# Traffic Engineering

## Proposed Multiple Dwelling Development

At 2 Karingal Drive, Pimpama

On behalf of BJS Gets Richer Pty Ltd



# About TTM

For 30 years, we've been at the centre of the Australian development and infrastructure industry. Our unique combination of acoustics, data, traffic and waste services is fundamental to the success of any architectural or development project.

We have over 50 staff, with an unrivalled depth of experience. Our industry knowledge, technical expertise and commercial insight allow us to deliver an exceptional and reliable service.

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## Revision Record

| No. | Author | Reviewed/Approved | Description | Date |
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# 1 Introduction

## 1.1 Background

TTM Consulting has been engaged by BJS Gets Richer Pty Ltd to prepare a traffic engineering report investigating a proposed development application for a townhouse development in Pimpama. It is understood that a Development Application will be lodged with the City of Gold Coast.

## 1.2 Scope

This report investigates the transport aspects associated with the proposed development. The scope of the transport aspects investigated includes:

- Parking supply required to cater for development demand;
- Parking layout to provide efficient and safe internal manoeuvring;
- Identification of likely traffic volumes and traffic distribution from the future development;
- Identification of likely traffic impact of development on the public road network;
- Access configuration to provide efficient and safe manoeuvring between the site and the public road network;
- Internal road layout to provide efficient and safe internal manoeuvring for service vehicles;
- Suitability of access and internal facilities to provide for pedestrian and cyclist operation;
- Access to suitable level of public transport, and;
- Internal road hierarchy to cater for lot access, vehicle design speeds and road user amenity requirements.

To assess the proposed transport arrangements, the development plans have been assessed against the following guidelines and planning documents:

- City of Gold Coast City Plan, specifically:
  - Gold Coast Planning Scheme 2003 Version 8
  - Gold Coast City Plan Development Codes, Part 9.4.13 Transport Code
- Australian Standard 2890

## 1.3 Site Location

The Site is located at 2 Karingal Drive, Pimpama. The property description is Lot 19 on RP152380. The site location is indicatively shown in Figuire 1.1

The site has a road frontage to Karingal Drive, and is currently undeveloped. Access is currently from Imelda Way and Karingal Drive – but not via formal crossovers. Currently there are no parking and service vehicle provisions for the site.

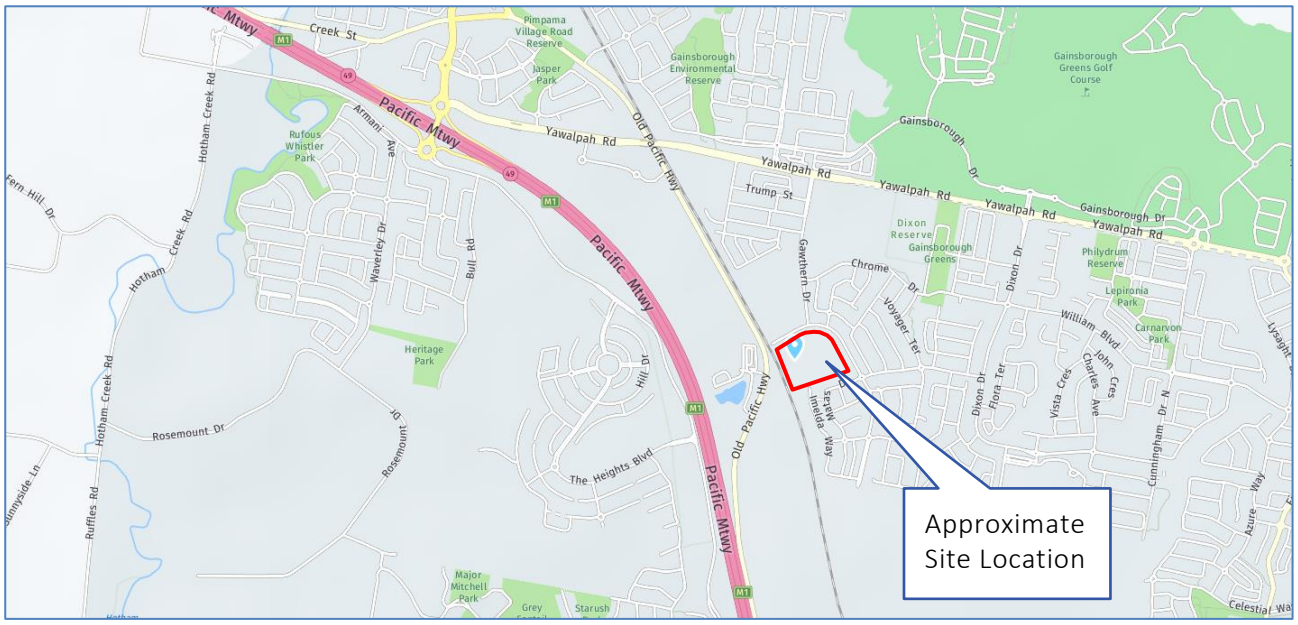



Figure 1.1: Site location




Figure 1.2: Site area

## 1.4 Development Profile

The development proposal is to construct 71 multiple dwellings, with the design characterised by two primary development precincts bisected by a waterway corridor. Dwellings are to be a mix of 1, 2 and 3 bedroom townhouses in a 2 to 3 storey configuration, each with off street parking.

The northern precinct includes 46 dwellings and the southern precinct includes 25 dwellings.

## 1.5 Access

The development plan includes two site accesses as follows:

- Karingal Street access located at the northern side of the subject site. The characteristics of this access include:
  - Type 1 drive way access
  - 5.5m wide at the property boundary
  - Priority control
  - Left in / right out (restricted due to location at end of cul-de-sac).
- Imelda Way located at the southern side of the subject site. This is a road continuation of the existing Imelda Way stub and is formed of a 5.5m wide carriageway within a 7.5m wide road reserve.

