Client	Date
Best Hooper Lawyers on behalf of Balmoral Quay Pty Ltd	7 February 2024

Transport Engineering Expert Witness

Amendment C436ggee & Planning Permit Application PP-573-2021

Balmoral Quay – Stage 5

1 Harbourside Drive, Rippleside

Report Prepared by: Hilary Marshall

ratio:

Project
Balmoral Quay Stage 5, Amendment C436ggee and Planning Application PP-573-2021

Prepared for
Best Hooper Lawyers on behalf of Balmoral Quay Pty Ltd

Our reference
20956T

Directory path	Y:\20501-21000\20956T - Balmoral Quay Hearing\Work\Reports\20956T PANEL01 F01.docx-

Acknowledgement of Country

We acknowledge the Traditional Owners of the land we work, live and travel on, and appreciate the rich cultures of the Aboriginal and Torres Strait Islander Peoples and their enduring connection to country.

Table of Contents

Appendices

Table of Figures

Table of Tables

1. Statement of Evidence:

Reference

Amendment C436ggee to the Greater Geelong Planning Scheme and Planning Permit Application PP-573-2021

Subject Land: 1 Harbourside Drive, Rippleside

Name and Address

Hilary Anne Marshall

Director

Ratio Consultants Pty Ltd

8 Gwynne Street, Cremorne, VIC 3121

Professional Qualifications

Bachelor of Engineering (Civil) Hons, 1998, RMIT University

Bachelor of Business Administration (Management), 1998, RMIT University

I am also a Registered Professional Engineering in Victoria (RPEnd Civil)

Professional Experience

Director – Ratio Consultants	Jan 2018 - present
Senior Associate – Ratio Consultants Jan	2016 – Dec 2017
Associate – Cardno	Nov 2015 – Jan 2016
Senior Engineer – Cardno	Feb 2011 – Oct 2015
Associate – Urban Crossroads, Irvine, California USA	2004-2006
Senior Engineer – Grogan Richards	2002-2004
Engineer – Grogan Richards	1999 - 2001

Professional Expertise

1. I have worked in the area of Traffic and Transportation Engineering throughout my career.
2. My area of expertise includes traffic advice and assessment of a wide range of land use and development proposals for planning authorities, government agencies, corporations, and developers. My CV is attached as Appendix A.
3. My training, qualifications and experience including involvement with a wide variety of developments over a number of years, qualifies me to comment on the traffic and parking implications of this proposal.

Instructions which define the scope of this report

4. I have been instructed by Best Hooper Lawyers to undertake a review of the traffic and parking implications of the proposed Amendment C436ggee to the Greater Geelong Planning Scheme and Planning Permit Application PP-573-2021 and prepare an expert evidence statement for submission and presentation at the upcoming Panel hearing.

Facts, Matters and Assumptions Relied Upon

5. In the course of preparing this report, the facts, matters and assumptions I have relied upon are outlined as follows:

   — Relevant sections of the Greater Geelong Planning Scheme.

   — Australian / New Zealand Standard (AS2890 series).

   — Architectural plans for Balmoral Quay – Stage 5, prepared by SJB Architects, dated 18 July 2022.

   — Traffic and Transport Assessment prepared by Cardno, Rev F07, dated 05 July 2022.

   — Minutes for Council Meeting – 22 November 2022.

   — Amendment C436ggee – Summary of submissions, dated 06/12/2023.

   — Site visit, undertaken on 03 February 2024.

6. In addition to the above, I have also relied upon a number of online mapping tools, including Melway, Google Maps, Landchecker, Nearmap, PTV, TravelSmart and VicPlan.

Identity of Persons Contributing Works

7. Hilary Marshall, Director assisted by Jackson Hamill-Beach, Senior Transport Engineer and Chris Deng, Transport Engineer, of Ratio Consultants.

Declaration

8. I have read the Planning Panels Victoria Practice Note 1 – Expert Evidence (June 2023) understand my duty as an expert witness.

9. I have no relationship with the client other than a business engagement to comment on this matter.

10. My involvement in this project commenced in January 2024.

11. I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance which I regard as relevant have to my knowledge, been withheld from the Panel.

Hilary Marshall
Director: Transport
Ratio Consultants

2. Introduction

2.1. Overview

12. I have been instructed by Best Hooper Lawyers on behalf of Balmoral Quay Pty Ltd to provide my expert opinion with respect to the proposed Amendment C436 to the Greater Geelong Planning Scheme and Planning Permit Application PP-573-2021, regarding traffic and transport implications the Amendment and planning permit application may have on the subject site and surrounding area.

13. This report has been prepared in accordance with the Planning Panels Victoria Practice Note 1 – Expert Evidence (June 2023).

14. In the course of preparing this assessment, I have undertaken a site visit to review existing conditions, I have examined the Amendment and planning permit application documentation and relevant supporting background assessments and referred to the documents outlined in Section 1 of this report.

15. My opinions with respect to the traffic and parking issues relating to the proposed Amendment and planning permit application are set out in the following statement.

3. Background

3.1. Planning History

16. A planning permit (PP-647-2004/C) was issued on 21 March 2005, which applies to the land generally bound by Liverpool Street, Balmoral Crescent, Victoria Street and Corio Bay, Rippleside (otherwise known as Balmoral Quay) and allows:

    "Use of the land for a convenience shop, restricted recreation facility, marina and more than 98 dwellings, construction of buildings and works, including buildings that exceed the heights shown on the comprehensive development plan, and variation of loading bay requirements generally in accordance with the endorsed plans".

17. Whilst not provided within my brief, I understand that a masterplan was prepared for Balmoral Quay which included five (5) stages of development.

18. As I understand, Stages 1 & 2 have been constructed, whilst construction of Stages 3 & 4 appeared to be close to completion at the time of preparing this assessment.

19. The remediation of Rippleside Beach, St Helens Beach, waterfront path and the initial stages of the Rippleside Marina have also been delivered.

3.2. Amendment Application

20. In May 2021, a Section 96A application was lodged with City of Greater Geelong for a combined Planning Scheme Amendment and Planning Permit Application in relation to the land addressed as 1 Harbourside Drive, Rippleside (otherwise known as Balmoral Quay – Stage 5).

21. The application seeks the following changes to the Greater Geelong Planning Scheme:

    — Amend Schedule 2 to the Comprehensive Development Zone to update the references to *Rippleside Comprehensive Development Plan February 2000* and *Rippleside Urban Design Guidelines June 2000;*

    — Amend Clause 72.04 to update the references to the *Rippleside Comprehensive Development Plan February 2000* and the *Rippleside Urban Design Guidelines June 2000;*

    — Amend the *Rippleside Comprehensive Development Plan February 2000* to refer to the increased height proposed; and

    — Amend the *Rippleside Urban Design Guidelines June 2000* to refer to the increased height proposed.

22. Following their review of the Section 96A application, City of Greater Geelong issued a Request for Further Information (RFI) on 08 October 2021.

23. The application material was subsequently updated, with an RFI submission package submitted to Council on 15 July 2022.

24. The architectural plans submitted within the RFI submission package contemplated the development of a seven-storey building, comprising 84 apartments, with a commercial tenancy and marina office at ground level. The site would be supported by 136 car parking spaces, 115 bicycle parking spaces and five (5) motorcycle spaces.

3.3. Council Position

25. The proposed Planning Scheme Amendment and Planning Permit Application was considered at a Council meeting on 22 November 2022, wherein Council resolved to support the preparation and exhibition of the Amendment and request that the Minister for Planning authorise the Exhibition of the Amendment.

26. Public exhibition of the Amendment occurred from 24 August 2023 to 25 September 2023.

27. At a Council meeting on 12 December 2023, Council resolved to refer the Amendment to the Minister for Planning to appoint an independent panel to consider the submissions received during exhibition.

3.4. Department of Transport and Planning Position

28. The Department of Transport (now DTP) advised on the 10/9/2021 that "as this amendment does not interact with the arterial network or the public transport system, the Department will not be making a submission".

3.5. Issues raised in submissions

29. I have been provided with a summary of issues raised in submissions, dated 6/12/2023. The issues relevant to this assessment are listed as follows:

CAR PARKING CONCERNS

- Adequacy of car parking
- Visitor parking allocation and sharing arrangement with Marina Spaces
- Demand for on-street car parking
- Lack of Electric Vehicle (EV) capability

TRAFFIC CONCERNS

- Traffic congestion
- Questions regarding status of proposed right turn ban from Yacht Approach
- No road connection between Balmoral Quay and Corio Bay
- Ability for roads to handle additional traffic
- Traffic entering from Victoria Street overpass may cause back up over bridge.
- Concern with Liverpool Street intersection

DESIGN CONCERNS

- Safety concerns with access locations, including sight lines to footpath
- Pedestrian and Bicycle Safety
- Lack of footpath connections including along Yacht Approach

- Accessibility for mobility impaired
- Waste collection and emergency services access

OTHER CONCERNS

- Parking issues during construction

4. Existing Conditions

4.1. Site Location

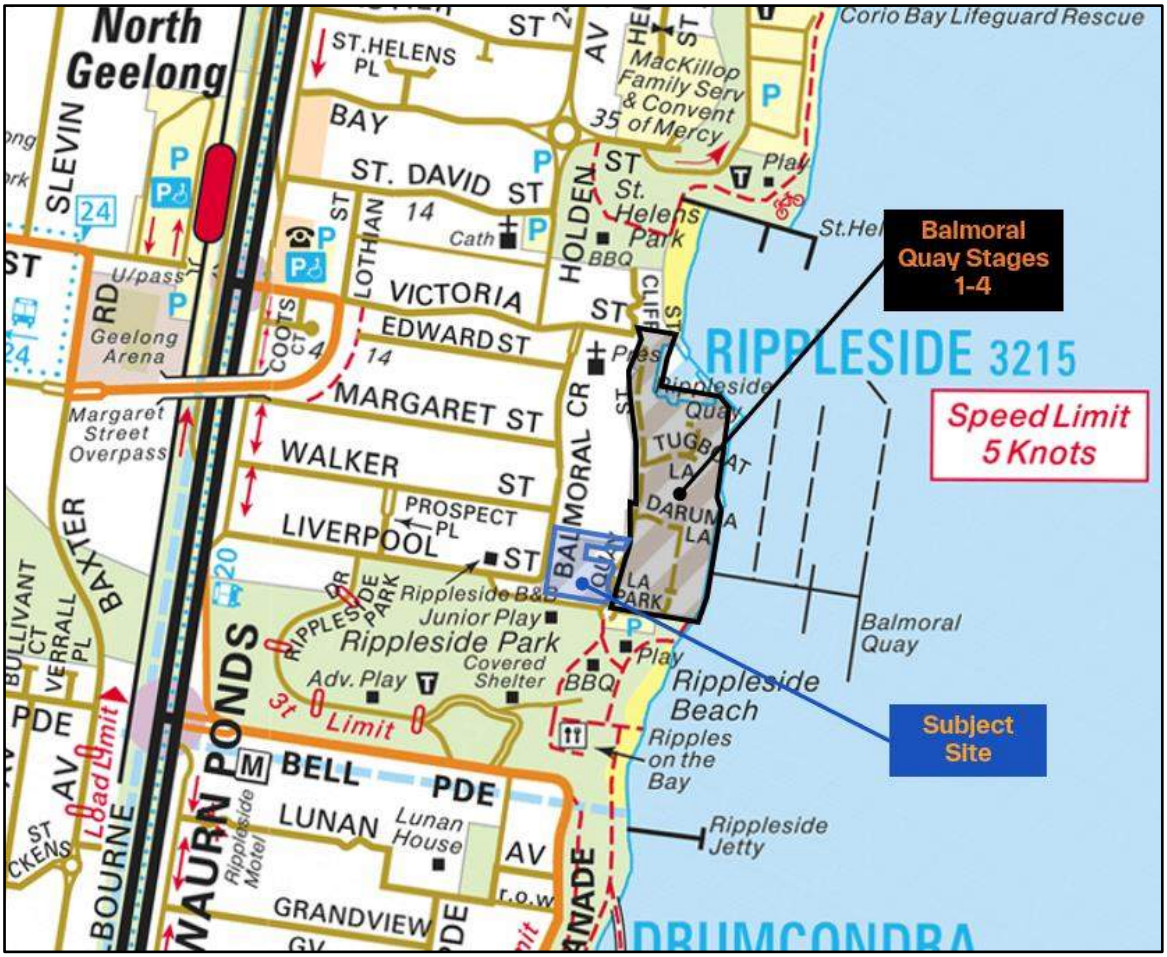
30. The subject site comprises the land parcel addressed as 1 Harbourside Drive in Rippleside, also known as Balmoral Quay – Stage 5.

31. The subject site is bound by residential development to the north, Harbourside Drive to the east, Yacht Approach to the south and Balmoral Crescent to the west. The land is irregular in shape, with an overall site area in the order of 4,000 sqm.

32. The subject site surrounds an existing Barwon Water Pump Station asset located in the north east portion of the site, with access from Harbourside Drive. The pump station will remain and is not parr of the development site. The subject site is currently undeveloped.

33. The location of the subject site and its surrounding environs is shown in Figure 4.1, with an aerial context also provided in Figure 4.1.

Figure 4.1: Site Locality



(Source: Melway, Map Ref. 442 B10)

Figure 4.2: Aerial View of the Site & Surrounds

(Source: Landchecker, image dated 20 October 2023)

34. Stages 1-4 of Balmoral Quay are located on the opposite side of Harbourside Drive to the subject site and occupies the land generally bound by Harbourside Drive, Yacht Approach, Victoria Street and Corio Bay.

