



TRAFFIC IMPACT AND PARKING ASSESSMENT

**PROPOSED RESIDENTIAL DEVELOPMENT
17-27 HARDWICKE STREET
RIVERWOOD**

**PREPARED FOR
HOMES NSW**

**IN-COORDINATION WITH
CUSTANCE**

DATE: 9TH JANUARY 2025

OUR REFERENCE: 230826

BY: ANTHONY OSTE



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1 INTRODUCTION

1.1 GENERAL

Greenview Consulting has been engaged by the client to undertake a review of traffic and parking at the subject site. This report must be read in conjunction with the other Part 5 documentation and other relevant information, including:

- Custance design drawings (July 2024)
- Georges River Council Development Control Plan 2021
- TfNSW Guide to Transport Impact Assessment TS 00085 Version 1.1
- State Environmental Planning Policy (Housing) 2021

This purpose of this report is to:

- Describe the site and the proposed development scheme;
- Describe the road network serving the site and the prevailing traffic conditions;
- Assess the adequacy of the proposed parking provision;
- Assess the potential traffic implications;
- Assess the suitability of the proposed vehicles access, internal circulation and servicing arrangements.

2 EXISTING CONDITIONS

2.1 SITE DESCRIPTION

The subject site is located on the southern side of Hardwicke Street, refer **Figure 2.1**. The site is currently zoned R3 – Medium Density Residential under the Georges River Council Local Environmental Plan 2021 and is currently occupied by six (6) single storey residential dwellings.

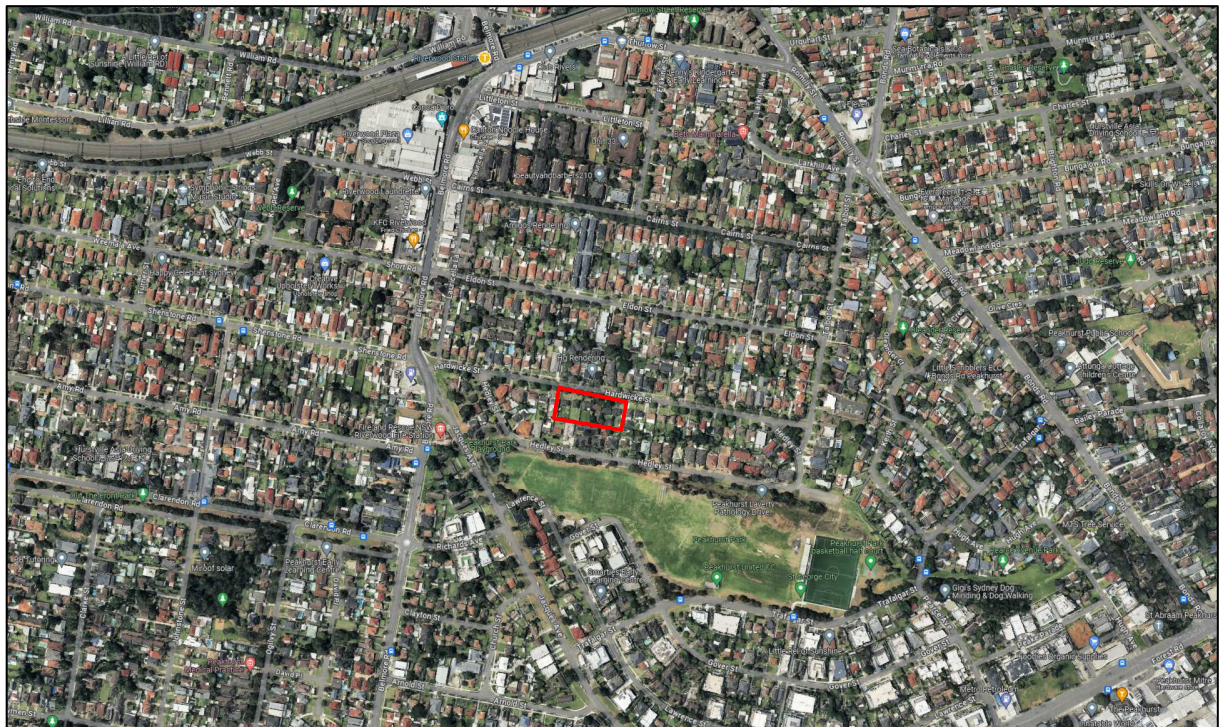


Figure 2-1 Site Location

The development as proposed consists of the removal of the existing structures and construction of a three-storey residential building containing 29 units and an at-grade car parking area at the rear of the site containing 14 car parking spaces. Vehicular access is provided via a single lane driveway from Hardwicke Street.

2.2 EXISTING ROAD CONDITIONS

The Roads & Maritime Services (RMS, now TfNSW) broadly classifies all roads into three administrative classes: state, regional and local. A detailed description of each administrative class is provided in “NSW Road Management Arrangements” (December 2008), however in general:

State Roads are the major arterial links throughout NSW and within major urban areas. They are the principal traffic carrying and linking routes for the movement of people and goods within the Sydney, Newcastle, Wollongong and Central Coast urban areas and which connect between these urban centres, the major regional towns, the major regions of the State and the major connections interstate.

Regional Roads are routes of secondary importance between State Roads and Local Roads which together with the State Roads, provide the main connections to and between smaller towns and districts and perform a sub arterial function in major urban areas.

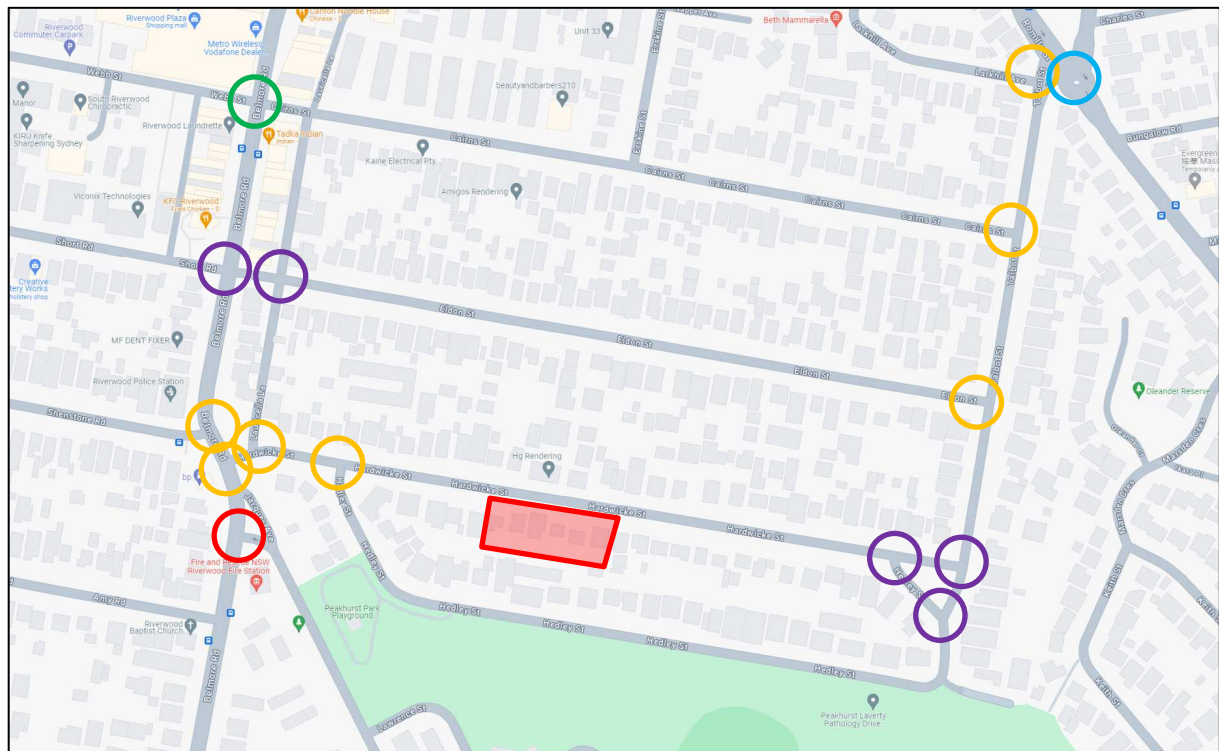
Local Roads comprise the remaining Council controlled roads which provide for local circulation and access.

Hardwicke Street is a local road of approximately 7m in width, accommodating two-way traffic flow and kerbside parking on both sides of the road. Kerbside parking is unrestricted, typical of a residential setting. A sign posted speed limit of 50km/h applies.

Belmore Road is a classified regional road (No. 2050) of approximately 12m in width, accommodating two-way traffic flow and kerbside parking on both sides of the road. Kerbside parking is typically time restricted to the north of Hardwicke Street and unrestricted to the south of Hardwicke Street. A sign posted speed limit of 50km/h applies.

2.3 EXISTING ROAD FEATURES

The existing road features which apply to the road network in the vicinity of the site are illustrated in **Figure 2.2**.



Key			
	Site		Giveway controlled intersection
	Priority controlled intersection		Stop controlled intersection
	Roundabout controlled intersection		Signal controlled intersection

Figure 2-2 Existing Road Features

2.4 TRAFFIC DATA

As far as we are aware, there are no readily available traffic counts in the local vicinity.

2.5 PUBLIC TRANSPORT

The closest bus stop to the subject site is located on Belmore Road, approximately 345m walking distance to the west. The bus stop services route 942 (Lugarno to Campsie).

Riverwood Train Station is within 750m walking distance of the subject site, servicing the T8 – Airport and South Line and provides access to the Sydney CBD (Central, Town Hall and the City Circle), the Domestic Airport and International Airport and Macarthur and Campbelltown.

2.5.1 ACCESSIBLE AREA

The *State Environmental Planning Policy (Housing) 2021 – Schedule 10* defines an accessible area as:

accessible area means land within—

(a) 800m walking distance of—

(i) a public entrance to a railway, metro or light rail station, or

*(ii) for a light rail station with no entrance—a platform of the light rail station,
or*

*(iii) a public entrance to a wharf from which a Sydney Ferries ferry service
operates, or*

(b) repealed

*(c) 400m walking distance of a bus stop used by a regular bus service, within the
meaning of the Passenger Transport Act 1990, that has at least 1 bus per hour servicing
the bus stop between—*

(i) 6am and 9pm each day from Monday to Friday, both days inclusive, and

(ii) 8am and 6pm on each Saturday and Sunday.

The subject site is within 800m walking distance from Riverwood Train Station and therefore, is satisfies the definition of an accessible area.

3 PROPOSED DEVELOPMENT

3.1 PROPOSED DEVELOPMENT DESCRIPTION

The proposed development comprises of 29 units and an at grade car parking area. The scale of the proposed relevant to traffic and parking impacts is as follows:

- 29 units comprising of:
 - 17 one-bedroom units;
 - 12 two-bedroom units.
- 14 car parking spaces including six (6) accessible car parking spaces.

3.2 ONSITE PARKING PROVISIONS

The proposed is a project of Homes NSW and therefore, reference is made to the *State Environmental Planning Policy (Housing) 2021 – Chapter 3 Part 5 Housing for seniors and people with a disability* which states the following car parking requirements:

108 Non-discretionary development standards for independent living units—the Act, s 4.15

- (1) *The object of this section is to identify development standards for particular matters relating to development for the purposes of independent living units that, if complied with, prevent the consent authority from requiring more onerous standards for the matters.*
- (2) *The following are non-discretionary development standards in relation to development for the purposes of independent living units—*
 - j. *for a development application made by, or made by a person jointly with, a social housing provider or Landcom—at least 1 parking space for every 5 dwellings*

The parking requirements of the proposal are summarised in **Table 3.1**, noting that the development is being made by a social housing provider.

Table 3.1 Car Parking Requirements

Land Use	Scale	Authority	Rate	Spaces Required
Residential	29 units (dwellings)	SEPP Housing 2021	1 space per 5 dwellings	6 (5.8)
Total	-	-	-	6

The proposal requires the provision of **6** car parking spaces to satisfy the requirements of the Housing SEPP 2021. These 6 spaces should be compliant to the accessibility requirements of Schedule 4 of the SEPP. The proposed car parking layout includes the provision of **14** car parking spaces (including 6 accessible spaces), thus satisfying the requirements of the Housing SEPP 2021. The additional non-accessible spaces are provided to address community expectations where concerns are often raised that the development will reduce the available on-street parking.

3.3 SITE ACCESS & SERVICING

It is currently proposed that the at-grade car parking area will be accessed via the road frontage of Hardwicke Street, refer **Figure 3.1**.

