HOME CONSORTIUM

# TRAFFIC REPORT FOR PROPOSED STAGE 2 DEVELOPMENT, VINCENTIA MARKETPLACE

NOVEMBER 2021

COLSTON BUDD ROGERS & KAFES PTY LTD
ACN 002 334 296
Level 18 Tower A
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067

Telephone: (02) 9411 2411
Email: cbrk@cbrk.com.au

REF: 11700/5

# TABLE OF CONTENTS

1. INTRODUCTION ..... 1
2. EXISTING CONDITIONS ..... 2
3. IMPLICATIONS OF PROPOSED DEVELOPMENT ..... 8

ATTACHMENT A – VEHICLE TURN PATHS

# 1. INTRODUCTION

1.1 Colston Budd Rogers and Kafes Pty Ltd has been commissioned by Home Consortium to prepare a report examining the traffic and parking implications of a proposed Stage 2 development at Vincentia Marketplace which comprises an additional 5,016m$^2$ mixed use (comprising specialty retail (bulky goods), medical centre and gym) and a 120 place child care centre.

1.2 This report assesses the traffic and parking implications of the proposed development through the following chapters:

- Chapter 2 - describing the existing conditions; and
- Chapter 3 - assessing the traffic implications of the proposed development.

# 2. EXISTING CONDITIONS

## Site Location

2.1 The site is located in Vincentia, on the southern side of Moona Creek Road, as shown in Figure 1. Stage 2 is currently vacant land. Surrounding land use includes Vincentia Marketplace (Stage 1) to the west, residential to the north, Vincentia Leisure Centre to the east and vacant land to the south.

## Road Network

2.2 The road network in the vicinity of the site comprises Naval College Road, The Wool Road, Moona Creek Road and Halloran Street. Naval College Road is located to the west of the site. It provides the main access to Vincentia from the Princes Highway. In the vicinity of the site it provides two traffic lanes in each direction. It intersects with Moona Creek Road and The Wool Road at dual lane roundabouts.

2.3 The Wool Road is located to the south of the site. It travels in an east west direction connecting Naval College Road with Vincentia. West of Naval College Road, The Wool Road provides an alternative connection to the Princes Highway. In the vicinity of the site The Wool Road provides one traffic lane in each direction.

2.4 Moona Creek Road runs along the northern boundary of the site. It provides one traffic lane in each direction with kerb side parking adjacent to the site and two

lanes leading up to the roundabout at Naval College Road. It intersects with Halloran Street at a single lane roundabout.

2.5 Halloran Street is located north of the site and provides one traffic lane in each direction. South of Moona Creek Road, it provides service access and secondary car park access to the Stage 1 Marketplace.

Traffic Flows

2.6 In order to gauge traffic conditions, counts were undertaken during weekday afternoon peak period (4.00pm and 6.30pm) and Saturday midday peak period (10.30am to 1.30pm) on 27 and 28 November 2020 respectively. The counts were undertaken at the following intersection:

- Naval College Road / Moona Creek road (roundabout controlled);
- Naval College Road / The Wool Road (roundabout controlled);
- Moona Creek Road / Marketplace access (priority controlled); and
- Moona Creek Road / Halloran Street (roundabout controlled).

2.7 The results of the surveys are shown in Figures 2 and 3, and summarised in Table 2.1.

| **Table 2.1: Existing Two Way (sum of both directions) Traffic Flows** | | |
|---|---|---|
| **Location** | **Weekday Afternoon** | **Saturday Midday** |
| Naval College Road | | |
| - north of Moona Creek Road | 680 | 765 |
| - south of Moona Creek Road | 935 | 880 |
| - south of The Wool Road | 425 | 590 |
| The Wool Road | | |
| - west of Naval College Road | 975 | 875 |
| - east Naval College Road | 890 | 955 |
| Moona Creek Road | | |
| - east of Naval College Road | 880 | 990 |
| - east of Marketplace Access | 160 | 140 |
| - east of Halloran Street | 40 | 35 |
| Halloran Street | | |
| - north of Moona Creek Road | 90 | 70 |
| Stage 1 Marketplace Access | | |
| - Main (western) Access | 805 | 895 |
| - Secondary (eastern) Access | 115 | 125 |

2.8 Examination of Table 2.1 reveals that;

- Naval College Road carried some 425 to 935 vehicles per hour (two way) during the weekday afternoon and Saturday midday peak periods;

- The Wool Road Road carried some 875 to 975 vehicles per hour (two way) during the weekday afternoon and Saturday midday peak periods;

- Moona Creek Road carried some 880 to 990 vehicles per hour (two way) east of Naval College Road during the weekday afternoon and Saturday midday. East of the main access to Stage 1, traffic flows were lower at some 35 to 160 vehicles per hour (two way), during the weekday afternoon and Saturday midday peak periods;

- Halloran Street carried lower flows of some 70 to 90 vehicles per hour (two way) during the weekday afternoon and Saturday midday peak periods;

- The main (western) Stage 1 Marketplace access carried some 805 to 895 vehicles per hour (two way) during the weekday midday and afternoon peak periods; and

- The secondary (eastern) Stage 1 Marketplace access carried some 115 to 125 vehicles per hour (two way) during the weekday midday and afternoon peak periods.

Intersection Operations

2.9 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The surveyed intersection has been analysed using the SIDRA program for the traffic flows shown in Figures 2 and 3.

2.10 SIDRA simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

ρ For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

| | | | |
|---|---|---|---|
| 0 to 14 | = | "A" | Good |
| 15 to 28 | = | "B" | Good with minimal delays and spare capacity |
| 29 to 42 | = | "C" | Satisfactory with spare capacity |
| 43 to 56 | = | "D" | Satisfactory but operating near capacity |
| 57 to 70 | = | "E" | At capacity and incidents will cause excessive delays. Roundabouts require other control mode. |
| >70 | = | "F" | Unsatisfactory and requires additional capacity |

ρ For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

| | | | |
|---|---|---|---|
| 0 to 14 | = | "A" | Good |
| 15 to 28 | = | "B" | Acceptable delays and spare capacity |
| 29 to 42 | = | "C" | Satisfactory but accident study required |
| 43 to 56 | = | "D" | Near capacity and accident study required |
| 57 to 70 | = | "E" | At capacity and requires other control mode |
| >70 | = | "F" | Unsatisfactory and requires other control mode |

2.11 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

2.12 The analysis found that;

- the roundabout controlled intersection of Naval College Road and Moona Creek Road is operating with average delays for the highest delayed movement of less than 15 seconds per vehicle during weekday morning and afternoon peak periods. This represents level of service A/B, a good level of service;

- the roundabout controlled intersection of Naval College Road and The Wool Road is operating with average delays for the highest delayed movement of less than 15 seconds per vehicle during weekday morning and afternoon peak periods. This represents level of service A/B, a good level of service;

- the roundabout controlled intersection of Moona Creek Road and Halloran Street is operating with average delays for the highest delayed movement of less than 15 seconds per vehicle during weekday morning and afternoon peak periods. This represents level of service A/B, a good level of service; and

- the priority controlled intersection of Moona Creek Road with the Marketplace Access is operating with average delays for the highest delayed movement of less than 15 seconds per vehicle during weekday morning and afternoon peak periods. This represents level of service A/B, a good level of service.

2.13 In addition to the traffic counts, observations were made of queues at the Moona Creek Road/Naval College Road roundabout and main access to the Stage 1 Marketplace shopping centre. The observations noted the following:

- occasional queuing southbound (maximum queue of seven vehicles) on the main shopping centre entry (back from the pedestrian crossing within the shopping centre) in the Friday afternoon period. On occasions this queue extended back onto Moona Creek Road (maximum queue of four vehicles);
- occasional queuing northbound (maximum queue of two vehicles) on the main shopping centre exit in the Friday afternoon period;
- frequent queuing southbound (maximum queue of 11 vehicles) on the main shopping centre entry (back from the pedestrian crossing within the shopping centre) in the Saturday midday period. On occasions this queue extended back onto Moona Creek Road (maximum queue of four vehicles); and
- occasional queuing northbound (maximum queue of seven vehicles) on the main shopping centre exit in the Saturday midday period

Public Transport

2.14 Local bus services are provided by Transport NSW. There is a bus stop within Vincentia Marketplace car park. the services provided include:

- route 102: Bomaderry to Vincentia via Nowra and St George Basin (loop service); and
- route 103: Nowra to Hyams Beach via Erowal Bay.

