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

Our Ref: SK/12247/sk

Transport Planning
Traffic Studies
Parking Studies

5 July 2023

Vicinity Centres
c/- APG
7 Essex Street
SYDNEY NSW 2000

Attention: **Andrew McCullum** **Andrew Rowley**
Email: **Andrew@apg.com.au** **Andrew.Rowley@vicinity.com.au**

Dear Sirs,

RE: S4.55 MODIFICATIONS TO CONTROLLED PARKING AT BANKSTOWN CENTRAL

1. As requested, we are writing regarding the traffic and parking implications of the S4.55 modifications to the approved controlled parking scheme (DA-279/2019) at Bankstown Central. We previous prepared a traffic report[1] which was submitted with the development application for the introduction of car park controls at the centre.

2. Our assessment of the implications of the S4.55 modifications is set down through the following sections:

   - approved developments;
   - proposed S4.55 modifications;
   - revised car park access controls;
   - swept path assessment;
   - car park control assessment; and
   - summary.

[1] "Bankstown Central Shopping Centre, Introduction of Car Park Control System", March 2019, Colston Budd Rogers and Kafes Pty Ltd.

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Approved Developments

3. Development approval was granted by Canterbury Bankstown Council on 30 November 2020 for the introduction of car park controls at Bankstown Central shopping centre (DA-279/2019).

4. The approved development includes the introduction of a ticketless car park control system, incorporating a licence plate recognition system (LPR). The system will operate together with automatic pay stations situated about the centre to validate and pay for parking, prior to customers returning to their vehicle and exiting the car park.

5. The approved system will include a car park guidance system including:

- external traffic guidance signage;
- car park entry information boards;
- internal wayfinding and aisle signage; and
- individual bay availability indicators.

6. In addition to the approved controlled parking scheme, subsequent development applications were also approved by Canterbury Bankstown Council for the centre, including:

- provision of a new interim bus layover within the site, between The Mall and North Terrace (DA-529/2020); and

- demolition of the existing bus interchange and partial demolition of the nearby pad tenancies to facilitate the extension of the existing at-grade car park at this location (DA-26/2021).

7. Traffic reports[2][3] were prepared which were submitted with the development applications for the relocation of the bus interchange and the extension of the existing at-grade car park adjacent to Jacob Street.

8. The new interim bus layover area and the extension of the existing at-grade car park adjacent to Jacobs Street will require modifications to the approved controlled parking scheme, including changes to the car park access controls onto Jacob Street and changes to car parking arrangements, internal circulation and access controls to the North Terrace multi-deck car park.

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[2] "Bankstown Central Shopping Centre – Car Park Development Trasport Impact Assessment", 18 December 2020.

[3] "Bankstown Central Shopping Centre – Bus Relocation Project – Revised Design", 29 March 2021

Proposed S4.55 Modifications

9. The S4.55 modifications include the following:

- removal of the car park entry lane (Location 5) at the western end of the Rickard Road at-grade car park;
- provision of two new entry lanes from Jacob Street (new Location 5) accessing the new extended at-grade car park;
- reconfigure car park circulation and traffic measures within the existing Rickard Road at-grade car park;
- provision of a new single egress lane (Location 5A) onto Jacob Street at The Mall;
- removal of the car park access controls (Location 6) at the western end of the North Terrace multi-deck car park, including the removal of B2 exit ramp at this location;
- reconfigure the car park exit controls (Location 7) at the western end of the North Terrace multi-deck car park, to accommodate the LPR equipment, including the conversion of three parking spaces to four motorcycle parking spaces; and
- reconfigure car park circulation and traffic measures within the western part of the existing North Terrace multi-deck car park.

10. The access arrangements and car park control measures to the balance of the Bankstown Central car park, in accordance with the approved development (DA-279/2019), will be the same as the approved control parking scheme.

Revised Car Park Access Controls

11. The revised car park access controls are shown on Figures 1 to 3. The revised car park layout and car park modifications will be provided as an extension of the approved controlled parking scheme. The revised access controls include the following:

- New Location 5 (Figure 4)
  - the existing entry lane from Jacob Street has been reconfigured in association with DA-26/2021, to provide two entry lanes, including one left and through traffic lane and one right turn only traffic lane;
  - the two entry lanes will include an LPR system and boom gate controls. Speed humps will be located on the entry lanes to control travel speeds;
  - the boom gates will be reverse logic (boom gates maintained in an opened position, unless activated by loop detectors to prevent vehicles exiting the car park from the proposed entry controls);
  - raised kerbs/medians and line marking have been provided to channelise traffic entering the car park at this location;
  - reconfigure car park circulation within the existing Rickard Road at-grade car park, to provide counter-clockwise traffic circulation, as shown on Figure 4;
  - all traffic entering the Rickard Road at-grade car park from the new Jacob Street car park will be required to turn right onto the internal car park circulation aisle, as shown on Figure 4;
  - install Give Way signage and line marking within the Rickard Road at-grade car park, to ensure priority to traffic entering from the new Jacob Street car park connection, in order to minimise traffic queues and traffic delays at this location;
  - maintain the existing pedestrian access and marked pedestrian facilities within the new Jacob Street at-grade car park.
- Location 5A (Figure 5)
  - the existing egress lane from the Jacob Street car park has been reconfigured in association with DA-26/2021, to provide a single egress lane onto Jacob Street at The Mall;
  - the egress lane will include an LPR system and boom gate controls. Exit payment controls will also be available for customer who choose to pay on exit from the car park;

- raised kerbs/medians and line marking have been provided to channelise traffic exiting the car park at this location;

- provide for the recirculation of vehicles within the new Jacob Street at-grade car park, past the proposed egress lane;

- maintain the existing pedestrian access and marked pedestrian facilities within the new Jacob Street at-grade car park.

- Location 6 (Figure 6)

  - the existing entry and exit lanes at the western end of the North Terrace multi-deck car park and the B2 exit ramp have been removed in association with DA-529/2020, to provide for the new interim bus layover within the site;

  - car parking arrangements and internal circulation within the North Terrace multi-deck car park have been reconfigured to cater for the changed traffic arrangements and traffic recirculation;

  - modified structure, raised kerbs/medians and line marking have been provided to channelise traffic through the car park at this location;

  - maintain the existing pedestrian access and marked pedestrian facilities within the new interim bus layover and modified North Terrace car park.