## 1.6 Parking

The development proposal includes the following parking supply:

- 51 resident spaces, which are located in garages.
- 51 car port spaces, which are located adjacent to garages.
- 20 resident spaces in tandem with single garages.
- 35 total visitor parking spaces (10 x spaces in the south, 25 x spaces in the north)

# 2 Existing Transport Infrastructure

## 2.1 The Road Network

Most roads in the immediate vicinity of the site are administered by City of Gold Coast Council. The hierarchy and characteristics of local roads are shown in Table 2.1.

Table 2.1: Local Road Hierarchy

| Road | Speed Limit | Lanes | Classification |
|---|---|---|---|
| Karingal Drive | 50kph | 2 (undivided) | Local Road |
| Imelda Way | 60kph | 4 (divided) | Local Road |
| Gawthern Drive | 60kph | 2 (undivided, plus parking) | Distributer Road |
| Yawalpah Road | 70kph | 2 (undivided, plus bicycle lane) | Sub-arterial Road |

Karingal Drive has a 6m wide carriageway at the site frontage. The intersection of Gawthern Drive and Karingal Drive is priority controlled intersection. The intersection of Gawthern Drive and Yawalpah Road is also priority controlled but incorporates a channelised right turn lane into Gawthern Drive.

## 2.2 Road Planning

TTM has reviewed the local government infrastructure plan and no changes in the immediate vicinity of the site are proposed. The nearest future trunk works are on Yawalpah Road as follows:

- upgrade to 4 lanes (2026) between Cunningham Drive North and Attenbrough Boulevard
- railway bridge, upgrade to 4 lanes (2031)

Council resources do not specify any other works in the vicinity of the site which will impact upon or be impacted by the proposed development.

A standard condition of approval will be the construction/repair and reinstatement of pedestrian footpaths across the frontage of the site subsequent to construction activity on the site.

## 2.3 Public Transport and Pedestrian Facilities

### Buses

A pair of bus stops are located approximately 1km walking distance from the site on Yawalpah Road, which provide services connecting to the Coomera and Ormeau Heavy Rail Stations via Coomera Rivers and Pimpama. The pair of bus stops are serviced by the 722 bus route, which is operated by Translink.

### Pedestrians & Cyclists

Formal pedestrian footpaths are located on the northern side of Karingal Drive, the eastern side of Gawthern Drive and the southern side of Imelda Way. Kerb ramps are provided to facilitate crossing of roads. Dedicated on street cycle lanes are located along Yawalpah Road, Gawthern Drive and Karingal Drive.

# 3 Car Parking Arrangements

## 3.1 Council Parking Supply Requirement

Council parking requirements for this type of development are identified in Table 3.1 and are sourced from the Gold Coast Planning scheme, in particular Part 9.4.13 of the Transport Code.

Table 3.1: Parking Supply Requirement (north precinct)

| Land Use | Council Requirement | Extent | Requirement | Provision |
|---|---|---|---|---|
| Multiple Dwelling<br>– 1 bedroom<br>– 2 bedroom<br>– 3 Bedroom<br>Visitor | <br>1 space / unit<br>1.25 spaces / unit<br>1.5 spaces / unit<br>2 + 1/10 units | <br>10 units<br>4 units<br>32 units<br>46 units | <br>10<br>5<br>48<br>7 | <br>20 (10 x tandem garage)<br>8 (4 x tandem garage)<br>64 (32 x garage + 32 x car port)<br>25 |
| **Total** | | | **70** | **117** |

Table 3.2: Parking Supply Requirement (south precinct)

| Land Use | Council Requirement | Extent | Requirement | Provision |
|---|---|---|---|---|
| Multiple Dwelling<br>– 1 bedroom<br>– 2 bedroom<br>– 3 Bedroom<br>Visitor | <br>1 space / unit<br>1.25 spaces / unit<br>1.5 spaces / unit<br>2 + 1/10 units | <br>6 units<br>6 units<br>13 units<br>25 units | <br>6<br>8<br>20<br>5 | <br>12 (6 x tandem garage)<br>12 (6 x tandem garage)<br>26 (13 x garage + 13 x car port)<br>9 |
| **Total** | | | **39** | **59** |

The Building Code of Australia (BCA) outlines the requirements for parking for people with a disability (PWD). The development, as a multiple dwelling development (Class 2 as per BCA), is not required to provide any PWD spaces on-site.

The proposed residential/visitor parking supply exceeds the Council parking supply requirements and is therefore considered to be compliant.

## 3.2 Car Parking Layout

Table 3.3 identifies the characteristics of the proposed parking area with respect to the Council requirements. The last column identifies the compliance of each design aspect.

Table 3.3: Parking Design Requirements

| Design Aspect | Minimum AS2890.1 Standard | Proposed Minimum Provision | Compliance |
|---|---|---|---|
| Parking space length:<br>• Enclosed garage<br>• Car port<br>• Visitor bay | <br>6.0m<br>5.4m<br>5.4m | <br>6.0m min<br>5.4m<br>5.4m | <br>Compliant<br>Compliant<br>Compliant |

| Design Aspect | Minimum AS2890.1 Standard | Proposed Minimum Provision | Compliance |
|---|---|---|---|
| Parking space width:<br>• Enclosed garage<br>• Car port<br>• Visitor bay | <br>3.0m<br>2.4m<br>2.5m | <br>3.2m<br>2.4m<br>2.5m | <br>Compliant<br>Compliant<br>Compliant |
| Aisle Width:<br>• Parking aisle<br>• Circulation aisle | <br>5.8m<br>5.8m | <br>5.8m (including apron)<br>6.0m | <br>Compliant<br>Compliant |
| Garage Door Opening | 2.4m | 2.7m | Compliant |
| Maximum Gradient:<br>• Residential Street *(SC6.11)*<br>• Driveway | <br>1:10 (10%) – desirable<br>1:5 (20%) - *Requires 1:8 over property boundary* | <br>1:10 max<br>1:5 max | <br>Compliant<br>Compliant |

The proposed geometrics of the parking arrangements comply with council requirements and is therefore considered acceptable.