4.2. Zoning and Overlays

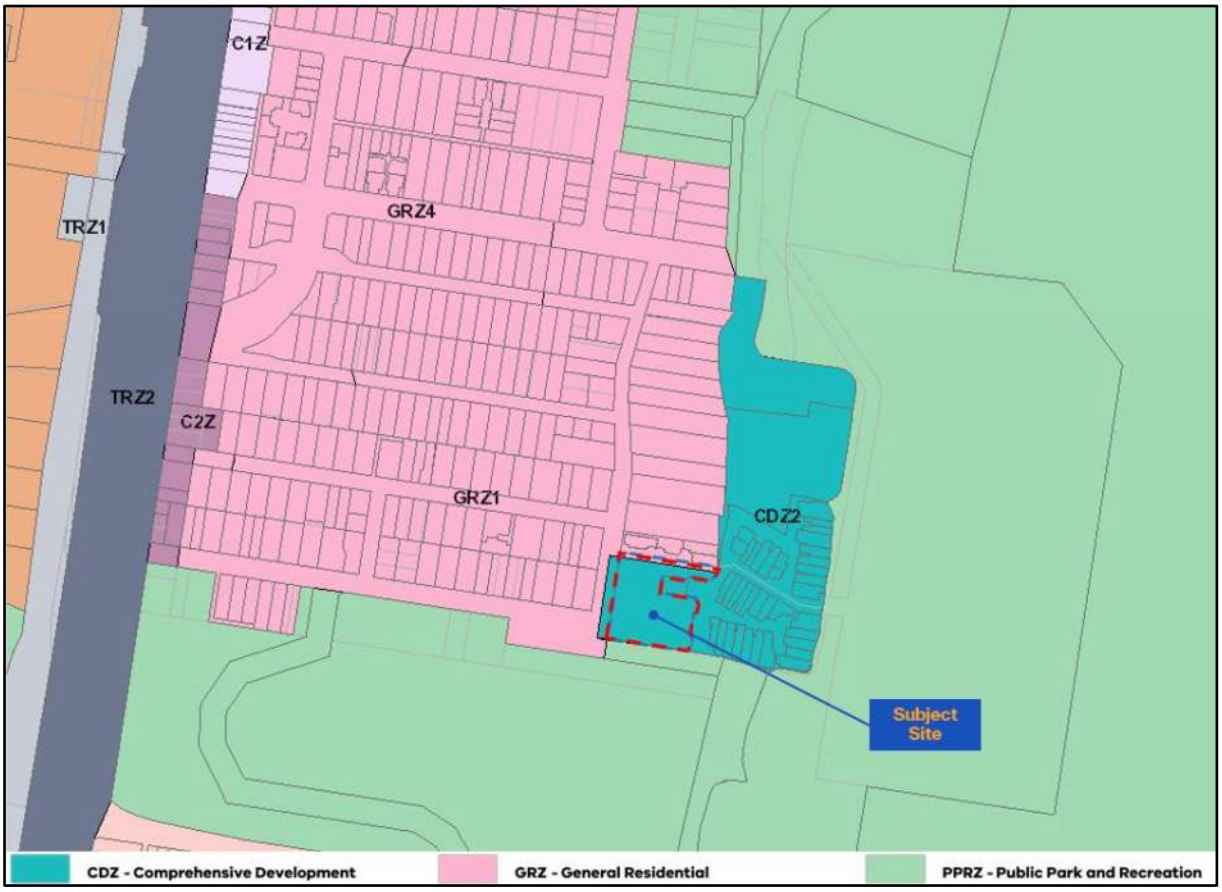
35. The subject site is primarily located within the Comprehensive Development Zone (CDZ2) – Schedule 2, with a slither along the northern site boundary also located within the General Residential Zone (GRZ1) – Schedule 1.

36. The site is subject to an Environmental Audit Overlay (EAO).

37. The site is surrounded by residential zoning to the north and west, comprehensive development zoning to the east (the remainder of Balmoral Quay) and public park and recreation zoning to the south (Rippleside Park).

38. The subject site location and relevant planning zones are shown in Figure 4.3.

Figure 4.3: Site Location & Planning Zones



(Source: VicPlan)

4.3. Road Network

39. The Balmoral Quay development, inclusive of the subject site, sits within a relatively isolated pocket of residential development with vehicle access limited to Melbourne Road and Lothian / Margaret Street to the west. A further local road connection, Rippleside Park Drive, provides access from Liverpool Street at the southern end of the precinct to Bell Parade / The Esplanade along the Geelong waterfront.

40. The following roads either abut or provide direct access to the subject site.

Liverpool Street

41. Liverpool Street is defined as a Category 3 – Secondary Distributor Road within the City of Greater Geelong Municipal Public Road Register.

42. Liverpool Street is aligned east-west between its termination at Melbourne Road service road and Balmoral Crescent and borders Rippleside Park along the majority of its southern boundary.

43. Liverpool Street has a carriageway width of approximately 11 metres, accommodating one lane of traffic in each direction plus parallel parking on both sides of the road. On-street parking is unrestricted. A pedestrian footpath is provided along the northern side of the road.

44. Liverpool Street does not have a posted speed limit; therefore, the default limit for urban environments of 50kph applies.

45. Photographs of Liverpool Street looking east, and west are shown in Figure 4.4 and Figure 4.5.

Figure 4.4: Liverpool Street, adjacent Rippleside Park Drive, facing east

Figure 4.5: Liverpool Street, adjacent Rippleside Park Drive, facing west

46. Liverpool Street provides access to the Melbourne Road service road, which operates as a two-way road providing access to the traffic signals at Victoria Street. The service road terminates at Liverpool Street allowing egress movements only in a southbound direction onto Melbourne Road.

Balmoral Crescent

47. Geelong Council classify Balmoral Crescent as a Category 2 Urban Local Access Street. Balmoral Crescent is aligned north south between Liverpool Street and Victoria Street.

48. In the vicinity of the site, Balmoral Crescent has a carriageway width of 8.9 metres allowing two-way traffic flow and parallel parking on both sides of the road. Parking is unrestricted.

49. Footpaths are provided on both sides of the road at 1.4m width plus verge on the west side and 2.0 metres wide without verge on the eastern side along the frontage of the site.

50. Photographs of Balmoral Crescent adjacent the subject site is shown in Figure 4.6 and Figure 4.7.

Figure 4.6: Balmoral Crescent looking south adjacent subject site

Figure 4.7: Balmoral Crescent looking north adjacent subject site

Yacht Approach

51. Yacht Approach is a local access street, aligned east-west between Liverpool Street and Harbourside Drive. The eastern end of Yacht Approach provides access to a public car park containing 39 unrestricted spaces.

52. Yacht Approach has a carriageway width of 6.7 metres, accommodating one lane of traffic in each direction. Footpaths are not currently provided on either side of Yacht Approach.

53. Yacht Approach looking west adjacent the subject site is shown in Figure 4.8.

Figure 4.8: Yacht Approach, adjacent the subject site, facing west

Harbourside Drive

54. Harbourside Drive is a local access street which comprises two distinct sections. The north-south section from Yacht Approach runs for approximately 110 metres. Following a 90-degree bend in the roadway, Harbourside Drive runs in an east-west alignment for approximately 40 metres, before terminating at Lady Nelson Drive.

55. Adjacent the subject site, Harbourside Drive has a carriageway width of 6.7 metres, plus indented parking on both sides, allowing two-way traffic flow, clear of parked vehicles. Two indented parallel parking spaces are provided along the site frontage. A pedestrian footpath is provided along the eastern side of the road, terminating at the southern end of the pump station.

56. Images of Harbourside Drive in close proximity to the subject site are shown in Figure 4.9 and Figure 4.10.

Figure 4.9: Harbourside Drive, facing north

Figure 4.10: Harbourside Drive, facing south

4.4. Sustainable Transport

Public Transport

57. The subject site has good access to public transport services, bus and train services as described in Table 4.1 and shown in Figure 4.11.

Table 4.1: Public Transport Services within vicinity of the Subject Site

Service	Route Number	Route	Nearest Stop	Walking Distance
Bus	20	Geelong Station – Corio SC	Walker Street / Princes Highway	450 metres (6 minutes)
	24	North Geelong Station via Newtown	North Geelong Railway Station	850 metres (13 minutes)
Train	V/Line	Melbourne – Warrnambool via Geelong & Colac Geelong – Melbourne	North Geelong Railway Station	850 metres (13 minutes)

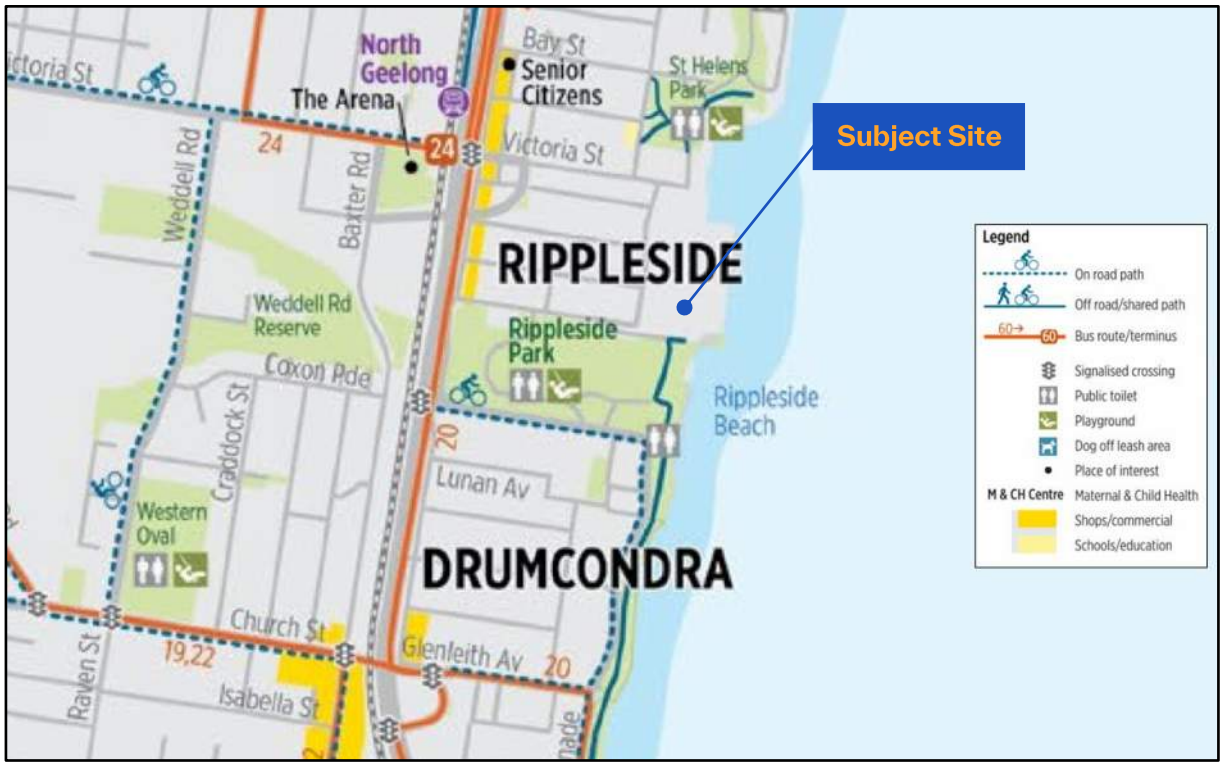
Figure 4.11: Public Transport Services in the Vicinity of the Subject Site

(Source: Public Transport Victoria)

Bicycle Network

58. The site has good access to existing bicycle network in proximity to the site is shown in Figure 4.12.

Figure 4.12: Bicycle Network in Vicinity of the Subject Site



Source: City of Greater Geelong TravelSmart Map

59. As demonstrated in Figure 4.12, on-road bicycle lanes are provided on various streets in close proximity of the subject site, including Bell Parade, The Esplanade, Church Street, Victoria Street and Weddell Road.

60. The site is located in close proximity to the Bob McGovan off-road shared path, which runs between St Helens Park and the Geelong waterfront (noting that the connection between Rippleside Park and St Helens Park was delivered as part of Stages 1-4 of Balmoral Quay).

61. The McGovan off road path provides a direct link to the City Centre of Geelong, approximately 2.5km to the south.

Pedestrian Accessibility

62. Pedestrian footpaths are provided on both sides of the majority of streets within the established road network in the vicinity of the site. The site is located in close proximity to the Bob McGovan shared path (which runs between St Helens Park and the Geelong waterfront).

63. There is currently limited pedestrian infrastructure along the site frontages. However, a pedestrian footpath is proposed along the Yacht Approach and Harbourside Drive frontages as part of the application.

Crashstats Assessment

64. A review has been conducted of VicRoads (now DTP) 'Crashstats' database for the most recent five-year period of available data (between 12 March 2018 to 12 March 2023) for any reported casualty crashes in the vicinity of the site, as shown in Table 4.2 and illustrated in Figure 4.13.

Figure 4.13: Location of recoded accidents near the Subject Site (2018-2023)

Table 4.2: VicRoads Casualty Accident Data near the Subject Site

Location	Date	Crash Type	Description	Severity
Victoria Street and Melbourne Road Service Road Intersection	28/3/2022	Collision with vehicle	U Turn	Other injury accident
Melbourne Road Service Road (northbound)	30/6/2022	Collision with vehicle	Rear End (Vehicles in the same lane)	Other injury accident
Melbourne Road near Intersection with Victoria Street (southbound)	8/3/2022	Collision with vehicle	Rear End (Vehicles in the same lane)	Serious injury accident

Melbourne Road near Intersection with Victoria Street (northbound)	6/3/2021	Collision with vehicle	Rear End (Vehicles in the same lane)	Other injury accident
Melbourne Road and Victoria Street Intersection (southbound)	13/3/2018	Collision with vehicle	Right Near (Intersections Only)	Serious injury accident
	9/1/2020	Collision with vehicle	Rear End (Vehicles in the same lane)	Other injury accident
	16/9/2020	Collision with fixed object	Left off carriageway into object/parked vehicle	Other injury accident
	16/7/2022	Collision with vehicle	Right through	Serious injury accident
Melbourne Road and Victoria Street Intersection (northbound)	1/7/2020	Struck Pedestrian	Far side. Ped hit by vehicle from the left	Serious injury accident
Margaret Road/Lothian Road between Baxter Road and Victoria Street	6/3/2022	Vehicle overturned (no collision)	Off carriageway to right	Serious injury accident
	18/1/2020	Vehicle overturned (no collision)	Out of control on carriageway (on straight)	Serious injury accident

65. As shown in the preceding figure, there have been no casualty accidents recorded within the surrounding local road network in vicinity of the subject site.

66. There have however been 4 accidents within the Melbourne Road / Victoria Street intersection and a further 4 accidents on either the approaches to the intersection or the adjacent service roads.

