undertaken in this report shows that the traffic generation of the proposed development is relatively low and would not have any significant impact on the surrounding road network.

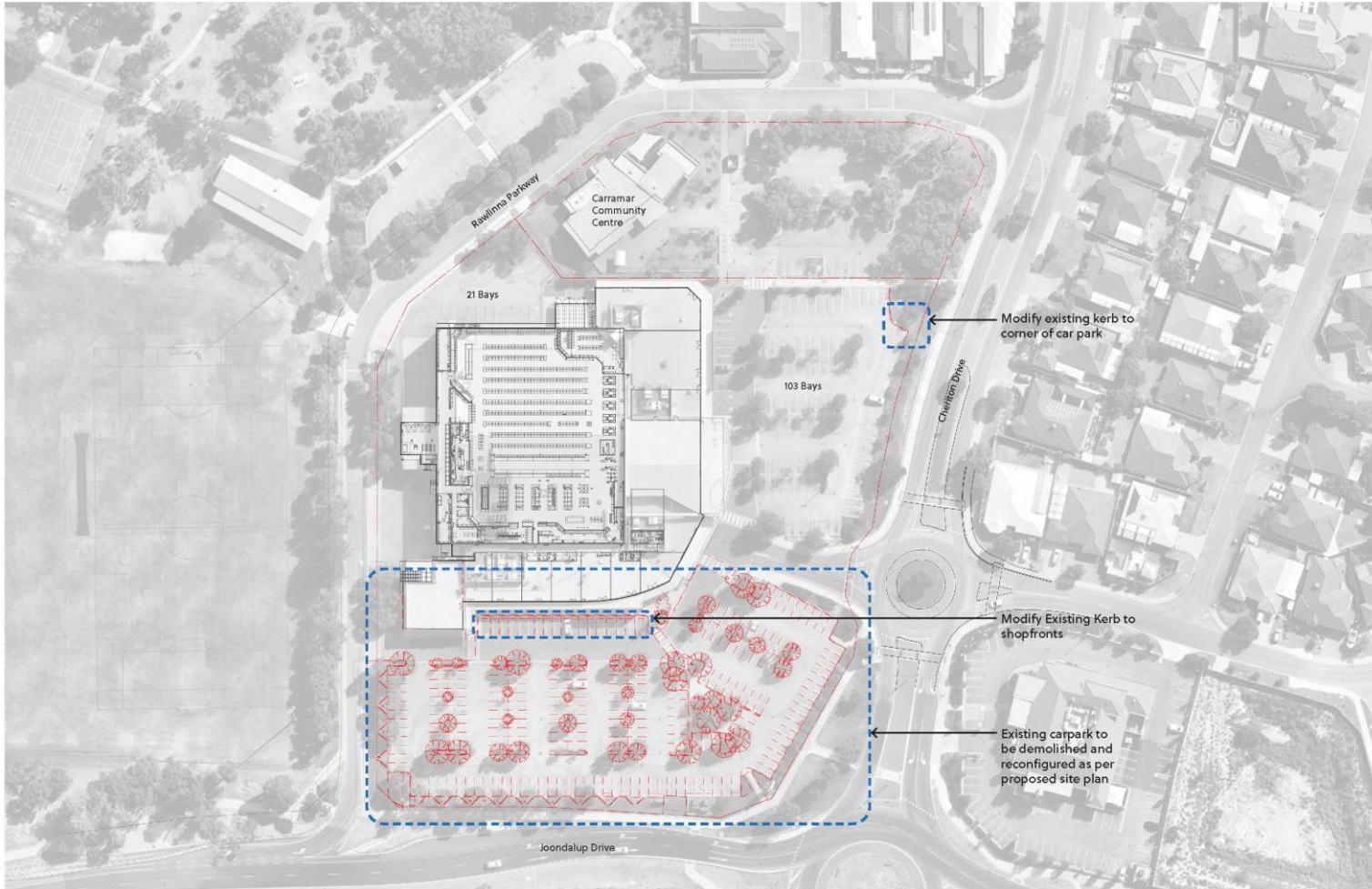
The site features good connectivity with the existing road, cyclist network and public transport coverage through the existing bus service operating in close proximity of the site.

It is concluded that the findings of this Transport Impact Statement are supportive of the proposed development.

