Colston Budd Rogers & Kafes Pty Ltd
as Trustee for C & B Unit Trust
ABN 27 623 918 759

Our Ref: TR/11554/jj

1 September, 2021

Transport Planning
Traffic Studies
Parking Studies

Greencliff Castlecrag Pty Ltd

Attention: Michael Goldrick
Email: mg@greencliff.com.au

Dear Sir,

RE: QUADRANGLE SHOPPING CENTRE,
AMENDED PLANNING PROPOSAL - TRAFFIC REVIEW

1. As requested, we have undertaken a review of the traffic and parking aspects of the proposed amended planning proposal for the redevelopment of Quadrangle shopping centre, Castlecrag. The amended planning proposal has been prepared in response to matters raised by Council with regards to a previous planning proposal and involves replacement of the existing shopping centre with a mixed use development (retail/residential). The findings of our review are set out through the following sections:

- site location;
- proposed development;
- parking;
- access and parking layout;
- servicing;
- traffic effects;
- response to traffic matters raised by Council in pre-planning advice; and
- summary

Site Location

2. The site is located on the south eastern corner of Edinburgh Road and Eastern Valley Way, Castlecrag. The site currently is occupied by a shopping centre (some 2,552m^2 NLA comprising a small supermarket (920m^2) and specialty shops). There is a basement car park (117 spaces) with access from Edinburgh Road (at the eastern end of the site).

Proposed Development

3. The concept plans prepared by FJMT are for a mixed use development comprising:

Suite 1801/Tower A, Zenith Centre, 821 Pacific Highway, Chatswood NSW 2067
P.O. Box 5186 West Chatswood NSW 1515 Tel: (02) 9411 2411 Fax: (02) 9411 2422
Directors - Geoff Budd - Stan Kafes - Tim Rogers - Joshua Hollis ACN 002 334 296
EMAIL: cbrk@cbrk.com.au

- retail – (some 1,740m^2 NLA, comprising a 1,057m^2 supermarket, 549m^2 specialty shops and 134m^2 restaurants);
- 53 residential units (2x1 bed, 29x2 bed, 22x3 bed);
- 2 levels of basement parking (with 157 parking spaces); and
- access from Edinburgh Road (via the existing driveway).

Parking

4. Section C.4 of WDCP sets out parking requirements for new development. The rates relevant to the proposed development are set out below:

- supermarkets – 6 spaces per 100m^2 of selling area;
- shops – 1 space per 25m^2 of selling area;
- restaurants (located on a major transport corridor) – 1 space per 75m^2; and
- residential (located on major transport corridor) – 1 space per 1 and 2 bed unit, 1.25 spaces per 3 bed unit plus 1 visitor space per 4 units.

5. In calculating selling area, WDCP suggests applying 85% of net lettable area.

6. Applying the above rates to the proposed development results in a requirement for 147 spaces comprising:

- 75 retail/restaurant spaces;
- 59 residential spaces; and
- 13 visitor spaces.

7. The concept plans prepared by FJMT show 157 spaces which satisfies the WDCP requirements.

8. WDCP requires 1 motorcycle space per 25 spaces, 1 bicycle locker per 10 units and 450m^2 of retail and 1 bicycle rack per 12 units and 150m^2 of retail Applying these rates, the proposed development will provide 7 motor cycle spaces, 10 bicycle lockers (6 residential and 4 retail) and racks/rails for 16 bicycles (4 residential and 12 retail).

Access and Parking Layout

9. Access to the site will be maintained from Edinburgh Road at the location of the existing driveway (eastern boundary). The existing driveway also provides access to the property to the east of the site. This access will be maintained in the proposed development.

10. Parking will be provided in two levels of basement parking, with retail/visitor parking on the upper and lower levels and resident parking on the lower level. Access between parking levels will be provided via ramps on the northern part of the site. All parking areas will be designed to comply with requirements of AS2890.1-2004 and AS2890.6-2009 with respect parking bay dimensions, aisle

widths, ramp grades and height clearances. This will be an improvement over the existing car park which is non-compliant with AS2890.1-2004.