67. A further two accidents have occurred on Lothian Street in proximity to its overpass of Melbourne Road.

68. In summary, the local road network appears to be operating well with no reported accidents.

69. The number of accidents at Melbourne Road / Victoria Street intersection is relatively high and I would recommend that Council request a review by DTP of its operation. Noting that Melbourne Road is a DTP managed arterial road.

5. Development Proposal

5.1. Development Overview

70. The Balmoral Quay development has been constructed in stages over a number of years with this application (Stage5) being the last stage of the development.

71. Although Stage 5 of the development is included in the original permit, the proposed increase in height is sought to be achieved by an amendment to the original document supporting the development of the Balmoral Quay.

72. Therefore, a Section 96A application seeks to construct a seven-storey mixed-use building at the subject site, comprising the following land uses:

— 84 apartments, comprising:

- 36 x one-bedroom apartments.
- 30 x two-bedroom apartments; and
- 18 x three-bedroom apartments.

— Tenancy at lower ground level with a total floor area of 77.8 sqm; and

— Marina office at lower ground level with a total floor area of 34.7 sqm.

73. Additionally, a communal garden courtyard is proposed at ground level and a communal landscaped roof terrace is proposed at level 03.

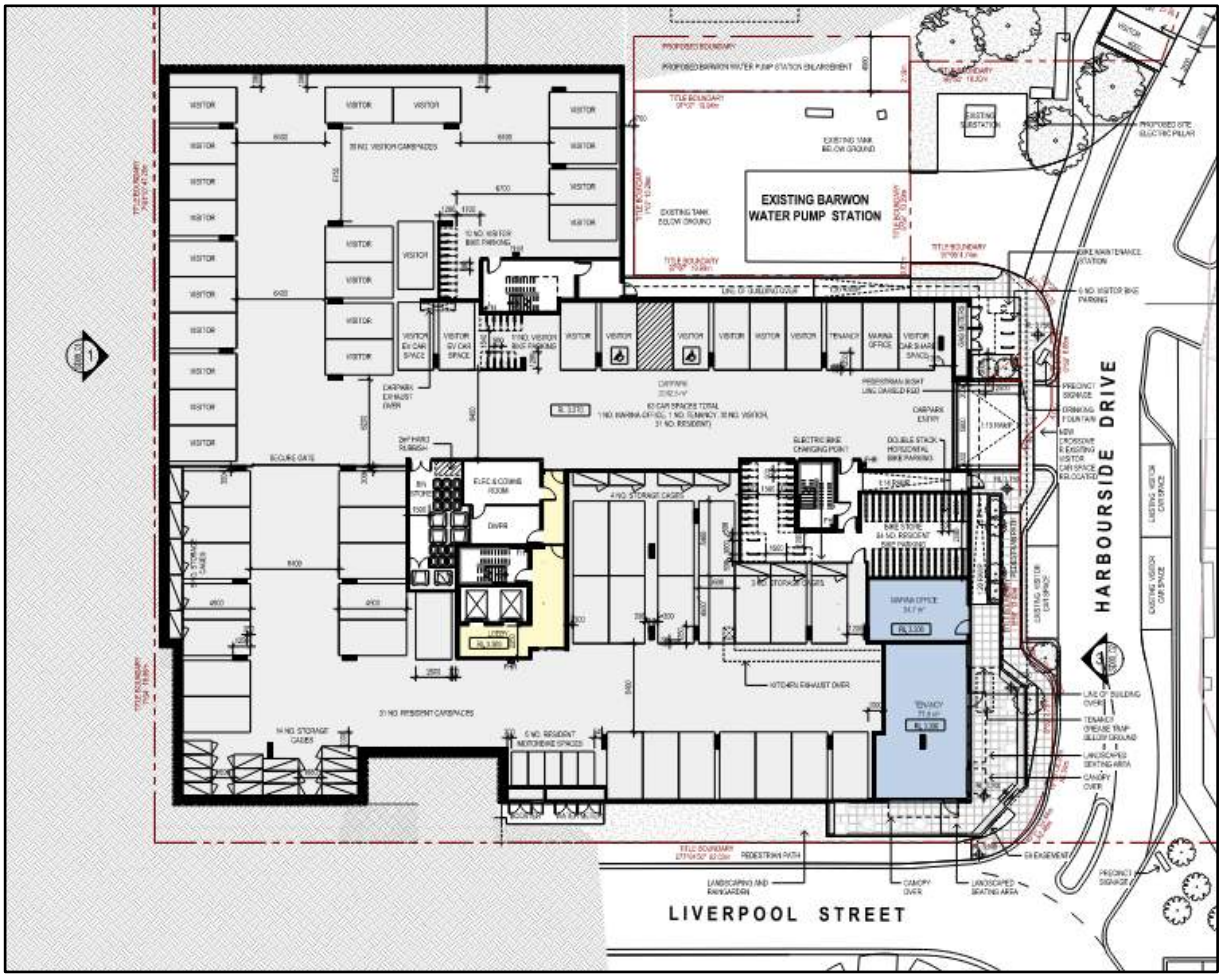
74. It is my understanding that a report titled *'The Allocation of Accommodation for Bicycles and Car Parking Management Plan'* was prepared by Transcorp Pty Ltd in January 2008 to satisfy Condition 16 of the planning permit for Balmoral Quay. With regard to the marina, this document specifies the following:

"20% of the marina berths will be available to the public; these berths (32) will be public moorings with the remaining berths to be made available to residents of the subject site. It is proposed that 1 car parking space per public berth will be made available in Building H. This equates to 32 car spaces. Bicycle parking for marina use will be accommodated in the undercover designed bicycle area in Building H."

75. I note for clarity, that Building H refers to the building within Balmoral Quay – Stage 5 that is the subject of this application.

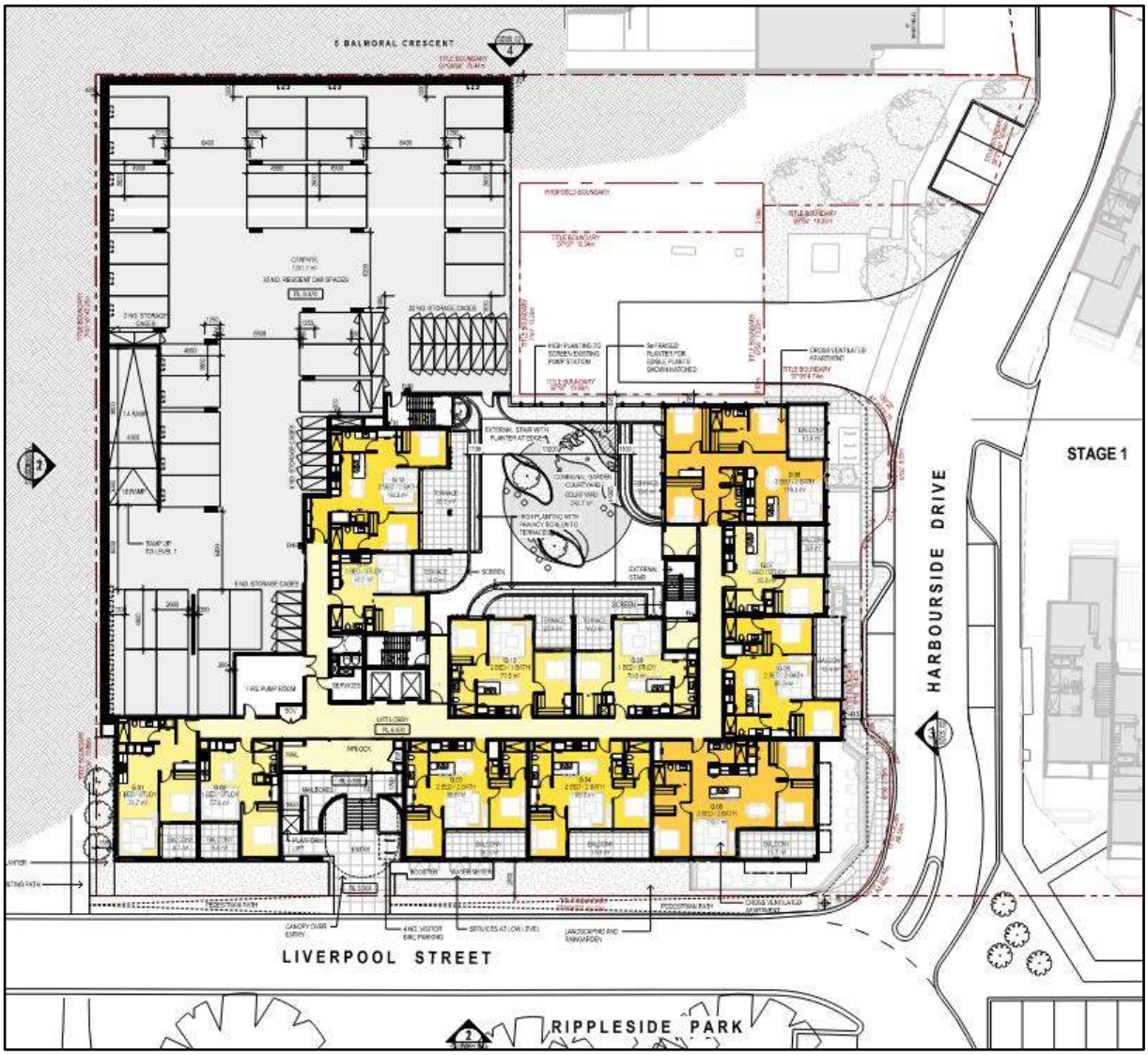
76. For context, the layout of the lower ground level, ground level and level 01 are shown in Figure 5.1 to Figure 5.3.

Figure 5.1: Proposed Lower Ground Level Layout



(Source: SJB Architects – Lower Ground Level Plan)

Figure 5.2: Proposed Ground Level Layout



(Source: SJB Architects – Ground Level Plan)

Figure 5.3: Proposed Level 01 Layout

(Source: SJB Architects – Level 01 Plan)

5.2. Parking Provision

77. A total of 136 car parking spaces are proposed on-site, comprising:

— 63 car parking spaces within the lower ground level car park.

— 35 car parking spaces within the ground level car park.

— 36 car parking spaces within the level 01 car park; and

— Two (2) car parking spaces along Harbourside Drive[1].

78. A total of 115 bicycle parking spaces are proposed on-site, comprising:

[1] It is noted that three (3) car parking spaces are proposed along Harbourside Drive; however, one (1) of these spaces will be provided to offset the removal of one (1) of the existing on-street spaces along the Harbourside Drive frontage.

- 84 spaces for residents and an electric bike charging point within the bike store in the lower ground car park.
- 21 spaces visitors in two (2) locations within the lower ground car park.
- Six (6) spaces for visitors and a bike maintenance station along the Harbourside Drive frontage; and
- Four (4) spaces for visitors adjacent to the pedestrian entrance along Yacht Approach.

79. A bike maintenance bay is proposed adjacent to the visitor spaces along Harbourside Drive.

80. A total of five (5) motorcycle spaces are proposed within the lower ground car park for residents.

5.3. Site Access

81. Due to level differences between the frontage roads, each of the proposed vehicle access points and the pedestrian access will each be provided at different levels of the site.

82. Vehicle access to/from the site is proposed as follows:

- A 6.1-metre-wide crossover to/from Harbourside Drive, providing access to/from the lower ground car park; and
- A 5.5-metre-wide crossover to/from Balmoral Crescent, providing access to/from level 01 car park, with an internal ramp providing access between Level 01 and Ground Level.

83. Pedestrian access is proposed from all three road frontages. The application is proposing new footpaths along Yacht Approach and Harbourside Drive frontages.

84. The bicycle storage facilities are located on Lower Ground Level and as such it is anticipated that all bicycle access will be via Harbourside Drive.

6. Proposed Amendment C436

6.1. Overview

85. The Stage 5 application site is within a Comprehensive Development Zone Schedule 2 of the Greater Geelong Planning Scheme. In order to accommodate the proposed increase in height on the Stage 5 site, it is sought to replace Schedule 2 of the Comprehensive Development Zone and update references within the Rippleside Comprehensive Development Plan 2000 and the Rippleside Urban Design Guidelines 2000 to allow an increased maximum building height.

86. The Amendment applies to land at 1, 11, 23 40 and 60 Harbourside Drive and 1 to 20 Lumb Place, Rippleside as shown on Figure 6.1.

Figure 6.1: Area covered by the Comprehensive Development Plan

87. In regard to the supporting document, I have reviewed the Rippleside Urban Design Guidelines, March 2023 and make the following comments:

6.2. Rippleside Urban Design Guidelines

Purpose

88. As stated in the introduction the purpose of the Guidelines is to guide the development of the former Rippleside Shipyard in North Geelong.

89. The Rippleside Urban Design Guidelines is an Incorporated Document within the Planning Scheme. It will be used by the Responsible Authority to assist in determining planning applications affecting land shown on the Rippleside Comprehensive Development Plan.

G5 Internal Operation: Pedestrian and Vehicle Movement

90. I have reviewed the guidelines and objectives of Section G5 and are satisfied that they do not need to be amended.

G6 Internal Operation: Car Parking

91. G6 of the Urban Design Guidelines relates to 'Internal Operation: Car Parking' and has the following objectives and guidelines

OBJECTIVES

- To provide adequate and convenient car parking for resident, visitor and service vehicles.
- To enable efficiencies through the sharing of car parking spaces where appropriate.
- To minimise the intrusion of vehicles within the site.
- To avoid the use of nearby parking areas and streets by visitors to the site.

GUIDELINES

- G6. I Provide car parking for residents in enclosed garages integrated within their building, reached by Access Lanes or Courts or directly off the Liverpool Street Extension, where possible.
- G6.2 Provide car parking for staff of the offices, shops and restaurants/cafes in a basement car park in the southwest corner of the site, accessed directly from the Liverpool Street Extension.
- G6.3 Provide car parking for visitors to dwellings along the Spine Road.
- G6.4 Provide short-term car parking for visitors to the offices, shops and restaurants/cafes in Pier Street and longer-term parking in a basement in the southwest corner of the site, accessed directly from the Liverpool Street Extension. Consider allowing visitor parking in the Village Square at night.