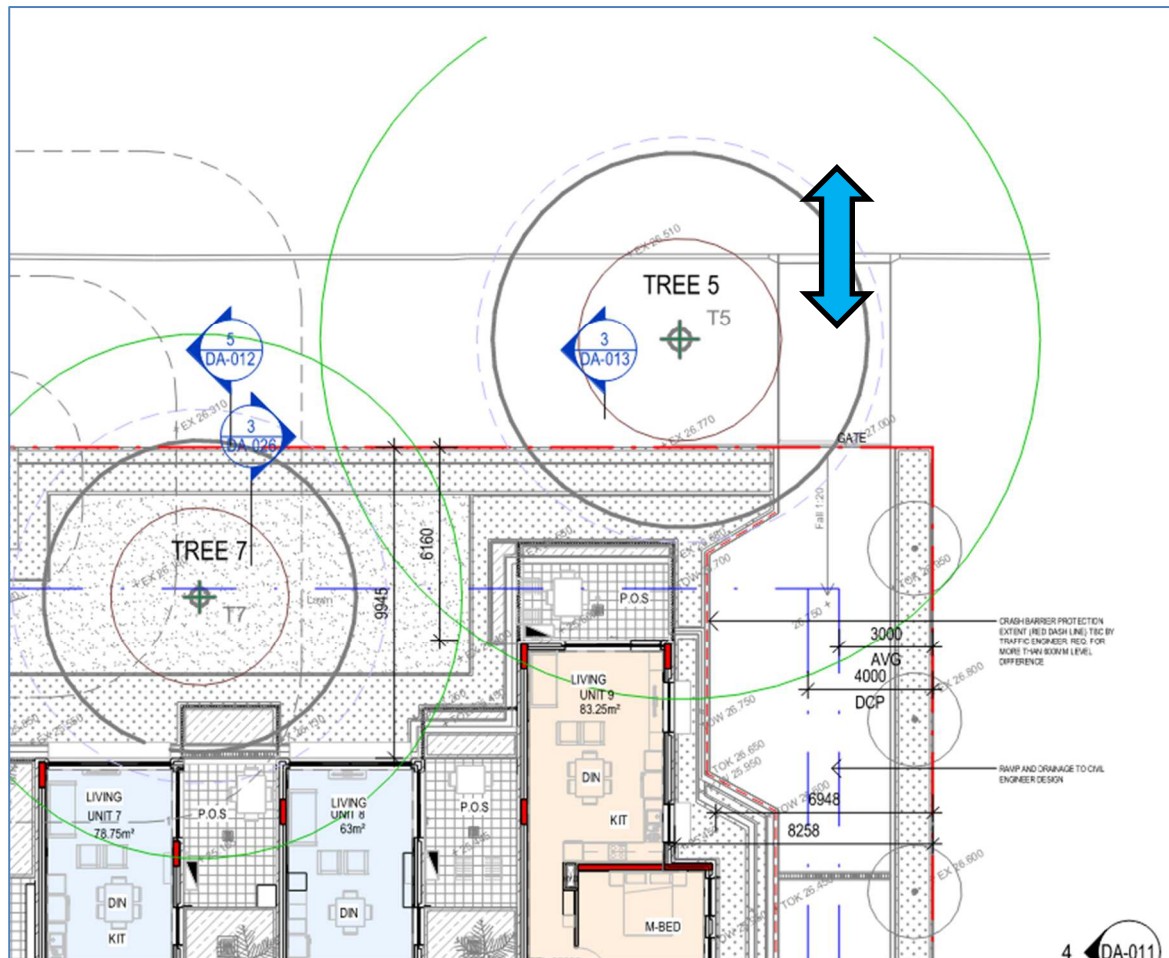


Figure 3-1 Proposed Entry / Exit Point

Swept Paths Analysis

We have undertaken swept-path analysis using Autotrack (refer attached turning plans), this analysis indicates that:

- A B85 vehicle can access and egress from all proposed car parking spaces in an adequate number of manoeuvres.
- A B99 & B85 can pass within the provided passing bay along the driveway.
- A B85 vehicle can use the turning bay to turn around and exit the carpark in the scenario where no spaces are available.

Garbage Collection

It is expected that the garbage will be conducted by Council kerbside waste collection service, as the surrounding dwellings.

3.4 PEDESTRIAN CONSIDERATIONS

There is no existing formal pedestrian footpath along the Hardwicke Street frontage.

3.5 DESIGN COMPLIANCE

The proposed car parking and vehicular access design has been assessed to achieve the relevant requirements of AS2890.1:2004, including:

- Adequate dimensions of car parking spaces of minimum 2.4m by 5.4m;
- Adequate circulation roadway widths;
- Vehicular access driveway of 3.6m width at the property boundary allow for access and egress for vehicles sized up to an Australian Standard B99 vehicle.
- Adequate clearance of at least 300mm to high objects from trafficable areas.
- Adequate passing bay dimensions for the passing of B85 & B99 vehicles.
- Provision of a turning bay at the end of the blind aisle.
- Adequate sight-lines at the access driveway exit for the purposes of pedestrian and vehicle egress safety

The locations of wheel stops, bollards, signage and other traffic furniture are to be confirmed during the Construction Documentation stage of the development and are to satisfy the relevant Australian Standard requirements.

With reference to AS2890.1:2004 – Clause 2.4.5 – Physical Controls, consideration to kerbs and wheel stops are to be made in and around parking areas where there are obstructions or noticeable drops (>150mm). Specifically, where the drop from the carpark deck to the adjacent landscape level exceeds 600mm, a crash barrier to AS2890.1:2004 Clause 2.4.5.3 should be provided. It is expected this may occur along the western edge of the access driveway adjacent to unit 9, however shall be confirmed, along with all other physical controls, prior to the issue of the Construction Documentation.

With respect to the sight lines of the access driveway exit, the requirements of AS2890.1:2004 Figures 3.2 & 3.3 have been achieved. Specifically:

- a) Entering sight distance (Figure 3.2) of 45m (minimum SSD), see Table 3.2 below.

Table 3.2 Entering Sight Distances

Hardwicke St speed-limit	Distance along Hardwicke St	
	Desirable 5s Gap	Min sight stopping distance
50 km/h	69 m	45 m

Please refer to the appendices for road entering sight distance sketch. It is noted that no permanent obstructions (excluding existing street trees and one power pole to the right of the proposed driveway) are within the exclusion zones. It is also noted that no obstructions are found within the exclusions zones when the desirable 5s gap method is applied.

b) Sight distance to pedestrians (Figure 3.3)

Figure 3.2 below demonstrates the required sight-lines for pedestrian safety along the road frontage. It is noted that no obstruction to pedestrians (i.e. >600 mm high) is proposed within the sight triangles, and the boundary fencing allows sight through to potential pedestrians. It is further noted that no formal footpath exists currently along the frontage, however the requirements have been met for future footpath provisions.

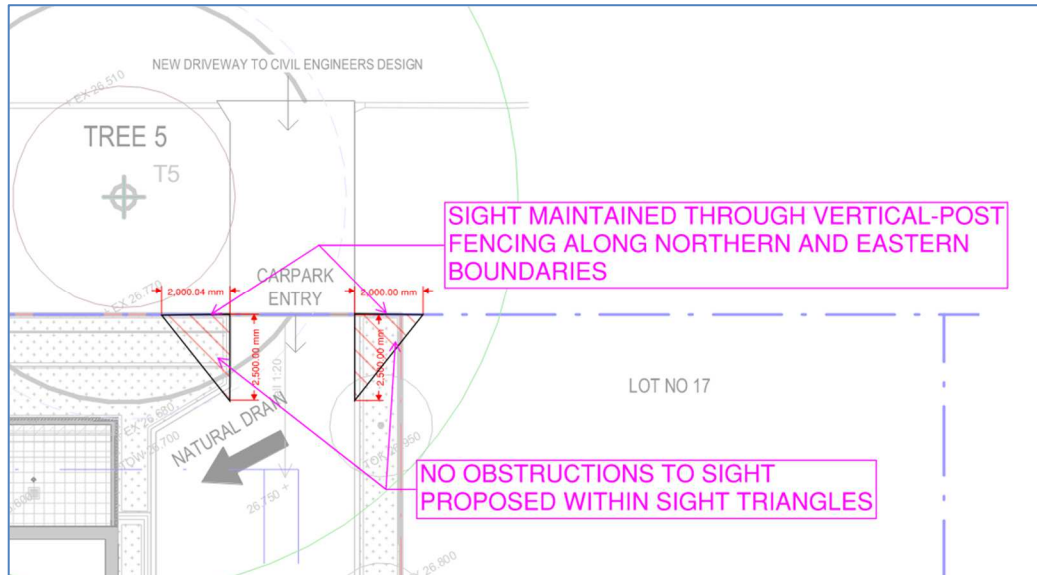


Figure 3-2 Pedestrian Sight Triangles

Further the above, the safety of the proposed development driveway access is ensured by the distance from the Belmore Rd intersection (approx. 290m), the sight distances down the road as identified above and the provision of a passing bay directly inside the boundary eliminating the need for vehicles to stop on Hardwicke St whilst manoeuvring into the driveway. It is noted that the number of driveways on Hardwicke St along the development frontage is being reduced from six **(6)** to one **(1)**.

4 TRAFFIC GENERATION

4.1 TRAFFIC GENERATION

The *TfNSW Guide to Transport Impact Assessment TS 00085 Version 1.1* provides estimated traffic generation rates for various development types, which have been applied accordingly to the proposal.

Table 5.16 Housing for seniors sample summary (weekday)

Site peak hour vehicle trips (Sydney) = 0.3 per dwelling

PM peak hour vehicle trips (Sydney) = 0.17 per dwelling

The expected traffic generation as a result of the scale of the proposed development is calculated in **Table 4.1**. Table 4.2 summarises the existing traffic conditions assessed under the guide, and Table 4.3 the net change (impact).

Table 4.1 Traffic Generated Under Proposed Conditions

Land Use	Scale	Peak Period	Rate	Trips	Split ⁽¹⁾
Housing for seniors	29 units	Site	0.30 per unit	9	2 in, 7 out
		PM	0.17 per unit	5	4 in, 1 out

Note (1) Assumes 20% inbound, 80% outbound in the site peak and 80% inbound, 20% outbound in the PM peak.

Table 4.2 Traffic Generated Under Existing Conditions

Land Use	Scale	Peak Period	Rate	Trips	Split ⁽²⁾
Low Density Residential	6 dwellings	AM	0.68 per unit	4	1 in, 3 out
		PM	0.77 per unit	5	4 in, 1 out

Note (2) Assumes 20% inbound, 80% outbound in the AM peak and 80% inbound, 20% outbound in the PM peak.

Table 4.32 Net Traffic Change Under Proposed Conditions

Peak Period	Existing Trips	Proposed Trips	Change	Split ⁽³⁾
AM	4	9	+5	+1 in, +4 out
PM	5	5	0	-

Note (3) Assumes 20% inbound, 80% outbound in the AM peak and 80% inbound, 20% outbound in the PM peak.

The proposed development is expected at a maximum to generate in the order of five (5) additional vehicle trips in the AM peak hour period (1 in, 4 out) over the existing conditions, and zero additional vehicle trips in the PM peak hour period. It is noted that the site peak period for seniors housing does not coincide with the network AM peak, however to be conservative it has been assumed that the two events occur simultaneously. This scale of traffic generation is minor and as such, no noticeable impacts to the surrounding traffic environment are expected as a result of the proposed.

5 CONCLUSIONS

We conclude that:

- We believe that the proposed development will not have a significant impact on the traffic in the local network.
- We believe the development will not have a significant impact on the locale in terms of the traffic efficiency, amenity, safety, and/or road pavement life.
- The car parking design achieves the relevant requirements of AS2890:2004
- The proposed development achieves the minimum required number of parking spaces as per the parking requirements outlined in **Table 3.1**.

Yours faithfully,
For & on behalf of Greenview,



Anthony Oste
Traffic Designer



Alistair McKerron B.E., M.I.E.(Aust), CP Eng,
NPER No. 2220277
Senior Project Engineer



APPENDICES
VEHICLE SIGHT DISTANCE SKETCH
SWEPT PATH ANALYSIS – GREENVIEW CONSULTING



USE

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only and are subject to

- Location of card only point is general only and will be confirmed and dimensioned at later stage.
- The size and position of privacy screens, louvres is indicative and shown in open and closed positions.
- Please refer to Landscape drawings for Landscape component (shown indicatively only in this set)
- Location & sizes of plant, equipment, service areas and service risers on drawings is general and indicative only, and does not include minor elements such as vent pipes, flues, grilles, etc.

2. GRAPHIC PRESENTATION
Colours presented on drawings are generic only and indicative of the architectural design intent.

3. EXISTING STRUCTURES AND SERVICES
Extent and location of existing and proposed neighbouring structures (excluding roads and power lines) according to the available survey will be verified on site at later stage.