11. Access to the site will be managed through a ticketless parking system with boom gates located on site, between the loading dock and ramp to Edinburgh Road. Based on the expected traffic flows, 98th percentile queue at the boom gates would be two vehicles. Queuing for two vehicles is provided.

12. Access to the site from Eastern Valley Way was investigated and was not supported by TfNSW. Eastern Valley Way is classified road and as such TfNSW concurrence for access is required under the provision of SEPP Infrastructure. TfNSW advised that as the site has practical access from Edinburgh Road it would not provide its concurrence for access from Eastern Valley Way.

Servicing

13. Servicing of the site will occur from on the upper car park level at two locations:

- a separate loading dock for the supermarket and waste collection (for all components) on the eastern part of site. This dock will be designed to accommodate a 8.8 metre long medium rigid truck with a turntable to allow entry and exit to the dock in a forward direction and all manoeuvring to occur separate to the car park access' and
- adjacent to the western lift core loading bays for a 6.4 metre long small rigid truck and a van. This would provide for deliveries to the residential and specialty shops/restaurants and removals for the residential component.

14. As the docks will be shared between the various components of the development, as part of a development application, a loading dock management plan would be prepared setting out, hours of operation of docks, size of trucks and management of the use of docks for each component.

15. Vehicle turning paths are provided in Attachment A. The loading docks and access to/from the dock will be designed to comply with the requirements of AS2890.2-2018.

Traffic Effects

16. The site is located on the south eastern corner of the intersection of Eastern Valley Way and Edinburgh Road. This intersection is traffic signal controlled with all movements permitted. Eastern Valley Way is located to the west of the site and forms part of an arterial road link between Miller Street (North Sydney) and Boundary Street (Roseville). It provides a four lane undivided carriageway, with separate right turn bays at the intersection with Edinburgh Road. Clearway restrictions apply in the direction of peak traffic flow in the weekday morning and afternoon peak periods. Bus stops are located on Eastern Valley Way immediately north of Edinburgh Road (with indented bus bays).

17. Edinburgh Road is located north of the site and provides access to residential development located within Castlecrag (east of Eastern Valley Way). It provides a traffic lane and parking lane in each direction (clear of intersections). Bus stops are located on Edinburgh Road along the frontage of the site. West of Eastern Valley Way, Edinburgh Road forms part of an alternative connection to the Warringah Freeway (via Alpha Road).

18. Traffic counts were undertaken at the intersection of Eastern Valley Way and Edinburgh Road during the weekday morning and afternoon peak periods in the last week of July 2019.

19. The results of the surveys are summarised in Table 1.

Table 1 : Existing Two Way Peak Hour Traffic Flows (Vehicles Per Hour)

Location	**Morning**	**Afternoon**
Eastern Valley Way – north of Edinburgh Road – south of Edinburgh Road	 3130 1715	 3150 1695
Edinburgh Road – east of Eastern Valley Way – west of Eastern Valley Way	 700 2055	 635 2010

20. Examination of Table 1 reveals that:

- Eastern Valley Way carried traffic flows of some 1,700 to 3,150 vehicles per hour (two way) in the peak periods. Traffic flows were highest north of Edinburgh Road; and
- Edinburgh Road carried traffic flows of some 635 to 2,055 vehicles per hour (two way) in the peak periods. Traffic flows were highest west of Eastern Valley Way.

21. The capacity of the road network is generally determined by the capacity of its intersections to cater for peak period traffic flows. The intersection of Eastern Valley and Edinburgh Road has been analysed using the SIDRA program using the 2019 traffic flows. SIDRA is designed to analyse signal controlled intersections, roundabouts and priority intersections

22. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):-

    - 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

23. The SIDRA analysis found that the intersection of Eastern Valley Way and Edinburgh Road operates with average delays per vehicle of some 65 seconds during the morning peak period. This represents level of service (LOS) E, at capacity. In the afternoon peak period the intersection operates with average delays of some 66 seconds per vehicle. This represents level of service (LOS) E, at capacity.