- Location 7 (Figure 6)

  - the existing egress lanes from the North Terrace multi-deck car park have been reconfigured, to provide to provide two egress lanes onto North Terrace;

  - the egress lanes have been reconfigured to accommodate the LPR equipment and boom gate controls. Exit payment controls will also be available for customer who choose to pay on exit from the car park;

  - raised kerbs/medians and line marking have been provided to channelise traffic exiting the car park at this location;

- provide for the recirculation of vehicles within the existing North Terrace multi-deck car park, past the proposed egress lanes;

- convert three parking spaces to four motorcycle parking spaces, adjacent to the recirculation aisle.

12. The S4.55 modifications to the approved car park control scheme will result in the loss of three car parking spaces. These spaces, located adjacent to Location 7 within the North Terrace multi-deck car park, will be converted to four motorcycle parking spaces. The loss of these car parking spaces will have no adverse traffic or parking effect on the operation of the overall car park.

Swept Path Assessment

13. The proposed revised car park access controls will be designed in accordance with the Australian Standards for Parking Facilities (Part 1: Off-street car parking), AS2890.1-2004, with respect to car park layout, circulation aisle widths, car park grades and height clearances. The revised car park access controls will be designed to ensure the appropriate movement of cars through the car park.

14. The swept path assessment for the proposed revised access controls is contained within Attachment A. The swept path assessment illustrates that suitable vehicle access is provided. The swept paths indicate that vehicles entering and exiting the car park via these controls, including the new two-way connection to the existing Rickard Road at-grade car park, have been designed to readily accommodate simultaneous movement of vehicles (B99 design vehicles) through the car park.

15. Overall, the swept path assessment for the proposed revised car park access arrangements, including the connection to the existing Rickard Road at-grade car park, is expected to operate appropriately and efficiently.

Car Park Control Assessment

16. The previous traffic reports supporting the approved development applications for the relocation of the bus interchange and the extension of the existing at-grade car park adjacent to Jacob Street, assessed the traffic effects of these developments on the operation of the surrounding road network and its intersections.

17. The traffic reports indicated that the extension of the existing at-grade car park and the relocation of the bus interchange would likely alter the distribution of the traffic generation of the existing centre to/from the various car parking areas. There would also be some additional vehicle movements generated by the additional car parking spaces within the extended car park.

18. The traffic reports estimated that the approved developments would likely generate some 142 and 181 additional and redistributed vehicle movements per hour two-way to/from the Jacob Street at-grade car park during the Thursday afternoon and Saturday midday peak periods.

19. Assuming an equal split between entering and exiting additional and redistributed traffic, the additional traffic was combined with the existing traffic generation of the Jacob Street at-grade car park, some 205 vehicles in and some 100 vehicles out during the Thursday afternoon and some 255 vehicles in and 100 vehicles out during the Saturday midday peak periods.

20. The proposed revised car park access controls at the Jacob Street at-grade car park (Location 5 and Location 5A) have been assessed to determine the operational characteristics and expected queue lengths at the controls during the peak operating times at the shopping centre. Tables 1 and 2 indicate the number of entry and exit lanes, and the average and 95th percentile vehicle queues at the revised car park access control locations.

Table 1: Access Control Capacity Assessment – Queuing Analysis Thursday Afternoon

Access Point	Type	Movement	Traffic Flow (Veh/Hr)	Service Rate (Veh/Hr)	Average Queue (Vehicles)	95%ile Queue (Vehicles)	Available Queue (Vehicles)
Location 5	Entry	Left/Through	205	600(1)	<1	2	5
	Entry	Right Turn Only	71	600(1)	<1	<1	5
Location 5A	Exit	All Movements	171	360(2)	1	3	6

(1) Free flow entry service rate - 600 vehicles per hour
(2) Boom gate controlled exit service rate - 360 vehicles per hour

Table 2: Access Control Capacity Assessment – Queuing Analysis Saturday Midday

Access Point	Type	Movement	Traffic Flow (Veh/Hr)	Service Rate (Veh/Hr)	Average Queue (Vehicles)	95%ile Queue (Vehicles)	Available Queue (Vehicles)
Location 5	Entry	Left/Through	255	600(1)	1	3	5
	Entry	Right Turn Only	91	600(1)	<1	<1	5
Location 5A	Exit	All Movements	191	360(2)	2	4	6

(1) Free flow entry service rate - 600 vehicles per hour
(2) Boom gate controlled exit service rate - 360 vehicles per hour

21. Tables 1 and 2 show that the revised entry and exit car park access controls (Location 5 and 5A) will cater for the expected peak hour traffic flows and will operate satisfactorily with manageable queue lengths during peak operating times at the shopping centre. The proposed revised car park access controls are therefore considered appropriate.

Summary

22. In summary, the main points relating to the traffic and parking implications of the S4.55 modifications are as follows:

i) The S4.55 modifications include the following:

- removal of the car park entry lane (Location 5) at the western end of the Rickard Road at-grade car park;
- provision of two new entry lanes from Jacob Street (new Location 5) accessing the new extended at-grade car park;
- reconfigure car park circulation and traffic measures within the existing Rickard Road at-grade car park;
- provision of a new single egress lane (Location 5A) onto Jacob Street at The Mall;
- removal of the car park access controls (Location 6) at the western end of the North Terrace multi-deck car park, including the removal of B2 exit ramp at this location;
- reconfigure the car park exit controls (Location 7) at the western end of the North Terrace multi-deck car park, to accommodate the LPR equipment, including the conversion of three parking spaces to four motorcycle parking spaces;
- reconfigure car park circulation and traffic measures within the western part of the existing North Terrace multi-deck car park;

ii) the access arrangements and car park control measures to the balance of the Bankstown Central car park, in accordance with the approved development (DA-279/2019), will be the same as the approved control parking scheme;

iii) the revised car park access controls will be designed in accordance with the Australian Standards for Parking Facilities (Part 1: Off-street car parking), AS2890.1-2004;

iv) the revised car park access controls will cater for the expected peak hour traffic flows and will operate satisfactorily with manageable queue lengths during peak operating times at the shopping centre;