THE DRAWING IS TO BE PRINTED IN COLOUR

Consultants

Client
HOMES NSW

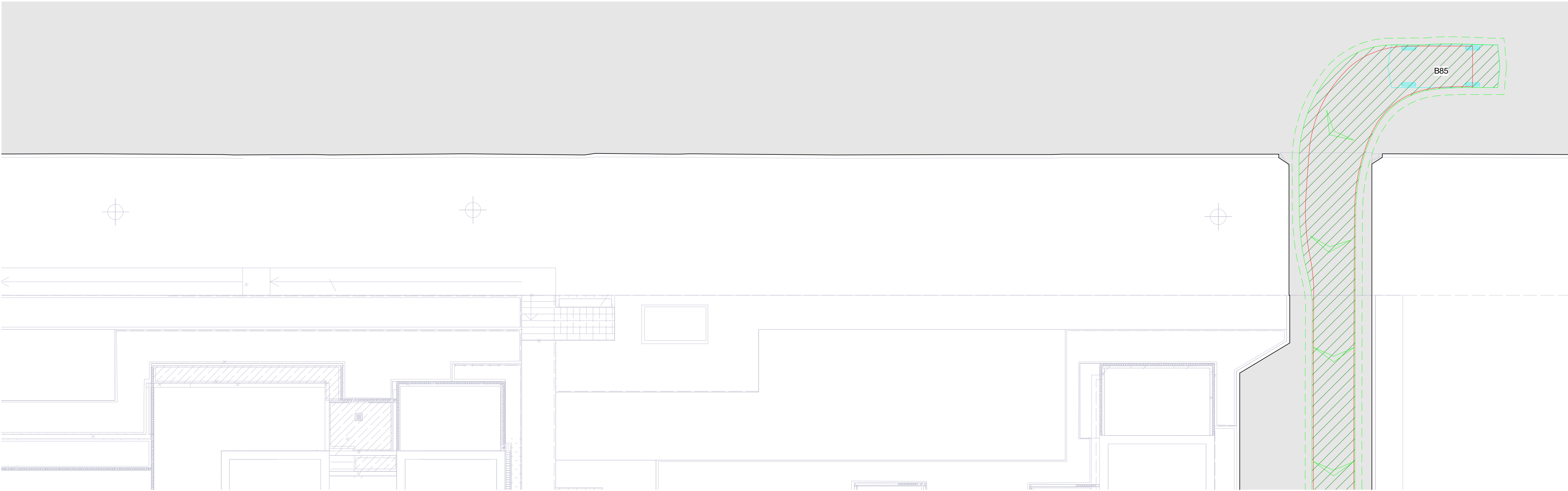


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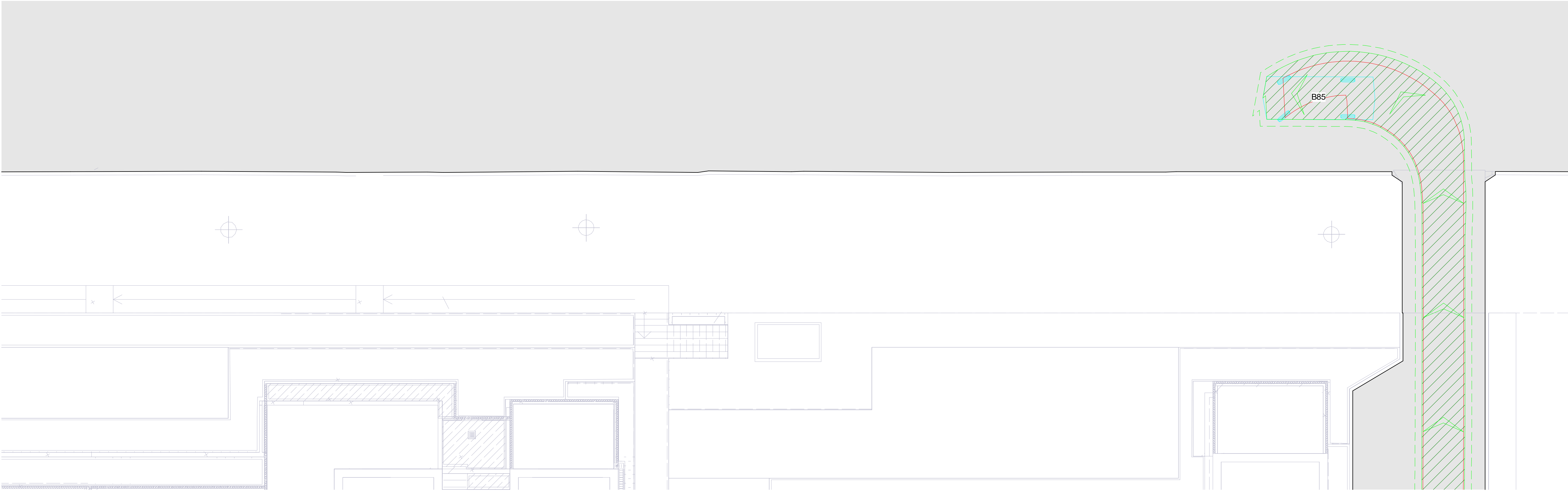
Project
HARDWICKE ST SENIOR HOUSING
17-27 HARDWICKE ST, RIVERWOOD



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SCALE: NTS	



GROUND FLOOR - SITE ENTRY
Scale: 1 : 100



GROUND FLOOR - SITE EXIT
Scale: 1 : 100

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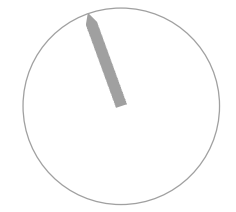
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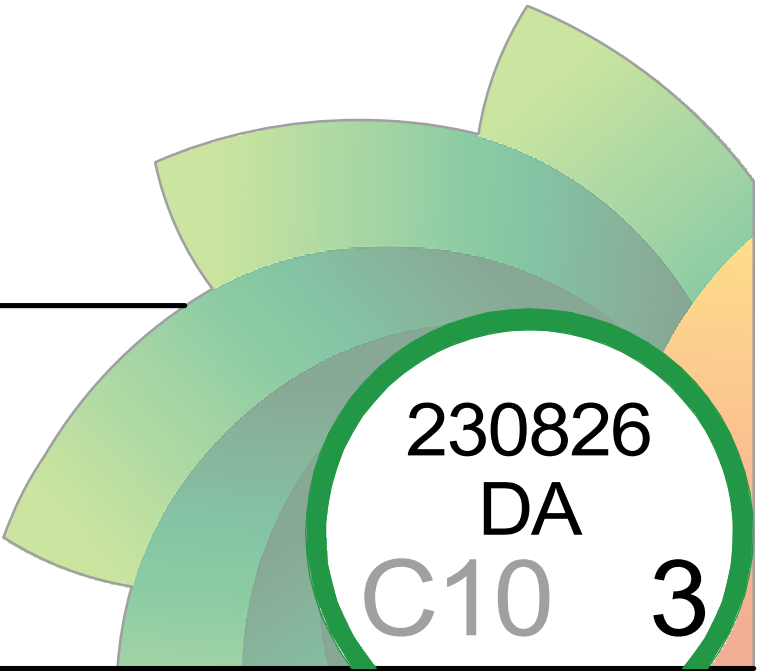
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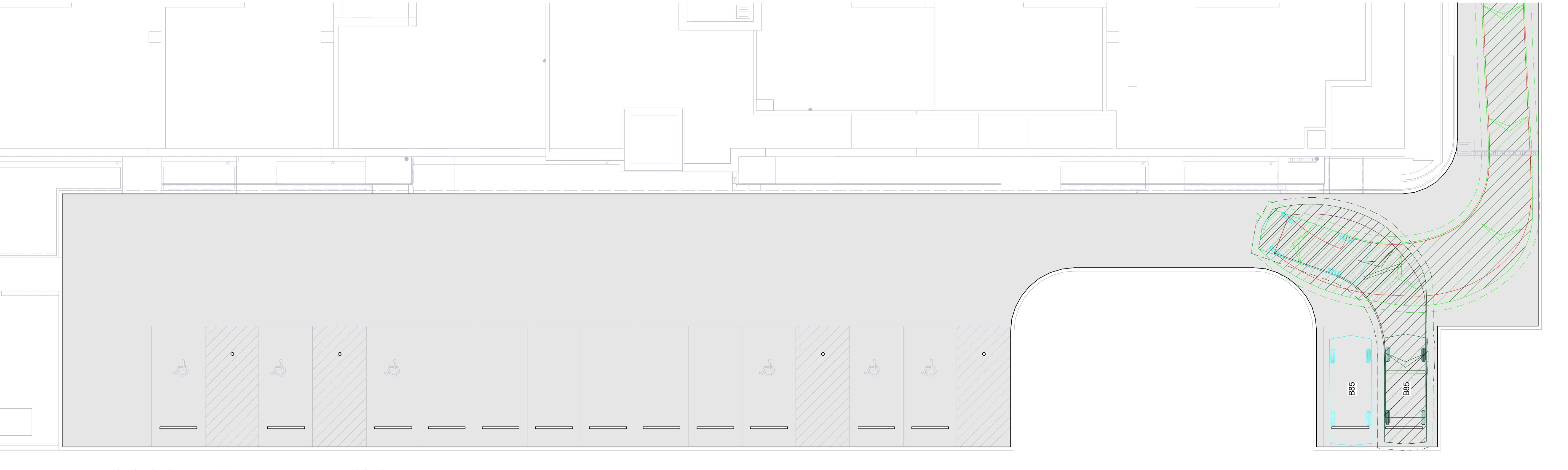
CIVIL DESIGN

GROUND FLOOR TURNING PATHS SHEET 1

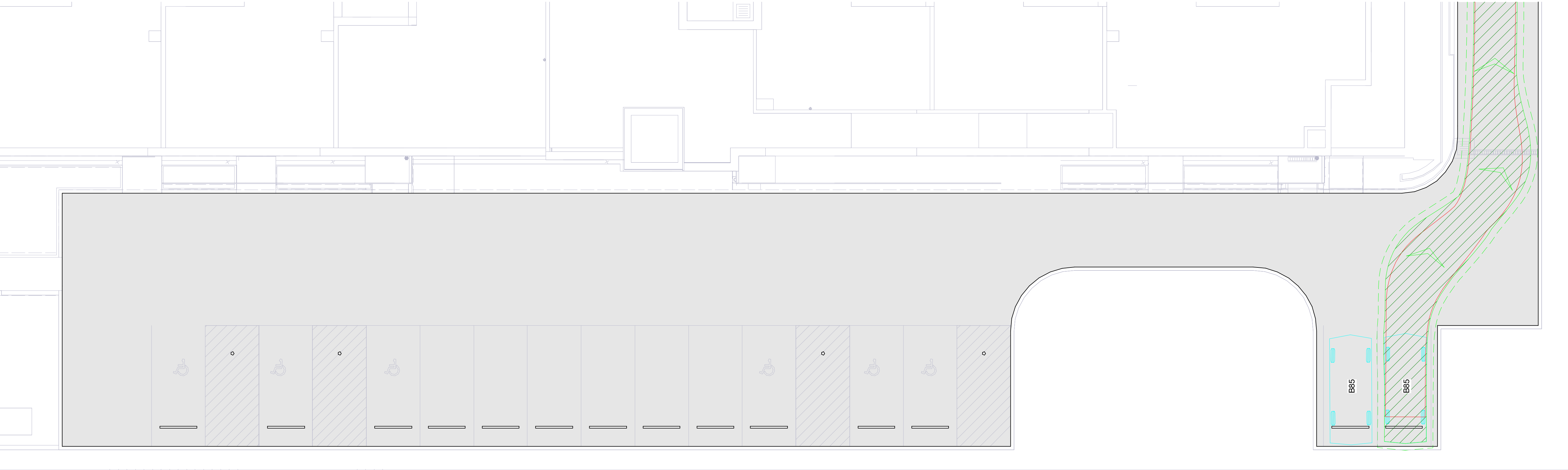


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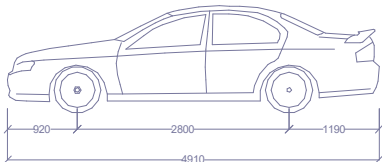


GROUND FLOOR - B85 ENTRY 1
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GROUND FLOOR - B85 EXIT 1
Scale: 1 : 100

- LEGEND
- PATH OF VEHICLE BODY FORWARDS
 - PATH OF VEHICLE BODY BACKWARDS
 - PATH OF VEHICLE WHEELS
 - BODY OF VEHICLE
 - CLEARANCE ENVELOPE



B85 VEHICLE

OVERALL LENGTH	4.910m
OVERALL WIDTH	1.870m
OVERALL BODY HEIGHT	1.260m
MIN BODY GROUND CLEARANCE	0.120m
TRACK WIDTH	1.770m
LOCK-TO-LOCK TIME	4.00s
KERB TO KERB TURNING RADIUS	5.750m