24. Observations of the operation of the intersection found that long delays and queues can occur on Edinburgh Road (westbound approach) in peak periods when traffic turning right into Eastern Valley Way is delayed and blocks through traffic. This can be exacerbated when the pedestrian movement across Eastern Valley Way (south) holds left turning traffic, effectively blocking through traffic (as only one traffic lane is provided on this approach for these two movements).

25. Based on TfNSW Guidelines the proposed development (additional 53 dwellings and setting aside the decrease of some 772m^2 in retail area) would generate some additional 20 vehicles per hour (two-way) in the weekday morning and afternoon peak periods. This additional traffic has been assigned to the road network and the impact on the operation of the intersection of Eastern Valley Way/Edinburgh Road has been analysed using SIDRA. The analysis found that with development traffic in place, there would be a minor increase in average delay per vehicle through the intersection of some one to three seconds in the AM/PM peak hours. There was no change in the LOS and minor increases in queue lengths. Thus in summary the proposed development would have minimal impact on the operation of the intersection of Eastern Valley Way and Edinburgh Road.

26. With respect to cumulative traffic impacts, we have reviewed the Traffic and Transport Plan (TTP) report for Willoughby Local Centres (Cardno – 17 January 2020) and note the following scale of additional development was assessed for the Castlecrag local centre:

- 6,665m^2 of additional residential floor space (101 units); and
- 1,527m^2 GFA of additional non-residential floor space;

27. The TTP report estimated the following additional traffic generation for the increase floor space:

- residential - 19 vehicles per hour (two way) in the weekday AM peak hour and 15 vehicles per hour (two way) in the PM peak hour.
- non-residential - 15 vehicles per hour (two way) in the weekday AM peak hour and 34 vehicles per hour (two way) in the PM peak hour

28. We are informed by City Planning Works that the Quadrangle site represents some 50% of the development potential within the Castlecrag local centre. Thus its development potential would be some 3,330m^2 of residential floor space (50 units) and some 760m^2 of additional non-residential floor space. Based on the traffic generation rates used in the TTP report, the additional traffic generated by the Quadrangle site (based on this scale of development) would be some 17 vehicles per hour (two way) in the AM peak hour and some 25 vehicles per hour (two way) in the PM peak hour.

29. The planning proposal for the Quadrangle site envisages some 53 residential units and a decrease of some 772m^2 in retail area. Applying the same generation rates as used in the TTP, the 53 residential units would generate an additional 10 vehicles per hour (two way) in the AM peak hour and an additional 8 vehicles per hour in the PM peak hour. Setting aside the decrease in retail area, the additional AM/PM peak hour traffic generated by the planning proposal (10 and 8 vehicles per hour, two way) is less than that assumed for the Quadrangle site in the TTP report for Castlecrag (17 and 25 vehicles per hour, two way). Thus the cumulative traffic effects of the planning proposal with other future development in Castlecrag have been considered in the TTP report.

Response to Traffic Matters

30. Council raised a number of traffic matters in its pre-planning proposal advice dated 4 August 2021. It is noted that Council acknowledges that the planning proposal is unlikely to have a significant adverse impact on the surrounding road network compared to the existing Quadrangle development. The matters raised and our response is set out below.

Parking Assessment under Draft WDCP

31. As requested, an assessment of parking requirements under Part F of Draft WDCP is set out below. For the planning proposal the following rates are relevant:

- retail – 1 space per 33m^2;
- restaurants – 1 space per 33m^2; and
- residential (located on major transport corridor) – 1 space per 2 bed unit, 1 space per 3 bed unit plus 1 visitor space per 7 units.

32. Applying these rates the planning proposal (1,740m^2 retail/restaurants and 53 x 2 and 3 bed units) would require 114 parking spaces (53 retail/restaurant spaces, 53 residential spaces and 8 residential visitor spaces).

Assessment of the Traffic Effects of the Planning Proposal

33. This report assesses the traffic effects of the planning proposal.

Queueing on Edinburgh Road at the Site Access

34. With regards to queuing on Edinburgh Road at the site access, the minor increase in traffic entering the site in the AM/PM peak hours (3 and 6 vehicles per hour in the AM/PM peak hours respectively) would have negligible impact and not extend back to Eastern Valley Way.