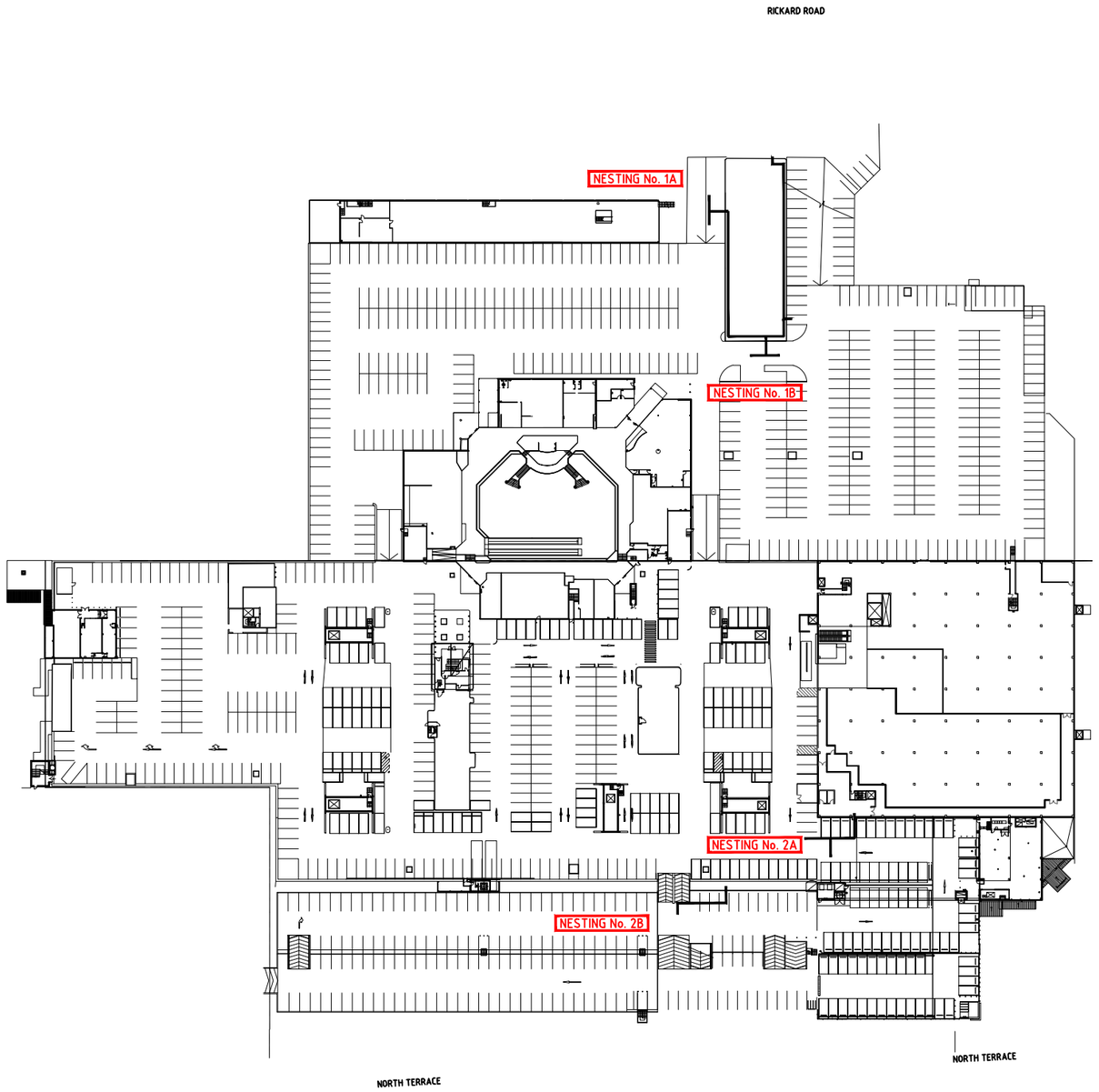
v) the S4.55 modifications will have no adverse traffic or parking effect on the operation of the overall car park; and

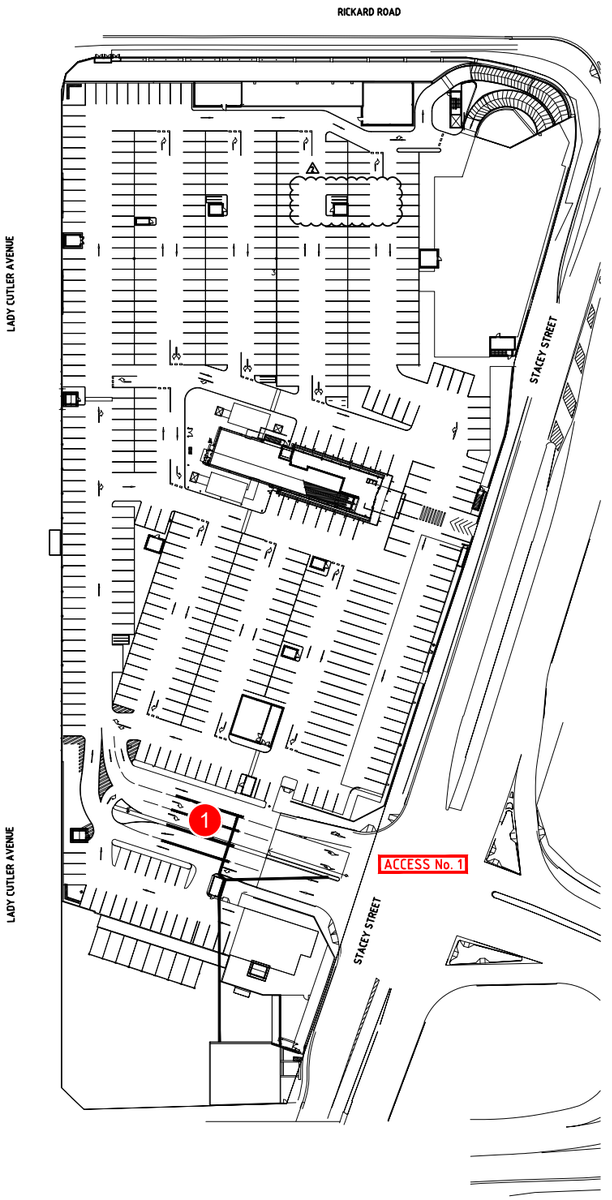
vi) the revised car park access controls are therefore considered appropriate.