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PROPOSED DEVELOPMENT

17-27 Hardwicke Street, Riverwood

Custance



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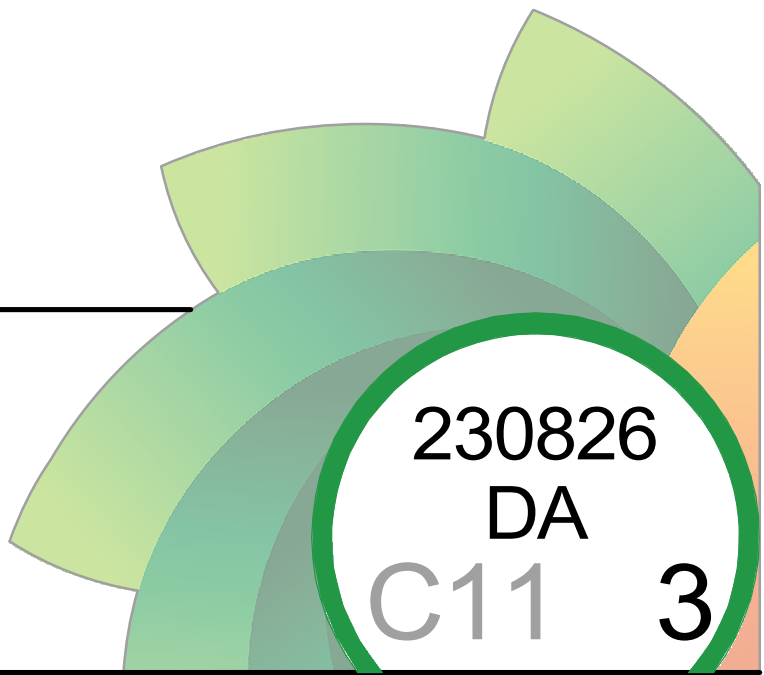
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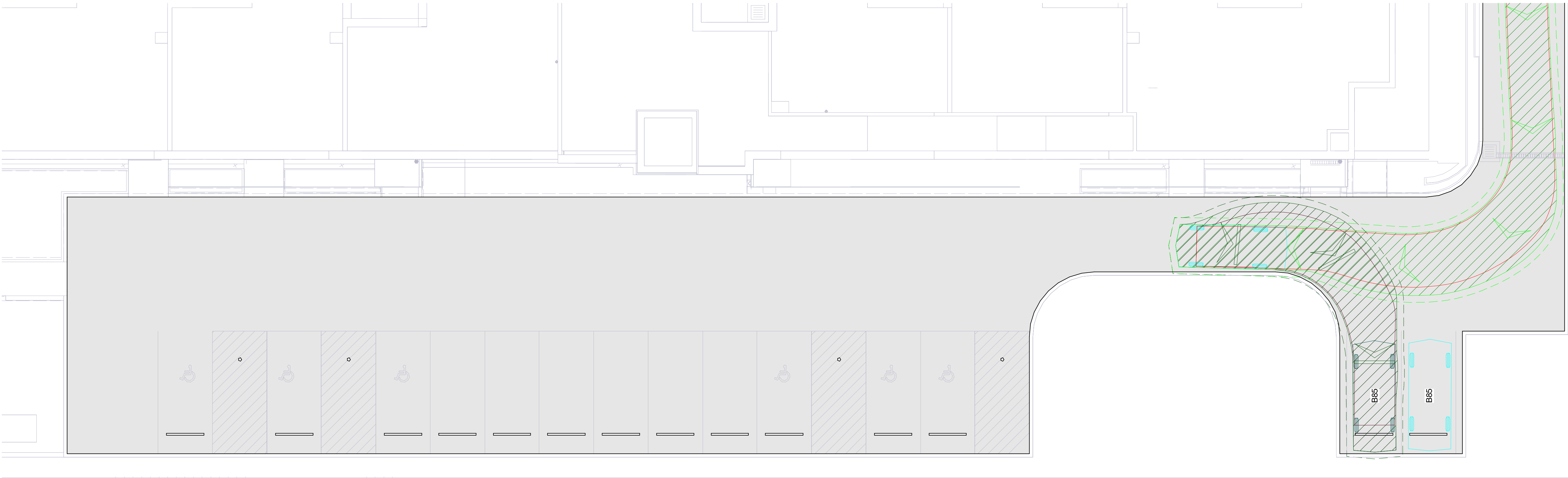
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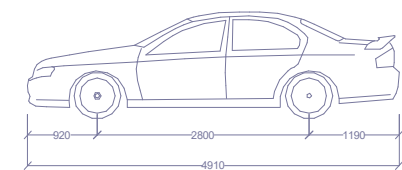
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GROUND FLOOR TURNING PATHS SHEET 2



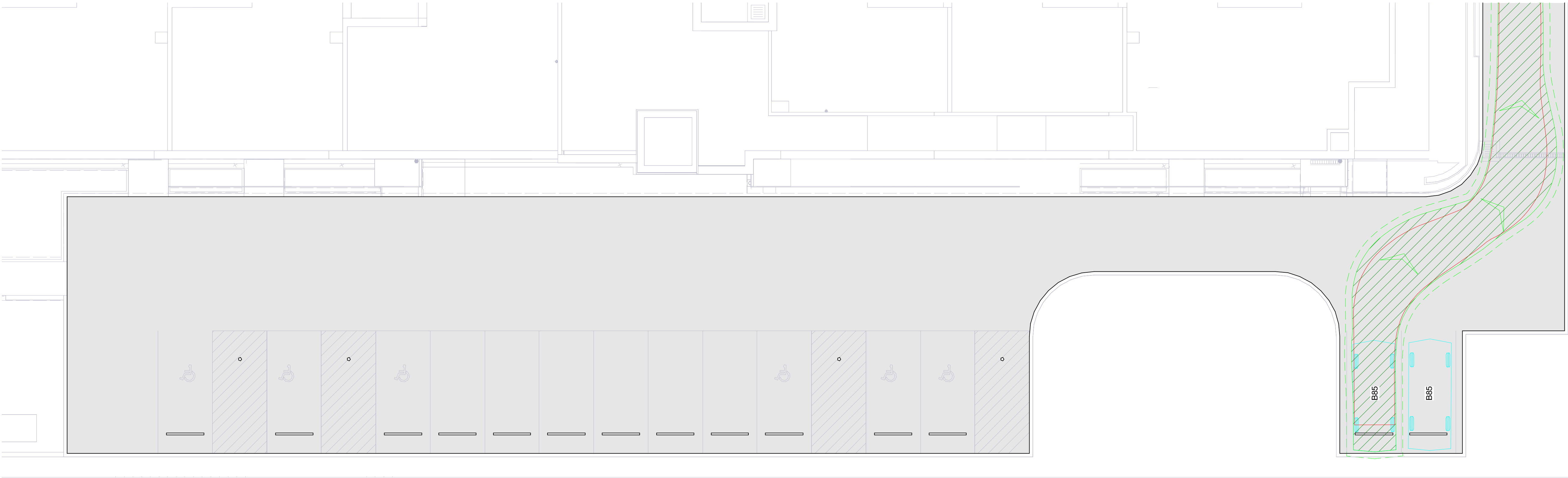


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GROUND FLOOR - B85 ENTRY 2
Scale: 1:100



GROUND FLOOR - B85 EXIT 2
Scale: 1:100

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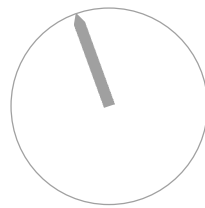
PROPOSED DEVELOPMENT

17-27 Hardwicke Street, Riverwood

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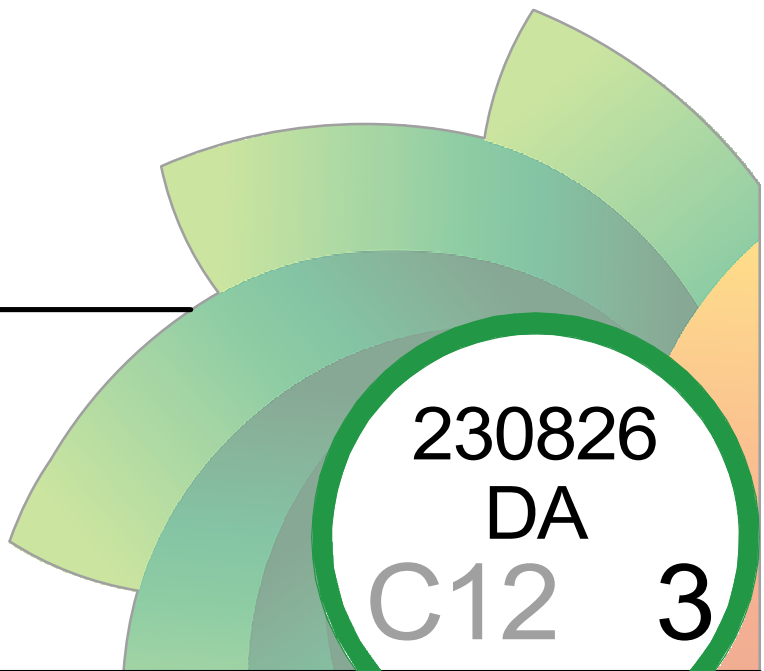
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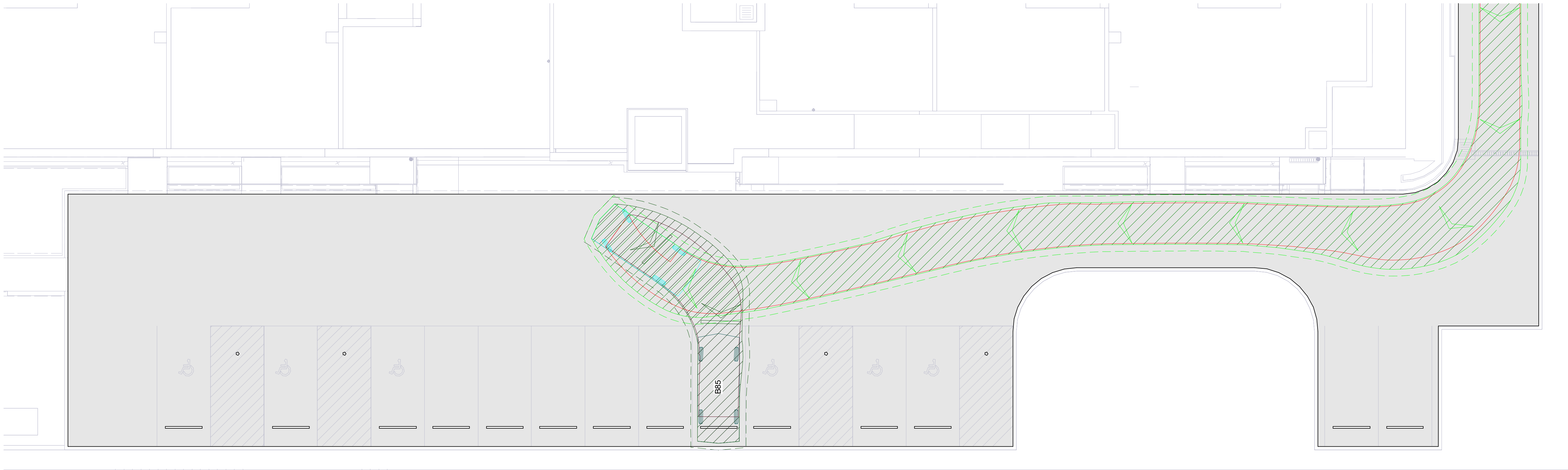
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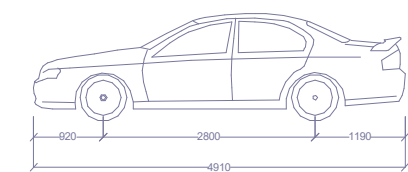
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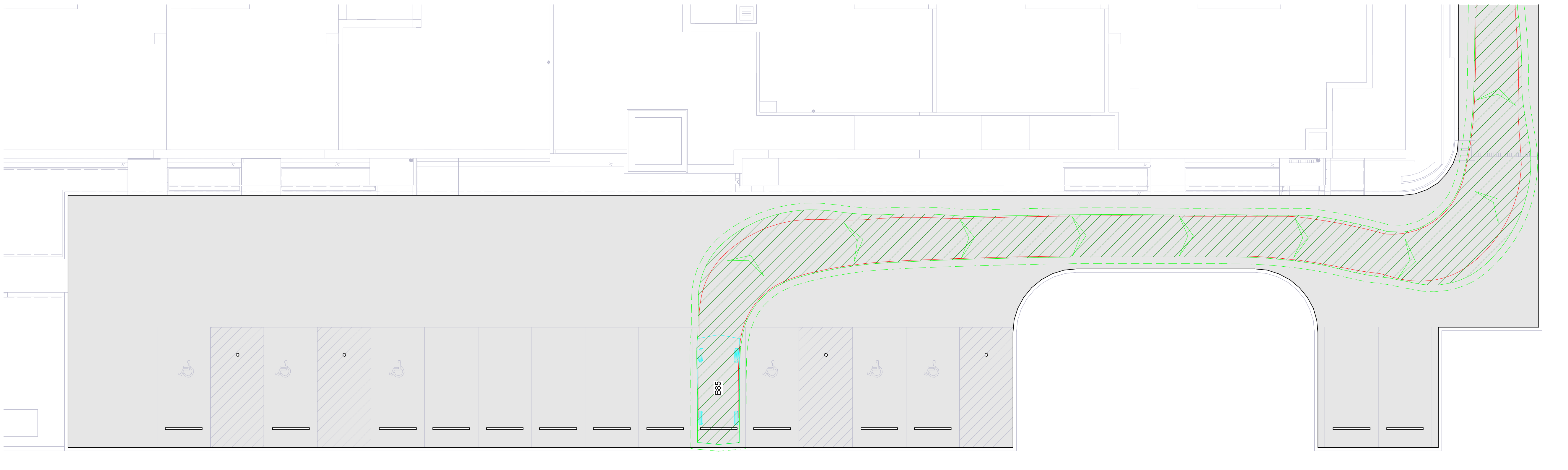