## 3.3 Speed Control

As per the Council requirements and outlined in the development meeting, traffic calming devices within the internal roads are proposed.

It is TTM's suggestion at a Watts profile speed hump is utilised at approximately 50m intervals, as per the development plans (See Appendices A). A Watts profile speed hump the preferred device as it is TTM's opinion that it will not lead to resident complaints (noise, comfort etc) in the future. Experience has shown complaints can occur when a Type 2 road hump (AS2890.1 Section 4.9) is implemented in a residential street.

Humps will be spaced at no less then 80m apart and no greater than 120m on straights for the internal road network. Figure 3.1 shows the profile of the hump and Figure 3.2 shows the TTM advised locations of humps.

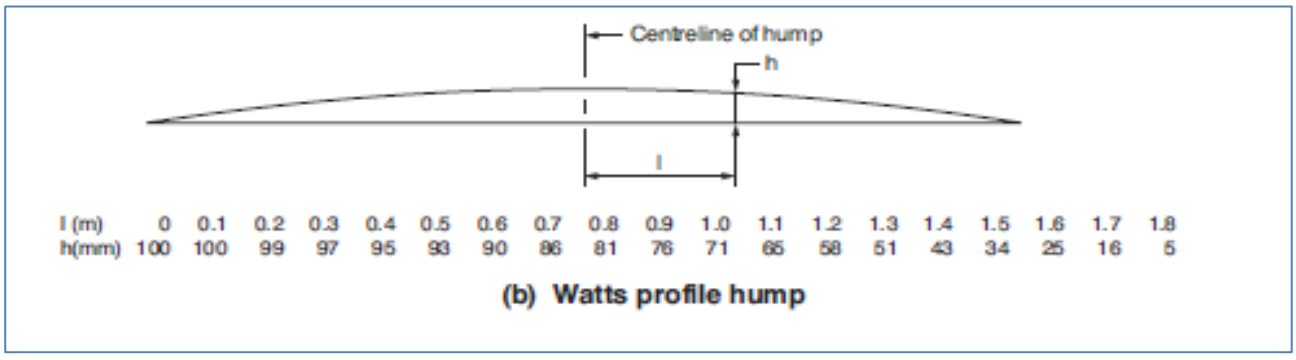



Figure 3.1: Watts profile road hump profile

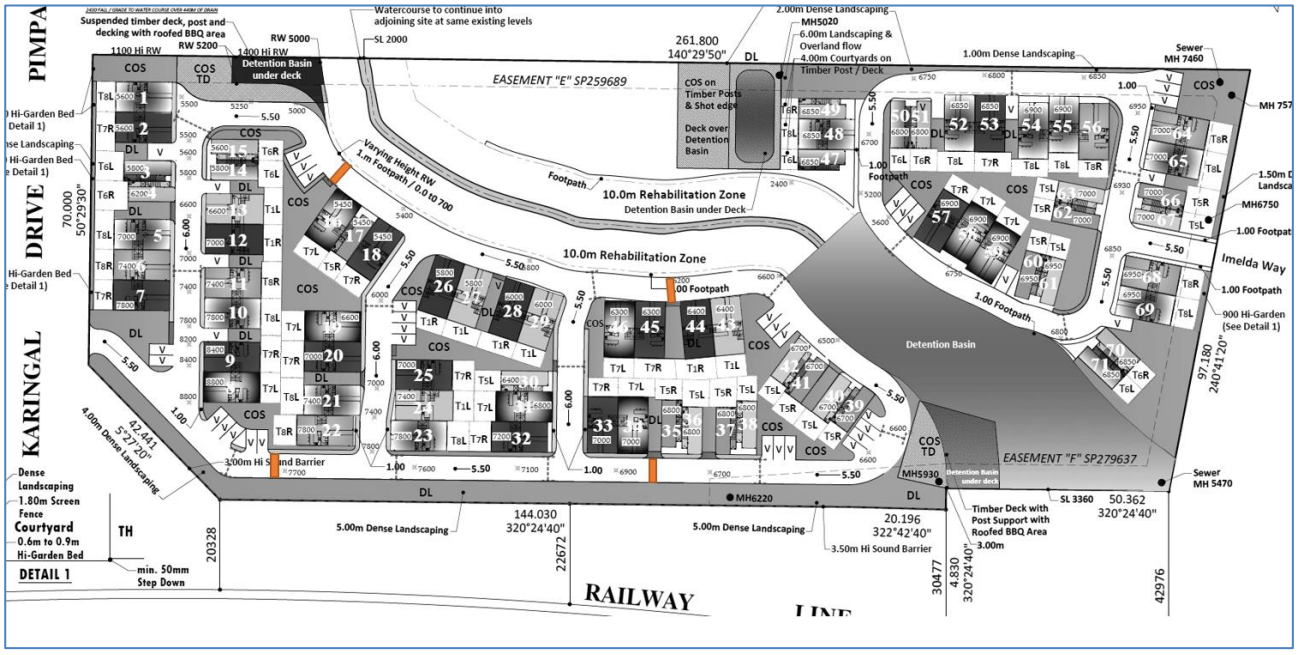



Figure 3.2: Locations of speed humps

# 4 Estimated Future Transport Demands

## 4.1 Estimated Development Traffic Generation

The RTA, Guide to Traffic Generating Developments recommend using specific generation rates, for planning purposes, for different development types. The RTA specifies a weekday peak rate of 0.65 vehicle trips per dwelling per hour for a townhouse development.