Relocation of Council Car Park (8 spaces)

35. Council has suggested relocation of the 8 spaces located in the Council car park on the corner of Edinburgh Road and The Postern to the subject site. The proposed parking provision provides a surplus of 10 spaces (based on WDCP) and 38 spaces (Based on Draft WDCP) and thus could accommodate the relocation of the Council car park (8 spaces).

Site Access

36. As noted in Paragraph 9, the existing site access on Edinburgh Road will be retained to provide access to the site. As per the existing situation this will provide access to the car park and loading docks. The swept paths provided in Attachment A, show that a car and 8.8 metre long medium rigid truck (MRV) can pass each other at the site access.

Servicing and Truck Size

37. As noted in Paragraphs 13 to 15, servicing of the site will occur from the upper car park level at two locations:

- a separate loading dock for the supermarket and waste collection (for all components) on the eastern part of site. This dock will be designed to accommodate a 8.8 metre long medium rigid truck with a turntable to allow entry and exit to the dock in a forward direction and all manoeuvring to occur separate to the car park access, and
- adjacent to the western lift core loading bays for a 6.4 metre long small rigid truck and a van. This would provide for deliveries to the residential and specialty shops/restaurants and removals for the residential component.

38. The largest vehicle that will access the site is a 8.8 metre long MRV. Supermarkets can be serviced by trucks as small as 6.4 metre long single unit trucks to 20 metre long articulated trucks. The size of truck used depends on the size of the

supermarket and the site constraints. The proposed supermarket in the planning proposal is a small supermarket located in a constrained site. As such deliveries by a 8.8 metre long MRV are considered appropriate.

39. As the docks will be shared between the various components of the development, as part of a development application, a loading dock management plan would be prepared (as part of a DA) setting out, hours of operation of docks, size of trucks and management of the use of docks for each component.

Car Park and Loading Dock Design to Comply with Australian Standards

40. As noted in Paragraphs 10 and 11, access between parking levels will be provided via ramps on the northern part of the site. All parking areas will be designed to comply with requirements of AS2890.1-2004 and AS2890.6-2009 with respect parking bay dimensions, aisle widths, ramp grades and height clearances (including truck access to the loading docks). This will be an improvement over the existing car park which is non-compliant with AS2890.1-2004.

41. As noted in Paragraph 15, the loading docks and access to/from the dock will be designed to comply with the requirements of AS2890.2-2018.

Vehicles to Enter/Depart Site in a Forward Direction

42. The swept paths provided in Attachment A, show that all vehicles enter and depart the site in forward direction. With regards to the use of a turntable for access to/from the main loading dock, it is considered appropriate and it is used to provide access by large rigid trucks to supermarkets at Beecroft and Manly.

Matters Raised by TfNSW

43. In response to the previous planning proposal, TfNSW requested that a cumulative traffic assessment be undertaken that takes into account the local centres strategy. Consideration of the cumulative traffic effects of the amended planning proposal (that takes into account the local centres strategy) is set out in Paragraphs 26 to 29.

Summary

44. Our review of the traffic and parking effects of the amended planning proposal for the redevelopment of the Quadrangle shopping centre at Castlecrag for a mixed use development has found that:

- parking provision is considered appropriate and will be provided in accordance with the requirements of WDCP;
- access and parking will be designed to comply with AS2890.1-2004 and AS2890.6-2009;
- loading docks will be designed to comply with AS2890.2-2018;

- the proposed development would have minimal impact on the operation of the intersection of Eastern Valley Way and Edinburgh Road;
- the cumulative traffic effects of the amended planning proposal (that takes into account the local centres strategy) have been considered; and
- the traffic matters raised by Council in its pre-planning proposal advice have been addressed.

45. We trust the above provides the information you require. Finally, if you should have any queries, please do not hesitate to contact us.