92. Upon review I am satisfied that the objectives are still applicable and have been satisfied by the proposed development. Particularly noting that the sharing of the marina parking bays with residential visitors is consistent with the objectives. In regards to avoiding the use of nearby parking areas and streets by visitors, I am also satisfied that an appropriate parking

provision is proposed and overflow parking beyond the frontage of the site is avoided. The parking assessment is detailed in the following section of this report.

93. In regard to the Guidelines, I am of the view that they should be updated to match the development as follows:

94. Amend G6.1 to specifically refer to townhouses as the Stage 5 application does not contain 'garages'.

95. Amend G6.2 to state that staff parking for offices, shops and restaurants / cafes within Stage 5 should be contained within the basement of Stage 5.

96. Amend G6.3 wording to "Provide car parking for visitors to dwellings along the Spine Road or to the satisfaction of the Responsible Authority", noting that it is proposed to accommodate residential visitor parking within the lower ground level car park of Stage 5.

97. Amend G6.4. Pier Street is defined in Section F5 (pg 24) as "A predominantly pedestrian street running from the end of the Liverpool Street extension through to the base of the pier (Pier Street)".

98. The road contemplated within Section F5 has not been constructed as contemplated by the indicative figure in F5 and as such does not provide the car parking referenced in G6.4. The application for Stage 5 proposes to accommodate both the short term and long term parking demands of the Stage 5 proposal, with the exception of two spaces associated with short term demand generated by customers of the tenancy.

99. Parking for two short term spaces on street associated with the tenancy can comfortably be accommodated along the site frontage and is considered an appropriate location for this type of parking to occur.

100. On that basis, it is my opinion, that the G6.4 guideline should either be deleted or updated to remove reference to Pier Street and respond to the application as it is now proposed.

101. It is also noted that that figure shown in Section G6 refers to Visitor Parking in a location immediately east of Stage 5 which is now occupied by townhouses and refers to basement parking on the Stage 5 site that should be amended to reflect the approved stages of development and the current application.

7. Car Parking Assessment

7.1. Clause 52.06 Requirements

102. Car parking requirements for new developments are set out within Clause 52.06 of the Greater Geelong Planning Scheme. The purpose of Clause 52.06 is defined in the scheme as follows:

- *To ensure that car parking is provided in accordance with the Municipal Planning Strategy and the Planning Policy Framework;*
- *To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality;*
- *To support sustainable alternatives to the motor car;*
- *To promote the efficient use of car parking spaces through consolidation of car parking facilities;*
- *To ensure that car parking does not adversely affect the amenity of the locality; and*
- *To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.*

103. Table 1 of Clause 52.06 sets out the car parking requirements that apply to a use listed in the Table. A car parking requirement in Table 1 is calculated by multiplying the figure in Column A or Column B (whichever is applicable) by the measure in Column C.

104. Column B applies if:

- *Any part of the land is identified as being within the Principal Public Transport Network Area, as shown on the Principal Public Transport Network (PPTN) Area Maps (State Government of Victoria 2018), or*
- *A schedule to the Parking Overlay specifies the number of car parking spaces required for the use.*

105. The PPTN does not apply to the Greater Geelong municipality, nor is the site subject to a Parking Overlay. The application is therefore subject to the Column A rates within Clause 52.06 of the Greater Geelong Planning Scheme.

106. Accordingly, the statutory car parking requirements for the application are set out in Table 7.1.

Table 7.1: Statutory Car Parking Requirements

Description	Land Use	Size/No.	Car Parking Rate [1]	Car Parking Requirement
One-bedroom apartment	Dwelling	36 dwellings	1 space to each one- or two-bedroom dwelling	36 spaces
Two-bedroom apartment		30 dwellings		30 spaces
Three-bedroom apartment		18 dwellings	2 spaces to each three or more-bedroom dwelling	36 spaces
Visitors		84 dwellings	1 space for visitors to every 5 dwellings for developments of 5 or more dwellings	16 spaces
Tenancy	Shop	77.8 sqm	4 spaces to each 100 sqm of leasable floor area	3 spaces
Office (marina)	Office	34.7 sqm	3.5 spaces to each 100 sqm of net floor area	1 space
Marina berths	Marina	32 berths	Not Specified	To the satisfaction of Responsible Authority
		Total		**122 spaces**

[1] Column A car parking rate within Clause 52.06 unless specified otherwise.

107. Where a rate is not specified, the parking provision is to be to the satisfaction of the Responsible Authority. In this case Condition 16 of the planning permit specifies one parking space per public marina berth equivalent to 32 spaces.

108. Based on the preceding assessment, the application has a statutory requirement to provide 122 car parking spaces on-site plus 32 spaces for the marina.

7.2. Proposed Car Parking Provision

109. It is proposed to supply a total of 136 car parking spaces on-site.

110. The proposed car parking allocation, as shown on the architectural plans that were exhibited, is summarised as follows:

— 102 car parking spaces for residents;

— 32 car parking spaces will be provided for shared use by the marina berths and residential visitors;

— One (1) car parking space will be provided for the marina office; and

— One (1) car parking space will be provided for the tenancy.

111. On the basis of the above car parking allocations, the application seeks to provide car parking in accordance with the statutory requirement for residents and for the marina office.

112. The provision of one (1) car parking space to the tenancy represents a shortfall of two (2) spaces against the statutory requirement for this use.

113. Whilst the provision of 32 car parking spaces for shared use by the marina berths and residential visitors meets the standalone statutory requirement for each use, consideration needs to be given to the expected fluctuations in car parking demand associated with each use to understand the adequacy of this arrangement.

114. For situations where the statutory car parking requirement is not met on-site, Clause 52.06-7 outlines that decision guidelines for an application to reduce the car parking requirement draw a distinction between the likely demand for parking spaces and whether it is appropriate to allow the provision of fewer spaces. These are two separate considerations, one technical while the other is strategic.

115. A Car Parking Demand Assessment and the appropriateness of allowing a reduction of on-site parking for the proposed development are discussed below:

7.3. Car Parking Demand Assessment

116. Clause 52.06-7 of the Greater Geelong Planning Scheme specifies that an application to reduce (including to zero) the number of car parking spaces required under Clause 52.06-5, or in a schedule to the Parking Overlay), must be accompanied by a Car Parking Demand Assessment, which must address the following matters:

- *The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use;*
- *The variation of car parking demand likely to be generated by the proposed use over time;*
- *The short-stay and long-stay car parking demand likely to be generated by the proposed use;*
- *The availability of public transport in the locality of the land;*
- *The convenience of pedestrian and cyclist access to the land;*
- *The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land;*
- *The anticipated car ownership rates of likely or proposed visitors to or occupants (residents or employees) of the land; and*
- *Any empirical assessment or case study.*

Likelihood of multi-purpose trips

117. The likelihood of multi-purpose trips is considered minimal for this development.

Variation in car park demand over time

118. There is expected to be a variation in demand over time for the 32 spaces associated with the marina. Boating activities are expected to mainly occur on weekends when the weather is favourable. Parking demand for the marina spaces outside of daylight hours is also likely to be minimal.

Short and long stay car parking demand

119. Residents of the development are considered to generate long stay parking demand, such that the spaces allocated for residents should remain clear at all times for exclusive use the applicable apartment.

120. Similarly, employee parking is also considered long stay as it is expected that the associated vehicle would be parked on site for the duration of typical business hours from Monday to Friday.

121. Residential visitors, patrons of the tenancy, visitors to the marina office and the marina parking are considered short stay.

The availability of public transport

122. As identified earlier, the subject site is accessible by both train and bus.

The convenience of pedestrian and cyclist access to the land

123. The site can be conveniently accessed by both pedestrians and cyclists, with footpaths, off road shared paths and on-road bike lanes in close proximity to the site.

The provision of bicycle parking and end of trip facilities

124. The proposal allows for generous on-site bicycle parking.

Anticipated car ownership rates

125. Car ownership rates are not expected to be higher than average demand in this location, given its proximity to the centre of Geelong and sustainable transport.

Empirical Assessment

TENANCY CAR PARKING DEMAND

126. Based on my experience with commercial land uses, the car parking demand is typically equivalent to the statutory requirement (i.e. three (3) spaces).

127. Within this demand, I would expect that one (1) space per 100 sqm would comprise the long-term (i.e. staff) demand. The balance of parking demand will comprise the short-term customer demands.

128. By applying the above assumptions, I estimate that the tenancy will generate a staff car parking demand of one (1) parking space and a customer car parking demand of two (2) parking spaces.

129. My assumption is that the car parking space allocated to the tenancy will be available for staff use and that the customer car parking demand will need to be accommodated off-site.

130. Unrestricted parallel parking is permitted on both sides of the carriageway on the majority of streets in the vicinity of the site. Furthermore, Nearmap imagery and observations during my site visit indicate that there is ample capacity within the on-street car parking supply to accommodate the estimated customer car parking demand.

RESIDENTIAL VISITOR CAR PARKING DEMAND

131. Ratio Consultants undertook a case study of residential visitor car parking demand at the Phoenix apartments in Doncaster. The Phoenix apartment building comprises 134 apartments and has an at-grade visitor parking area containing 26 car parking spaces. This provision is equivalent to a rate of 0.19 car parking spaces per apartment (noting that the Column A rate within Clause 52.06 is 0.20 spaces per dwelling).

132. Surveys were undertaken continuously for two x 18-hour periods (6:00am-midnight) on Thursday 31 October 2019 and Saturday 02 November 2019.

133. The surveys found that the peak demand for visitor parking on the Thursday occurred just after 9:00am and was equivalent to a rate of 0.08 spaces per apartment.

134. The recorded peak demand on the Saturday occurred at 1:50pm, with a maximum of 12 spaces occupied, equivalent to a rate of 0.09 spaces per apartment.

135. Adopting the recorded rates from the above case study, the subject site could be expected to generate a peak weekday visitor car parking demand of seven (7) spaces (i.e. 0.08 x 84 apartments) and a peak weekend visitor car parking demand of eight (8) spaces.

MARINA BERTHS CAR PARKING DEMAND

136. As described previously in this report, Condition 16 of the planning permit for Balmoral Quay specifies that one (1) car parking space per public marina berth will be provided within Stage 5.

137. I understand that 32 public moorings will be provided and therefore, 32 car parking spaces are required.

138. In my opinion, I would consider it highly unlikely that all boats utilising the public marina berths would be taken out on the same day at the same time. A review of recent aerial imagery indicates that there is always a reasonably consistent number of boats moored in the marina.

139. To investigate the adequacy of this provision, I have referenced the RTA Guide to Traffic Generating Developments (2002), which specifies the following in Section 5.9.3 in relation to marinas:

"Parking demands at marinas vary substantially depending on the season, the type of berth or mooring and the type of boat. Ideally, surveys should be undertaken of similar developments, over summer weekends. Boats parked in wet marina berths are more accessible and therefore more likely to be used than boats in dry berths or on swing moorings. Use also varies with boating purpose. While a typical marina might have 30% of boats used on a summer weekend, racing yachts are more highly utilised with an average of over 60% at one club surveyed. The size of the boat affects the number of crew or passengers, while the location of the marina affects the crew's transport mode."

140. The RTA Guide also recommends a car parking provision of *0.6 spaces per wet berth*. My understanding is that this rate accommodates 30% of boats being used by a crew using two (2) vehicles.

141. Further to the above, Ratio Consultants has previously undertaken work for Wyndham Harbour and Martha Cove. The following car parking rates were approved for the marina at each site:

— Martha Cove – 0.5 spaces per berth; and

— Wyndham Harbour – 0.36 spaces per berth.

142. When considering that the majority of boats currently moored at Balmoral Quay Marina (as shown by Nearmap imagery) appear to be quite small in size, therefore requiring less crew than larger vessels.

143. On the basis of the preceding information, I have conservatively assumed that peak car parking demand for the marina could be up to the higher RTA Guide rate of 0.6 spaces per wet berth.

144. Application of this rate to the 32 publicly available berths equates to a peak car parking demand of 19 spaces.

145. I would expect the peak car parking demand to occur during daylight hours on summer weekends. At other times, the car parking demand is likely to be significantly lower.

7.4. Adequacy of Proposed Car Parking Provision

Residents & Marina Office

146. The proposed provision of on-site car parking for residents and the marina office is in accordance with the statutory requirement.

Tenancy

147. The tenancy is expected to generate a car parking demand of three (3) spaces, comprising one (1) staff parking space and two (2) customer parking spaces.

148. One (1) car parking space is proposed on-site for the tenancy.

149. I assume that this parking space will be available for staff use and therefore, the two (2) customer parking spaces will need to be accommodated off-site.

150. Nearmap imagery and on-site observations indicate that there is ample capacity within the nearby on-street car parking supply to accommodate the customer car parking demand.

Residential Visitors & Marina Berths

151. 32 car parking spaces are proposed on-site, to be shared between residential visitors and public users of the marina berths.

152. The site is expected to generate a peak residential visitor car parking demand of eight (8) spaces, on a Saturday afternoon.

153. I have conservatively estimated that the public use of the marina berths will generate a car parking demand of up to 19 spaces at peak times (i.e. during summer weekends).

154. Therefore, the anticipated peak car parking demand associated with residential visitors and public use of the marina berths is 27 spaces, resulting in a surplus of five (5) spaces within the publicly accessible portion of the lower ground car park at peak times.

155. I also note that all car parking demand associated with the public use of the marina berths is currently being accommodated within the nearby car park (39 spaces) or on-street. This arrangement will continue up until the delivery of Balmoral Quay – Stage 5.

156. The delivery of Balmoral Quay – Stage 5 is anticipated to therefore reduce reliance on the nearby on-street parking supply, including the Rippleside Park car park.

Summary

157. Based on the preceding discussion, I am satisfied that the proposed on-site car parking provision of 136 car parking spaces will be sufficient to accommodate the car parking demands associated with each use proposed on-site.

158. Furthermore, not only is the sharing of the marina parking spaces appropriate, it is consistent with the Rippleside Urban Design Guidelines (G6 objectives).

7.5. DDA Car Parking Requirements

159. In addition to the statutory car parking requirements outlined in Clause 52.06 of the Greater Geelong Planning Scheme, the National Construction Code (NCC) outlines the requirement for the provision of car parking spaces for people with disabilities.

160. I note that within the overall on-site car parking provision of 136 spaces, it is proposed to allocate 102 spaces to residents, which do not trigger a requirement for DDA compliant parking spaces.