Application of this rate to the proposed development, results in the following estimate of development site traffic generation.

- North = 0.65vph/dwelling (46 units) = 30vph (in+out)
- South = 0.65vph/dwelling (25 units) = 17vph (in+out)

The total development peak generation rate is expected to be a total of 47vph new trips on the local road network.

## 4.2 Estimated Development Traffic Distribution

The traffic generated by the proposed development has been approximately distributed based on the local road infrastructure and surrounding land use destinations.

It is therefore assumed that 70% will travel to/from the north towards Pimpama, Yatala and beyond, and 30% to/from the south towards Foxwell Road and beyond. This is based on the proximity to wider network of Yawalpah Road, Finnegan Way and access to the M1.

Inbound and outbound split proportions are assumed to be:

- 30% of development traffic is inbound in the AM Peak, with the remaining 70% outbound.
- 60% of development traffic is inbound in the PM Peak, with the remaining 40% outbound

The estimated distribution of development generated traffic is shown in Figure 4.1.

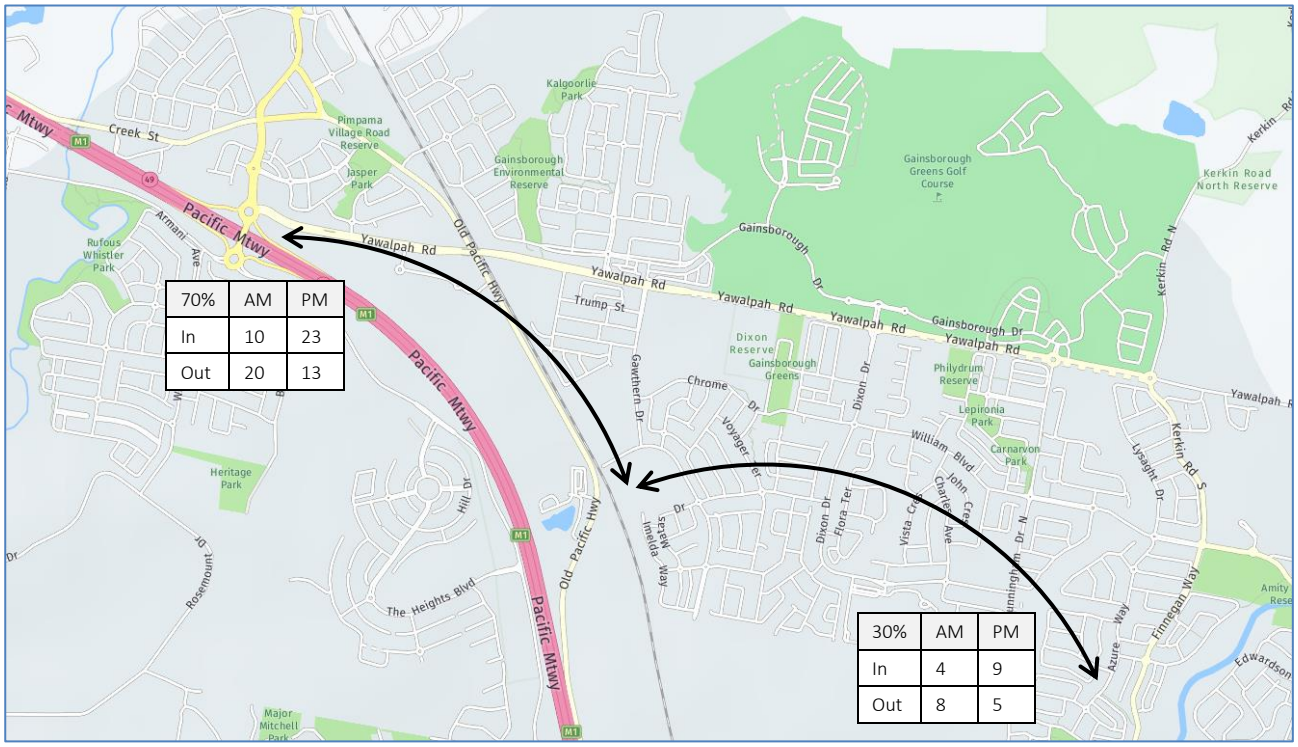



Figure 4.1: Estimated Distribution of Development Generated Traffic

Based on Figure 4.1, it is expected that the development would result in approximately 33 movements during the peak hours through the Gawthern Drive / Yawalpah Road intersection. This would correspond to almost one additional movement through the intersection every 2 minutes. This quantity is negligible and is not anticipated to have a negative impact on the safety or operation of roads in the vicinity.

Based on the above, TTM expects that the proposed development would have a minimal impact on the local road network and that detailed assessment is not warranted.

# 5 Site Access Arrangements

The proposed access driveway requirements are specified in Table 5.1 and Table 5.2. It is noted that the Imelda Way access is in fact a continuation of the existing stub road and is therefore classed as a road rather than an access – however access geometry has been assessed for reference purposes.

Table 5.1: Driveway Requirements – Karingal Drive

| Design Aspect | Council Requirement | Proposed Provision | Compliance |
|---|---|---|---|
| Distance from a minor intersection | 10m | 150m | Compliant |
| Distance from a major intersection | 20m | 800m | Compliant |
| Distance from another driveway | 3m | 230m | Compliant |
| Sight Distance - 50kph | Desirable – 69m<br>Minimum - 45m | >45m | Compliant |
| Design Type | Category 1 | Category 1 | Compliant |
| Width/ Entry and Exit Widths | 3.0m - 5.5m | 5.5m | Compliant |
| Minimum Queuing Provisions | 2 cars to traffic control point | 3 cars to first internal intersection | Compliant |

Table 5.2: Driveway Requirements – Imelda Way

| Design Aspect | Council Requirement | Proposed Provision | Compliance |
|---|---|---|---|
| Distance from a minor intersection | 10m | 200m | Compliant |
| Distance from a major intersection | 20m | 400m | Compliant |
| Distance from another driveway | 3m | 170m | Compliant |
| Sight Distance - 50kph | Desirable – 69m<br>Minimum - 45m | 75m | Compliant |
| Design Type | Category 1 | Category 2 | Compliant |
| Width/ Entry and Exit Widths | 3.0m - 5.5m | 5.5m | Compliant |
| Minimum Queuing Provisions | 2 cars to traffic control point | 3 cars to first internal intersection | Compliant |

The proposed access arrangements comply with Council Requirements and are therefore considered acceptable.