2.15 The site therefore has access to public transport and is accessible by modes of transport other than private car.

# 3. IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1 Stage 2 of the Vincentia Marketplace development comprises the following:

- 126 place childcare centre;
- some 2,266m$^2$ GFA specialised retail (bulky goods);
- some 1,500m$^2$ GFA health services;
- some 250m$^2$ radiology;
- some 1,000m$^2$ GFA gym;
- some 362 parking spaces; and
- construction of a new access road on the eastern boundary.

3.2 The traffic and parking implications of the proposed development have been assessed through the following sections:

- pedestrians, cyclists and public transport;
- parking provision;
- access, servicing and internal layout;
- traffic effects; and
- summary.

Pedestrians, Cyclists and Public Transport

3.3 As previously discussed in Chapter 2, the site is accessible by buses servicing the adjacent Stage 1 Vincentia Marketplace. Thus the proposed development will provide increased employment adjacent to existing and future public transport and will strengthen the demand for these services.

3.4 The proposed development is therefore consistent with government objectives and the planning principles of:

(a) improving accessibility to employment and services by walking, cycling, and public transport;

(b) improving the choice of transport and reducing dependence solely on cars for travel purposes;

(c) moderating growth in the demand for travel and the distances travelled, especially by car; and

(d) supporting the efficient and viable operation of public transport services.

3.5 The proposed development will be connected to Stage 1 and Moona Creek Road via dedicated pedestrian paths.

Parking Provision

3.6 Chapter G21 of Shoalhaven DCP 2015, sets out the following parking requirements for the proposed development:

- childcare centre - 1 space per 3 places, can be reduced to 1 space per 4 spaces;
- medical centres – 4 spaces per consulting room or 4 spaces per 100m$^2$ GFA;
- specialised retail (bulky goods) – 1 space per 50m$^2$ GFA; and
- gyms – 1 space per 13m$^2$, can be reduced to 1 space per 22m$^2$ GFA where peak demand occurs at other times to other uses.

3.7 For the proposed development the following rates have been adopted:.

- childcare centre - 1 space per 4 spaces;
- health services and radiology –4 spaces per 100m$^2$ GFA (based the medical centre rate of 4 spaces per 100m$^2$ GFA);
- specialised retail (bulky goods) – 1 space per 50m$^2$ GFA; and
- gyms –1 space per 22m$^2$ GFA.

3.8 These take into account that the peak parking demand for the gym (before 7.30am and after 5.30pm) and child care centre (between 7.30am to 9.00am and 4.00pm and 5.30pm) do not occur at the same time as the specialised retail or health services/radiology (between 11.00am and 2.00pm) and that the number of consulting rooms in the health services/radiology are not known at this stage.

3.9 Using the above rates, the proposed development would require 194 parking spaces comprising (32 childcare spaces, 60 health services spaces, 10 radiology spaces, 46 specialised retail and 46 gym spaces). Some discount (between 5% to 10%, assume 7.5% or 14 spaces) would apply to overall parking demand to account for shared use between the various components of the site (including the existing Stage 1 Marketplace). Thus overall parking required would be 178 spaces as summarised in Table 3.1.

| **Table 3.1** | **Summary of Parking Requirements** | | |
|---|---|---|---|
| Component | Size | Rate | Spaces |
| Childcare | 126 places | 1/4 places | 32 |
| health services | 1,500m$^2$ GFA | 4/100m$^2$ GFA | 60 |
| radiology | 250m$^2$ GFA | 4/100m$^2$ GFA | 10 |
| Specialised Retail | 2,360m$^2$ GFA | 1/50m$^2$ GFA | 47 |
| Gym | 1,000m$^2$ GFA | 1/22m$^2$ GFA | 45 |
| Sub-total | | | 194 |
| Shared Use | | 7.5% | Less 15 |
| Total | | | 179 |

3.10 The Stage 2 Centre plans will provide 362 spaces. This includes 96 spaces that have been approved in accordance with a recent DA. Parking will be allocated as follows:

- 15 child care centre set down/pick up spaces located adjacent to the entry to the child care centre (north eastern corner of the main car park);
- 14 child care centre staff spaces located at the rear of the child care centre;
- 96 staff spaces for Stage 1 located in the western car park;
- 45 staff spaces for Stage 1 located along the eastern boundary; and
- balance of the car park (189 spaces), customer parking for Stage 2.

Access, Servicing and Internal Layout

3.10 Vehicular access will be provided via the existing eastern access road to Stage 1 (via the Moona Creek Road/Halloran Street roundabout) and a new access road to be constructed along the eastern boundary of the site (that connects to the existing roundabout on Moona Creek Road). This new access road will provide access to the service areas and some staff parking.

3.11 The main car park will be located on the western side of the site and accessed from the existing access road that separates Stages 1 and 2 at two locations.

3.12 Within the site, customer parking spaces will be typically 2.6 metres wide by 5.4 metres long. Disabled parking spaces will be 2.4 metres wide, with a 2.4 metre wide adjacent area for wheelchairs. The two-way circulation aisles will be a minimum of 6.6 metres wide. These dimensions satisfy the requirements of the Australian Standard for Parking Facilities (Part 1: Off-street car parking and Part 6: Off-street parking for people with disabilities), AS 2890.1:2004 and AS 2890.6:2009.

3.13 Within the western car park, 96 spaces are provided in a separate car park for staff parking for the adjacent shopping centre. Access to/from this car park will be controlled by boom gates with staff provided with a swipe card for ingress/egress.

3.14 Servicing will take place on the eastern side of the site with service bays located adjacent to each tenancy. The northern specialised retail (bulky goods) tenancy will be serviced by 12.5 metre long large rigid trucks (LRV) and all other tenancies by smaller rigid trucks (SRV and MRV). All service vehicles will be able to enter and exit the site in a forward direction. Vehicle turn paths are provided in Attachment A.

Traffic Generation and Effects

3.15 Traffic generated by the proposed development will have its greatest effects during weekday afternoon and Saturday midday peak periods when it combines with other traffic on the surrounding road network.

3.16 Estimates of traffic generation of the proposed development have been based on TfNSW Guidelines as set out below. These take into account link trips for the gym and child care components with the retail components of Stages 1 and 2.

- childcare centre - 0.35 vehicles per hour per childcare place (two way) in the weekday afternoon peak hour (no traffic generation in the Saturday midday peak hour);
- medical centres – 4.2 vehicles per hour per 100m$^2$ GFA (two way) in the weekday afternoon and Saturday midday peak hours;
- specialised retail (bulky goods) – 2.7 vehicles and 3.9 vehicles per hour per 100m$^2$ GFA (two way) in the weekday afternoon and Saturday midday peak hours respectively;
- gyms - 3 vehicles per hour per 100m$^2$ GFA (two way) in the weekday afternoon and Saturday midday peak hours.

3.17 Applying these rates the proposed development would generate some 200 vehicles per hour (two way) in the weekday afternoon and Saturday midday peak hours. The additional traffic has been assigned to the road network as shown in Figures 2 and 3, and summarised in Table 3.2.

| **Table 3.2: Existing Weekday Afternoon and Saturday Midday + Development Two Way (sum of both directions) Traffic Flows** | | | | |
|---|---|---|---|---|
| **Location** | **Weekday Afternoon** | | **Saturday Midday** | |
| | **Existing** | **+Dev** | **Existing** | **+Dev** |
| Naval College Road | | | | |
| - north of Moona Creek Road | 680 | +70 | 765 | +70 |
| - south of Moona Creek Road | 935 | +70 | 880 | +70 |
| - south of The Wool Road | 425 | +20 | 590 | +20 |
| The Wool Road | | | | |
| - west of Naval College Road | 975 | +30 | 875 | +30 |
| - east Naval College Road | 890 | +20 | 955 | +20 |
| Moona Creek Road | | | | |
| - east of Naval College Road | 880 | +140 | 990 | +140 |
| - east of Marketplace Access | 160 | +140 | 140 | +140 |
| - east of Halloran Street | 40 | +20 | 35 | +20 |
| Halloran Street | | | | |
| - north of Moona Creek Road | 90 | +40 | 70 | +40 |
| Stage 1 Marketplace Access | | | | |
| - Main (western) Access | 805 | +0 | 895 | +0 |
| - Secondary (eastern) Access | 115 | +200 | 125 | +200 |

3.24 Examination of Table 3.2 shows that:

- traffic flows on Naval College Road would increase by some 20 to 70 vehicles per hour (two way) during the peak periods;

- traffic flows on The Wool Road would increase by some 20 to 30 vehicles per hour (two way) during the peak periods;

- traffic flows on Moona Creek Road would increase by some 20 to 140 vehicles per hour (two way) during the peak periods;

- traffic flows on Halloran would increase by some 40 vehicles per hour (two way) during the peak periods; and

- traffic flows on Secondary (eastern) access would increase by some 200 vehicles per hour (two way) during the peak periods.