161. As a result, 34 car parking spaces will be allocated to the marina office, tenancy, public users of the marina berths and residential visitors.

162. The NCC specifies that accessible car parking spaces be provided at a rate of *'1 space for every 50 car parking spaces or part thereof'* for most land uses. Some uses are subject to a lower rate of *'1 space for every 100 car parking spaces or part thereof'*.

163. Application of the higher rate to the car parking spaces available to the marina office, tenancy, and public users of the marina berths results in a requirement to provide one (1) accessible car parking space on-site.

164. The application is proposing to provide two (2) accessible car parking spaces on-site, within the publicly accessible portion of the lower ground car park.

165. This provision exceeds the NCC requirement for the site and is therefore consider acceptable.

7.6. Motorcycle Parking

166. The Greater Geelong Planning Scheme does not outline any specific requirements for the provision of motorcycle spaces on-site.

167. Notwithstanding, a total of five (5) motorcycle parking spaces are proposed on-site for residents, to cater for the demand of this travel mode.

168. All motorcycle parking spaces are proposed within the lower ground car park and have been designed as 1.2 metres wide by 2.5 metres long, in accordance with the requirements of Figure 2.7 within the Australian Standard for Off Street Parking (AS2890.1:2004).

169. As such, I am satisfied with the provision and design of motorcycle spaces.

8. Bicycle Parking Assessment

8.1. Clause 52.34 Requirements

170. Requirements for bicycle facilities are set out in Clause 52.34 of the Greater Geelong Planning Scheme. The purpose of Clause 52.34 is defined in the scheme as follows:

— *To encourage cycling as a mode of transport; and*

— *To provide secure, accessible, and convenient bicycle parking spaces and associated shower and change facilities.*

Bicycle Parking Spaces

171. The statutory bicycle parking requirements for the application are set out in Table 8.1.

Table 8.1: Statutory Bicycle Parking Requirements

Description	Land Use	Size/No.	User	Parking Rate	Parking Requirement
One-, two- & three-bedroom apartments	Dwelling	84 dwellings	Resident	In developments of four or more storeys, 1 space to each 5 dwellings	17 spaces
			Visitor	In developments of four or more storeys, 1 space to each 10 dwellings	8 spaces
Tenancy	Shop	77.8 sqm	Employee	1 space to each 600 sqm of leasable floor area if the leasable floor area exceeds 1,000 sqm	0 spaces
			Visitor	1 space to each 500 sqm of leasable floor area if the leasable floor area exceeds 1,000 sqm	0 spaces
Marina office	Office	34.7 sqm	Employee	1 to each 300 sqm of net floor area if the net floor area exceeds 1000 sqm	0 spaces
			Visitor	1 to each 1000 sqm of net floor area if the net floor area exceeds 1000 sqm	0 spaces
Marina berths	Marina	32 berths	Employee	Not specified	0 spaces
			Visitor	Not specified	0 spaces
			Total		**25 spaces**

172. Where a rate is not specified in Clause 52.34, the provision of bicycle parking is not required for that particular use.

173. Based on the above assessment, the application has a statutory requirement to provide 25 bicycle parking spaces on-site including 17 spaces for residents and eight (8) spaces for visitors.

Shower / Change Room Requirements

174. In addition to the bicycle parking requirements outlined above, Table 2 & 3 within Clause 52.34 of the Greater Geelong Planning Scheme requires that one (1) shower be provided for the first five (5) employee bicycle parking spaces and one (1) shower for each subsequent ten (10) employee bicycle parking spaces.

175. A change room or direct access to a communal change room must be provided for each shower.

176. Noting that the application does not have a statutory requirement to provide any employee bicycle parking spaces on-site, there is no requirement to provide showers and/or change rooms.

8.2. Bicycle Parking Provision

177. It is proposed to provide a total of 115 bicycle parking spaces on-site.

178. 84 bicycle parking spaces and an electric bike charging point are proposed for residents within the bike store in the lower ground car park. This provision is more than three (3) times higher than the statutory requirement for residents.

179. I also note that this provision allows for one (1) bicycle parking space to be provided to each apartment.

180. A total of 31 bicycle parking spaces are proposed for visitors in the following locations:

— 21 spaces in two (2) locations within the lower ground car park;

— Six (6) spaces and a bike maintenance station along the Harbourside Drive frontage; and

— Four (4) spaces adjacent to the pedestrian entrance along Yacht Approach.

181. This provision is almost four (4) times higher than the statutory requirement for visitors.

182. Whilst there is no statutory requirement to provide bicycle parking for the marina berths, each of the abovementioned visitor bike parking locations are proposed in publicly accessible locations. I therefore expect that any public users of the marina berths cycling to/from the site will use these visitor bicycle parking spaces.

183. Given that the visitor bicycle parking provision is almost four (4) times higher than the statutory requirement, I expect there will be ample capacity to accommodate this.

184. Based on the above, I consider the proposed bicycle parking provision to be acceptable.

8.3. Bicycle Parking Layout

185. The bicycle parking spaces throughout the site have been designed as a mix of horizontal, vertical and two-tier horizontal spaces.

186. The layout of the proposed bicycle parking spaces is described below.

Resident Spaces

187. 58 spaces are proposed within a two-tier horizontal arrangement within the bicycle store in the lower ground car park. Two-tier bicycle parking spaces have been designed to be 2.0 metres long and are proposed at 0.5 metre spacings. Access will be provided via a 2.0-metre-wide aisle.

188. Six (6) spaces are proposed within an at-ground horizontal arrangement within the bicycle store in the lower ground car park. Bicycle parking spaces have been designed with a 0.5-metre-wide by 1.8-metre-long parking envelope that is accessed via a minimum aisle width of 1.5 metres.

189. 20 spaces are proposed within a wall-mounted vertical arrangement within the bike store in the lower ground car park. Bicycle parking spaces have been designed with a 0.5-metre-wide by 1.2-metre-long parking envelope that is accessed via a minimum aisle width of 1.5 metres.

Visitor Spaces

190. Ten (10) spaces are proposed within an at-ground horizontal arrangement, including six (6) spaces along Harbourside Drive and four (4) spaces adjacent to the pedestrian entrance along Yacht Approach. Bicycle parking spaces have been designed with a 0.5-metre-wide by 1.8-metre-long parking envelope that is accessed via an aisle width of at least 1.5 metres.

191. 21 spaces are proposed within a wall-mounted vertical arrangement in two (2) locations within the lower ground car park. Bicycle parking spaces have been designed with a 0.5-metre-wide by 1.2-metre-long parking envelope that is accessed via a minimum aisle width of 1.54 metres.

8.4. Summary

192. Based on the preceding assessment, I am satisfied that all bicycle parking spaces have been designed appropriately, in accordance with the relevant design requirements set out within AS2890.3:2015.

193. Furthermore, the proposed bicycle parking layout seeks to provide 39% of the total bicycle parking provision within an at-ground horizontal arrangement. This exceeds the requirement outlined in AS2890.3:2015 that 20% of bicycle parking spaces must be provided within an at-ground horizontal arrangement.

9. Access Arrangements & Car Parking Layout

9.1. Access Arrangements

194. Due to level differences between the frontage roads, each of the proposed vehicle access points and the pedestrian access will each be provided at different levels of the site.

195. Vehicle access to/from the site is proposed as follows:

- A 6.4-metre-wide crossover to/from Harbourside Drive, providing access to/from the lower ground car park; and
- A 5.5-metre-wide crossover to/from Balmoral Crescent, providing access to/from the Level 01 car park, with an internal ramp providing access to Ground Level.

196. Pedestrian access to/from the site will be provided from all three road frontages, providing direct access to all three car park levels. The application is seeking to provide a pedestrian footpath along the Yacht Approach and Harbourside Drive frontages, to enhance pedestrian connectivity between the subject site and surrounding areas.

9.2. Car Park Layout

197. I have assessed the proposed access arrangements and car park layout against the objectives and design requirements of Clause 52.06-9 of the Greater Geelong Planning Scheme and relevant sections of AS/NZS 2890.1:2004.

Design Standard 1 – Accessways

198. Design Standard 1 of Clause 52.06-9 relates to the design of accessways. The requirements of Design Standard 1 are assessed against the proposal in Table 9.1.

Table 9.1 : Design Standard 1 Assessment – Accessways

Requirement	Comments
Be at least 3 metres wide.	Satisfied – All accessways are wider than 3.0 metres.
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide.	Satisfied – The accessways and internal layout have been designed to be at least 4.2 metres wide at all changes of direction.
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre.	Satisfied – A 1.0 metre extension has been provided beyond the last space of all dead-end aisles within the publicly accessible portion of the car park to allow vehicles to depart in a forward direction.

Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres.	Satisfied – Based on the section drawings, a headroom of at least 2.2 metres will be provided within the car park.
If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	Satisfied – Accessways have been designed so that all vehicles can depart the site in a forward direction.
Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Transport Zone 2 or Transport Zone 3.	N/A – Neither vehicle access point connects to a road in a Transport Zone 2 or Transport Zone 3, and it is less than 50 metres before passing can occur.
Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height.	Satisfied – A pedestrian sight triangle measuring 2.0 metres along the frontage road from the edge of the exit lane and 2.5 metres along the exit lane from the frontage is proposed on the departure side of both vehicle access points.
If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6 metres from the road carriageway.	N/A – Access to the site is not from a land in a Transport Zone 2 or Transport Zone 3.
If entry to a car space is from a road, the width of the accessway may include the road.	Satisfied – The two (2) visitor spaces along Harbourside Drive will be accessible from the roadway. A carriageway width of approximately 6.5 metres will be provided in front of these spaces.

Design Standard 2 – Car Parking Spaces

199. Design Standard 2 within Clause 52.06-9 of the Greater Geelong Planning Scheme relates to the design of car parking spaces. The development proposal has been assessed against the requirements of Design Standard 2 in Table 9.2.

Table 9.2 : Design Standard 2 Assessment – Car Parking Spaces

Requirement	Comments
Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2 of Design Standard 2.	Satisfied – Car parking spaces have been designed to be 2.6 metres wide by 4.9 metres long accessed via an aisle width of at least 6.4 metres, in accordance with the dimensional requirements set out within Table 2 of Design Standard 2.
A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1 of Design Standard 2, other than:	Satisfied – The car parking spaces have been designed to accord with Diagram 1 of Design Standard 2.

A column, tree or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' on Diagram 1. A structure, which may project into the space if it is at least 2.1 metres above the space.	All car parking spaces adjacent to a wall have been provided within a minimum 300mm clearance to that structure. All columns adjacent to a car parking space are located outside of the area marked 'clearance required'.
Car spaces in garages must be at least 6 metres long and 3.5 metres wide for a single space and 5.5 metres wide for a double space measured inside the garage.	N/A – No garages are proposed.
Where parking spaces are provided in tandem (one space behind the other) an additional 500mm in length must be provided between each space.	Satisfied – All car parking spaces provided in tandem have been designed as 5.4 metres in length, thereby providing an additional 500mm in length.
Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.	Satisfied – All resident car parking spaces are undercover within the car park.
Disabled car parking spaces must be designed in accordance with Australian Standard AS2890.6-2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 of Design Standard 2 by 500mm.	Satisfied – Accessible car parking spaces have been designed as 2.6 metres wide by 4.9 metres long, with an adjacent set down area of the same dimensions. Noting that Clause 52.06 allows for accessible car parking spaces to encroach into an accessway by up to 500mm, the proposed dimensions satisfy the dimensional requirements outlined within AS2890.6:2022.

Design Standard 3 – Gradients

200. Design Standard 3 within Clause 52.06-9 of the Greater Geelong Planning Scheme relates to the design of gradients. The development proposal has been assessed against the requirements of Design Standard 3 in Table 9.3.

Table 9.3 : Design Standard 3 Assessment – Gradients

Requirement	Comments
Accessway grades must not be steeper than 1:10 (10%) within 5 metres of the frontage to ensure safety for pedestrians and vehicles. The design must have regard to the wheelbase of the vehicle being designed for; pedestrian and vehicular traffic volumes; the nature of the car park; and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three dwellings or less.	Satisfied – The entrance ramp at both the Balmoral Crescent and Harbourside Drive vehicle access points have gradients of 1:10 spanning for 4.65 metres and 4.5 metres respectively, before transitioning to a flat section within the car park.
Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 of Design Standard 3 and be designed for vehicles travelling in a forward direction.	Satisfied – A maximum gradient of 1:4 is proposed along the ramp between ground level & level 01. Noting that the ground level & level 01 car park only comprises parking spaces for residents and the ramp is less than 20 metres in length, the maximum gradient is in accordance with Table 3 within Design Standard 3.

Where the difference in grade between two sections of ramp or floor is greater than 1:8 (12.5%) for a summit grade change, or greater than 1:6.7 (15%) for a sag grade change, the ramp must include a transition section of at least 2 metres to prevent vehicles scraping or bottoming. Plans must include an assessment of grade changes of greater than 1:5.6 (18%) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.	Satisfied – Appropriate transition sections have been provided to prevent scraping or bottoming.

9.3. Design Recommendation

201. It is noted that safety concerns have been raised in regard to the proposed crossover to Balmoral Crescent. Although the proposed design satisfies the relevant design requirements, it is recommended that the access be widened as much as possible, and the security door recessed to allow convenient two-way movement and to allow an entering vehicle to store on site whilst the security door opens.

202. The additional width (6.1m minimum between walls) would ensure that vehicles could enter the site whilst another vehicle was propped at the crossover to exit. The current design and the proposed modifications are shown on Figure 9.1 and Figure 9.2.