Appendix A

PROPOSED DEVELOPMENT PLANS





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Carramar Village SC
Existing Site Plan
Development Application

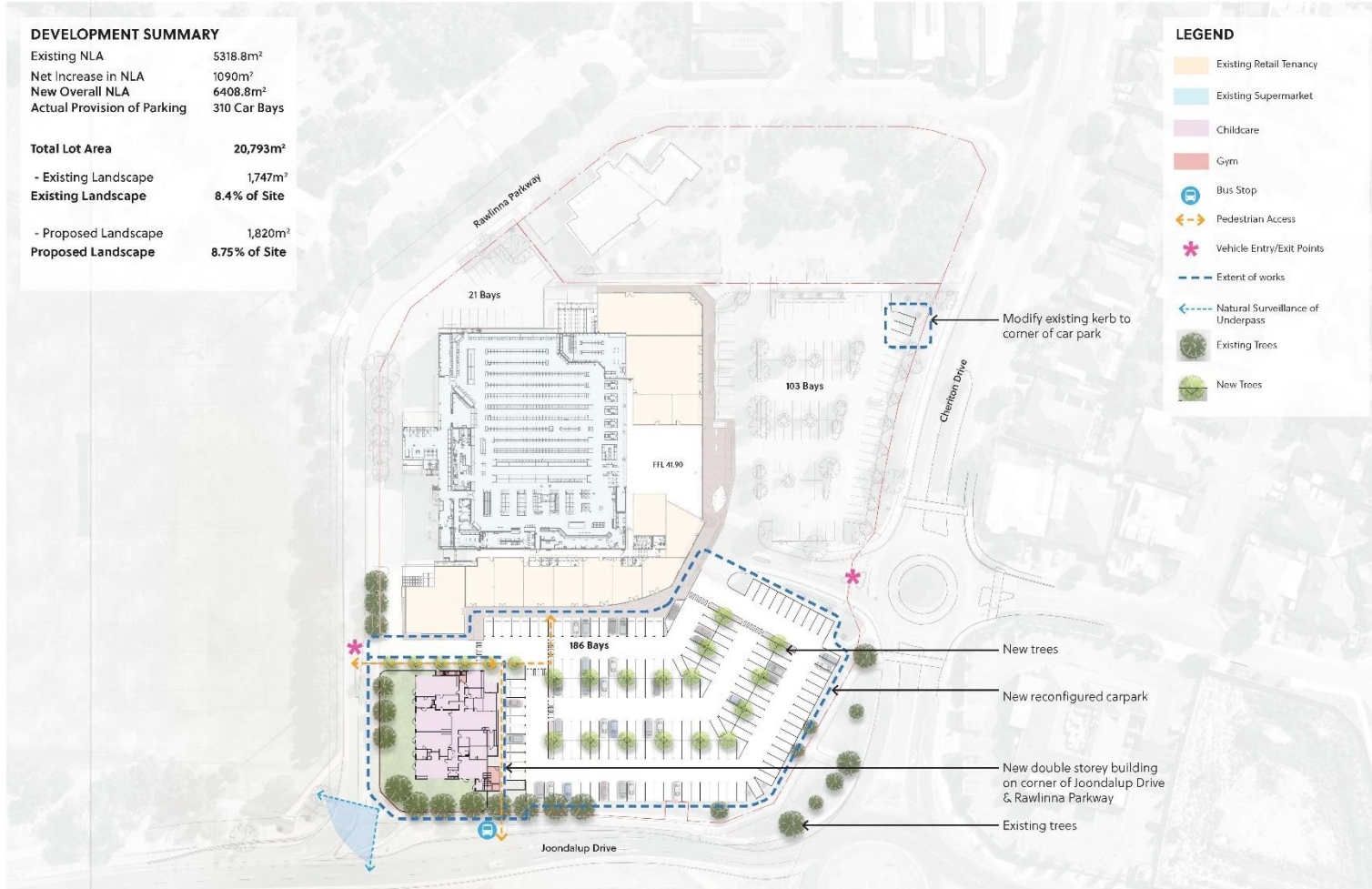
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DEVELOPMENT SUMMARY