3.25 The intersections surveyed in Chapter 2 have been reanalysed with SIDRA with the additional development traffic flows shown in Figures 2 and 3. The analysis found that:

- the roundabout controlled intersection of Naval College Road and Moona Creek Road would continue to operate with average delays for the highest delayed movement of less than 15 seconds per vehicle during weekday morning and afternoon peak periods. This represents level of service A/B, a good level of service;

- the roundabout controlled intersection of Naval College Road and The Wool Road would continue to operate with average delays for the highest delayed movement of less than 15 seconds per vehicle during weekday morning and afternoon peak periods. This represents level of service A/B, a good level of service;

- the roundabout controlled intersection of Moona Creek Road and Halloran Street would continue to operate with average delays for the highest delayed movement of less than 15 seconds per vehicle during weekday morning and afternoon peak periods. This represents level of service A/B, a good level of service;

- the priority controlled intersection of Moona Creek Road with the Marketplace Access would operate with average delays for the highest delayed movement of less than 15 seconds per vehicle during weekday

morning and afternoon peak periods. This represents level of service A/B, an good level of service; and

- the roundabout controlled intersection of Moona Creek Road and the eastern site access would operate with average delays for the highest delayed movement of less than 15 seconds per vehicle during weekday morning and afternoon peak periods. This represents level of service A/B, a good level of service;

3.28 Therefore the traffic generated by the development can be accommodated by the existing road network.

Summary

3.29 In summary, the main points relating to the traffic implications of the proposed development are as follows:

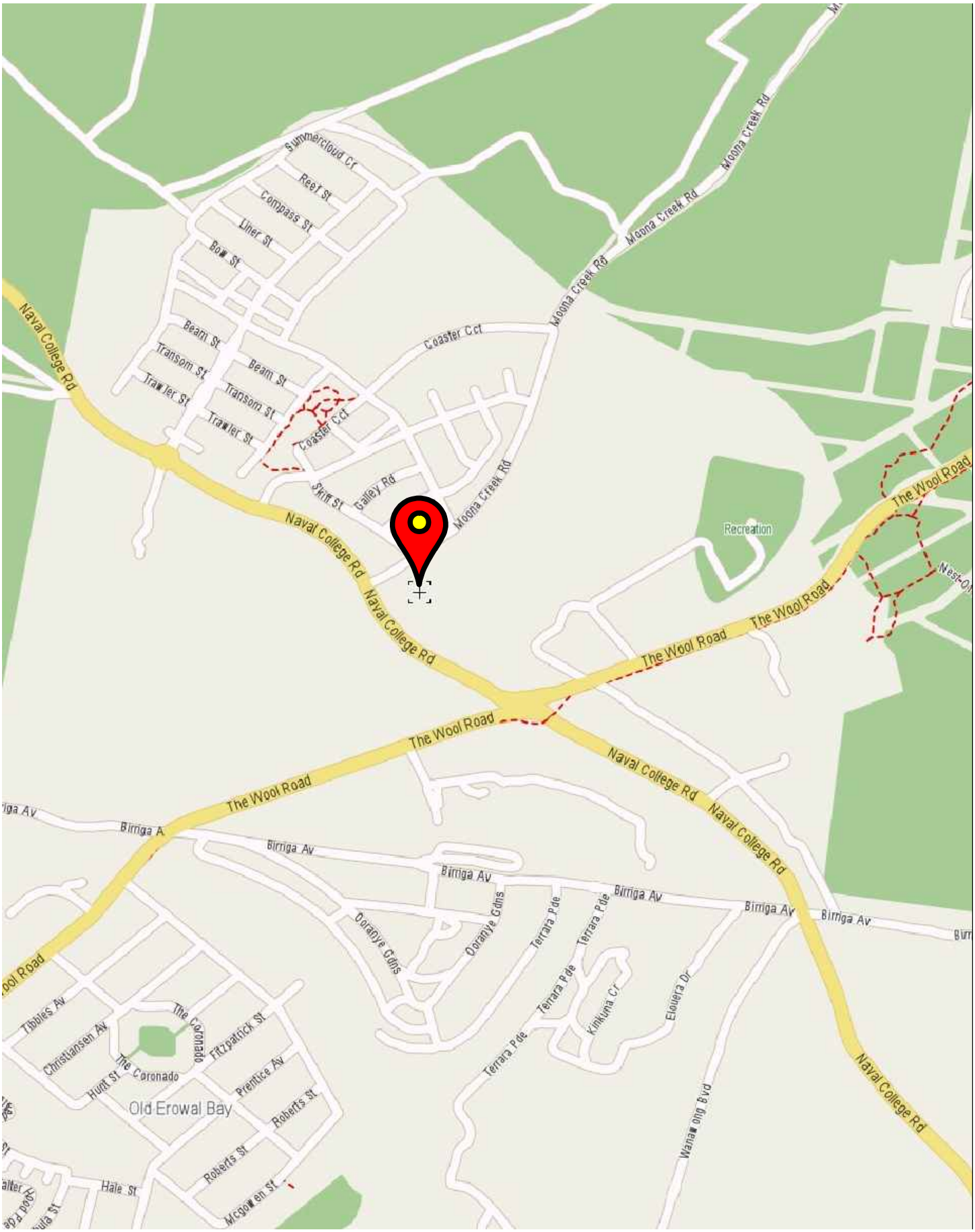
i) the proposed development will be accessible by public transport;

ii) the proposed parking provision is appropriate;

iii) vehicular access, internal circulation and servicing arrangements will be are appropriate;

iv) car park layout provided in accordance with AS 2890.1:2004 and AS 2890.6 – 2009;

v) the existing road network will be able to cater for the traffic generation of the development.