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GROUND FLOOR - B85 ENTRY 3
Scale: 1 : 100



GROUND FLOOR - B85 EXIT 3
Scale: 1 : 100

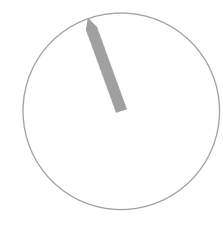
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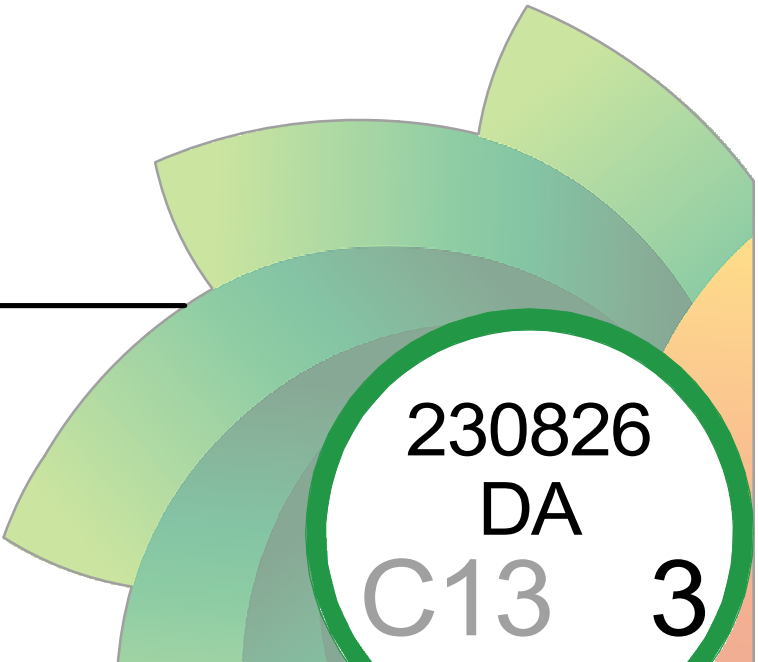
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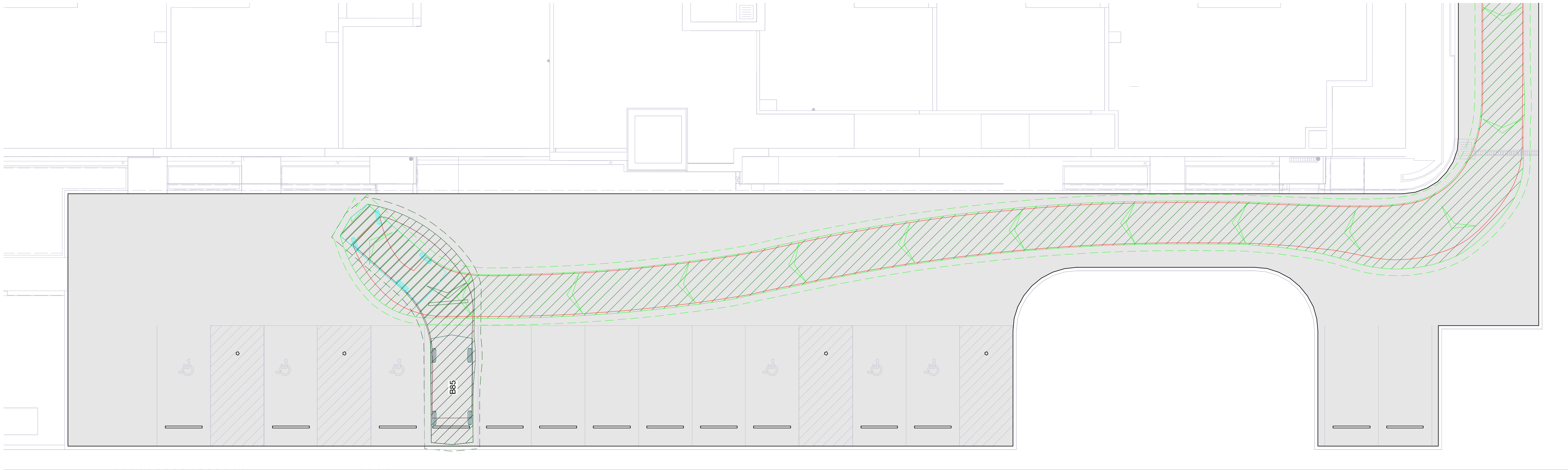


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CIVIL DESIGN
GROUND FLOOR TURNING PATHS SHEET 4



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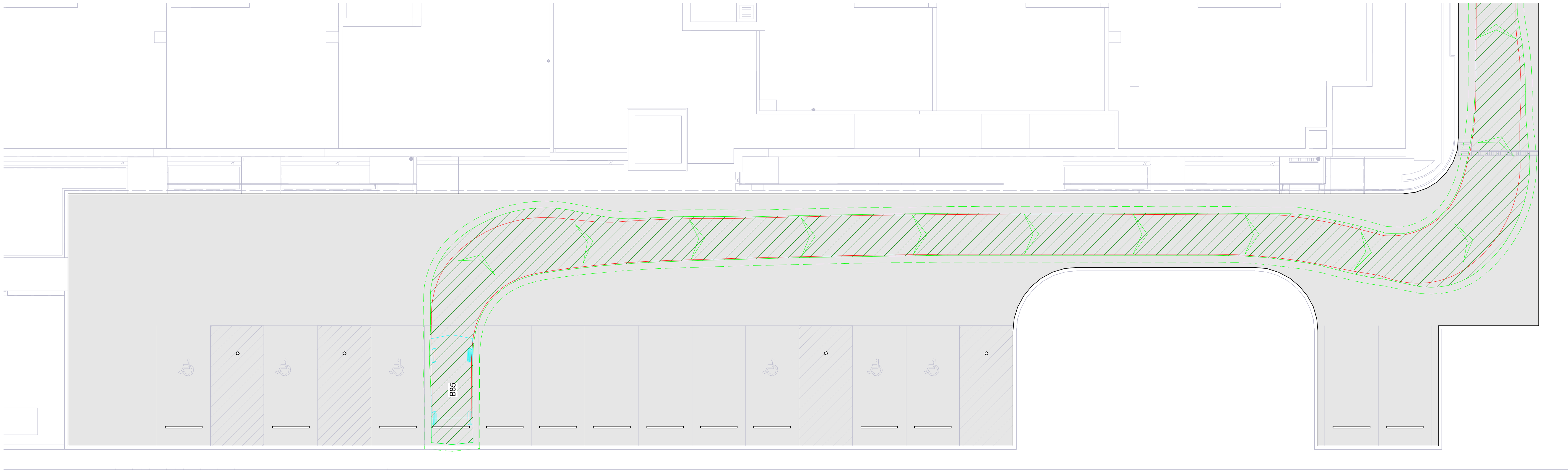
LEGEND

- PATH OF VEHICLE BODY FORWARDS
- PATH OF VEHICLE BODY BACKWARDS
- PATH OF VEHICLE WHEELS
- BODY OF VEHICLE
- CLEARANCE ENVELOPE

B85 VEHICLE

OVERALL LENGTH	4.910m
OVERALL WIDTH	1.870m
OVERALL BODY HEIGHT	1.260m
MIN BODY GROUND CLEARANCE	0.120m
TRACK WIDTH	1.770m
LOCK-TO-LOCK TIME	4.00s
KERB TO KERB TURNING RADIUS	5.750m

GROUND FLOOR - B85 ENTRY 4
Scale: 1 : 100



GROUND FLOOR - B85 EXIT 4
Scale: 1 : 100

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	1	27.02.2024	JC	FOR APPROVAL					
REV.	DATE	BY		DESCRIPTION					

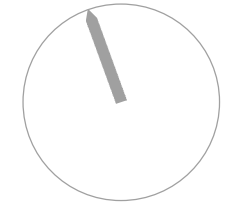
PROPOSED DEVELOPMENT

17-27 Hardwicke Street, Riverwood

Custance



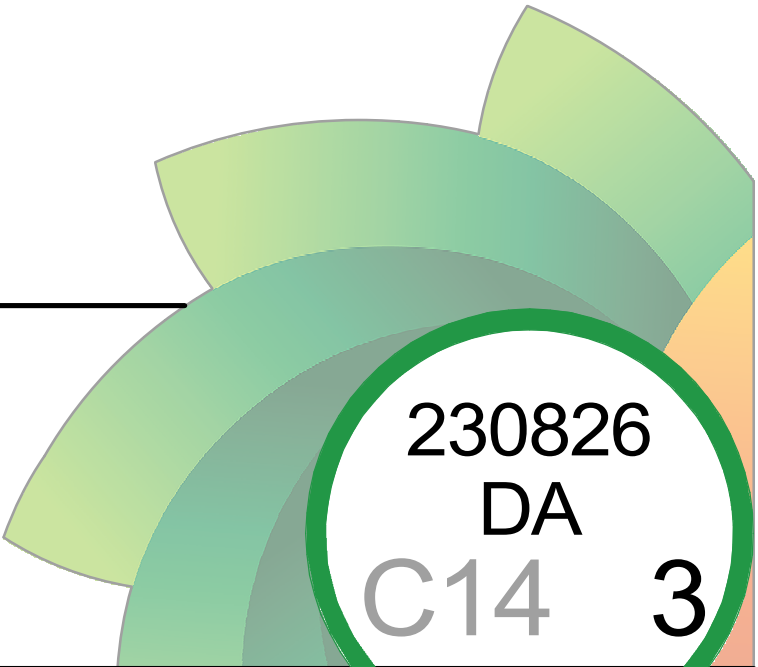
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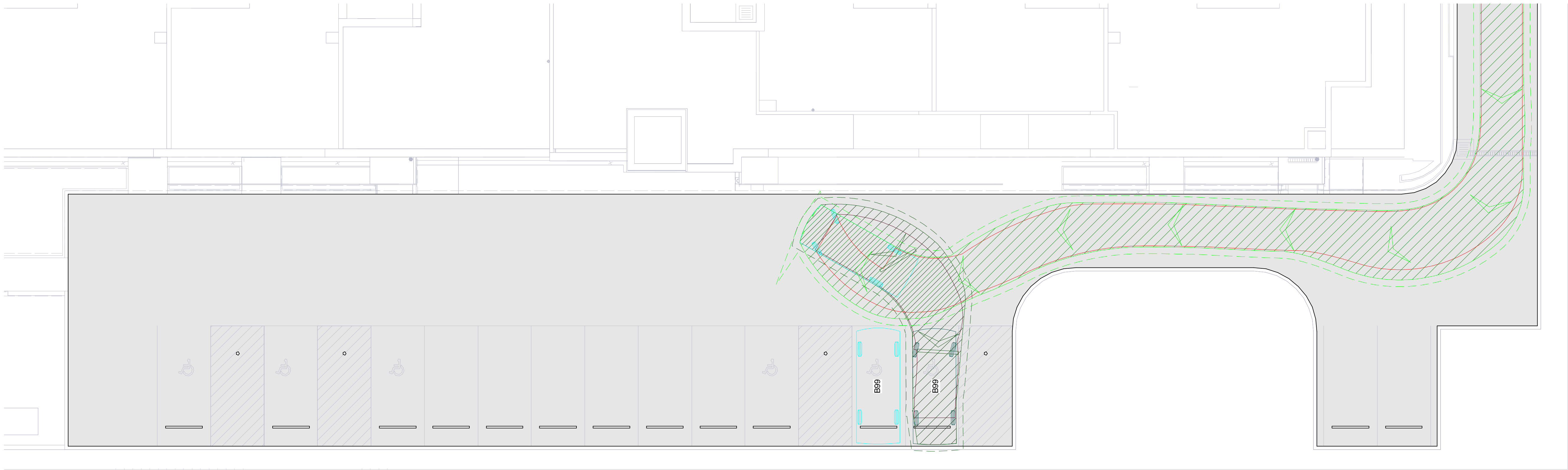
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CIVIL DESIGN