# 6 Service Vehicle Arrangements

To assess the required number of service bays for the development, TTM has referred to the City of Gold Coast's requirements for service vehicles. Other service vehicle provisions are generally in accordance with AS2890.2.

## 6.1 Council Requirements

The proposed development includes a multi dwelling residential use only, totalling 71 dwelling units. Council's city plan therefore requires access for vehicles up to and including refuse collection vehicles (RCV).

## 6.2 Proposed Service Vehicle Arrangements and Their Adequacy

All movements in the preceding figures allow a minimum 500mm clearance to all parts of the structure.

Based on the development being wholly residential, it is expected that general refuse will occur fortnightly. The waste will be collected on-site, from kerbside. TTM have conducted a swept path analysis (refer Appendix B) demonstrating that an RCV can collect all kerb side wheelie bins via the left-hand side of the vehicle. This refuse collection is likely to occur off peak.

# 7 Summary and Conclusions

## 7.1 Development Summary

The development consist of a total of 71 units developed as two precincts of 46 and 25 units each.

The access points are recommended as Category 1 accesses which is expected to meet regulations. The development will provide 3 cars queue provision across the two access driveways which is sufficient.

## 7.2 Car Parking Arrangements

The development provides a total of 176 parking spaces of which 34 are available to visitors which complies with the Gold Coast Council requirements. The geometry of the proposed car park layout complies with AS2890.1 requirements. Although, as there are two proposed access points, design is based on the two precincts being wholly separate with no vehicular connection between which meet design standards.

Overall, TTM considers the proposed car parking arrangements for this development are adequate.

## 7.3 Impact on Surrounding Road Network

Assessment of the proposed development indicates that the development will not have a significant impact on the future road network. As such, no further mitigating road works are required.

## 7.4 Service Vehicle Arrangements

Based upon the development being wholly residential, it is expected that waste collection will be facilitated on-site. This manoeuvring was demonstrated by TTM who have conducted a swept path analysis (refer Appendix B) showing an RCV completing all internal movements.

Overall, the proposed service vehicle arrangements are considered adequate to meet the needs of the proposed development.