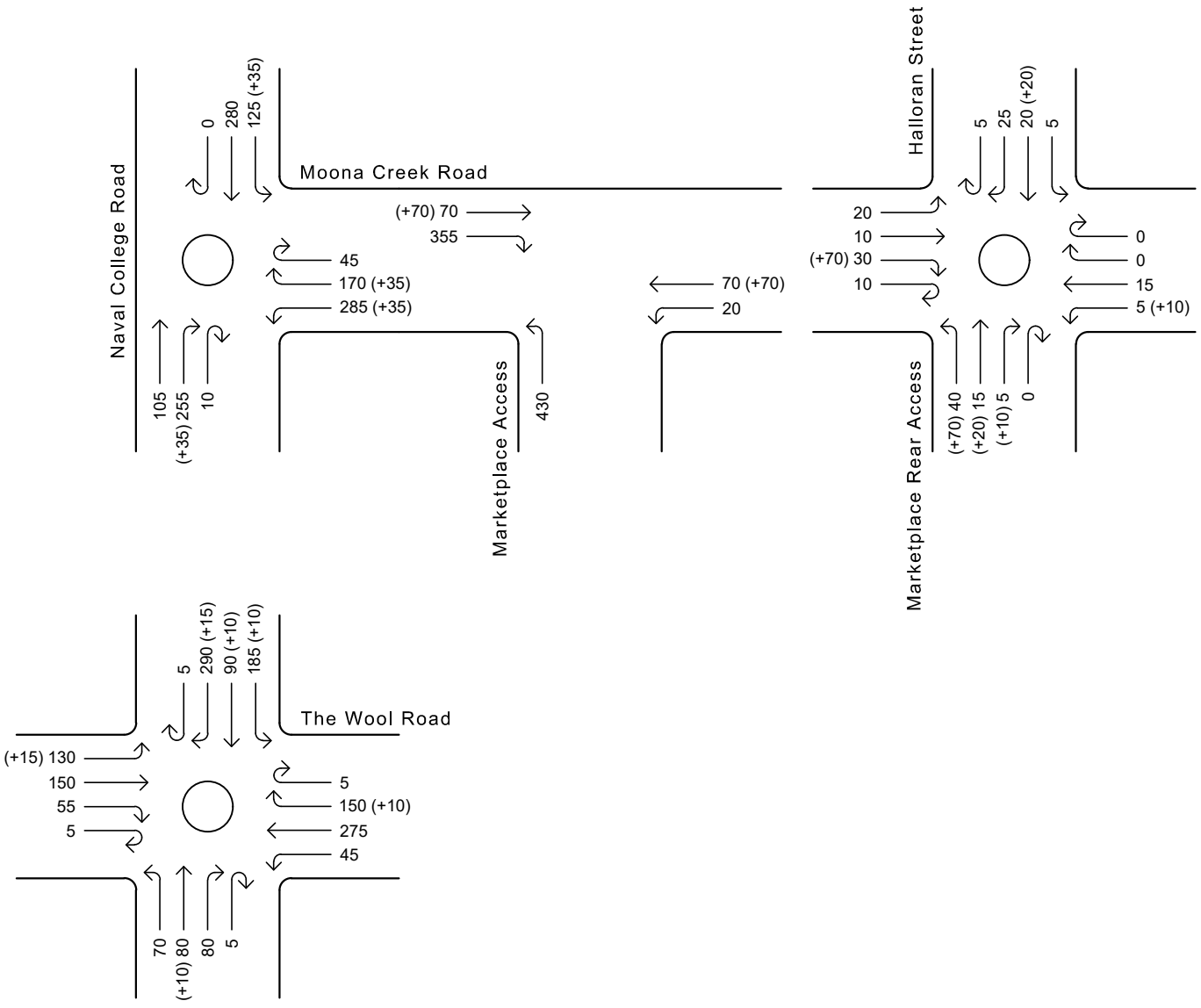

Click: https://goo.gl/maps/ekPT4M4eyb68X1mj6

# Location Plan

*Colston Budd Rogers & Kafes Pty Ltd*

Drawn By: CBRK Pty Ltd_hs Ref: 11700 18.12.2020

**Figure 1**




## LEGEND

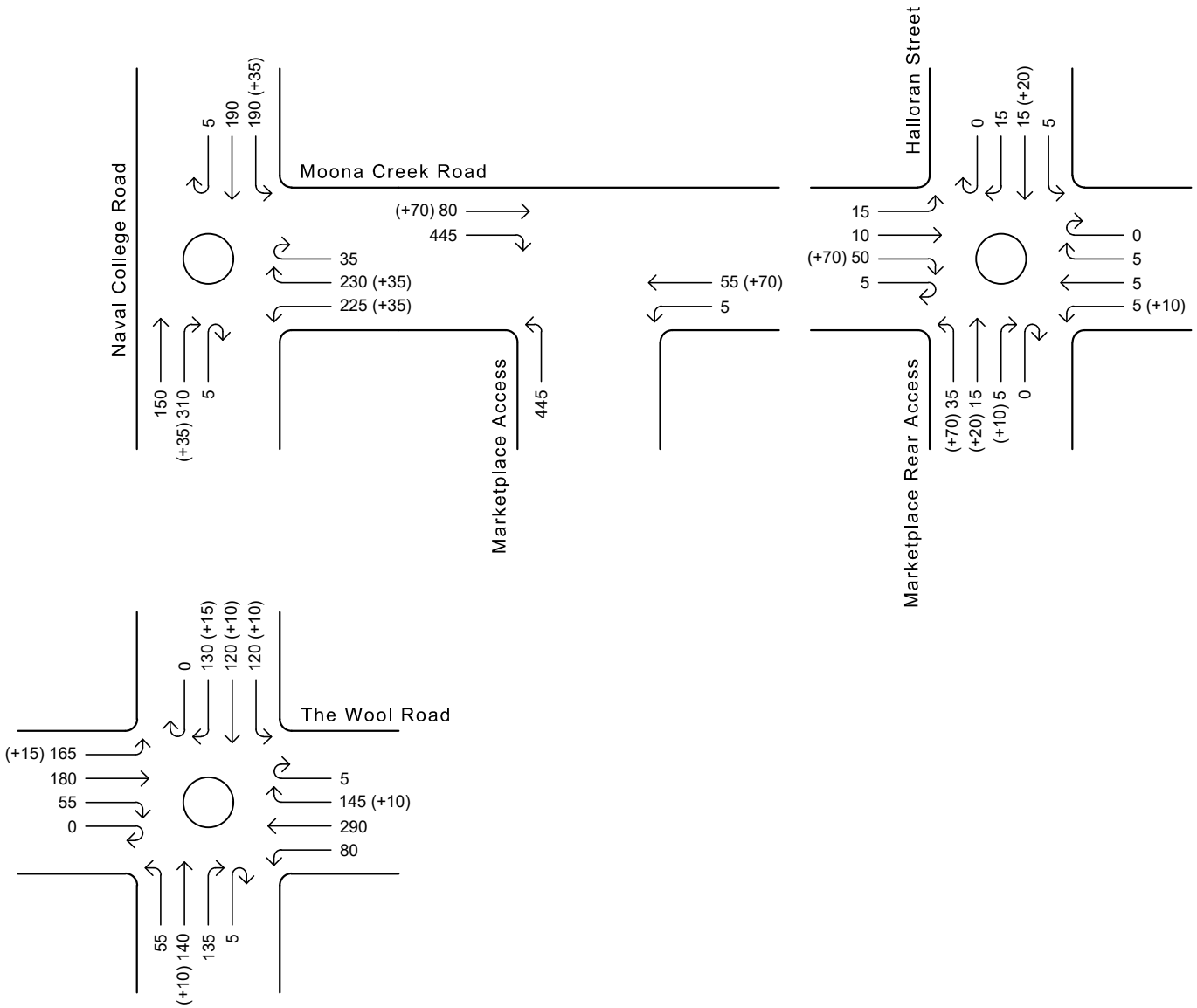
100 - Existing Peak Hour Traffic Flows
(+10) - Additional Development Traffic
◯ - Roundabout

**Existing weekday afternoon peak hour traffic flows plus development traffic**

**Figure 2**

*Colston Budd Rogers & Kafes Pty Ltd*

Drawn By: CBRK Pty Ltd_hs Ref: 11700 18.12.2020




**LEGEND**

100 - Existing Peak Hour Traffic Flows
(+10) - Additional Development Traffic
◯ - Roundabout