23. 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

S. Kafes
Director





DENOTES INDICATIVE CABLE PATH

LEVEL 3 INDICATIVE ELECTRICAL LAYOUT PLAN

NOTE:
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BANKSTOWN CENTRAL SHOPPING CENTRE ACCESS CONTROL LOCATIONS

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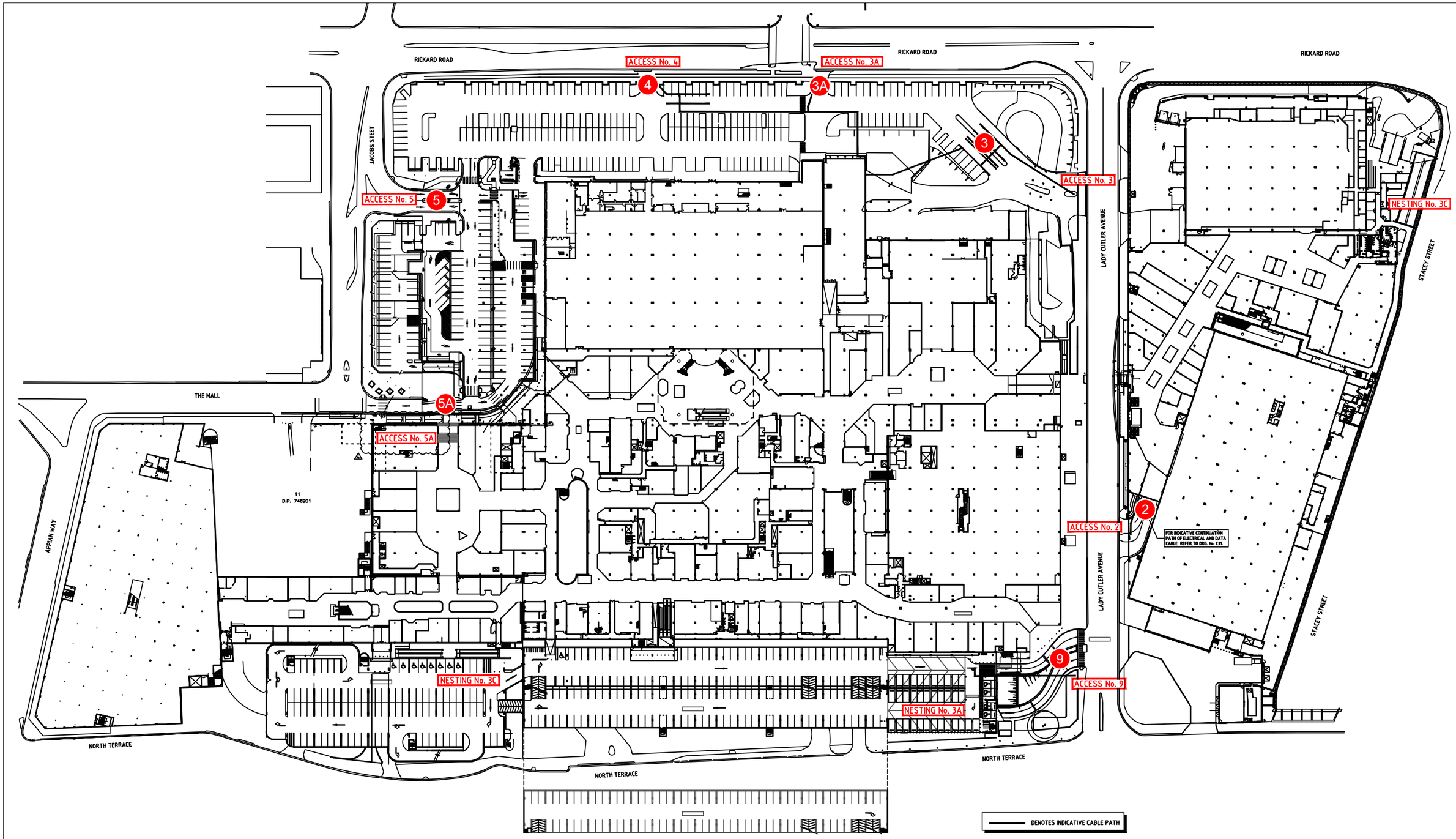
1