GROUND FLOOR TURNING PATHS SHEET 5



230826
DA
C14 3

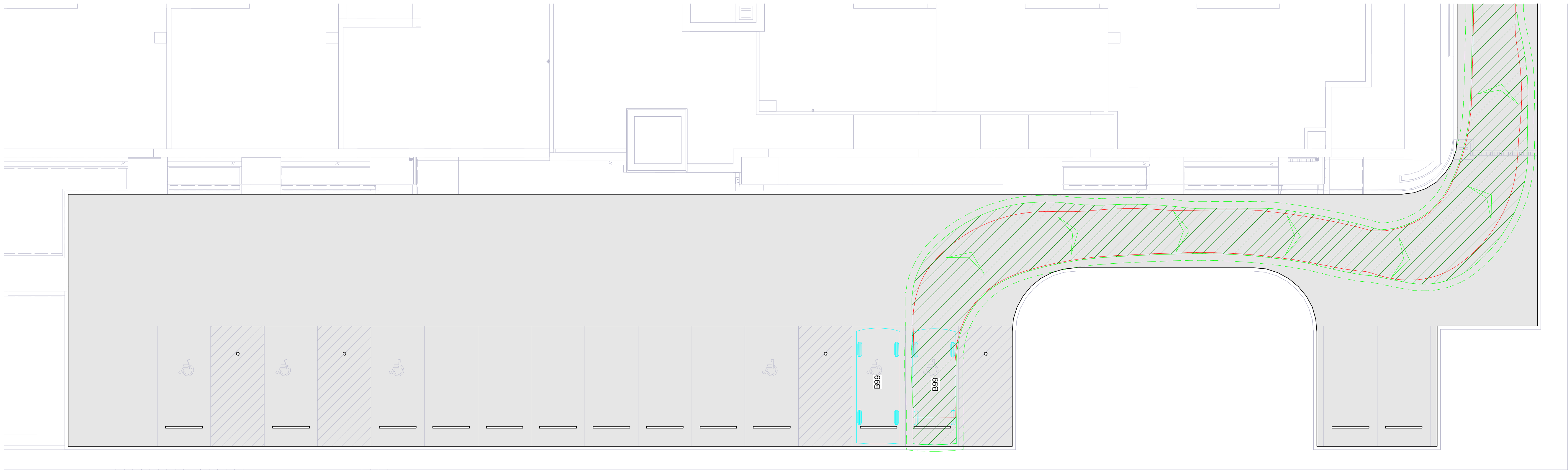


LEGEND

- PATH OF VEHICLE BODY FORWARDS
- PATH OF VEHICLE BODY BACKWARDS
- PATH OF VEHICLE WHEELS
- BODY OF VEHICLE
- CLEARANCE ENVELOPE

B85 VEHICLE
OVERALL LENGTH 4.910m
OVERALL WIDTH 1.670m
OVERALL BODY HEIGHT 1.260m
MIN BODY GROUND CLEARANCE 0.120m
TRACK WIDTH 1.770m
LOCK-TO-LOCK TIME 4.00s
KERB TO KERB TURNING RADIUS 5.750m

GROUND FLOOR - B99 ENTRY 1
Scale: 1 : 100



GROUND FLOOR - B99 EXIT 1
Scale: 1 : 100

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PROPOSED DEVELOPMENT

17-27 Hardwicke Street, Riverwood

Custance

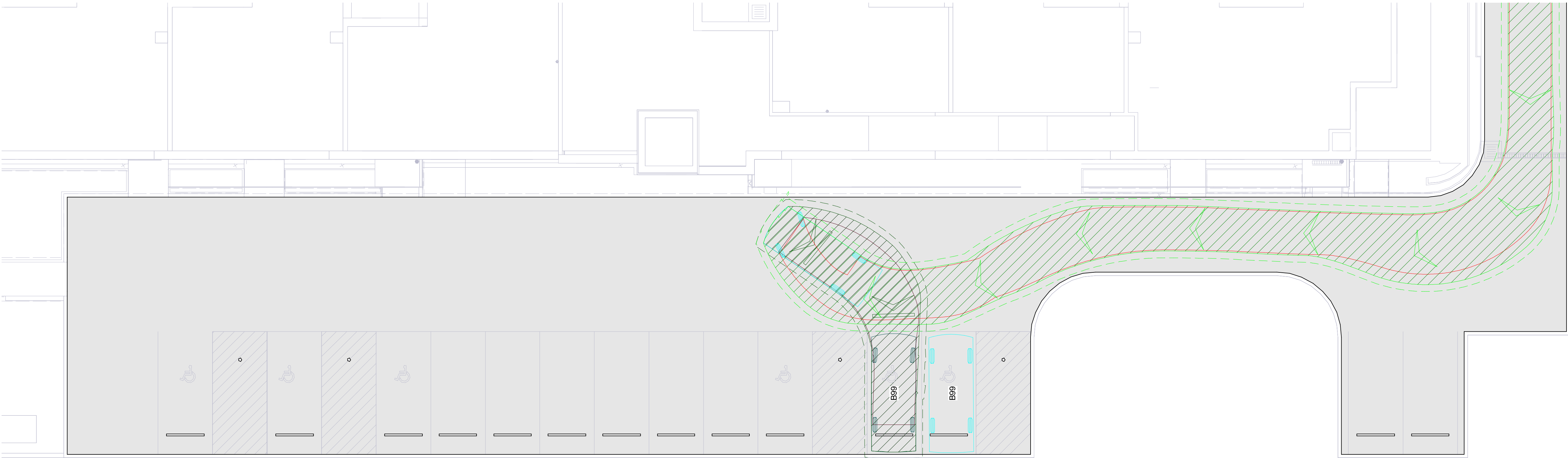
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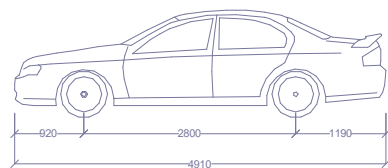
CIVIL DESIGN

GROUND FLOOR TURNING PATHS SHEET 6

230826
DA
C15 3

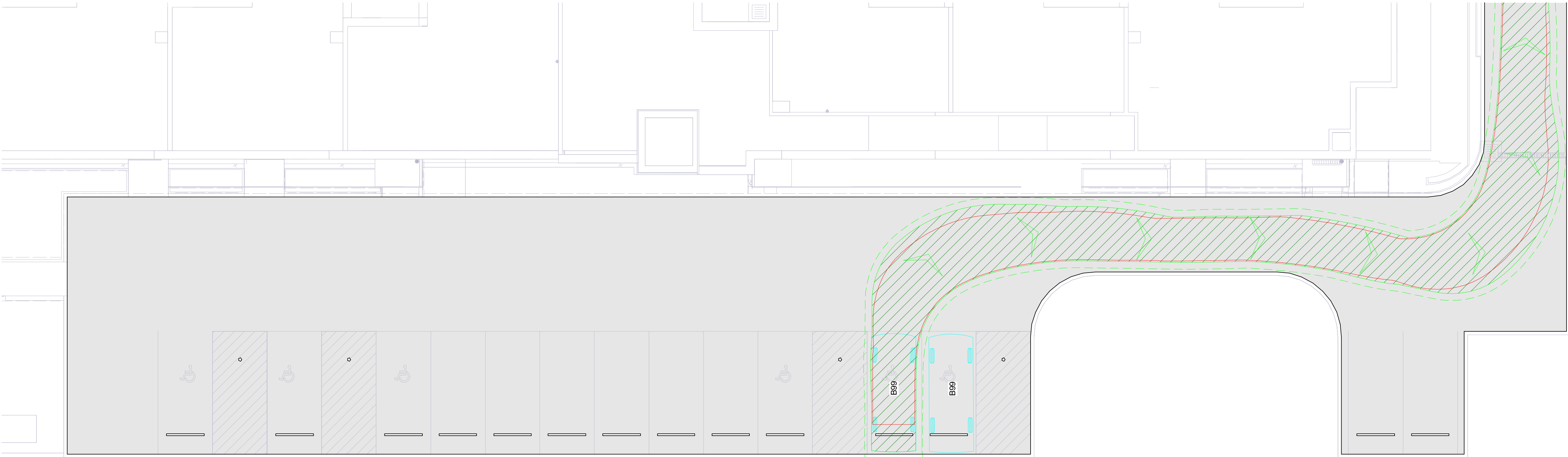


- LEGEND**
- PATH OF VEHICLE BODY FORWARDS
 - PATH OF VEHICLE BODY BACKWARDS
 - PATH OF VEHICLE WHEELS
 - BODY OF VEHICLE
 - CLEARANCE ENVELOPE



B85 VEHICLE	
OVERALL LENGTH	4.910m
OVERALL WIDTH	1.870m
OVERALL BODY HEIGHT	1.200m
MIN BODY GROUND CLEARANCE	0.120m
TRACK WIDTH	1.770m
LOCK-TO-LOCK TIME	4.00s
KERB TO KERB TURNING RADIUS	5.750m

GROUND FLOOR - B99 ENTRY 2
Scale: 1 : 100



GROUND FLOOR - B99 EXIT 2
Scale: 1 : 100

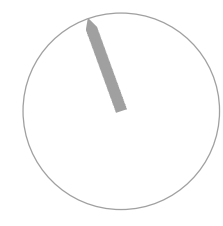
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1	27.02.2024	JC	FOR APPROVAL	
REV.	DATE	BY	DESCRIPTION	

PROPOSED DEVELOPMENT
17-27 Hardwicke Street, Riverwood
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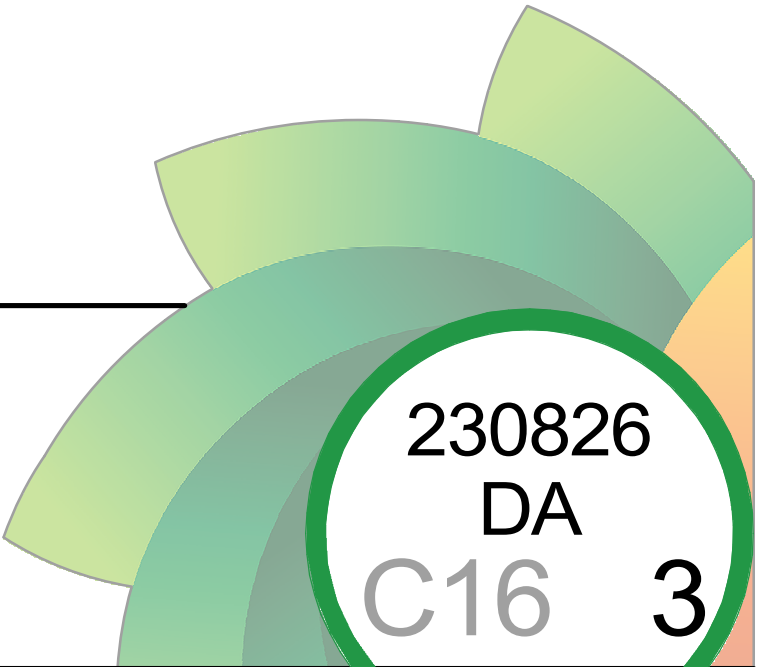
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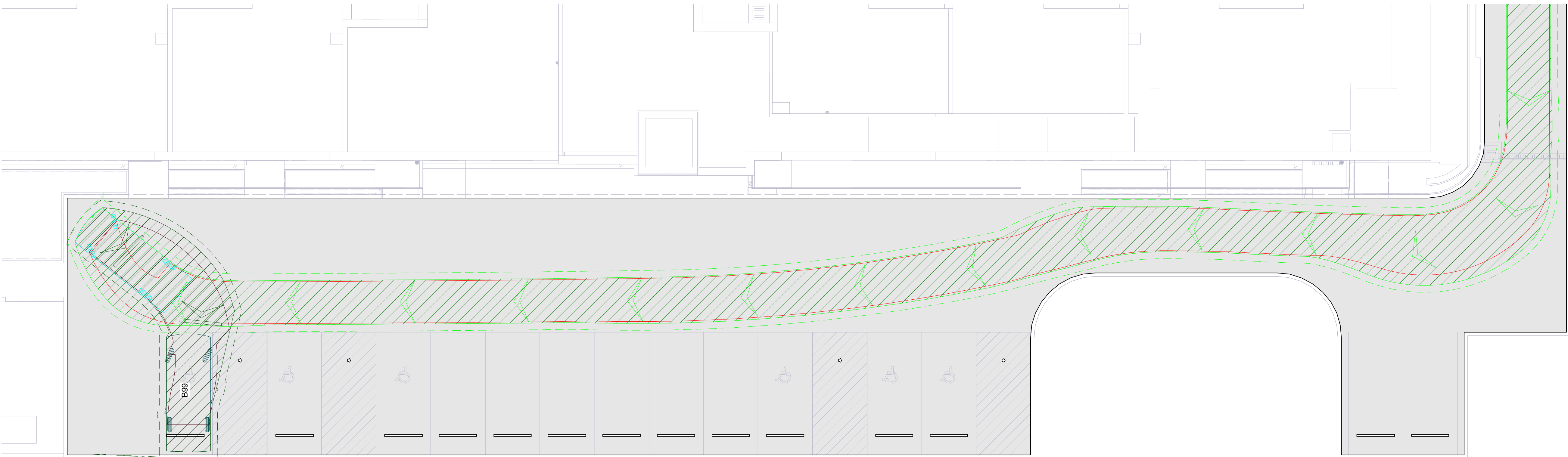