**Existing Saturday midday peak hour traffic flows plus development traffic**

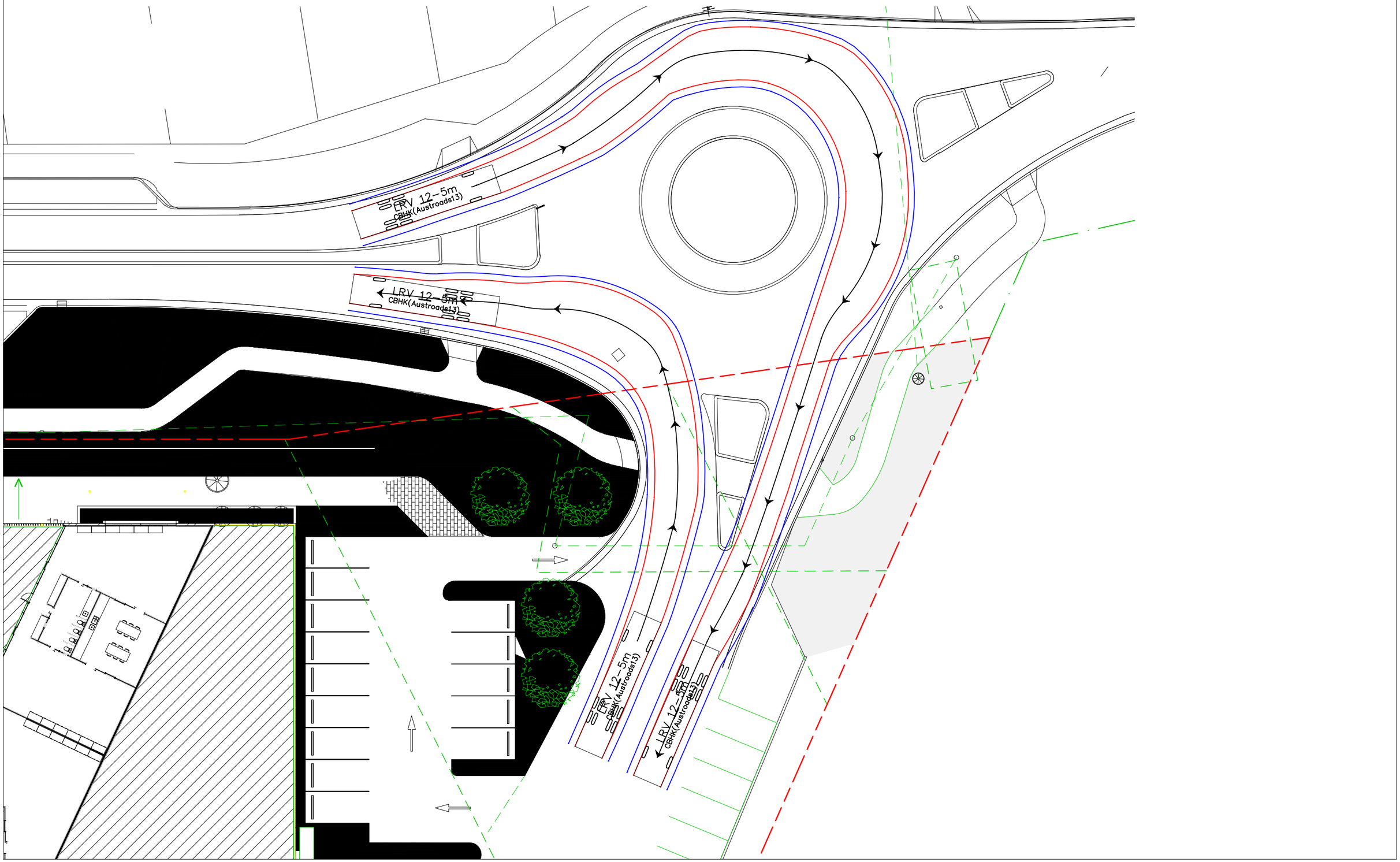
**Figure 3**

*Colston Budd Rogers & Kafes Pty Ltd*

Drawn By: CBRK Pty Ltd_hs Ref: 11700 18.12.2020

# ATTACHMENT A

# VEHICLE TURN PATHS



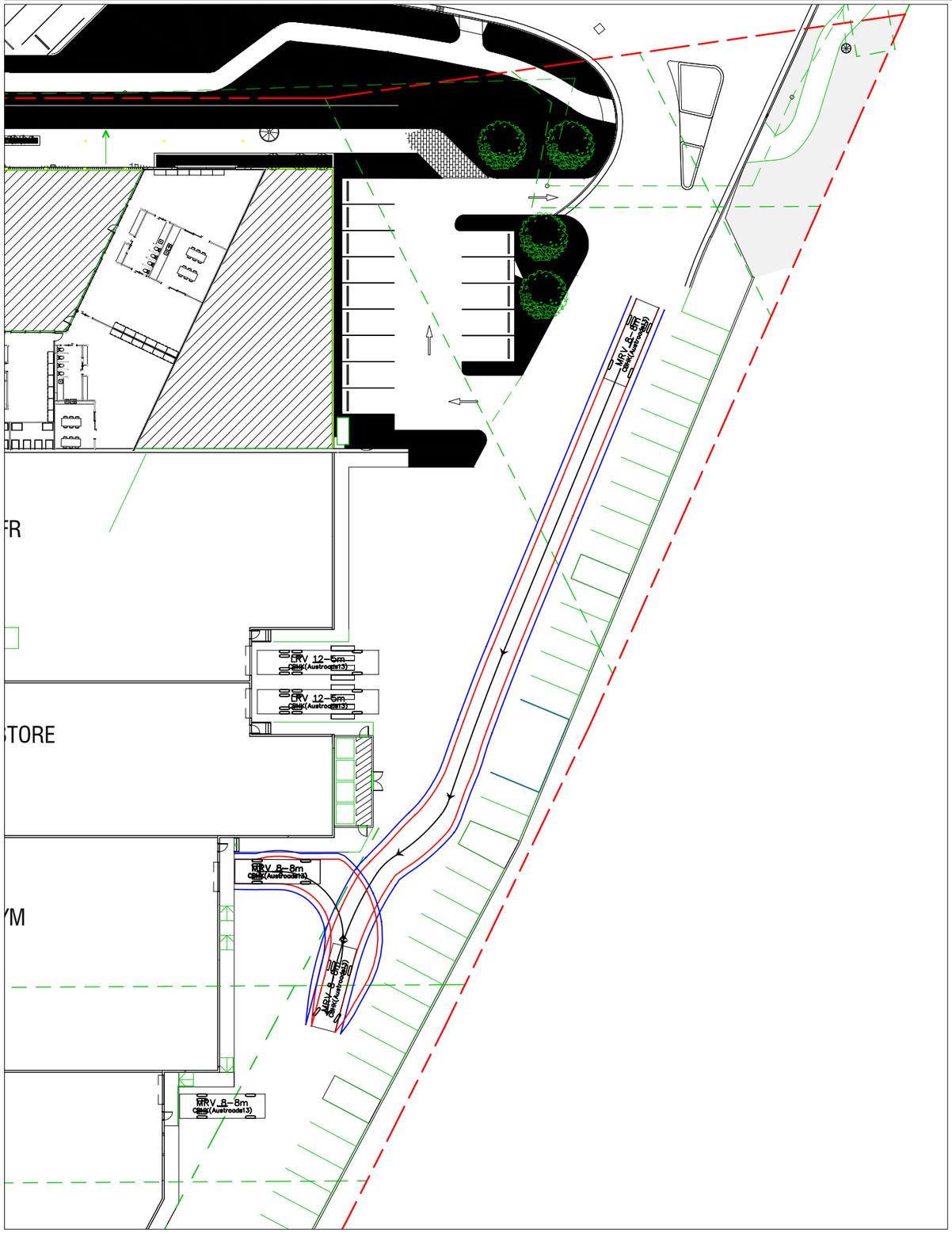

**NOTE:**
SKETCH PLAN ONLY. PROPERTY BOUNDARIES, UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO SURVEY AND FINAL DESIGN. TRAFFIC MEASURES PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

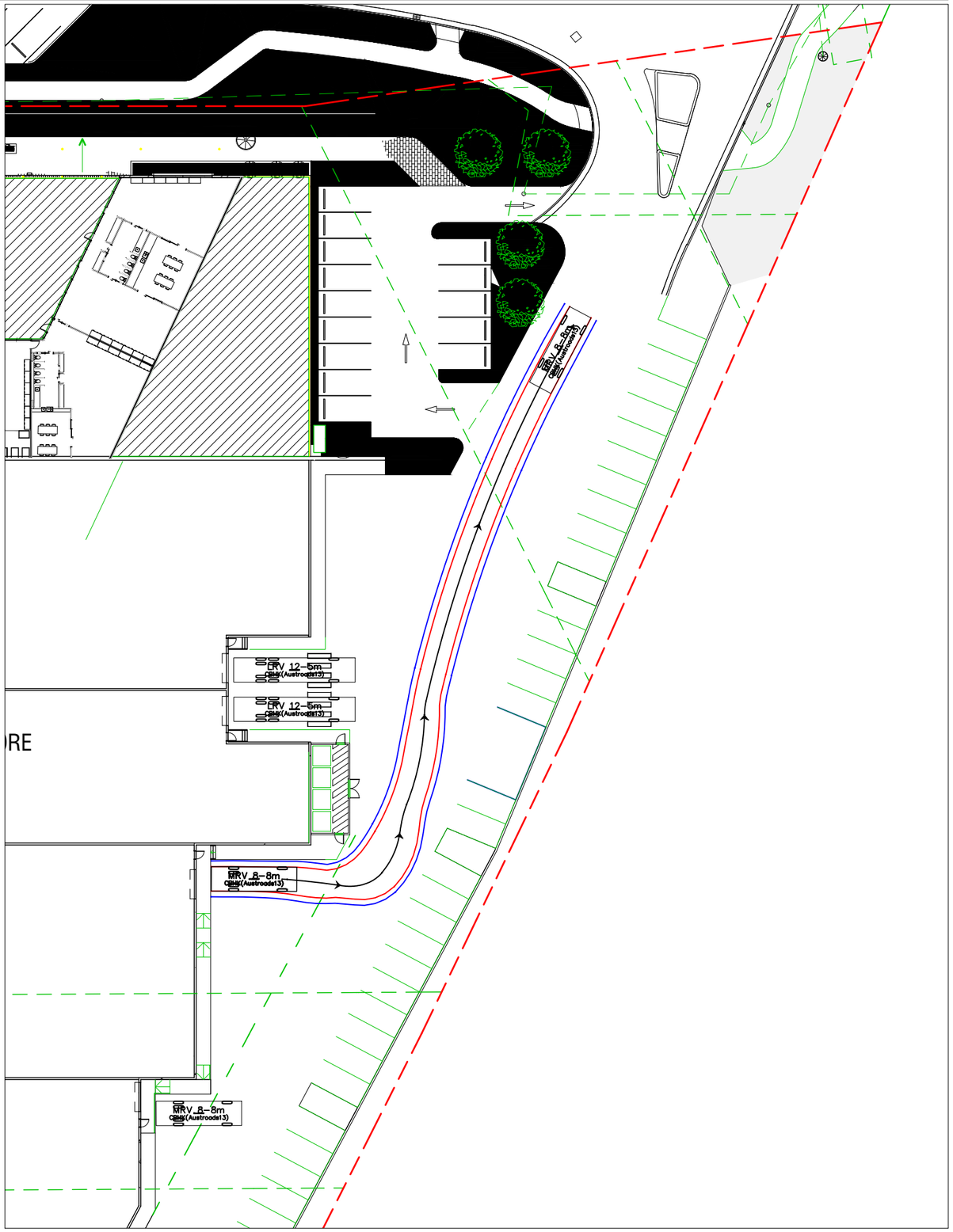
Swept Path of Vehicle Body
Swept Path of Clearance to Vehicle Body