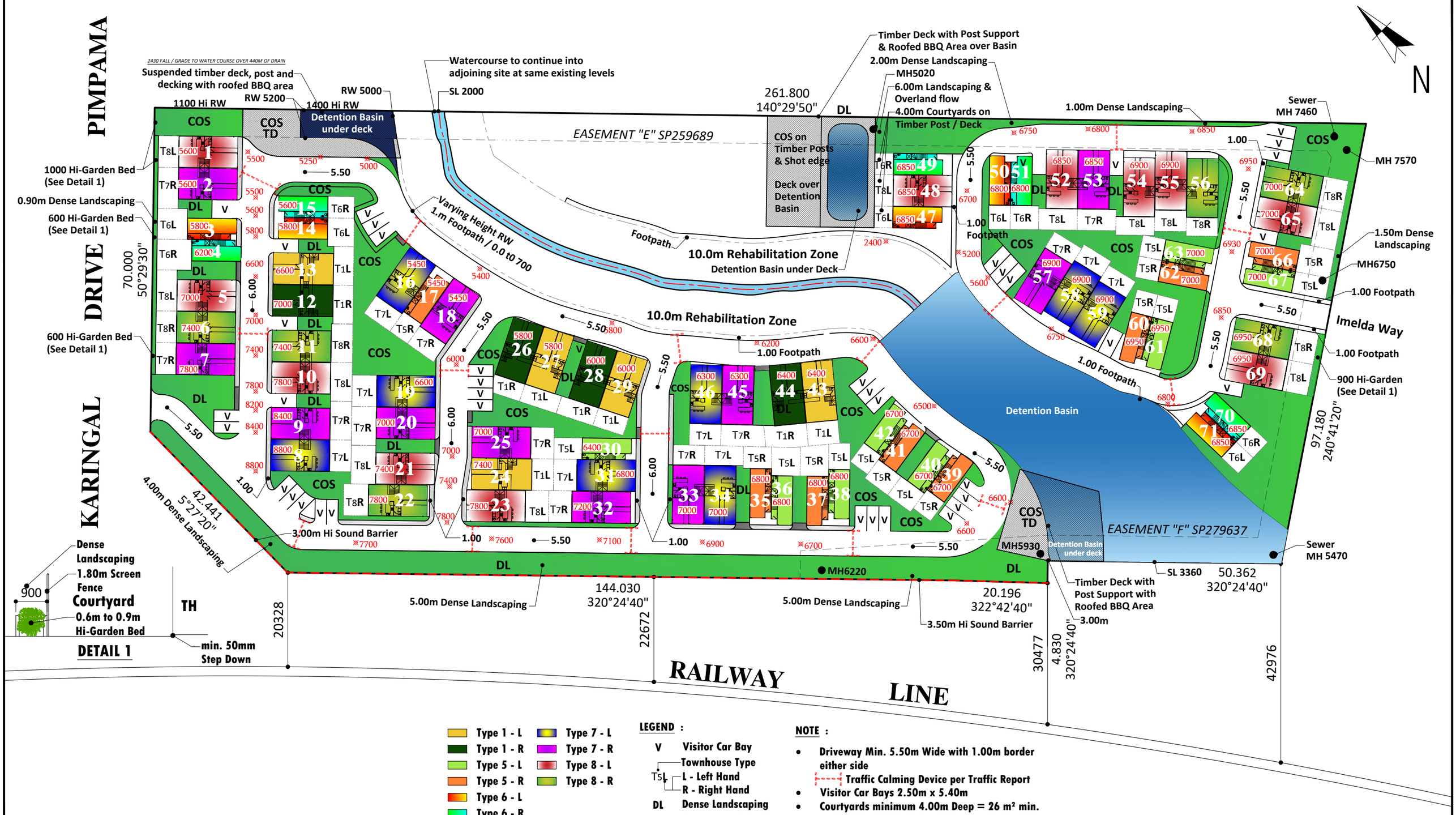
## 7.5 Active Transport Facilities

The current public transport infrastructure and proposed site provisions for pedestrian/bicycle facilities is in line with existing provisions.

## 7.6 Conclusion

Based on the assessment contained within this report, TTM see no traffic engineering reason why the relevant approvals should not be granted.

# Appendix A Proposed Site Plan




Type 1 - L
Type 1 - R
Type 5 - L
Type 5 - R
Type 6 - L
Type 6 - R
Type 7 - L
Type 7 - R
Type 8 - L
Type 8 - R

**LEGEND :**

- V — Visitor Car Bay
- T5L — Townhouse Type; L - Left Hand; R - Right Hand
- DL — Dense Landscaping
- COS — Community Open Space
- TD — Timber Deck

**NOTE :**

- Driveway Min. 5.50m Wide with 1.00m border either side
  - Traffic Calming Device per Traffic Report
- Visitor Car Bays 2.50m x 5.40m
- Courtyards minimum 4.00m Deep = 26 m² min.

**Total Area (sqm) : 24,592**

Dence Landscaping = 1,566 sqm
Community Open Space = 3,174 sqm
20.0m Rehabilitation Zone = 4,118.19 sqm
Timber Deck = 1414 sqm

**NOTE :**
**HRV / GARBAGE TRUCK MANOEUVRING MIN. 10.5m KERB TO KERB PER J.J. RICHARDS DESIGN**

1:750
15m 0 15m 30m 45m 60m 75m

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*Verify all dimensions on site and from the dimension on the plans. Do not scale from drawings*

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Drawn by
John C.

Checked by
JPD, Brian Johnston plan design P/L

Client

**SITE LAYOUT**

**RAY SUGARS**
**2 Karingal Drive Pimpama**
**Lot 19 on RP 152380**

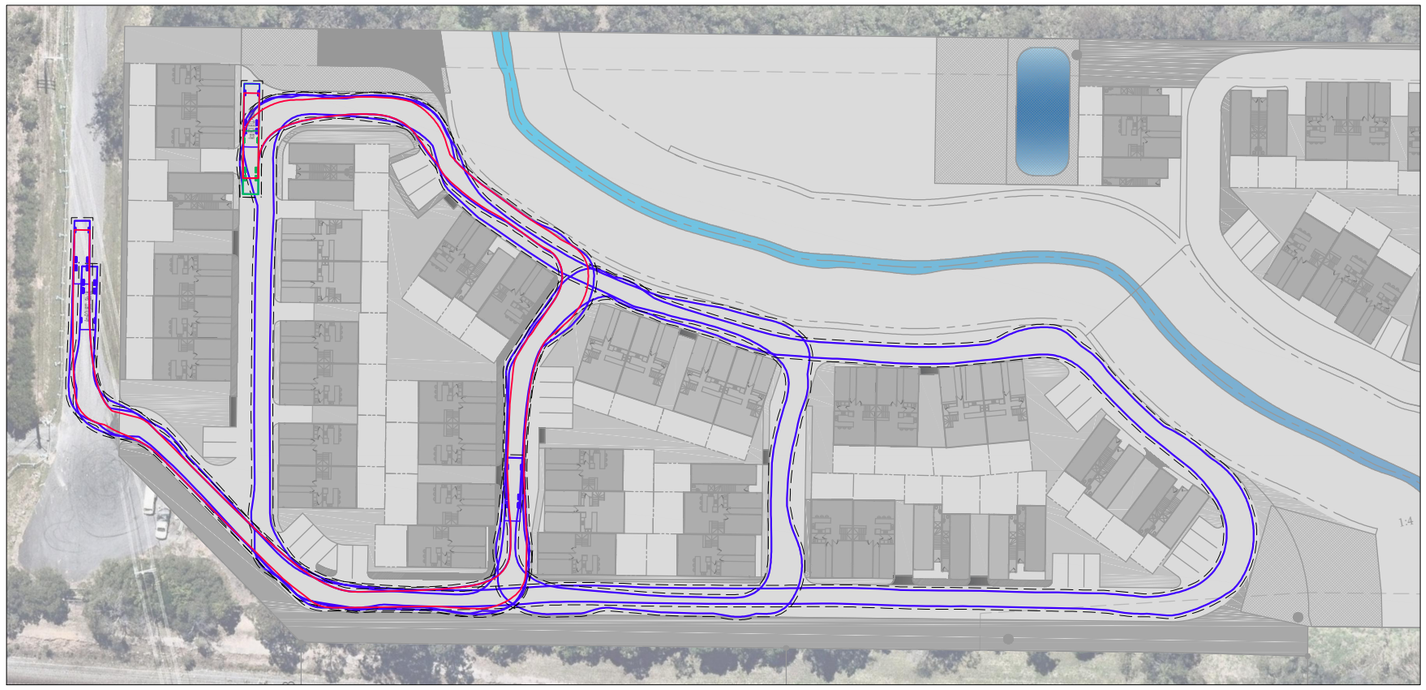
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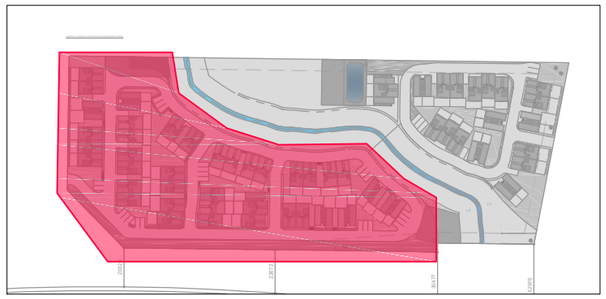
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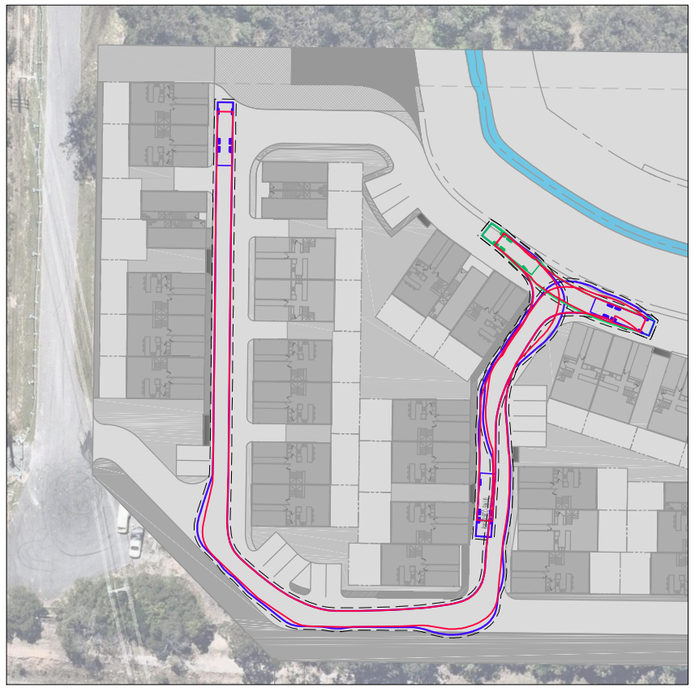
# Appendix B Service Vehicle Swept Paths