Figure 9.1: Balmoral Crossover as Exhibited (SJB Architects SD02-03 dated 15/7/22)

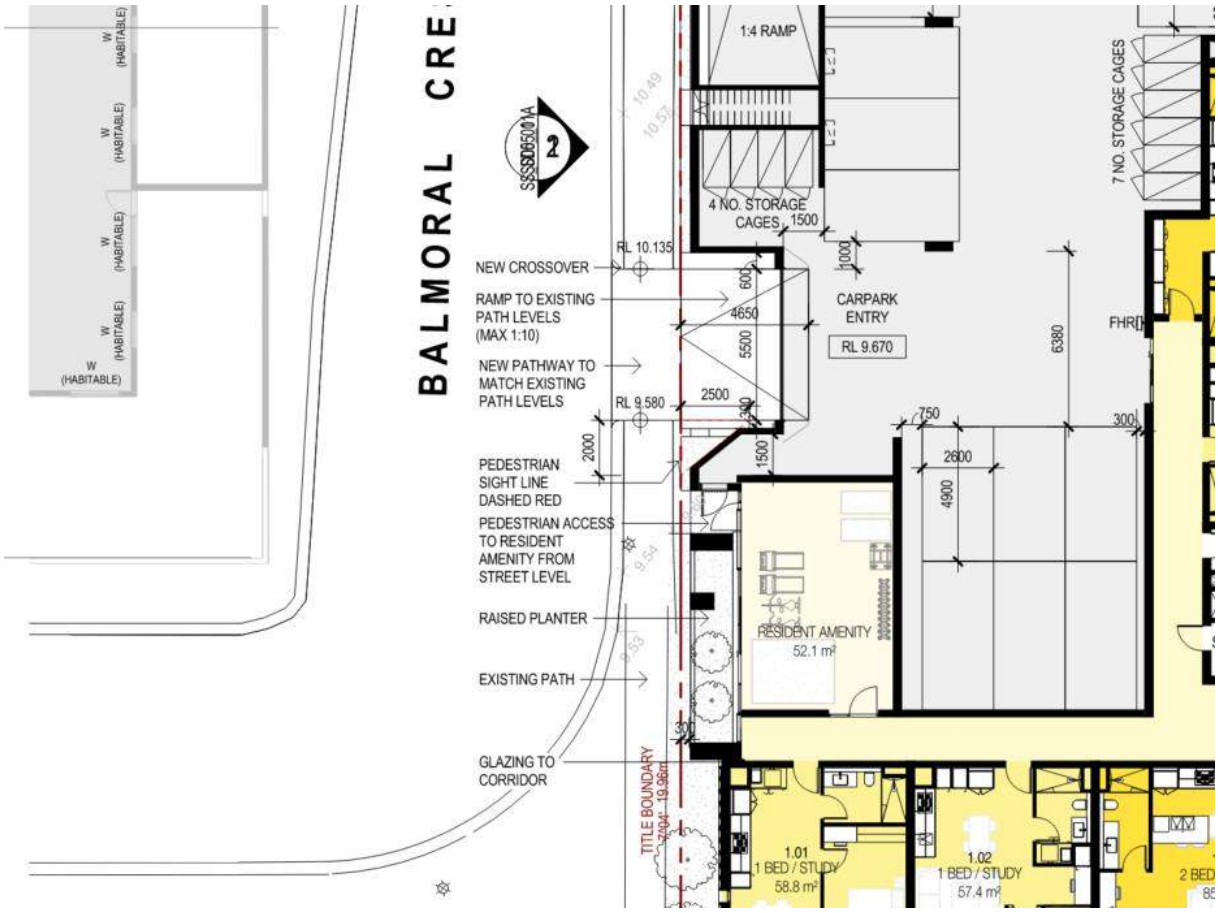
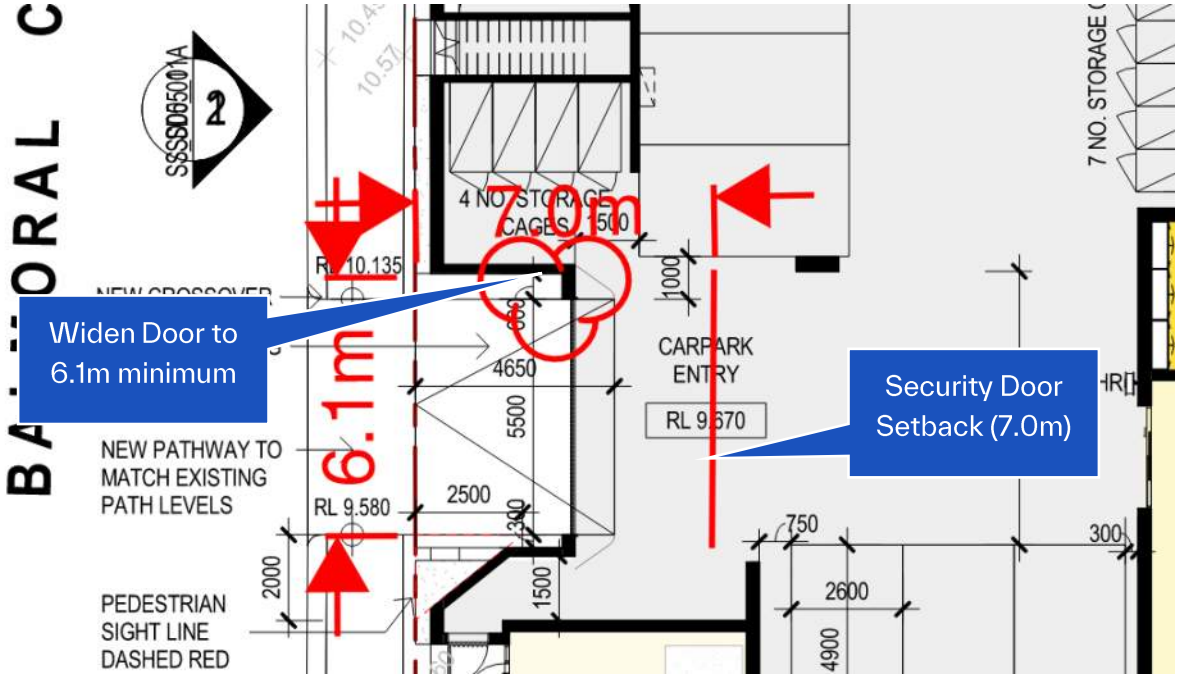


Figure 9.2: Proposed Design Modification to Balmoral Crossover



203. As shown in the preceding figure, there appears to be ample space to accommodate the proposed modifications and should not result in a loss of parking on site. Minor modifications to the adjacent storage facilities and pedestrian access may be necessary but should be achievable.

9.4. Swept Path Assessment

204. In addition to the above, an assessment of site access and circulation using the 'Autodesk Vehicle Tracking' software program has been prepared.

205. A swept path has been undertaken for the largest vehicle anticipated to access the site, that being a 6.4-metre-long mini rear loader for waste collection.

206. The mini rear loader is expected to access the site via Harbourside Drive and be limited to the publicly accessible portion of the car park.

207. The swept path assessment demonstrates that the mini rear loader is able to enter the site via the Harbourside Drive access point, circulate the internal accessways within the lower ground car park and park outside the bin room. Once waste collection is complete, the mini rear loader is able to depart the site in a forward direction via the Harbourside Drive access point.

208. I have also undertaken a swept path which demonstrates that a vehicle is able to turn to/from the site at both vehicle access points whilst another vehicle is stopped (either within the site or on the frontage road). This is a commonplace arrangement for residential sites, noting that a widening of the Balmoral Crescent access should reduce the need for a vehicle to prop on street.

209. Additionally, a swept path assessment has also been undertaken which demonstrates that a B85 is able to access critical spaces within the car park in a suitable manner.

210. Each of the abovementioned swept paths are provided at Appendix B of this report for reference.

9.5. Adequacy of Access Arrangements & Car Park Layout

211. On the basis of the above, I am satisfied that the proposed access arrangements and car park layout have been designed appropriately, in accordance with the requirements outlined within Clause 52.09-9 of the Greater Geelong Planning Scheme and/or relevant sections of the Australian Standards (AS2890 series).

212. Although I recommend minor widening and a setback at the Balmoral Crescent access, I have not had an opportunity to confirm with the architect that the modifications are possible and note that in the event that they can't be accommodated for whatever reason, the access has still been designed in accordance with the relevant standards.

10. Loading & Waste Collection

10.1. Statutory Requirement

213. Clause 65.01 'Decision Guidelines' of the Greater Geelong Planning Scheme outlines the provision of loading requirements and states the following:

'Before deciding on an application or approval of a plan, the responsible authority must consider as appropriate:

The adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts.'

10.2. Loading Arrangements

214. The site will generate low level loading and unloading activities associated with deliveries to residents of the apartments (meal delivery services, postal deliveries etc.). When having regard for the proposed number of dwellings, I expect that these will occur daily and typically be completed by a scooter, standard passenger vehicle or courier vehicle. After initial occupation of the building, it is anticipated that residents will move in / out intermittingly. These movements are infrequent and short term and can be managed appropriately along the frontages of the site as needed.

215. The proposed tenancy and marina office are small in size and are expected to generate occasional deliveries during business hours. Deliveries would typically be undertaken by a van or small truck that can park in a standard car park bay.

216. The loading / unloading arrangements are considered appropriate for the type of development proposed and can be comfortably accommodated on the three streets fronting the subject site.

10.3. Waste Collection Arrangements

217. A bin store is proposed within the lower ground car park. A Waste Management Plan (WMP) has been prepared for the application by Leigh Design.

218. From my review of the WMP I understand that waste bins are to be collected on-site by a private contractor, using a 6.4-metre-long mini rear-loader vehicle.

219. As previously discussed, the swept path assessment which demonstrates that a 6.4-metre-long mini rear loader is able to enter the site via the Harbourside Drive access point, circulate the internal accessways within the lower ground car park and park outside the bin room. Once waste collection is complete, the mini rear loader is able to depart the site in a forward direction via the Harbourside Drive access point.

220. The abovementioned swept path assessment is provided at Appendix B for reference.

10.4. Adequacy of Loading & Waste Collection Arrangements

221. Based on the preceding discussions, I consider the proposed loading and waste collection arrangements are considered to be acceptable.

11. Traffic Assessment

11.1. Background

222. It is my understanding that the original application for Balmoral Quay contemplated the provision of 36 apartments within Stage 5. The overall development including the 36 apartments was approved by Council in 2007.

223. The current application is seeking to provide a total 84 apartments within Stage 5, which represents an increase of 48 apartments.

224. Therefore, the critical consideration is the impact that the increase in traffic volumes above what has already been approved. As such, the following traffic assessment will address the impacts of the traffic generation arising from the additional 48 apartments.

11.2. Traffic Generation

225. Traffic generation rates for residential developments are impacted by a range of factors including housing density, number of car parking spaces provided, availability to proximate alternate transport modes (including public transport services, cycling network and car share facilities) and proximity to nearby activity centres or other retail facilities and services.

226. Based on the above discussion, the locality of the subject site and my experience of similar residential developments, I am of the view that each apartment could be expected to generate up to five (5) vehicle trips per day.

227. It is generally accepted that 10% of this traffic will be generated during the peak hour periods (weekday AM & PM peak hour).

228. For the purpose of this assessment, I have adopted a traffic generation rate of five (5) vehicle movements per day and 0.5 vehicle movements per hour during each of the peak hour periods for each dwelling.

229. I have adopted typical splits between inbound and outbound vehicle movements for residential developments, as follows:

- Weekday AM peak hour: 20% inbound / 80% outbound;
- Weekday PM peak hour: 60% inbound / 40% outbound; and

230. Application of the preceding assumptions to the increased number of apartments (i.e. 48 apartments) is presented in Table 11.1 to estimate the increase in traffic volumes accessing the subject site.

Table 11.1: Estimated Increase in Traffic Generation

Direction	Weekday AM Peak Hour	Weekday PM Peak Hour	Daily
Inbound	5 vph	14 vph	120 vpd
Outbound	19 vph	10 vph	120 vpd
Total	**24 vph**	**24 vph**	**240 vpd**

11.3. Traffic Distribution & Impact

Traffic Distribution

231. To understand the distribution of the estimated traffic volumes shown in Table 11.1, I note the following with regard to the proposed vehicle access arrangements:

— 31 resident car parking spaces (30% of the resident car park supply) are proposed within the lower ground car park, which is accessible via Harbourside Drive; and

— 71 resident car parking spaces (70% of the resident car park supply) are proposed within the ground level and level 01 car park, both of which are accessible via Balmoral Crescent.

Peak Hour Traffic Impacts

232. Based on the above, the additional 24 vehicles estimated to access the site during each peak hour will be split as follows:

— Seven (7) vehicles accessing the site via the Harbourside Drive access point; and

— 17 vehicles accessing the site via the Balmoral Crescent access point.

233. The additional 17 vehicle movements throughout the peak hour are equivalent to an additional vehicle movement through the site access point approximately every 3.5 minutes (on average).

234. This is a low volume of traffic from a transport engineering perspective. This level of traffic activity will not have a detrimental impact on the operation of the site access point or the surrounding road network.

Daily Traffic Impacts

235. As per Table 11.1, I estimate that the subject site will generate an additional 240 vehicle movements per day on the surrounding road network from what was previously anticipated.

236. These traffic movements will be distributed over the surrounding road network, primarily to Liverpool Street via Harbourside Drive and Yacht Approach, Balmoral Crescent, Rippleside Park Drive and Victoria Street.

237. The local road network surrounding the site comprises typical street typologies that would generally be classified as Access Street Level 2 under Clause 56.06-8 of the Greater Geelong Planning Scheme, giving them a theoretical capacity of 2,000-3,000 vehicles per day.

238. As noted earlier the subject site is located within a relatively isolated pocket of residential development, with all vehicle movements to and from the west via Melbourne Road or to/from the south via Rippleside Park Drive.

239. In my experience the existing road network has sufficient capacity to absorb the relatively modest increase in daily traffic volumes projected by the additional apartments proposed on the subject site.

11.4. Single Width Ramp

240. A single width ramp is proposed between the ground level & level 01 car parking areas.

241. To assess the adequacy of this arrangement, I refer to Clause 3.2.2 within AS2890.1:2004 which specifies:

"As a guide, 30 or more vehicle movements in a peak hour (in and out) combined would usually require the provision for two vehicles to pass on the driveway, i.e. a minimum width of 5.5 metres."

242. Application of the traffic generation rates outlined in Section 10.2 to the overall proposed number of apartments (i.e. 84 apartments) suggests that the subject site will generate a total of 42 vehicle movements during each peak hour period.

243. I note that 35 car parking spaces are proposed within the ground level car park, representing 34% of the total residential car parking allocation.

244. On this basis, I assume that the spaces within the ground level car park (being those that will use the ramp between ground level and level 01) will generate a total of 14 vehicle movements during each peak hour period.