# 12.5m LARGE RIGID VEHICLE SWEPT PATHS

DRAWN BY CBRK Pty Ltd_mc Ref: 11700 8 SEPTEMBER 2021

**1**



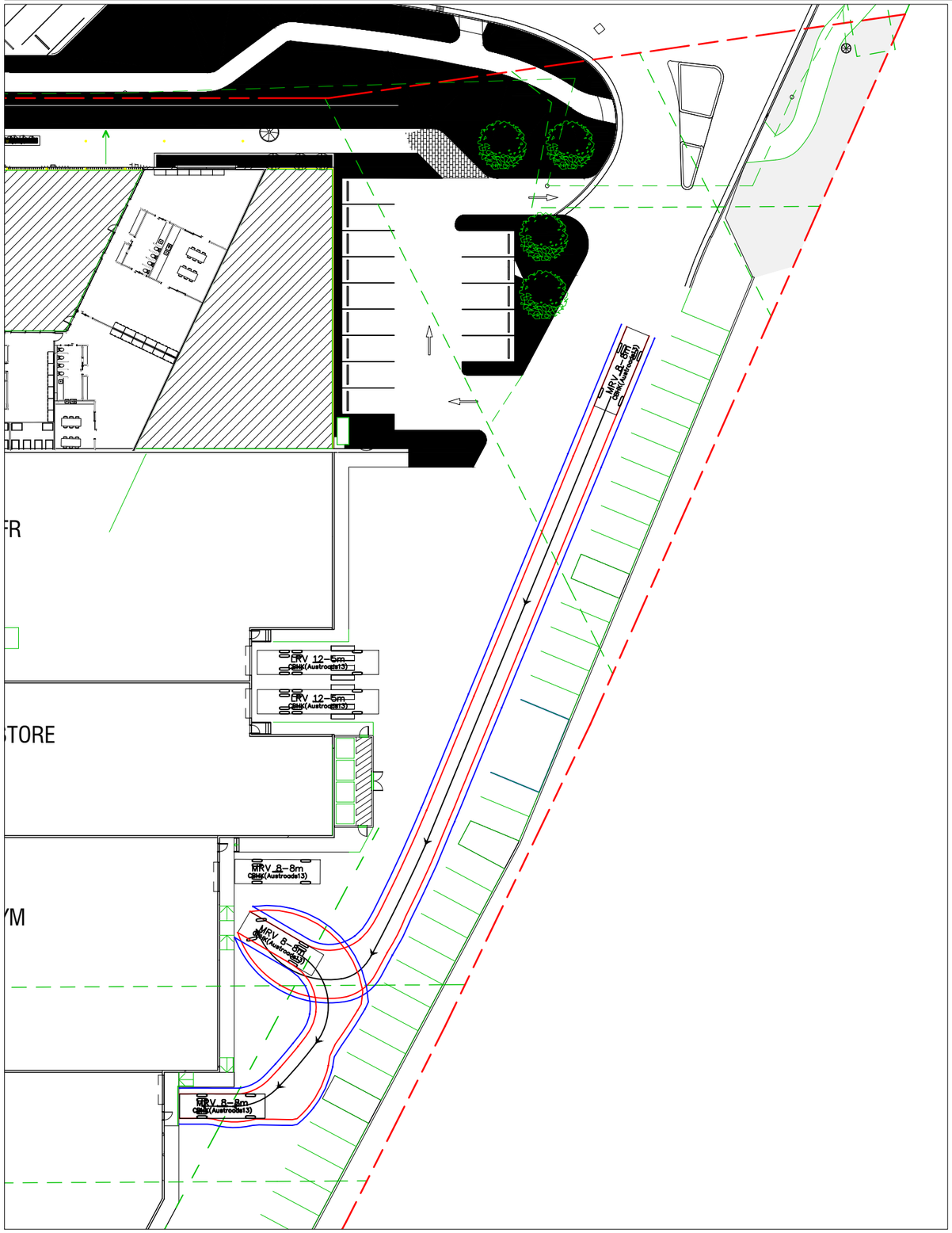

**NOTE:**
SKETCH PLAN ONLY. PROPERTY BOUNDARIES, UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO SURVEY AND FINAL DESIGN. TRAFFIC MEASURES PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

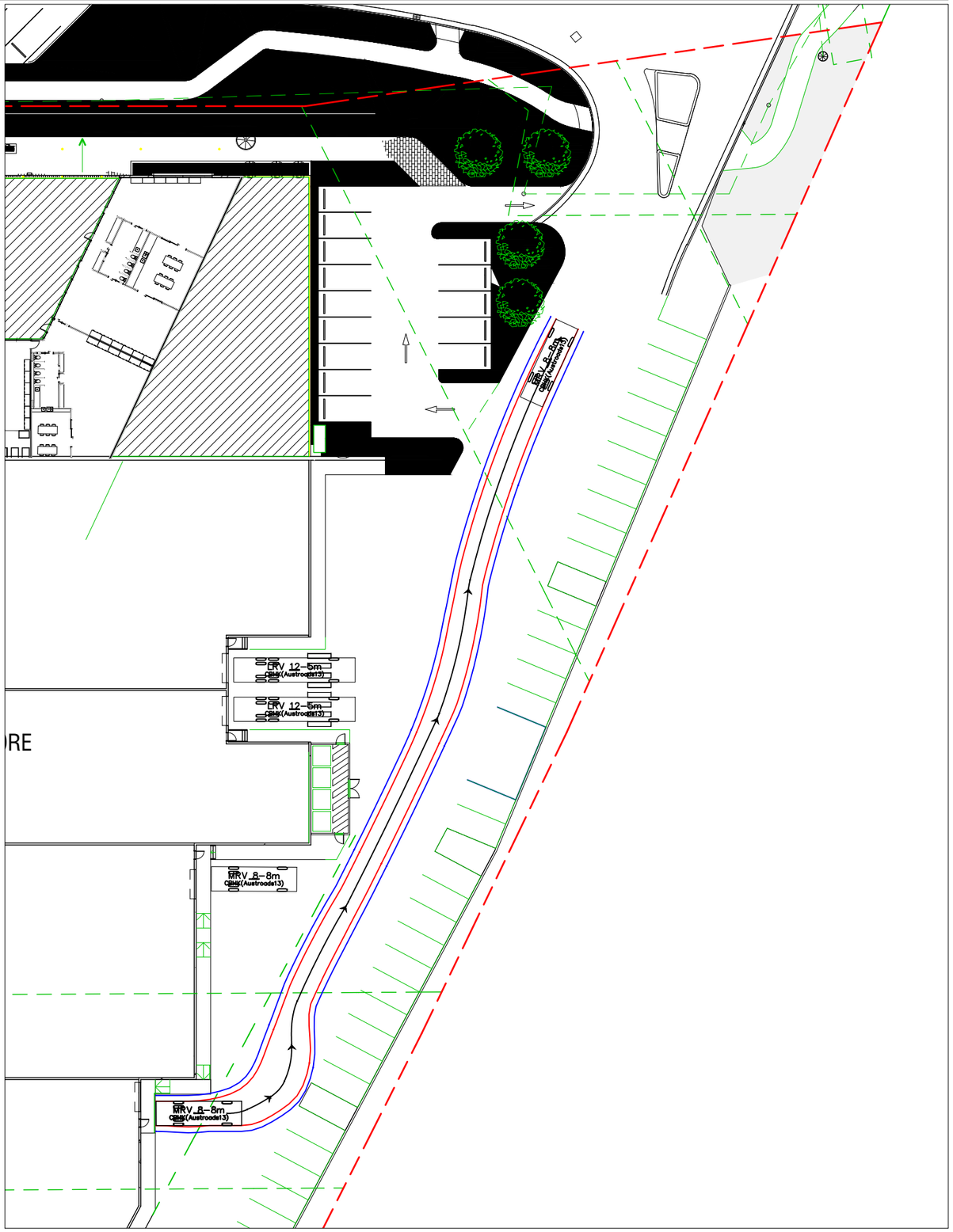
Swept Path of Vehicle Body
Swept Path of Clearance to Vehicle Body