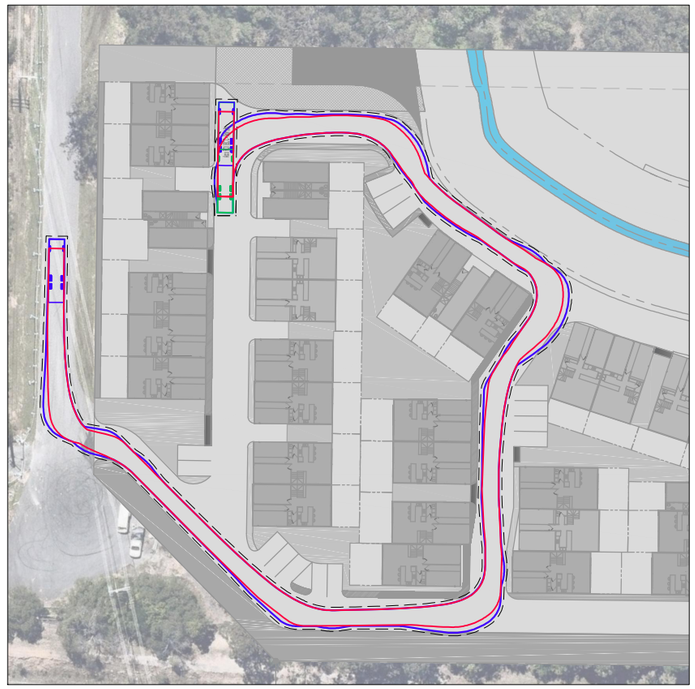
FULL ROUTE



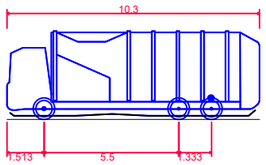
SITE LAYOUT PLAN



TURNAROUND MANEUVER

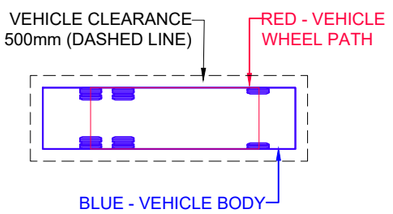


RCV SITE EGRESS




Acco RCV (BCC - Side Lift)

| | |
|---|---|
| Overall Length | 10.300m |
| Overall Width | 2.500m |
| Overall Body Height | 3.600m |
| Min Body Ground Clearance | 0.150m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Curb to Curb Turning Radius | 9.500m |




| REV. | DATE | AMENDMENT DESCRIPTION | DRAWN | CHECKED | APPROVED |
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NORTH

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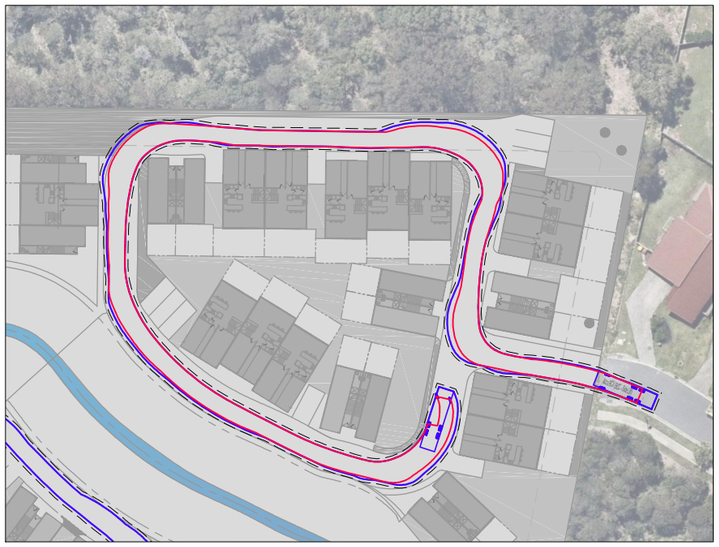
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PROJECT
**2 KARINGAL DRIVE, PIMPAMA**