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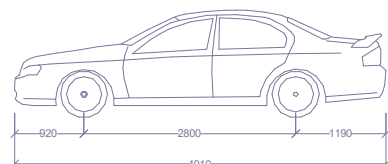
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GROUND FLOOR TURNING PATHS SHEET 7



230826
DA
C16 **3**

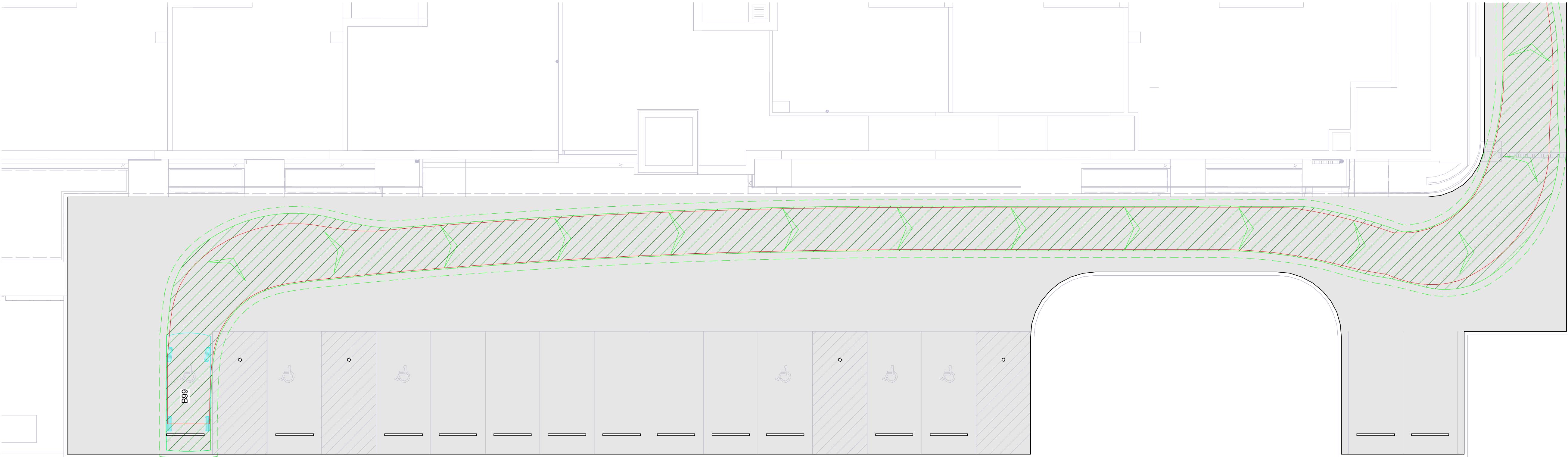


- LEGEND
- PATH OF VEHICLE BODY FORWARDS
 - PATH OF VEHICLE BODY BACKWARDS
 - PATH OF VEHICLE WHEELS
 - BODY OF VEHICLE
 - CLEARANCE ENVELOPE



B85 VEHICLE	
OVERALL LENGTH	4.910m
OVERALL WIDTH	1.870m
OVERALL BODY HEIGHT	1.200m
MIN BODY GROUND CLEARANCE	0.120m
TRACK WIDTH	1.770m
LOCK-TO-LOCK TIME	4.00s
KERB TO KERB TURNING RADIUS	5.750m

GROUND FLOOR - B99 ENTRY 3
Scale: 1 : 100



GROUND FLOOR - B99 EXIT 3
Scale: 1 : 100

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PROPOSED DEVELOPMENT

17-27 Hardwicke Street, Riverwood

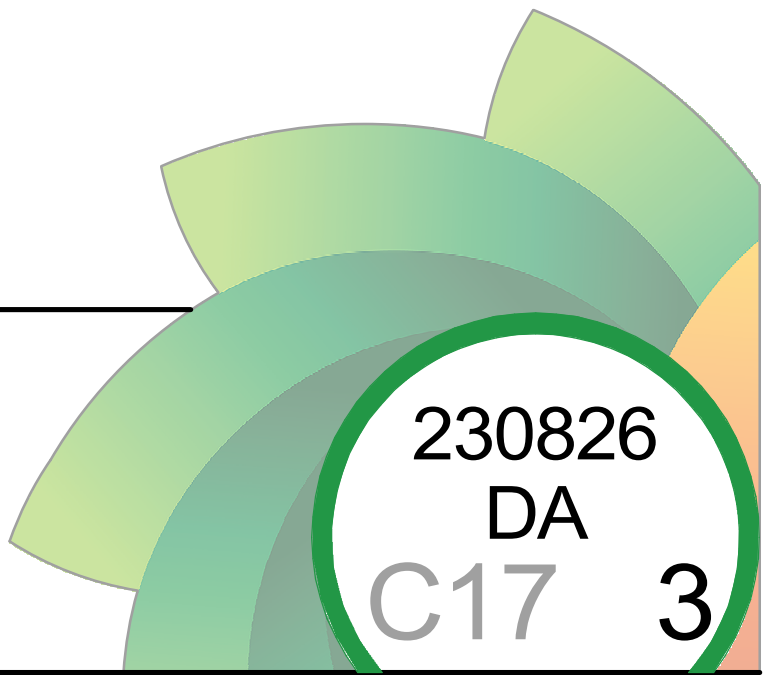
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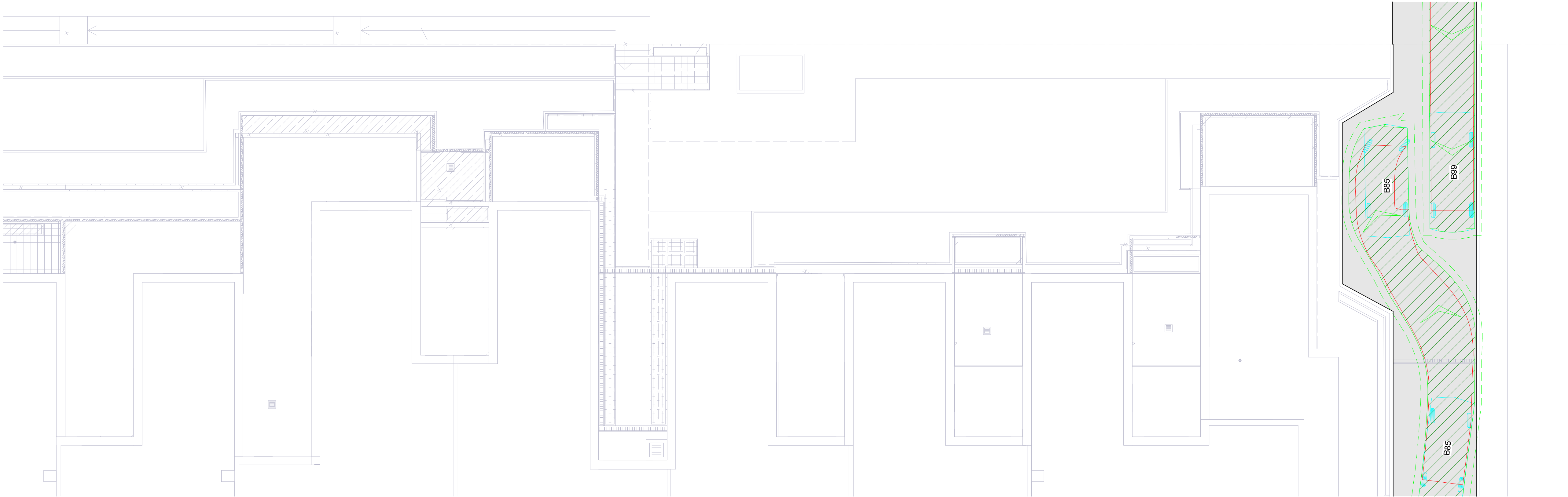


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CIVIL DESIGN

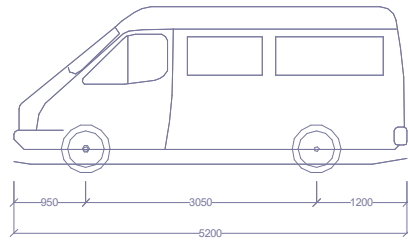
GROUND FLOOR TURNING PATHS SHEET 8





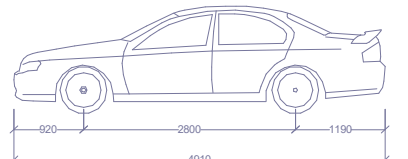
GROUND FLOOR - PASSING TURN 1
Scale: 1 : 100

- LEGEND
- PATH OF VEHICLE BODY FORWARDS
 - PATH OF VEHICLE BODY BACKWARDS
 - PATH OF VEHICLE WHEELS
 - BODY OF VEHICLE



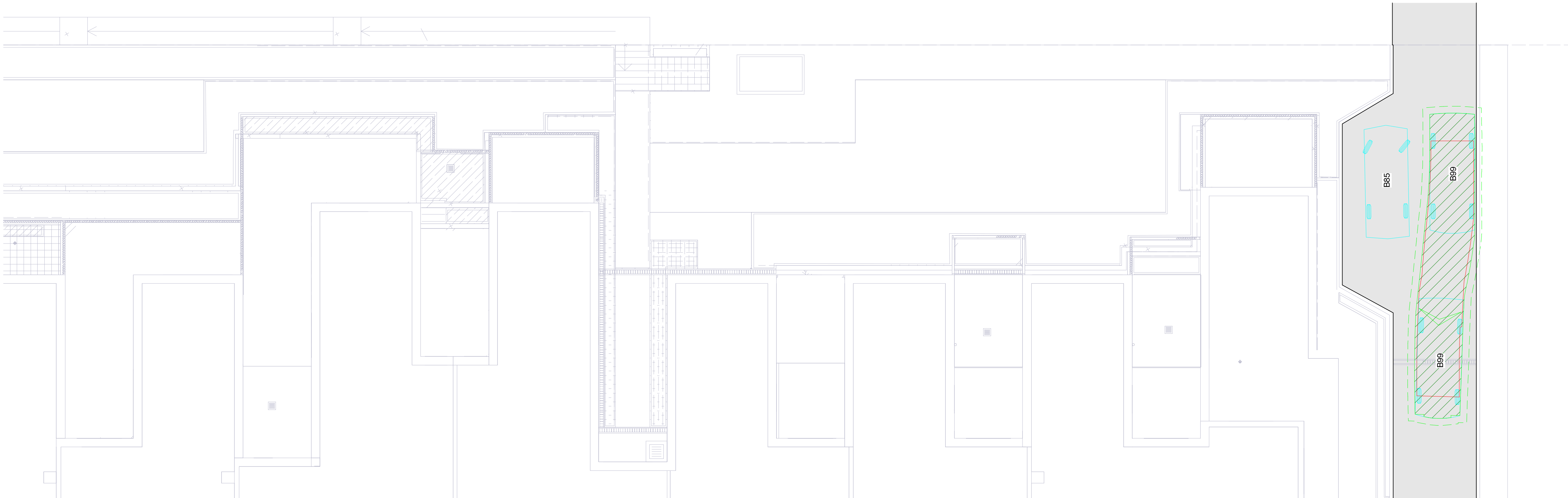
B99 VEHICLE

OVERALL LENGTH	5.200m
OVERALL WIDTH	1.940m
OVERALL BODY HEIGHT	1.606m
MIN BODY GROUND CLEARANCE	0.120m
TRACK WIDTH	1.840m
LOOK-TO-LOCK TIME	4.00s
KERB TO KERB TURNING RADIUS	8.000m