# 8.8m MEDIUM RIGID VEHICLE SWEPT PATHS

DRAWN BY CBRK Pty Ltd_mc Ref: 11700 8 SEPTEMBER 2021

**2**



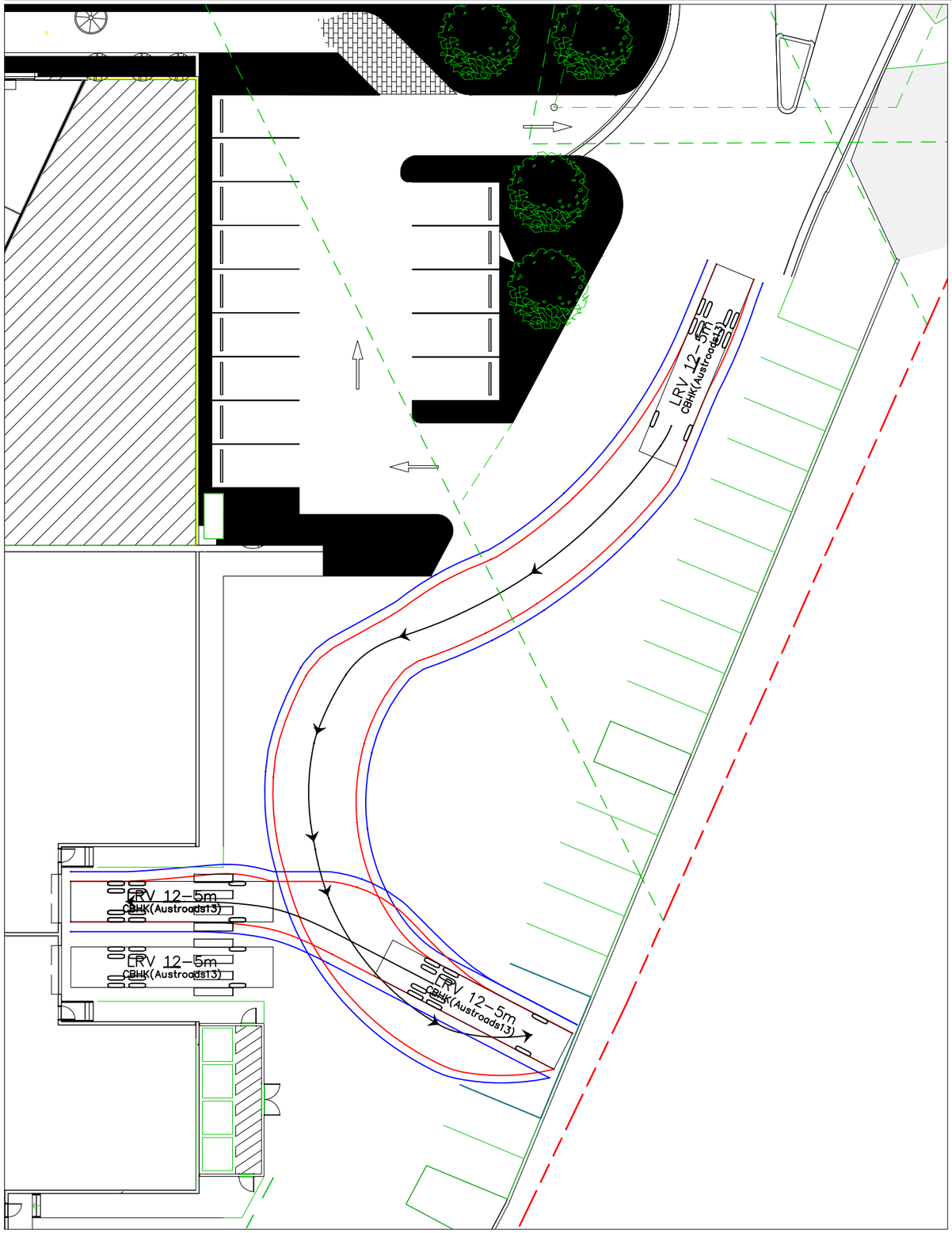

**NOTE:**
SKETCH PLAN ONLY. PROPERTY BOUNDARIES, UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO SURVEY AND FINAL DESIGN. TRAFFIC MEASURES PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

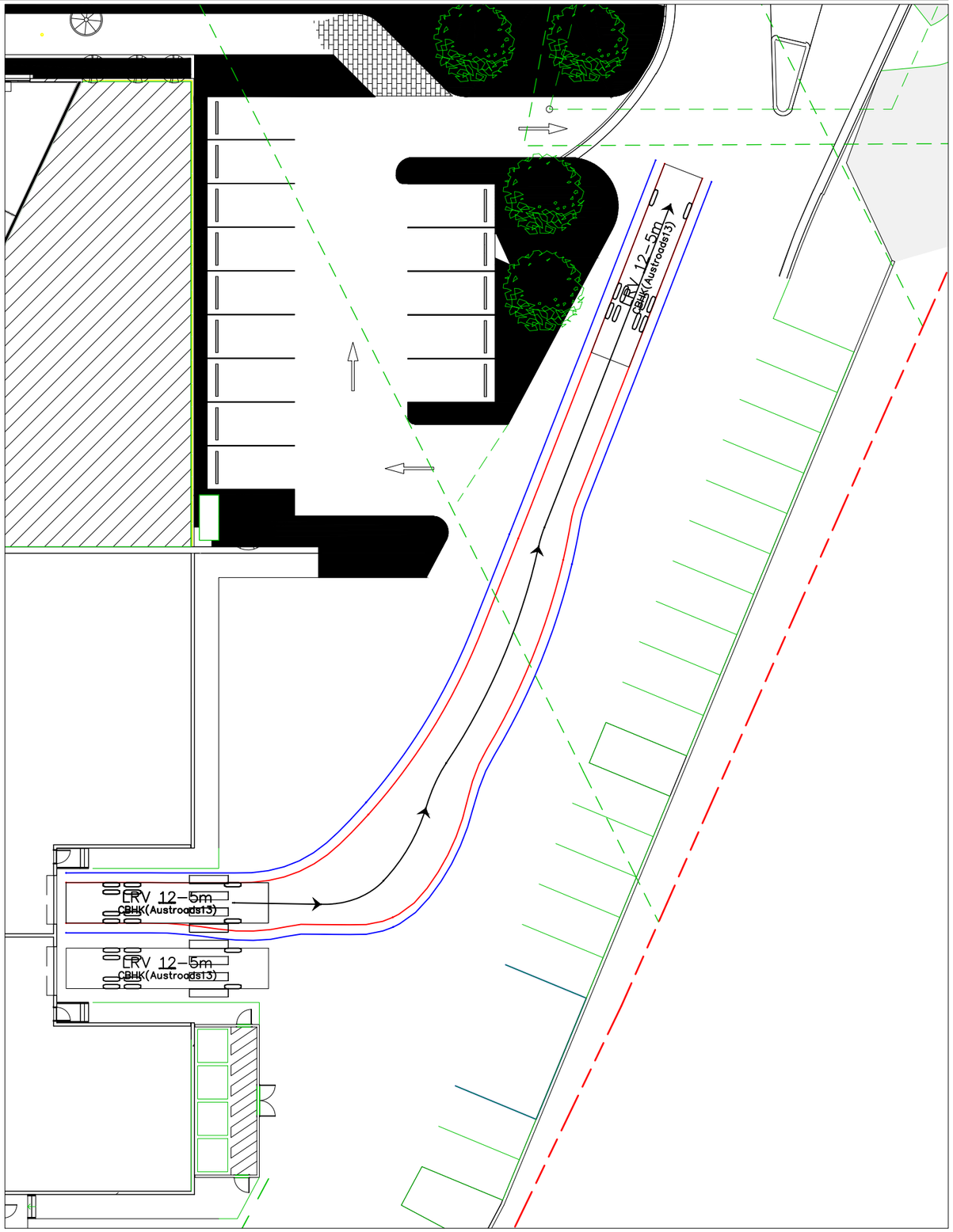
Swept Path of Vehicle Body
Swept Path of Clearance to Vehicle Body