LEVEL 2 INDICATIVE ELECTRICAL LAYOUT PLAN

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BANKSTOWN CENTRAL SHOPPING CENTRE ACCESS CONTROL LOCATIONS

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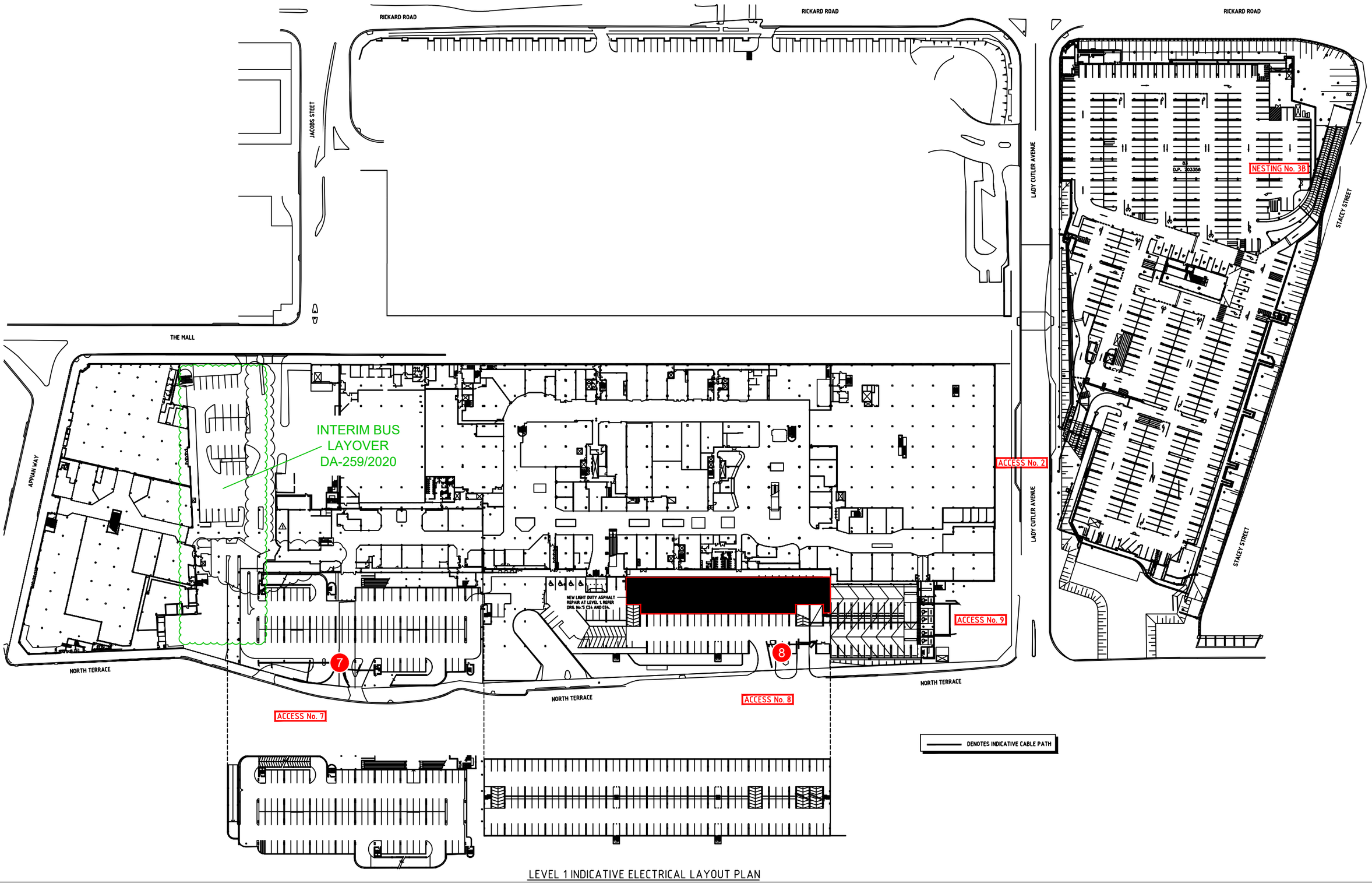
2



LEVEL 1 INDICATIVE ELECTRICAL LAYOUT PLAN

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BANKSTOWN CENTRAL SHOPPING CENTRE ACCESS CONTROL LOCATIONS

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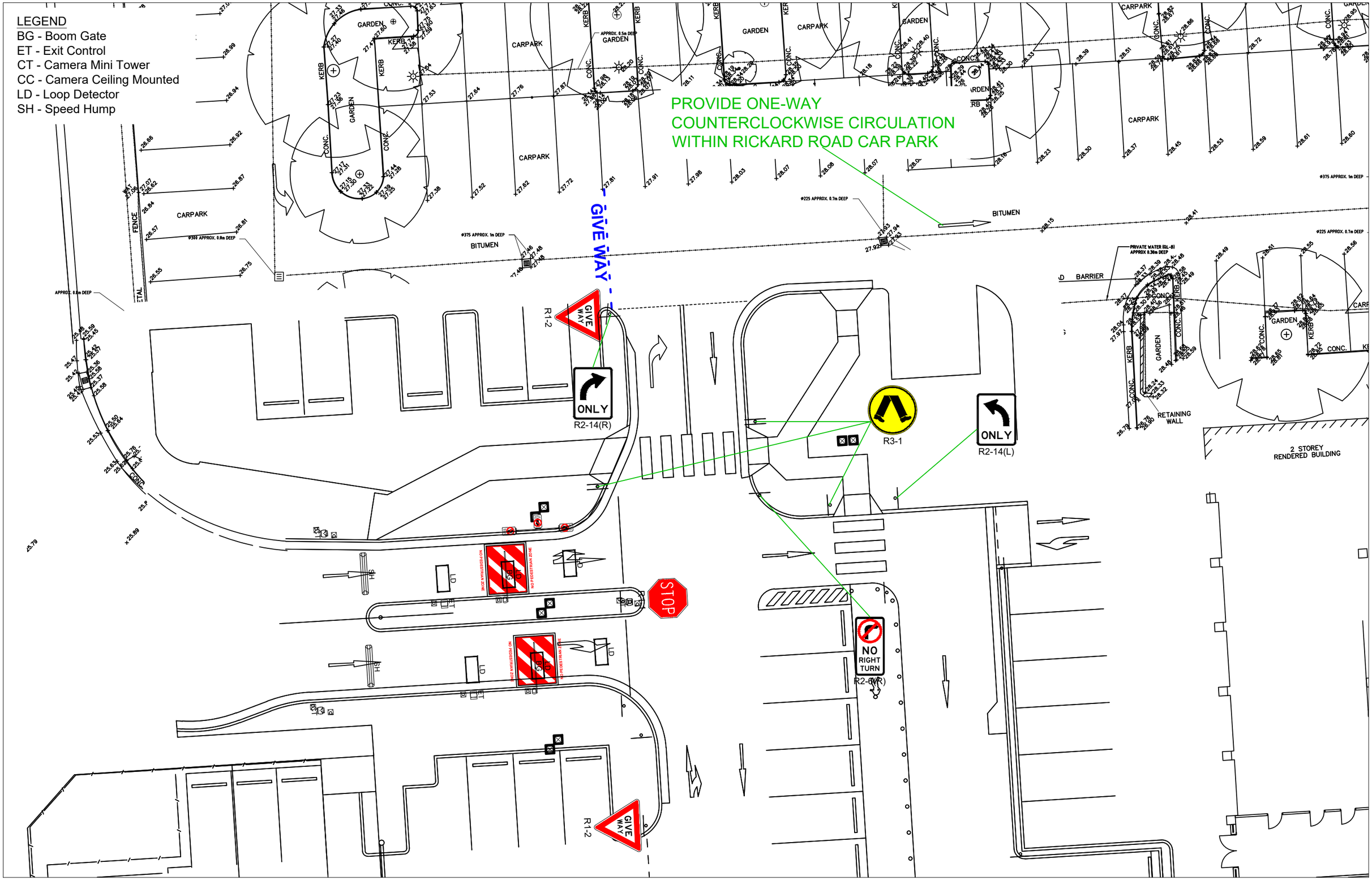
3