Yours faithfully,
COLSTON BUDD ROGERS & KAFES PTY LTD

T. Rogers
Director

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

B99 VEHICLE SWEPT PATHS

DRAWN BY CBRK Pty Ltd_mc Ref: 11554 30 AUGUST 2021

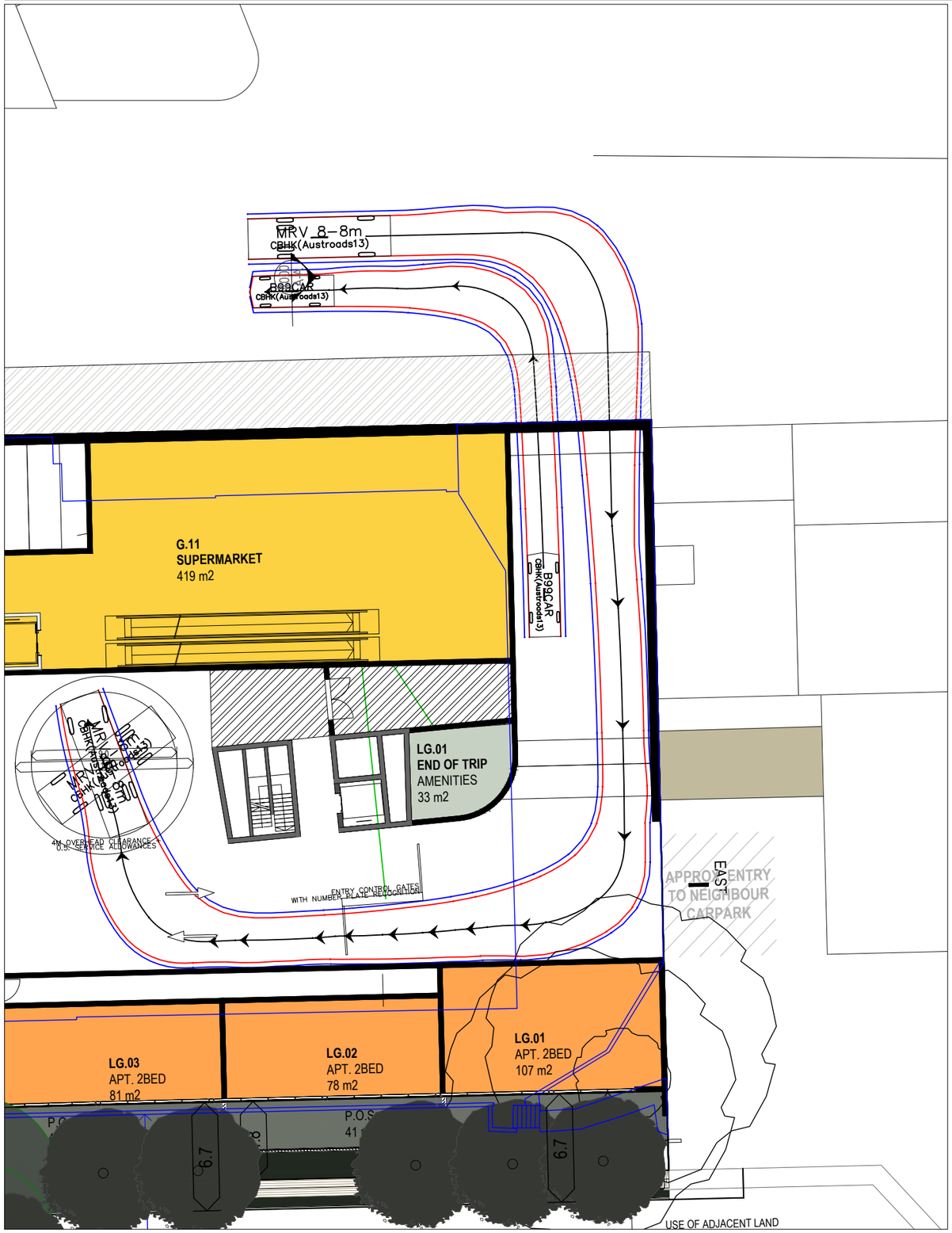
NOTE:
SKETCH PLAN ONLY. PROPERTY BOUNDARIES, UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO SURVEY AND FINAL DESIGN. TRAFFIC MEASURES PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