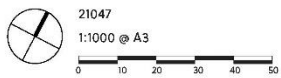
Existing NLA 5318.8m²
 Net Increase in NLA 1090m²
 New Overall NLA 6408.8m²
 Actual Provision of Parking 310 Car Bays

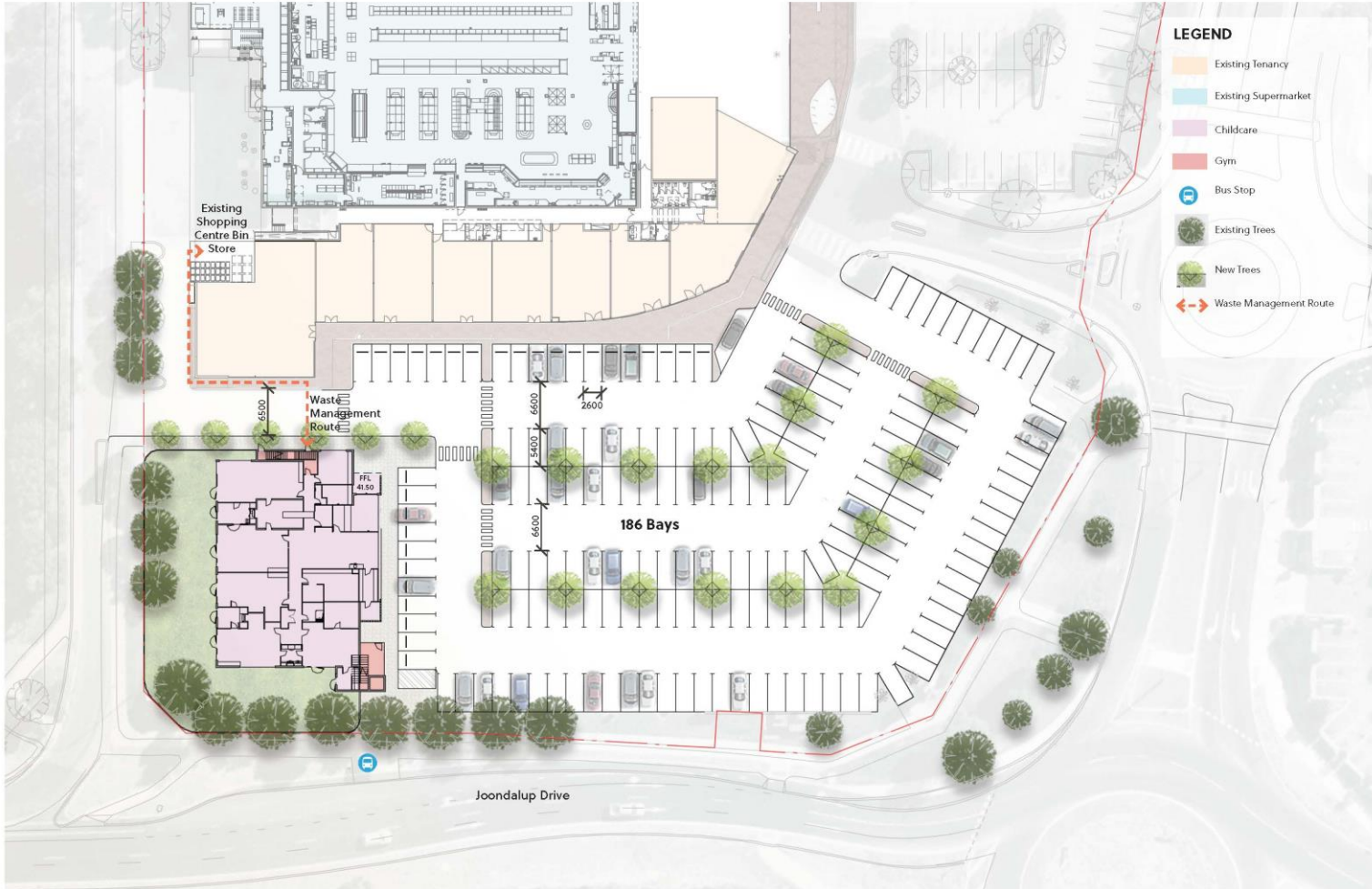
Total Lot Area 20,793m²
 - Existing Landscape 1,747m²
Existing Landscape 8.4% of Site
 - Proposed Landscape 1,820m²
Proposed Landscape 8.75% of Site