245. This is less than half of the allowable threshold for a single width accessway. Based on this, I am satisfied that a single width ramp between the ground level and level 01 car parking areas is acceptable.

12. Response to Issues

12.1. Overview

246. Based on the submissions received following exhibition of the Amendment and Planning Application material, a number of transport related issues were identified as summarised in Section 3.5.

247. Following the preceding investigation, a response to each of the identified issues is outlined as follows:

12.2. Car Parking concerns

Adequacy of car parking

248. As detailed in the Car Park Assessment, the car parking provision is considered appropriate, with a surplus of 5 spaces within the marina / residential visitor parking during peak times.

Visitor parking allocation and sharing arrangement with Marina Spaces

249. The provision of one space per marina berth exceeds anticipated demand and therefore provides opportunity for those spaces to be shared with residential visitors. The sharing of these spaces is considered appropriate and a good use of a parking resource.

Demand for on-street car parking

250. The only demand expected to be generated by the site for on-street car parking is in association with visitors to the proposed tenancy and any loading / unloading activity (excluding waste collection). These activities are short term and are expected to occur during business hours. Car parking in the precinct is generally provided on both sides of the road and is unrestricted. The occasional use of two spaces on-street at peak times will have a negligible impact on car parking in the vicinity of the site.

251. I also note that there is an off-street car park containing 39 spaces at the eastern end of Yacht Approach. During my site visit, only 17 spaces were occupied at 2:35pm on a sunny Saturday afternoon and some of these spaces were being used by construction workers who were departing around this time. This car park would be a logical place in close proximity to accommodate any parking demand generated by the proposed tenancy.

252. Further noting that provision of parking on site for a tenancy of this nature is highly unusual and generally not desirable.

Lack of EV capability

253. Since Cardno prepared their Traffic Assessment, the National Construction Code (NCC) has been updated to require new buildings to be ready for Electric Vehicles (EV).

254. As part of the new requirements under the NCC 2022 energy efficiency standards, there must be space for switchboards and EV charging infrastructure in new builds for:

100% of parking car spaces in apartment buildings,

10% of spaces in offices and retail, and

20% of spaces in other commercial buildings.

255. These requirements took effect in Victoria on 1 October 2023. Although the circuitry and energy requirements will need to be in place, there is expected to be a transition period before every car space in an apartment building has EV charging ports ready for use.

256. On that basis, the proposed development is expected to provide for Electric Vehicles to satisfy the relevant national building codes.

12.3. Traffic concerns

Traffic congestion

257. The proposed increase in apartments is expected to generate an additional 24 vehicle movements during the peak hours, split between inbound and outbound movements and further distributed between the two proposed access locations.

258. This level of additional traffic will have a negligible impact on the existing operation of the surrounding road network.

Questions regarding status of proposed right turn ban from Yacht Approach

259. In my opinion, there is no need to ban right turns from Yacht Approach into Balmoral Crescent. The traffic movements generated by the Balmoral Quay development and the public car park are relatively minimal and distributed over the surrounding road network.

No road connection between Balmoral Quay and Corio Bay

260. The road network serving the Balmoral Quay development has been approved and largely constructed during the initial stages of the development. Further road connections to the foreshore are unnecessary in my opinion to serve Stage 5 of the development.

Ability for roads to handle additional traffic

261. The area surrounding the subject site is a relatively isolated pocket of residential development, with limited through volumes due to the constraints on access to the north, east and south.

262. The proposed increase in apartments is anticipated to generate an additional 240vpd compared to what was previously contemplated and approved.

263. This level of traffic can be comfortably accommodated by the existing local road network, noting that the 240vpd will be dispersed over several roads throughout the precinct.

Traffic entering from Victoria Street overpass may cause back up over bridge.

264. It is anticipated that the additional apartments will generate in the order of 24 vph in the AM and PM peak hour. The movement outlined above would be residents returning to the subject site as an 'inbound' movement. Of the 24vph, 14vph (60% during the PM peak) would be the largest number of inbound vehicle movements anticipated. Assuming that 10% of all inbound vehicles arrive from the west via Margaret Street would be equivalent to 1 additional vehicle

movement during the peak hour. This level of traffic activity would have no discernible impact on existing queues on the overpass.

265. Even if up to 20% of all arrivals were to use the Margaret Street overpass, this would be equivalent to 3vph in the PM peak hour, or on average one additional vehicle movement every 20 minutes.

Concern with Liverpool Street intersection

266. A concern with the Liverpool Street intersection was raised in the summary of submissions. Upon review of Liverpool Street, I am unsure of what the specific concern relates to.

267. Liverpool Street is approximately 200m in length which would not typically trigger a requirement for speed control.

268. Upon review of both Liverpool Street and the application, I see no particular concerns regarding Liverpool Street that would need to be addressed to accommodate the proposal.

12.4. Design concerns

Safety concerns with access locations, including sight lines to footpath

269. As detailed in the Design Review section the proposed access locations on Balmoral Crescent and Harbourside Drive are both designed appropriately with sight splays in accordance with Clause 52.06 of the Geelong Planning Scheme.

Pedestrian and Bicycle Safety

270. The provision of new footpaths along Yacht Approach and Harbourside Drive will improve pedestrian connectivity around the subject site, noting that there is already a wide (2.0m) wide footpath along the Balmoral Crescent frontage that provides access to Yacht Approach and Rippleside Park.

271. The subject site is located within a low speed and low traffic volume environment that will promote pedestrian and bicycle use.

272. The site has excellent access to the existing shared path along the Geelong foreshore providing convenient access to the wider bicycle and pedestrian network.

273. The surrounding road network generally has footpaths on both sides of the road.

274. I am satisfied that pedestrian and bicycle facilities and access have been designed appropriately.

Lack of footpath connections including along Yacht Approach

275. A new footpath along the Yacht Approach frontage will improve pedestrian connectivity from Liverpool Street and Balmoral Crescent to both Rippleside Park and Corio Bay.

Accessibility for mobility impaired

276. The proposed development has been designed with two lifts as well as a platform lift on Yacht Approach to enter the building. All internal grades have been designed appropriate to satisfy the relevant DDA standards for access.

Waste collection and emergency services access

277. Waste collection has been designed to be collected on site by a mini-rear loader vehicle, which is commonly used in apartment buildings of this nature and is considered appropriate.

278. The three road frontages to the subject site will provide convenient access for an emergency vehicle if required.

279. Both waste collection and access by emergency vehicles is appropriate.

12.5. Other concerns

Parking issues during construction

280. Planning permits typically include a requirement for the developer to prepare a Construction Management Plan (CMP), to the satisfaction of Council. The Construction Management Plan would include details of how construction will be managed including car parking and vehicle access to the site.

281. Parking demand associated with the construction phase of the project is temporary and relatively short term. I am satisfied that the subject site and surrounding street network provide appropriate opportunities for parking associated with construction of the subject site that can be identified and managed, if necessary, as per an approved CMP.

13. Conclusion

282. It is proposed to increase the size of the previously approved development contemplated for the subject site, which is Stage 5 of the Balmoral Quay development and is the last stage of this development.

283. The proposal for Stage 5 will contain 84 apartments an increase of 48 from the original masterplan. In addition to the apartments there will be an office associated with the Balmoral Marina and a second small tenancy.

284. Car parking for the development will be located over three levels and gain access from Harbourside Drive and Balmoral Crescent.

285. In summary the proposed increase in apartments (48) can be comfortably accommodated from a transport perspective. The anticipated additional traffic volumes are in the order of 24 vehicle movements during the peak hours and 240 vehicle movements per day.

286. Traffic will be dispersed over the surrounding road network and will not have a detrimental impact to the existing operating conditions.

287. An appropriate provision of parking has been provided on site in my opinion and will only rely on on-street parking for customers of the tenancy, which is expected to be in the order of two spaces.

288. Customer parking for a small tenancy of this nature is usually accommodated on street and the three road frontages and nearby public car park containing 39 spaces provide ample opportunity to accommodate the anticipated demand of 2 spaces.

289. In order to improve access to the site from Balmoral Crescent I have recommended design changes that would widen the accessway and setback any security door, making two-way vehicle movements easier and allowing a vehicle to store off street whilst the security door is opening.

290. Although these design changes are not required to satisfy the relevant standards, I believe they would reduce the concerns raised in submissions over the safety of this access to Balmoral Crescent.

291. The car park design and access satisfy the relevant standards and are considered appropriate. Waste collection will be undertaken on site by a mini rear-loader which is common for an apartment building of this size.

292. I have reviewed the Rippleside Urban Design Guidelines (March 2023) and recommend that Section G6 Internal Operations: Car Parking, is updated to match the development that has been approved and the current application (if approved).

Appendix A : Hilary Marshall CV

+61 3 9429 3011
0409 173 262
hilary.marshall@ratio.com.au

Melbourne

Hilary Marshall
Director: Transport

Qualifications

Bachelor of Civil Engineering (Hons)

Bachelor of Business Administration
RMIT University, Melbourne

Registered Professional Engineer
PE0006082

Industry Participation

PCA - Residential Developers Committee (2021 - present)

Property Council of Australia Industrial, Infrastructure and Logistics Committee (2017 - 2020)

UDIA - Engagement & Diversity Committee (2021 - present)

UDIA - Women in Property (2019 - 2021)

Victorian Planning & Environmental Law Association (VPELA)

Awards

UDIA Awards - Women in Leadership Award 2019

Key Skills

Expert Witness

Traffic and Transport Planning

Car Parking Analysis

Traffic Impact Assessment

Strategic Transport Planning

Traffic Modelling, Road and Intersection Analysis

Hilary is a highly respected professional with over 20 years' experience as a Traffic and Transport Engineer.

She has a developed a diverse skill set during her career through her involvement in a wide variety of projects.

In particular, Hilary has extensive experience in Greenfields development, having worked in over 40 Precinct Structure Plan (PSP) areas throughout Metropolitan Melbourne and regional growth areas.

Her involvement includes participation in PSP panel hearings, residential and industrial subdivision, preparation of Urban Design Framework studies and transport planning of Activity Centres.

Hilary is a passionate member of the property industry, who sits on committees at both the Property Council of Australia (PCA) and the Urban Development Institute of Australia (UDIA). She also regularly participates as a guest speaker on transport and infrastructure related topics.

Hilary particularly enjoys preparation and presentation of expert evidence to both VCAT and Planning Panels Victoria.

She is a regular guest speaker in seminars, conferences, workshops and professional development seminars organised by the Property Council, PIA and VPELA and lectures from time to time at tertiary institutions, including the University of Melbourne and RMIT. She presented at the PIA National Congress in May 2018, as well as the Green Buildings Council of Australia Conference in March of the same year.

Notable projects

VCAT / Panel

- North East Link EES Panel
- Beveridge North West PSP Panel
- Crib Point Gas Pipeline EES Panel
- Nightingale 3.0, Sydney Road, Brunswick VCAT
- Craigieburn West PSP Panel

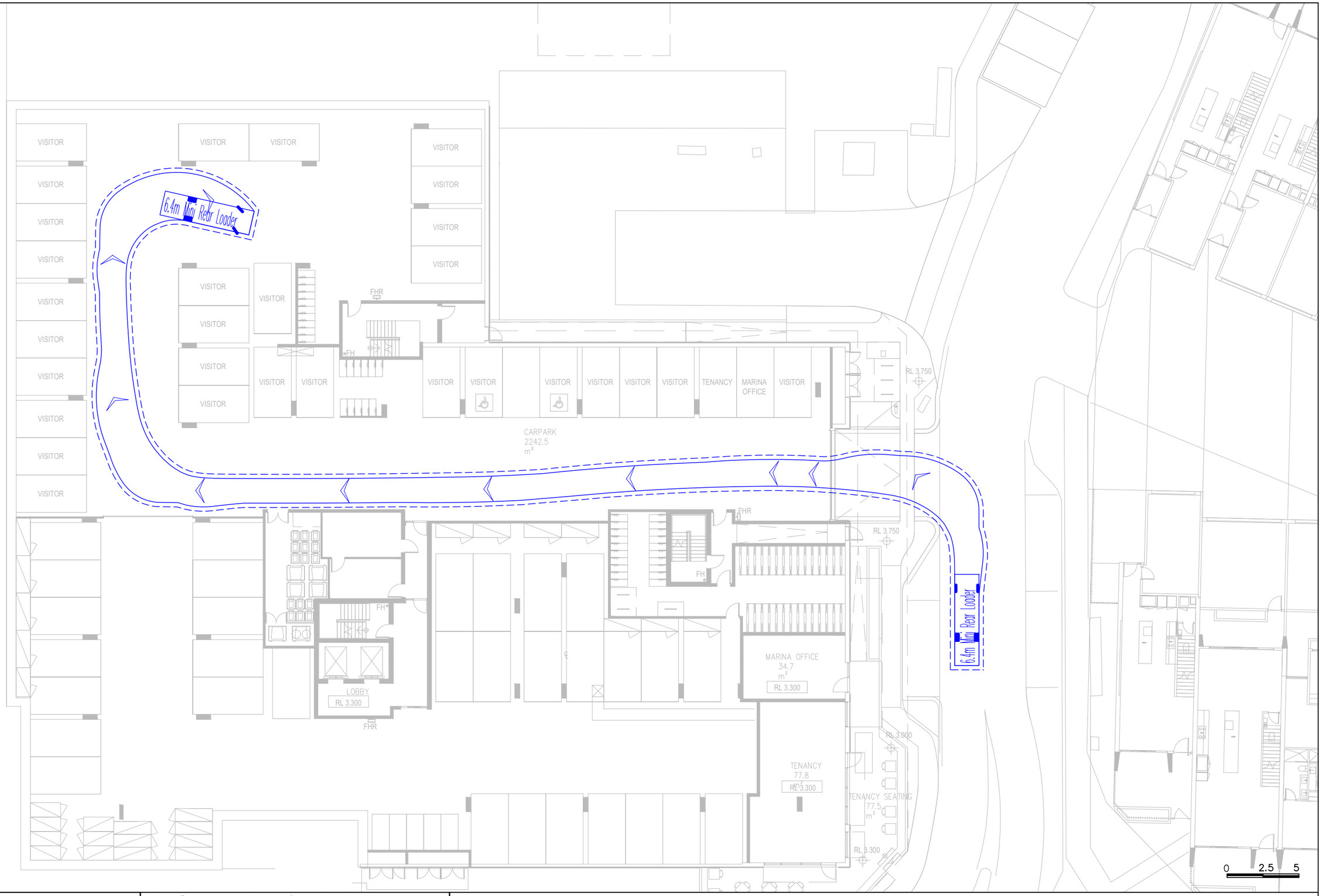
Subdivision

- Mt Atkinson Residential Estate - *Stockland*
- Mambourin Residential Estate and Major Activity Centre - *Frasers*
- Melbourne Business Park Mt Atkinson - *Stockland*
- Redstone Estate and Major Activity Centre, Sunbury - *Villawood*
- Vearings Road (240ha) Industrial Estate, Epping - *Sandhurst Retail and Logistics*