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BANKSTOWN CENTRAL REVISED ACCESS CONTROLS - LOCATION 5

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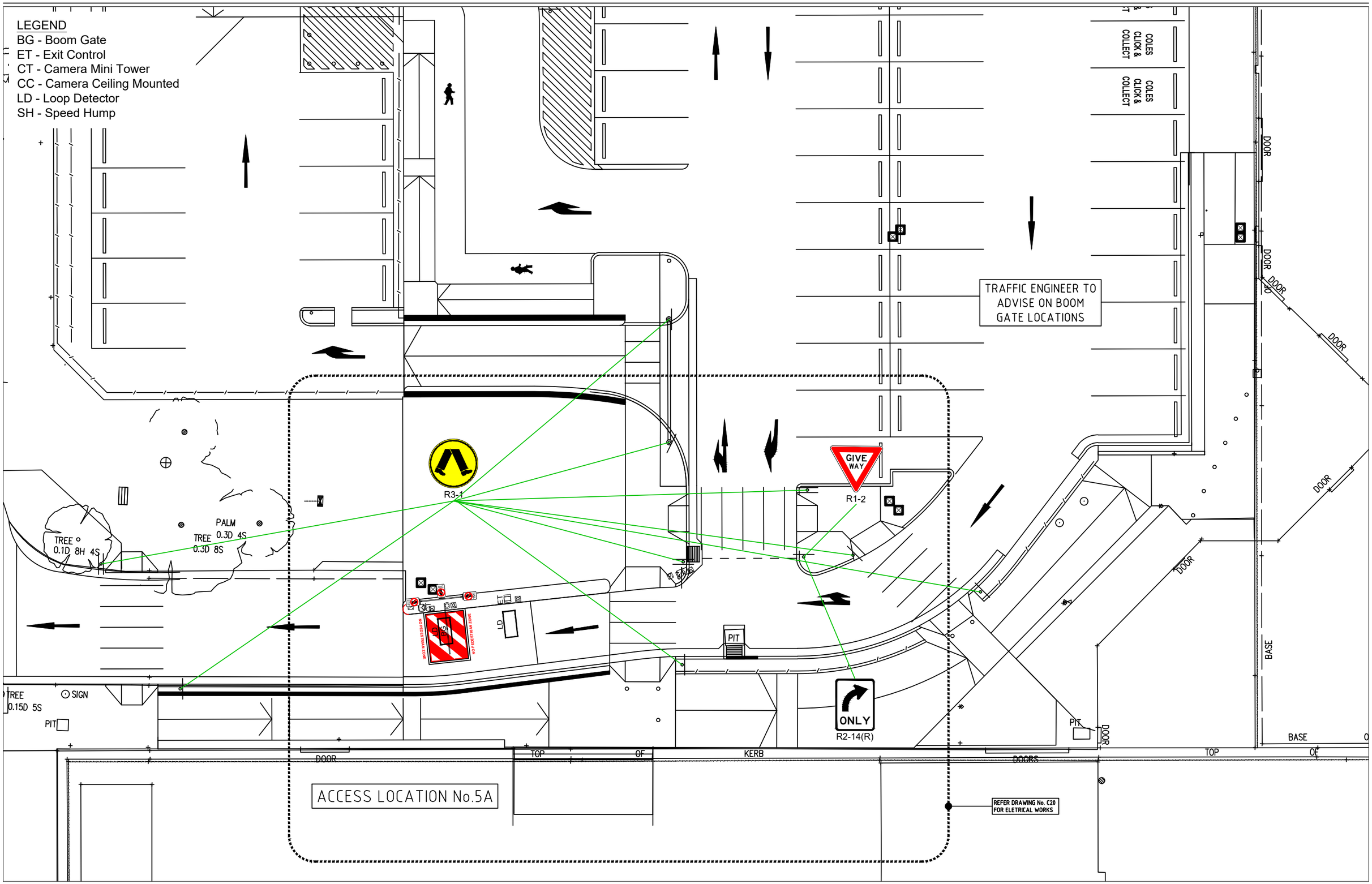
4



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BANKSTOWN CENTRAL REVISED ACCESS CONTROLS - LOCATION 5A

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5

LEGEND
BG - Boom Gate
ET - Exit Control
CT - Camera Mini Tower
CC - Camera Ceiling Mounted
LD - Loop Detector
SH - Speed Hump
MC - Motorcycle Space

INTERIM BUS LAYOVER (DA-529/2020)

LOCATION 6 ACCESS CONTROLS REMOVED IN ACCORDANCE WITH DA-529/2020

T.217 101.0275 SQM

T.219 36.8884 SQM

T.220 12.1514 SQM

T.221 78.5503 SQM

T.223 82.1505 SQM

T.224 81.4144 SQM

T.225 105.2567 SQM

T.226 39.0854 SQM

T.227 44.0953 SQM

T.22 34.85 SQM

WRONG WAY BOOM GATE (NORMALLY OPEN)