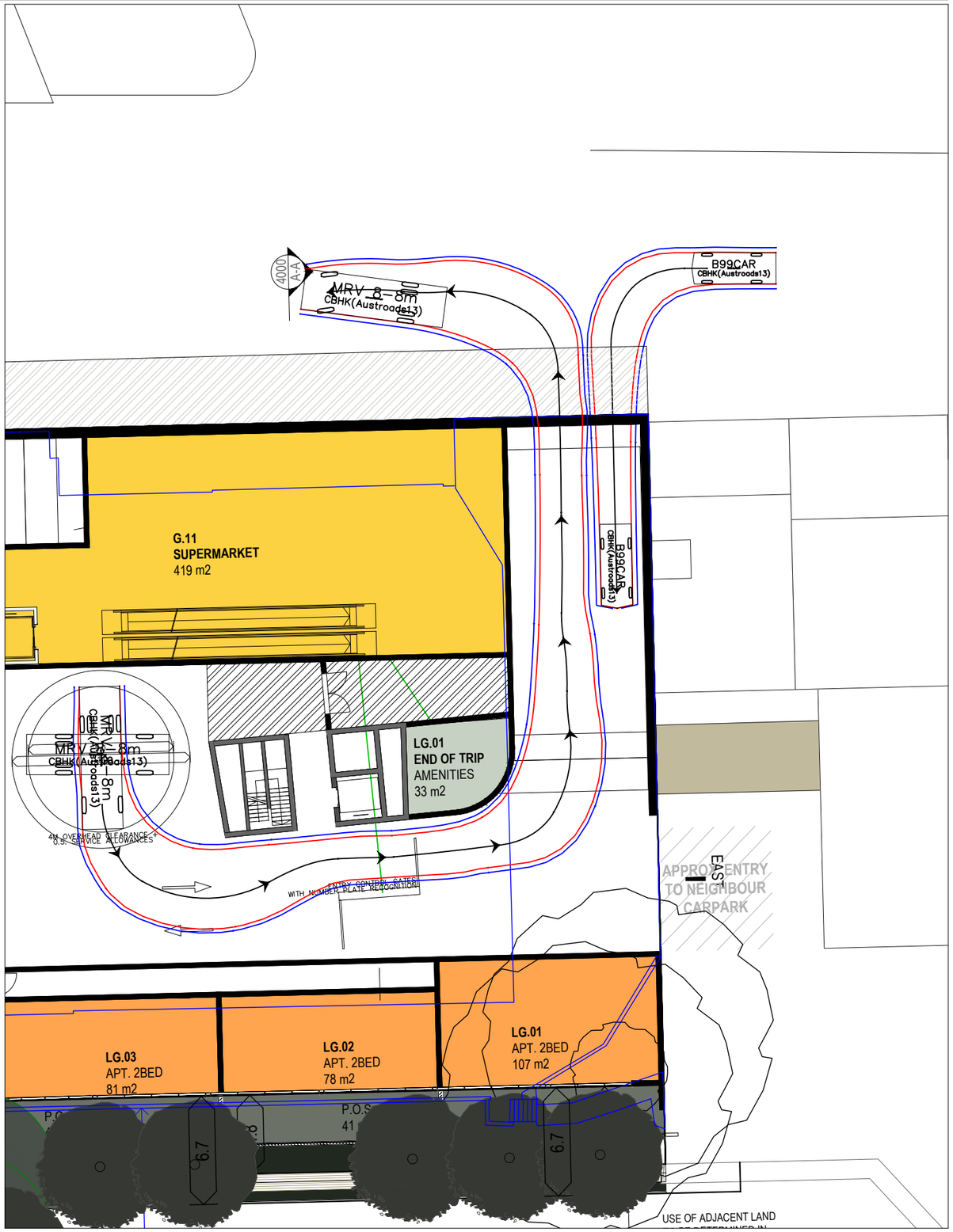
Swept Path of Vehicle Body
Swept Path of Clearance to Vehicle Body

6.4m SMALL RIGID VEHICLE SWEPT PATHS

DRAWN BY CBRK Pty Ltd_mc Ref: 11554 30 AUGUST 2021

2





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

B99 & 8.8m MEDIUM RIGID VEHICLE SWEPT PATHS

DRAWN BY CBRK Pty Ltd_mc Ref: 11554 30 AUGUST 2021