# 8.8m MEDIUM RIGID VEHICLE SWEPT PATHS

DRAWN BY CBRK Pty Ltd_mc Ref: 11700 8 SEPTEMBER 2021

**3**



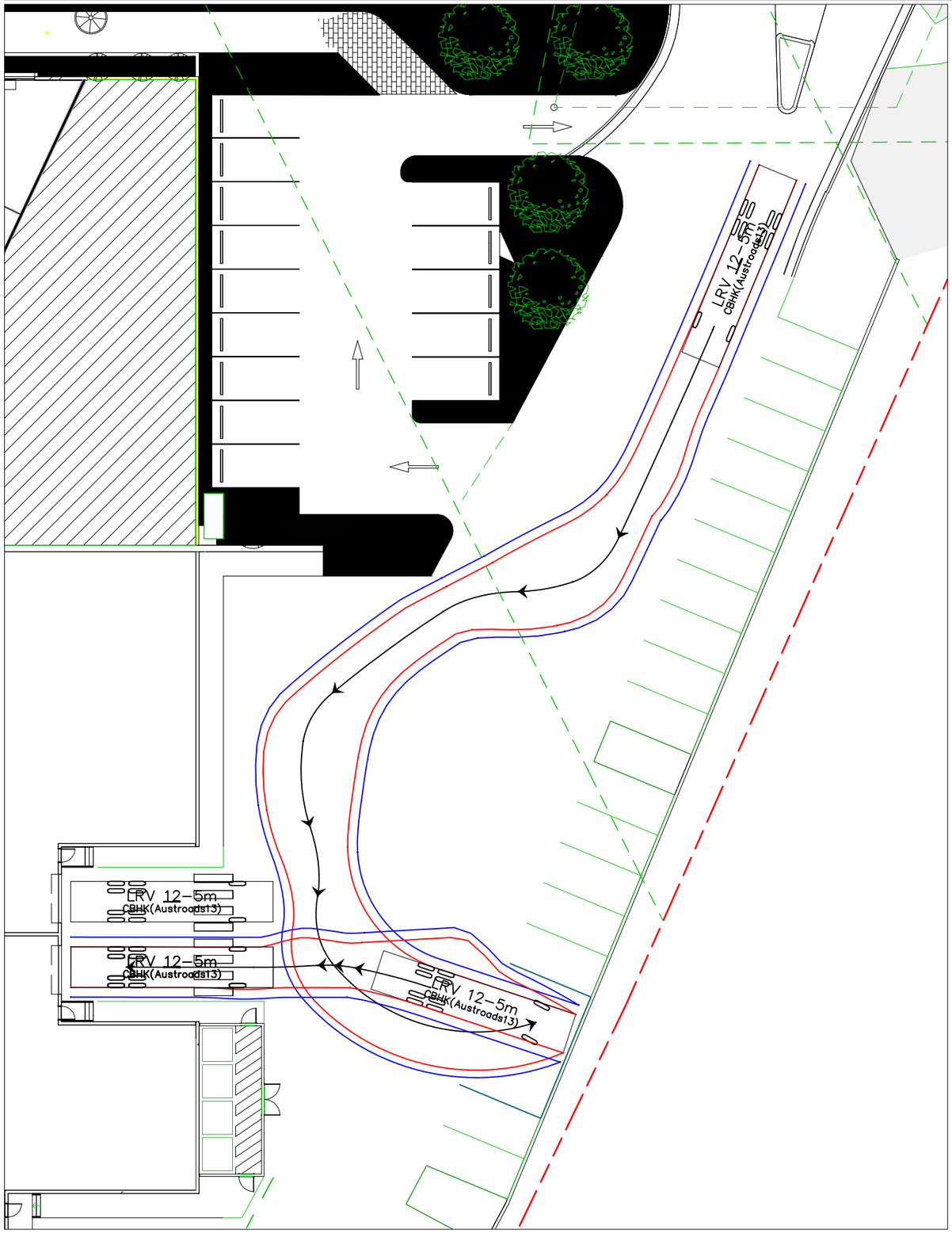

**NOTE:**
SKETCH PLAN ONLY. PROPERTY BOUNDARIES, UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO SURVEY AND FINAL DESIGN. TRAFFIC MEASURES PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

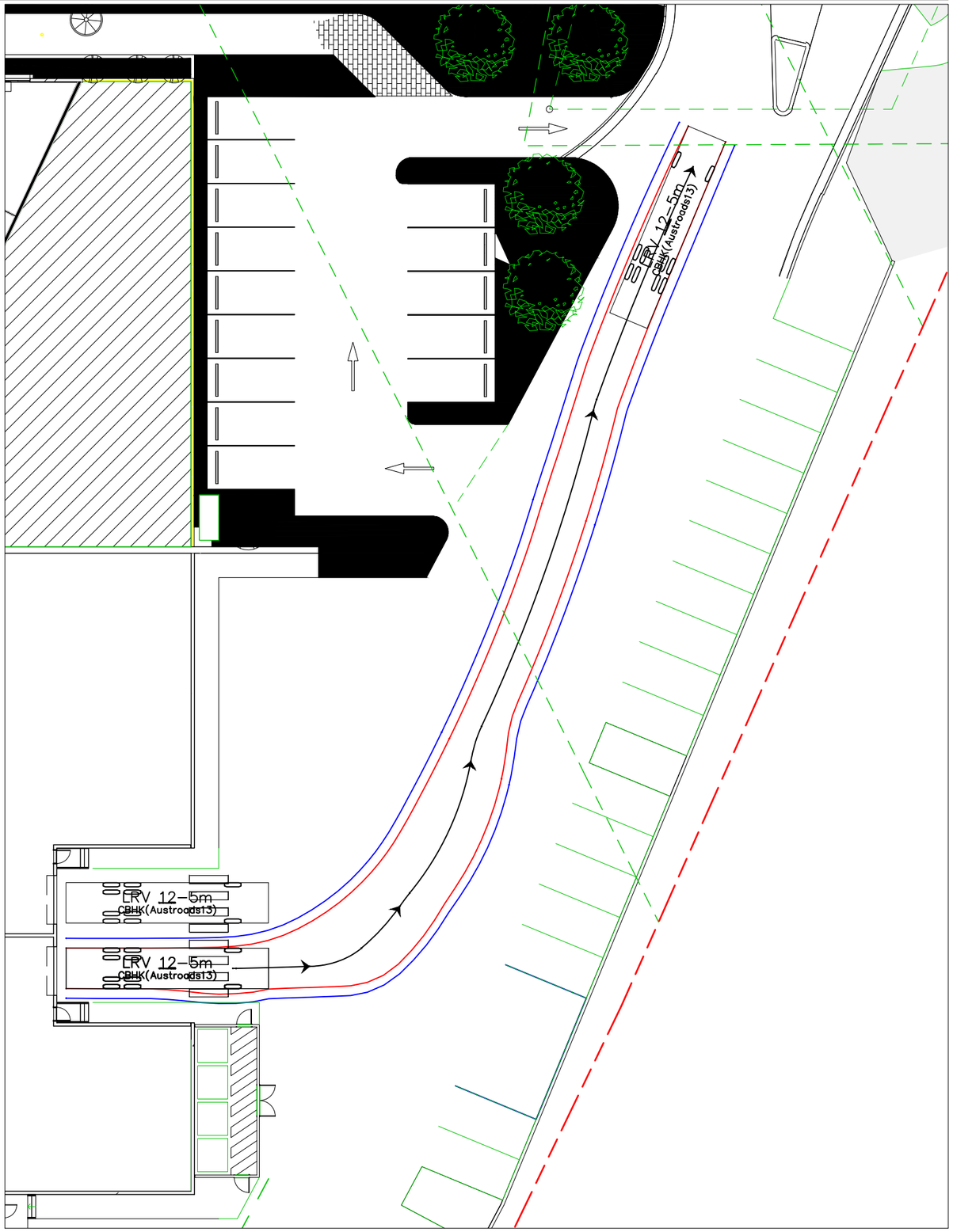
Swept Path of Vehicle Body
Swept Path of Clearance to Vehicle Body

# 12.5m LARGE RIGID VEHICLE SWEPT PATHS

DRAWN BY CBRK Pty Ltd_mc Ref: 11700 8 SEPTEMBER 2021

**4**




**NOTE:**
SKETCH PLAN ONLY. PROPERTY BOUNDARIES, UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO SURVEY AND FINAL DESIGN. TRAFFIC MEASURES PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

Swept Path of Vehicle Body
Swept Path of Clearance to Vehicle Body

# 12.5m LARGE RIGID VEHICLE SWEPT PATHS

DRAWN BY CBRK Pty Ltd_mc Ref: 11700 8 SEPTEMBER 2021