B85 VEHICLE

OVERALL LENGTH	4.910m
OVERALL WIDTH	1.870m
OVERALL BODY HEIGHT	1.260m
MIN BODY GROUND CLEARANCE	0.120m
TRACK WIDTH	1.770m
LOOK-TO-LOCK TIME	4.00s
KERB TO KERB TURNING RADIUS	5.750m



GROUND FLOOR - PASSING TURN 2
Scale: 1 : 100

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REV.	DATE	BY	DESCRIPTION

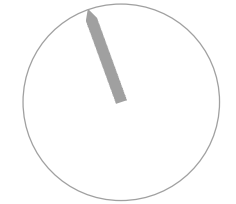
PROPOSED DEVELOPMENT

17-27 Hardwicke Street, Riverwood

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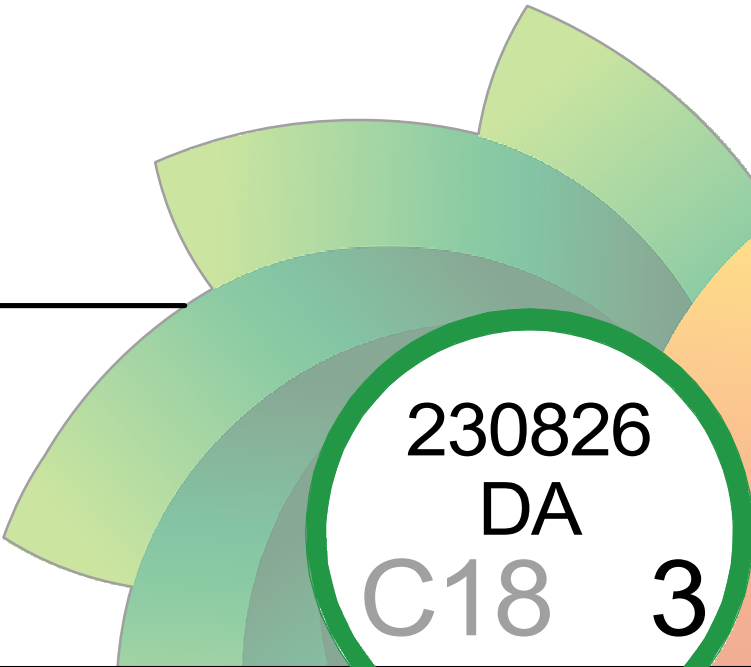
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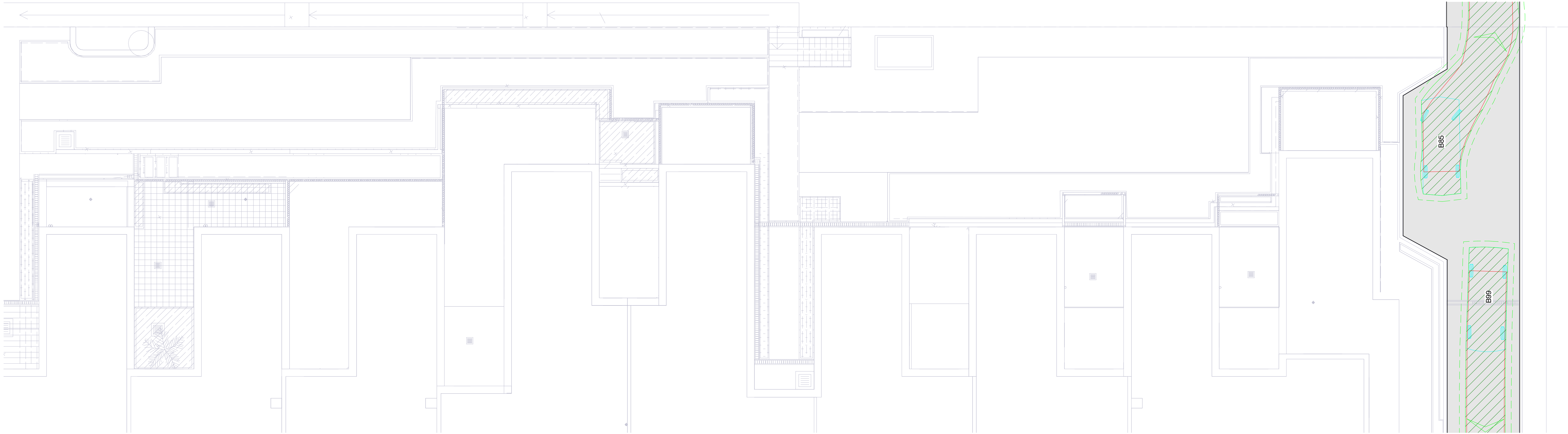
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CIVIL DESIGN

GROUND FLOOR PASSING TURN SHEET 1



230826
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GROUND FLOOR - PASSING TURN 3
Scale: 1 : 100

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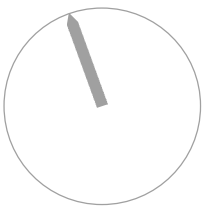
PROPOSED DEVELOPMENT

17-27 Hardwicke Street, Riverwood

Custance

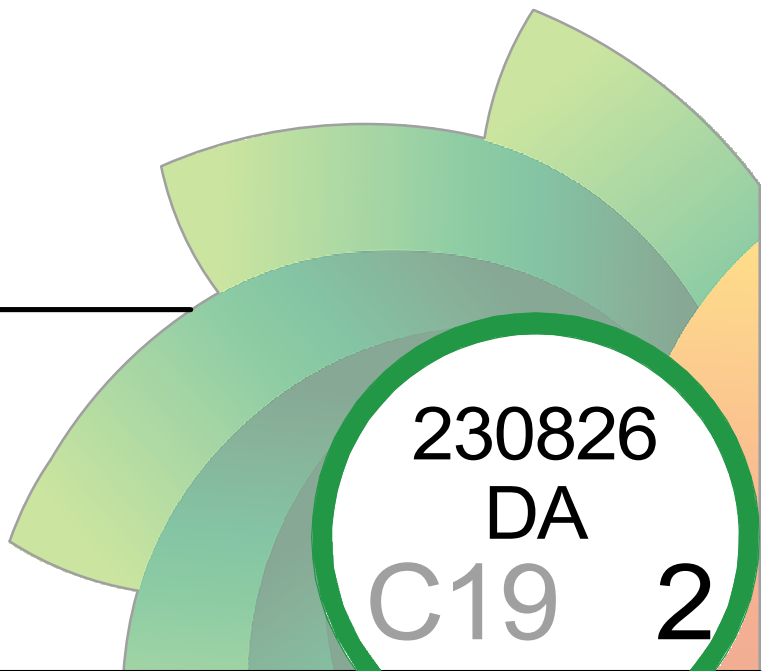


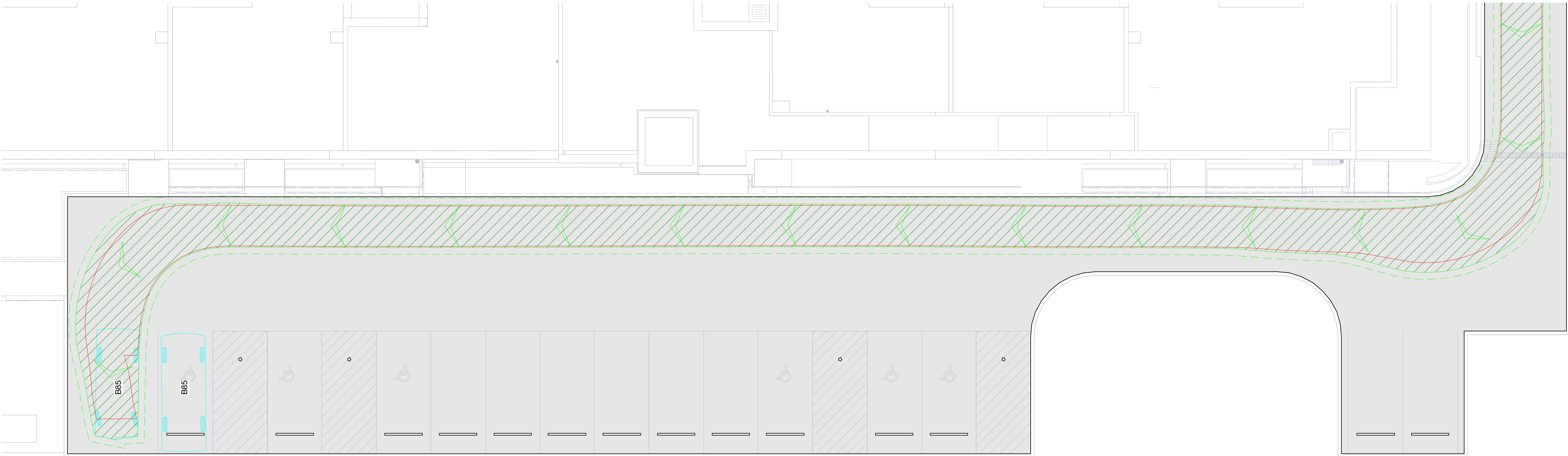
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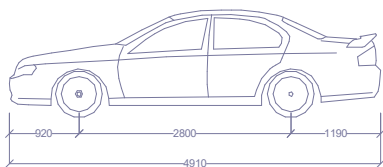
CIVIL DESIGN

GROUND FLOOR PASSING TURN SHEET 2



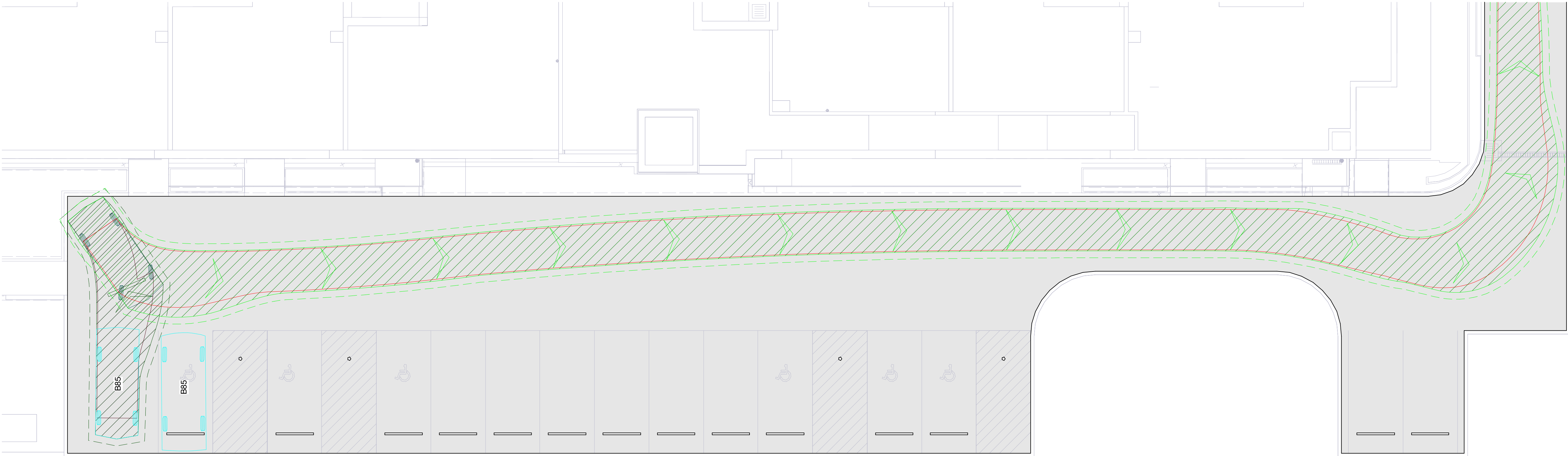


- LEGEND
- PATH OF VEHICLE BODY FORWARDS
 - PATH OF VEHICLE BODY BACKWARDS
 - PATH OF VEHICLE WHEELS
 - BODY OF VEHICLE



B85 VEHICLE	
OVERALL LENGTH	4.910m
OVERALL WIDTH	1.870m
OVERALL BODY HEIGHT	1.260m
MIN BODY GROUND CLEARANCE	0.120m
TRACK WIDTH	1.770m
LOCK-TO-LOCK TIME	4.00s
KERB TO KERB TURNING RADIUS	5.750m

CIRCULATION TURN ENTRY
Scale: 1 : 100



CIRCULATION TURN EXIT
Scale: 1 : 100

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1	27.02.2024	JC	FOR APPROVAL	

PROPOSED DEVELOPMENT

17-27 Hardwicke Street, Riverwood

Custance



DESIGN: JC

DRAWN: JC

CHECKED: AMcK

SIZE: A1

SCALE: 1 : 100

CIVIL DESIGN

GROUND FLOOR CIRCULATION TURN