LEGEND

- Existing Retail Tenancy
- Existing Supermarket
- Childcare
- Gym
- Bus Stop
- Pedestrian Access
- Vehicle Entry/Exit Points
- Extent of works
- Natural Surveillance of Underpass
- Existing Trees
- New Trees





- LEGEND**
- Existing Tenancy
 - Existing Supermarket
 - Childcare
 - Gym
 - Bus Stop
 - Existing Trees
 - New Trees
 - Waste Management Route

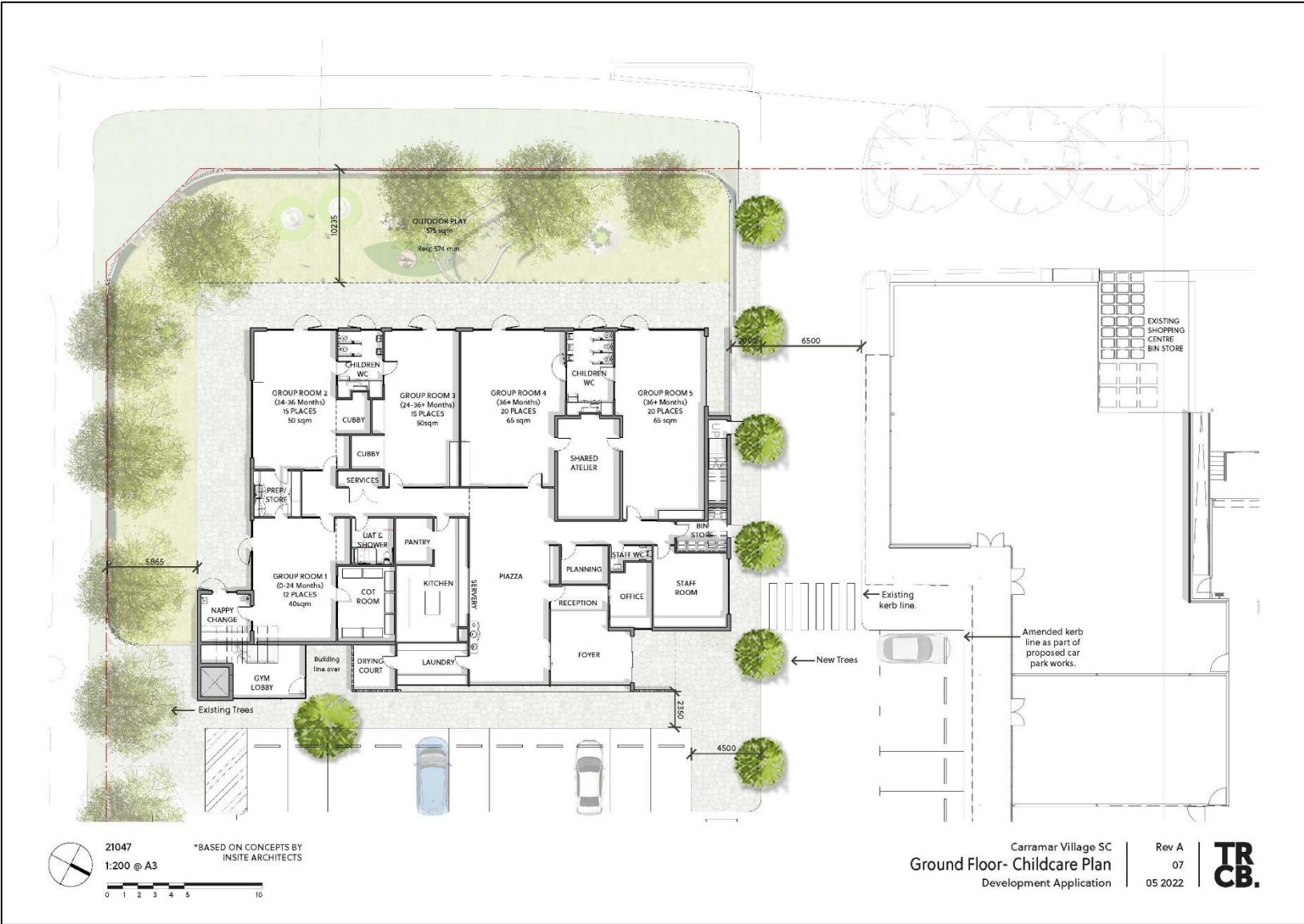