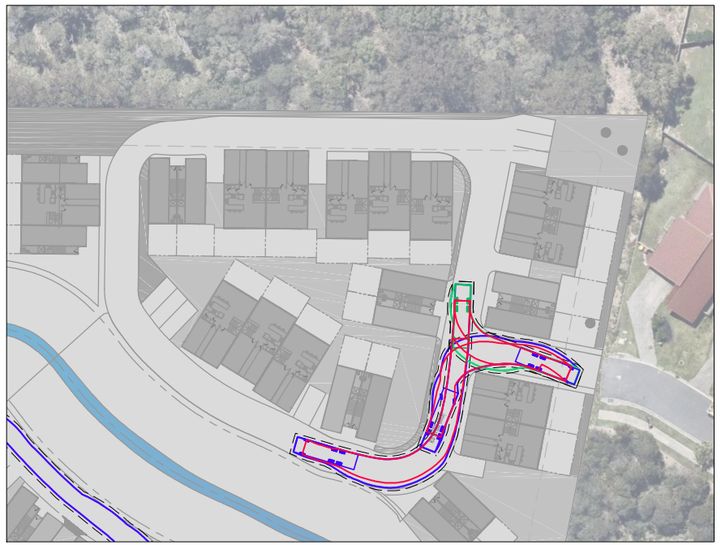
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**REFUGE VEHICLE TYPICAL ROUTE - KARINGAL ACCESS ROAD**
DESIGN VEHICLE - RCV (SIDE LIFT)

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| DATE | 29 Mar 2021 |
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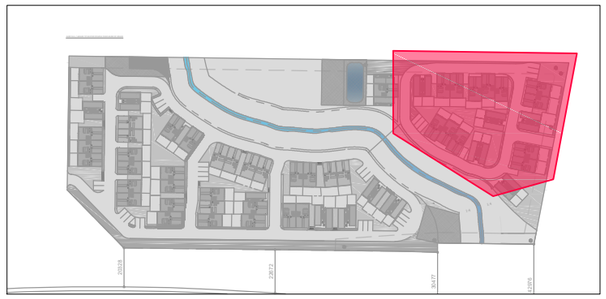
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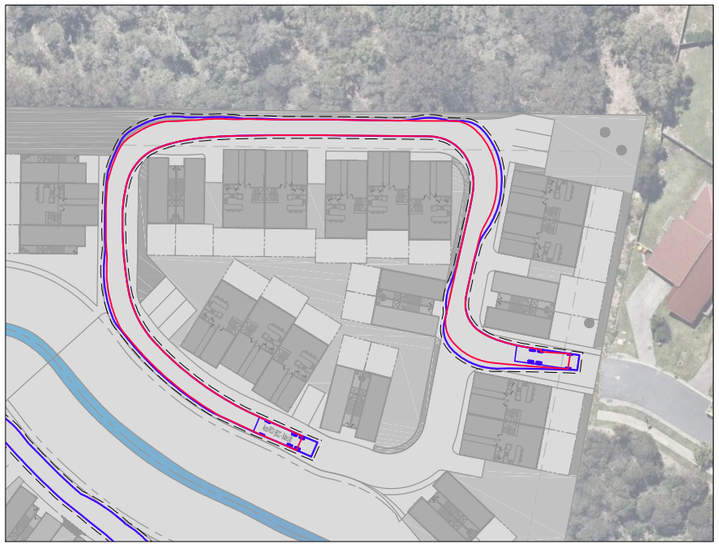
RCV SITE ACCESS



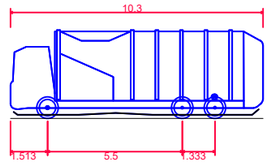
TURNAROUND MANEUVER



SITE LAYOUT PLAN

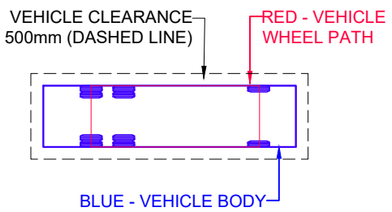


RCV SITE EGRESS




Acco RCV (BCC - Side Lift)

| | |
|---|---|
| Overall Length | 10.300m |
| Overall Width | 2.500m |
| Overall Body Height | 3.600m |
| Min Body Ground Clearance | 0.150m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Curb to Curb Turning Radius | 9.500m |




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| REV. | DATE | AMENDMENT DESCRIPTION | DRAWN | CHECKED | APPROVED |
|---|---|---|---|---|---|
| A | 29-03-21 | ORIGINAL ISSUE | SM | IB | IB |

SCALE 0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

NORTH

CLIENT

BJS GETS RICHER PTY LTD

TTM CONSULTING PTY LTD

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PROJECT
**2 KARINGAL DRIVE, PIMPAMA**

DRAWING TITLE
**SWRPT PATH ANALYSIS**
**REFUGE VEHICLE TYPICAL ROUTE - IMELDA WAY ACCESS**
DESIGN VEHICLE - RCV (SIDE LIFT)

| | |
|---|---|
| PROJECT NUMBER | 21GCT0060 |
| ORIGINAL SIZE | A3 |
| DRAWING NUMBER | 21GCT0060-01 |
| REVISION | B |
| DATE | 29 Mar 2021 |
| SHEET | 1 OF 1 |