RL 21.800

MODIFIED CAR PARK CIRCULATION

CONVERT 3 PARKING SPACES TO 4 MOTORCYCLE SPACES

MC MC MC MC

EXIT

LD

SH

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BANKSTOWN CENTRAL REVISED ACCESS CONTROLS - LOCATION 7

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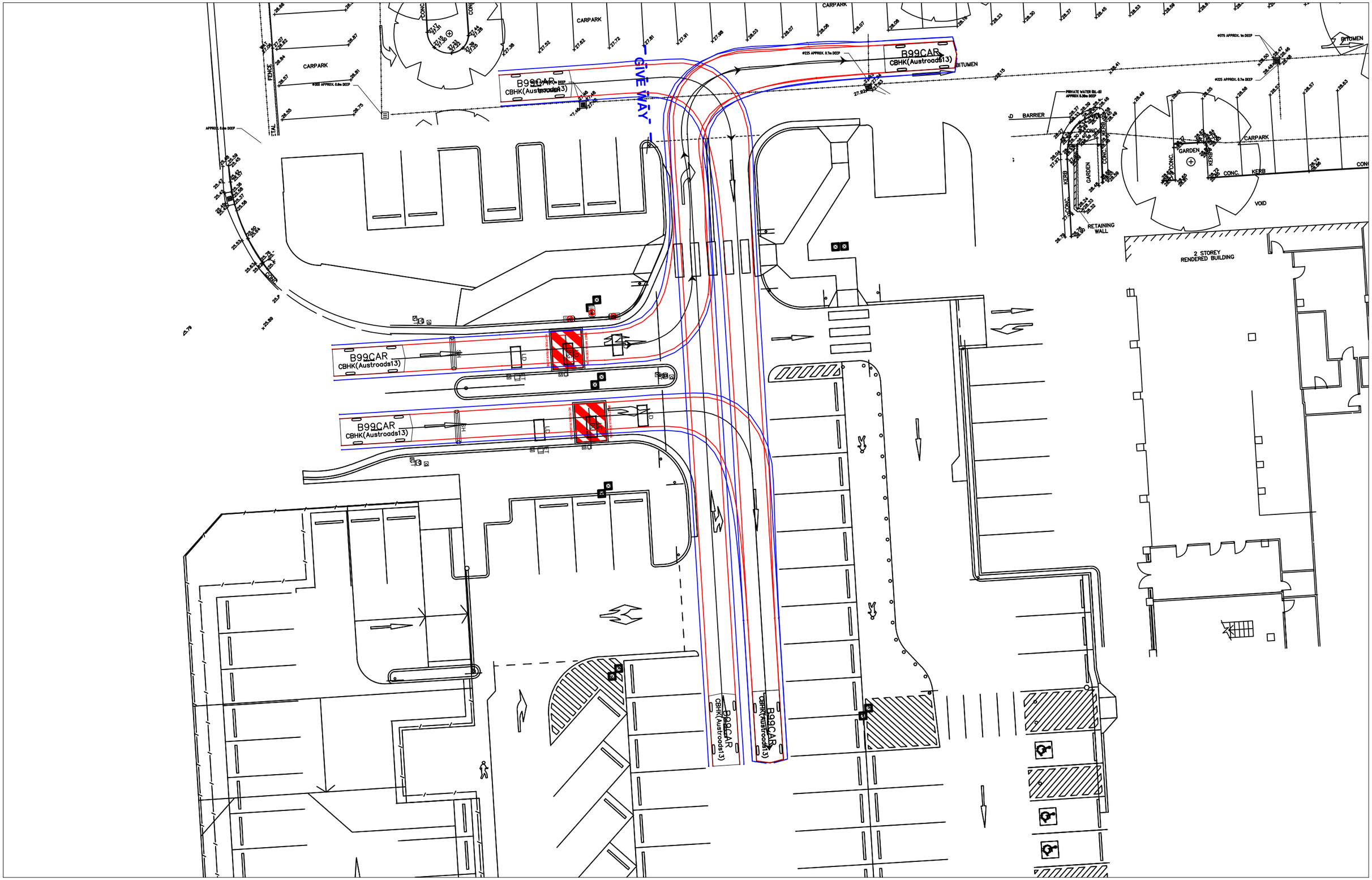
6