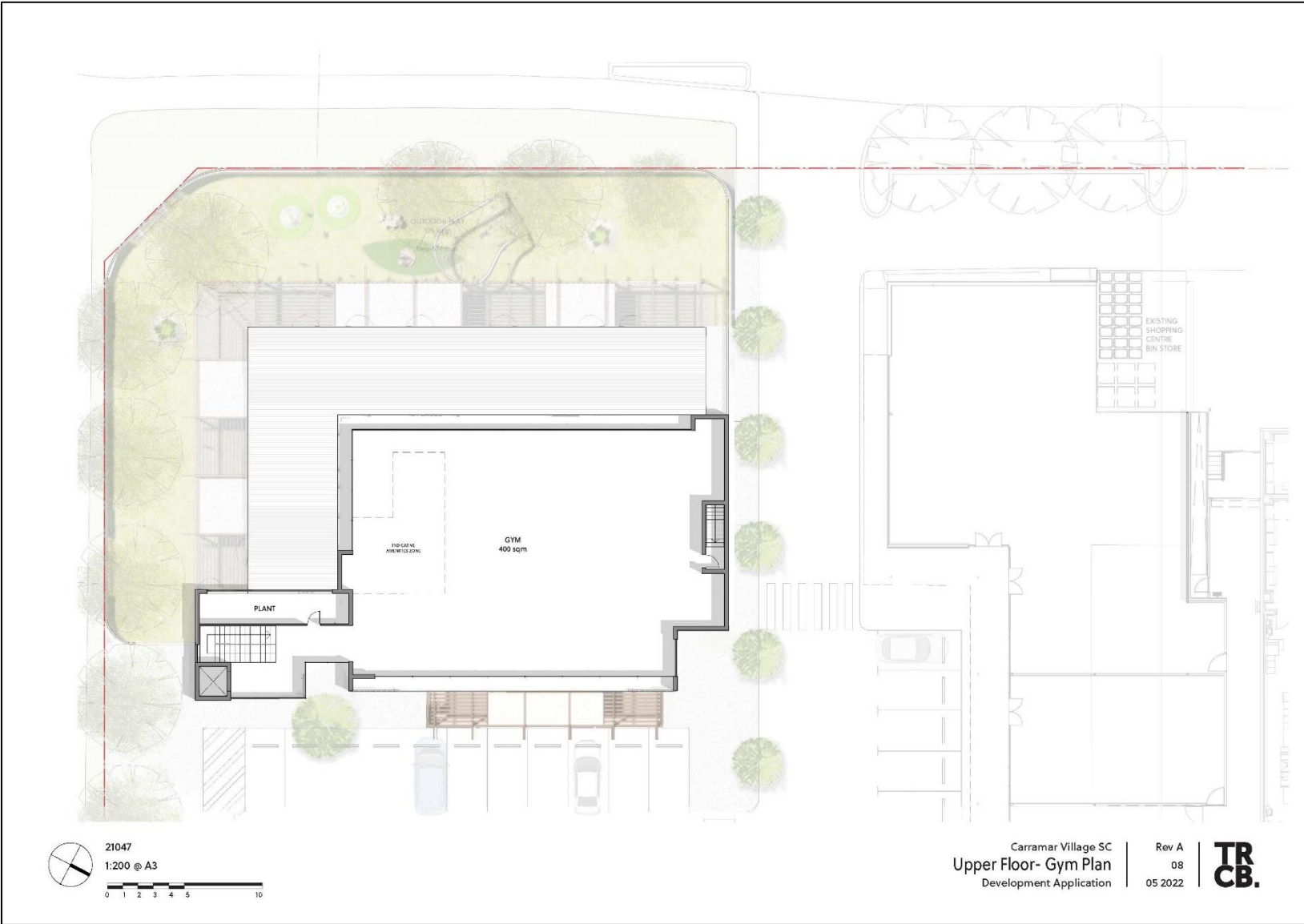
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Carramar Village SC
Proposed Site Plan
Development Application

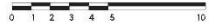
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Carramar Village SC
Upper Floor- Gym Plan
Development Application

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05 2022