ATTACHMENT A
VEHICLE SWEPT PATH ASSESSMENT



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

B99 VEHICLE SWEPT PATHS - LOCATION 5

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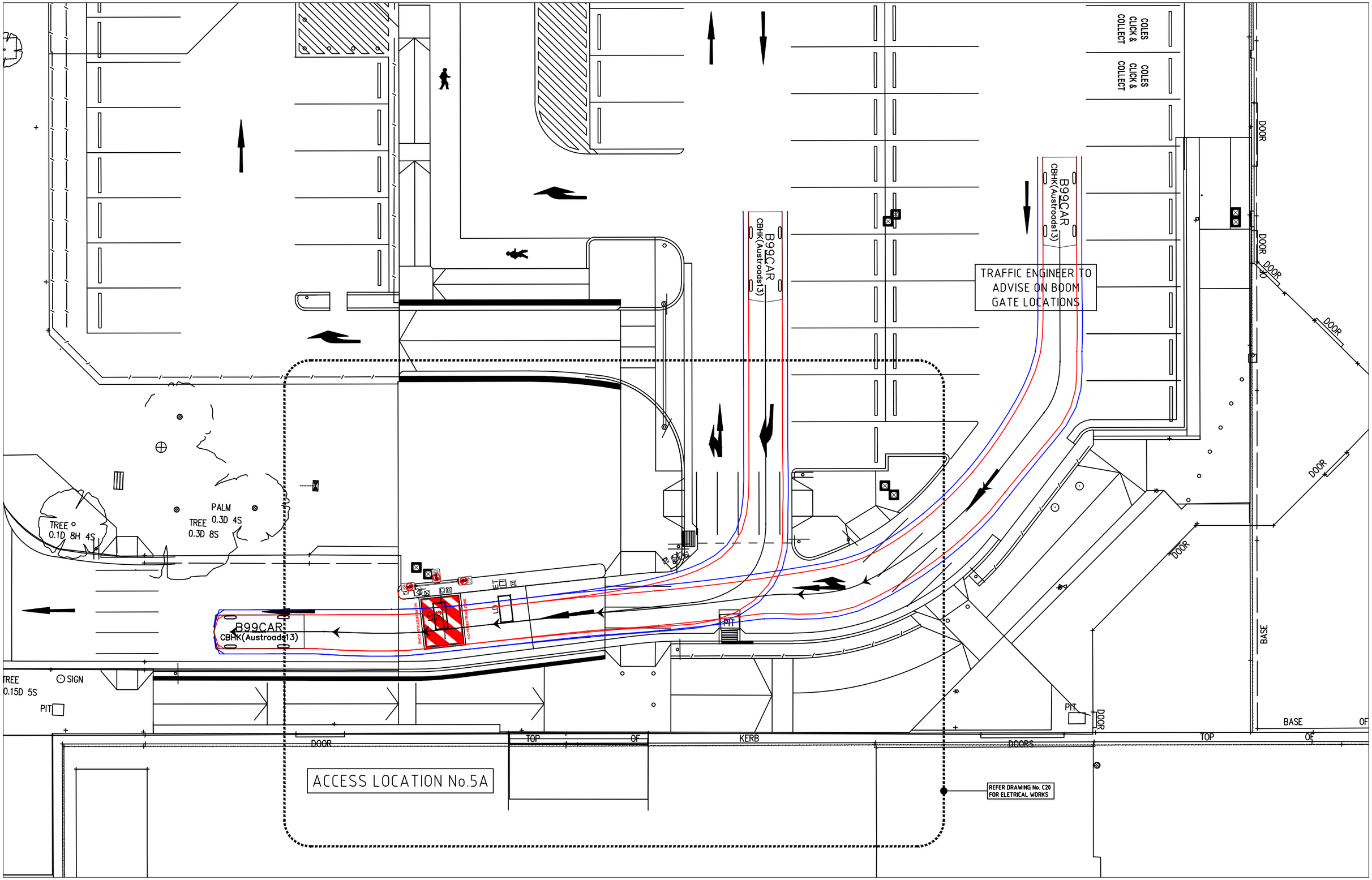
A1



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

B99 VEHICLE SWEPT PATHS - LOCATION 5a

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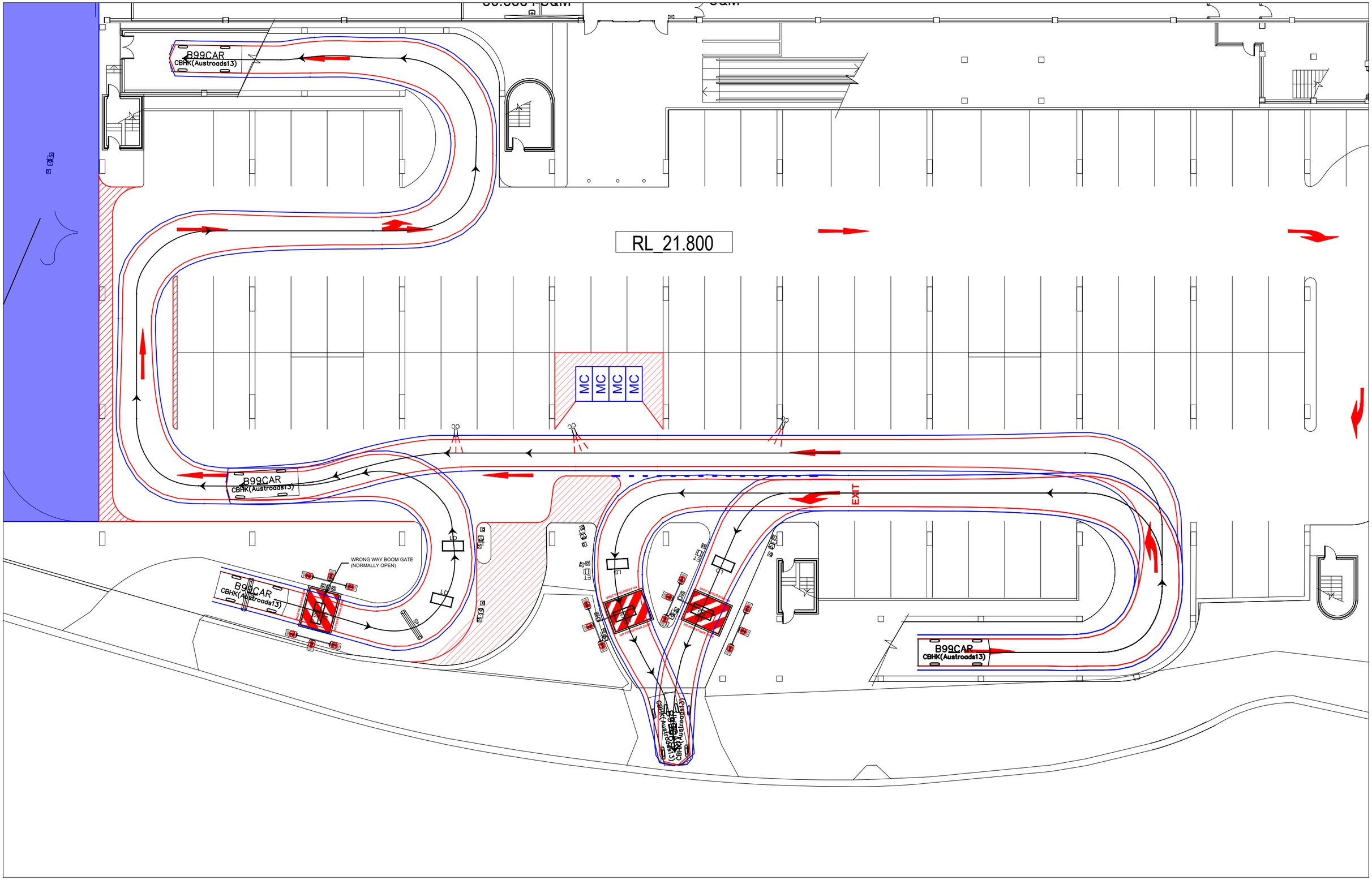
A2



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

B99 VEHICLE SWEPT PATHS - LOCATION 7

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A3