Other

- Marnong Estate, Winery and Function Facility - Mickleham
- The Base, Mixed Use Development - Hume Highway, Craigieburn
- Hopkins Road Large Format Retail - Mt Atkinson
- Kallo Town Centre - Toyon Road, Kalkallo
- Porta Site Redevelopment - Heidelberg Road, Fairfield

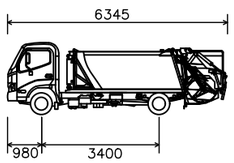
Appendix B Swept Path Assessment



ratio:

RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

Mini–Rear Loader Waste Collection Vehicle



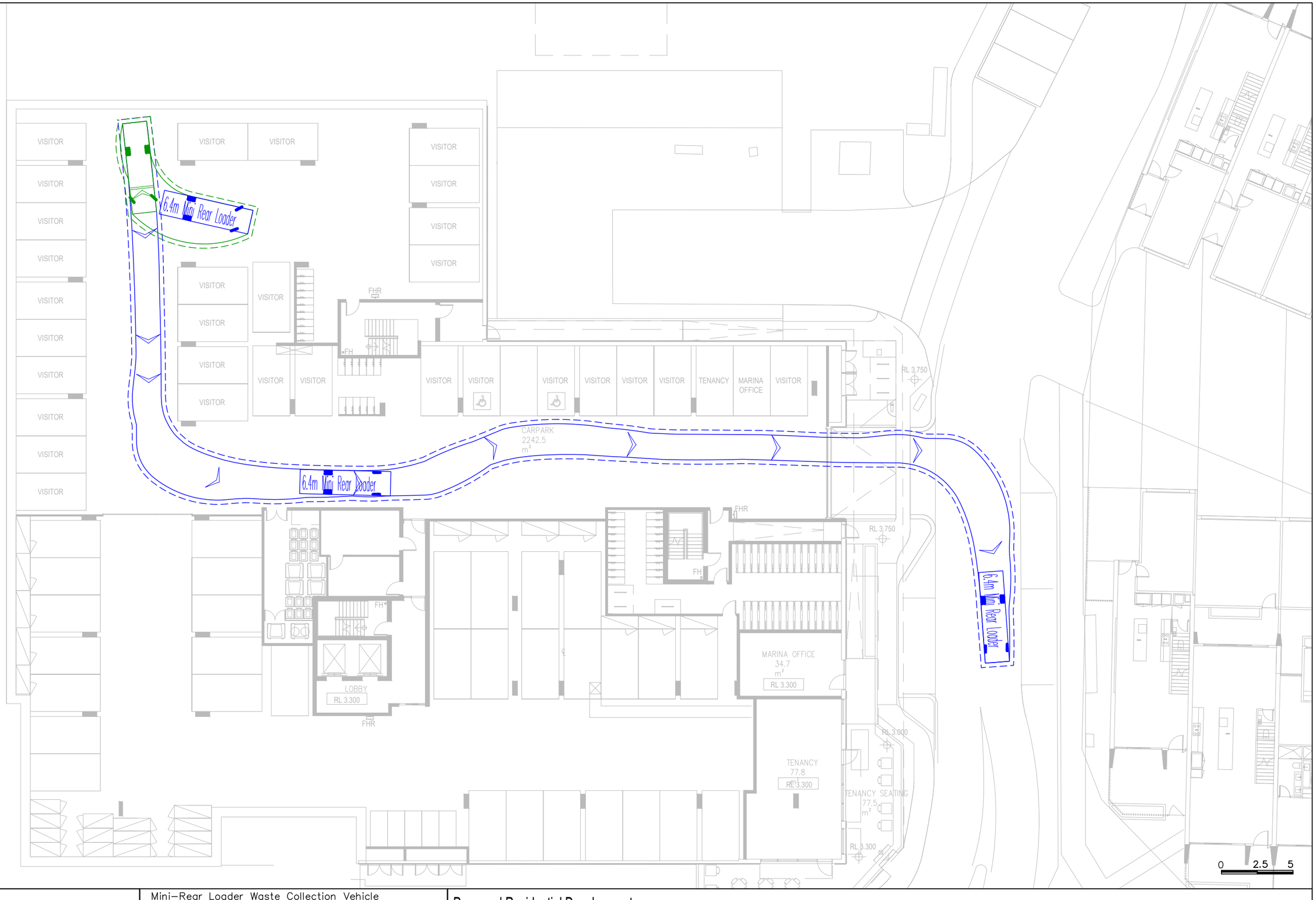
VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

Overall Length	6.345m
Body Width	1.700m
Overall Body Height	2.080m
Min Body Ground Clearance	0.205m
Track Width	1.670m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.450m

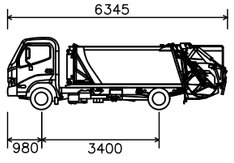
Proposed Residential Development
1 Harbourside Drive, Rippleside
Swept Path Assessment - Lower Ground Level

NOTE:
1) Base plan supplied by SJB Architects, dated 18 July 2022
2) Maximum design speed - 5km/h

RATIO REFERENCE	SHEET No.	SCALE	DATE
20956T-SK01-A/XX	01 of 09	1:250@A3	02/02/2024



Mini–Rear Loader Waste Collection Vehicle



VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

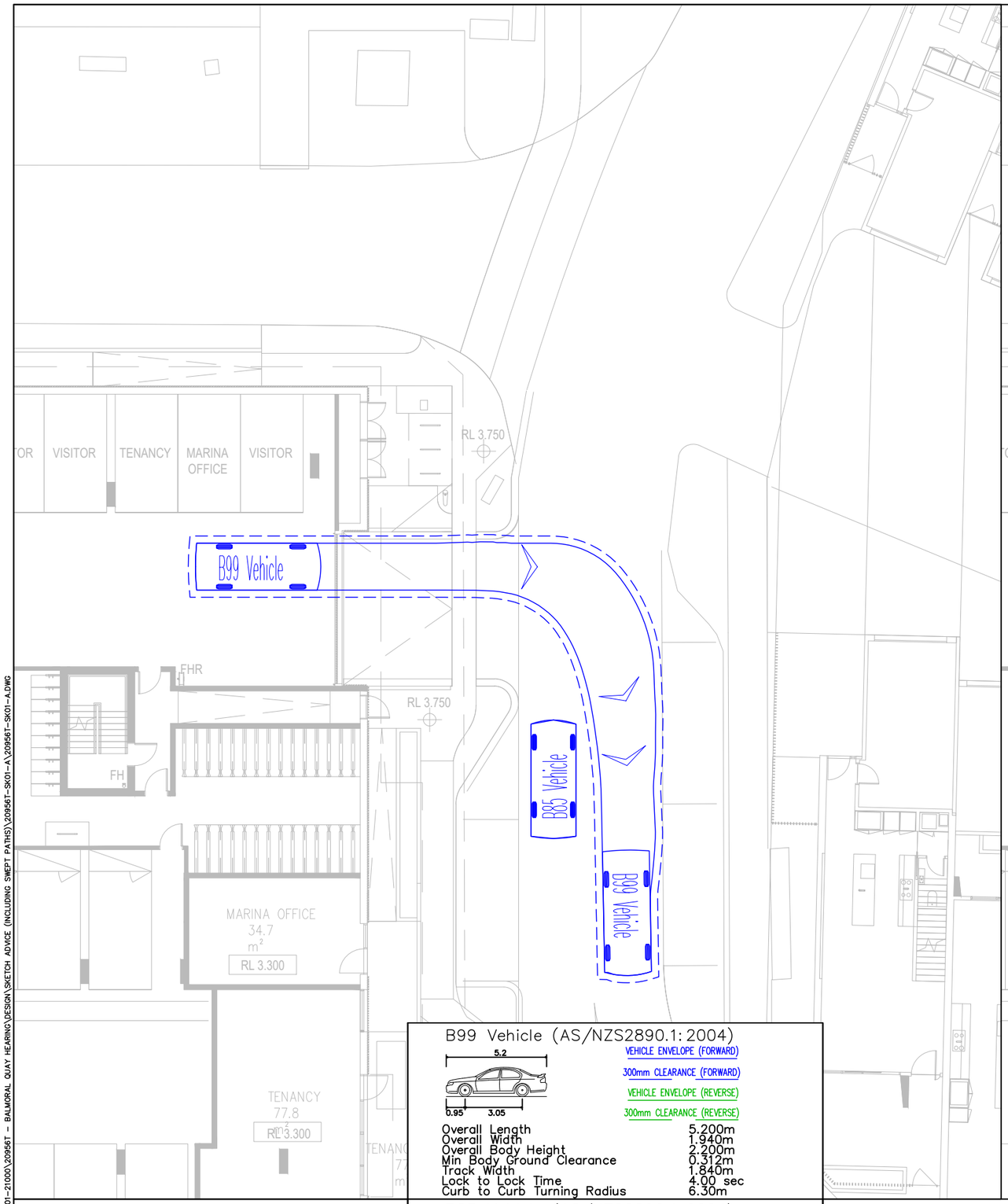
Overall Length	6.345m
Body Width	1.700m
Overall Body Height	2.080m
Min Body Ground Clearance	0.205m
Track Width	1.670m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.450m

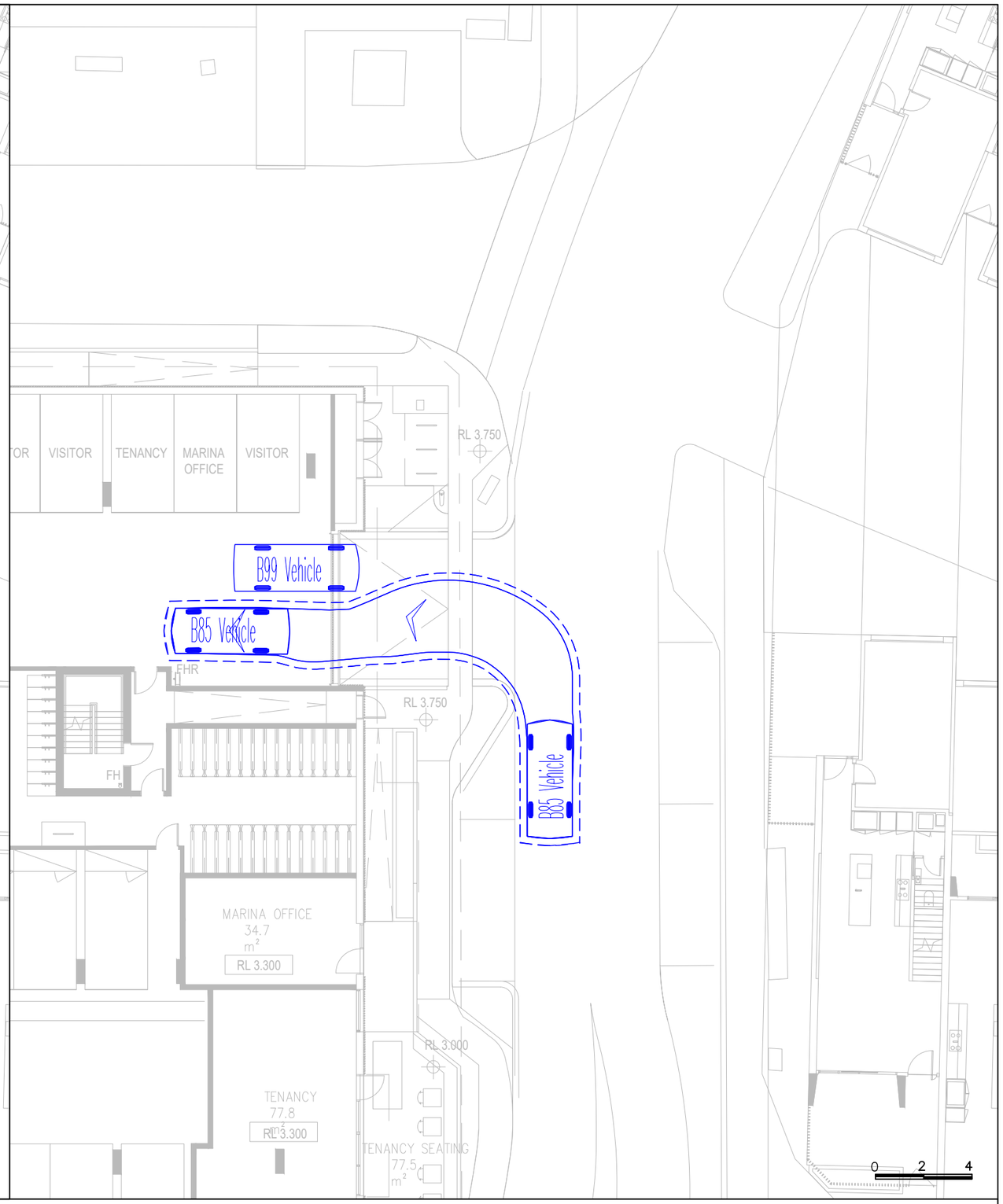
ratio:
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

Proposed Residential Development
1 Harbourside Drive, Rippleside
Swept Path Assessment - Lower Ground Level

NOTE:
1) Base plan supplied by SJB Architects, dated 18 July 2022
2) Maximum design speed - 5km/h

RATIO REFERENCE	SHEET No.	SCALE	DATE
20956T-SK01-A/JHB	02 of 09	1:250@A3	02/02/2024



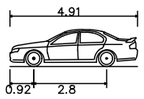


B99 Vehicle (AS/NZS2890.1:2004)

VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

B85 Vehicle (AS/NZS2890.1:2004)



VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

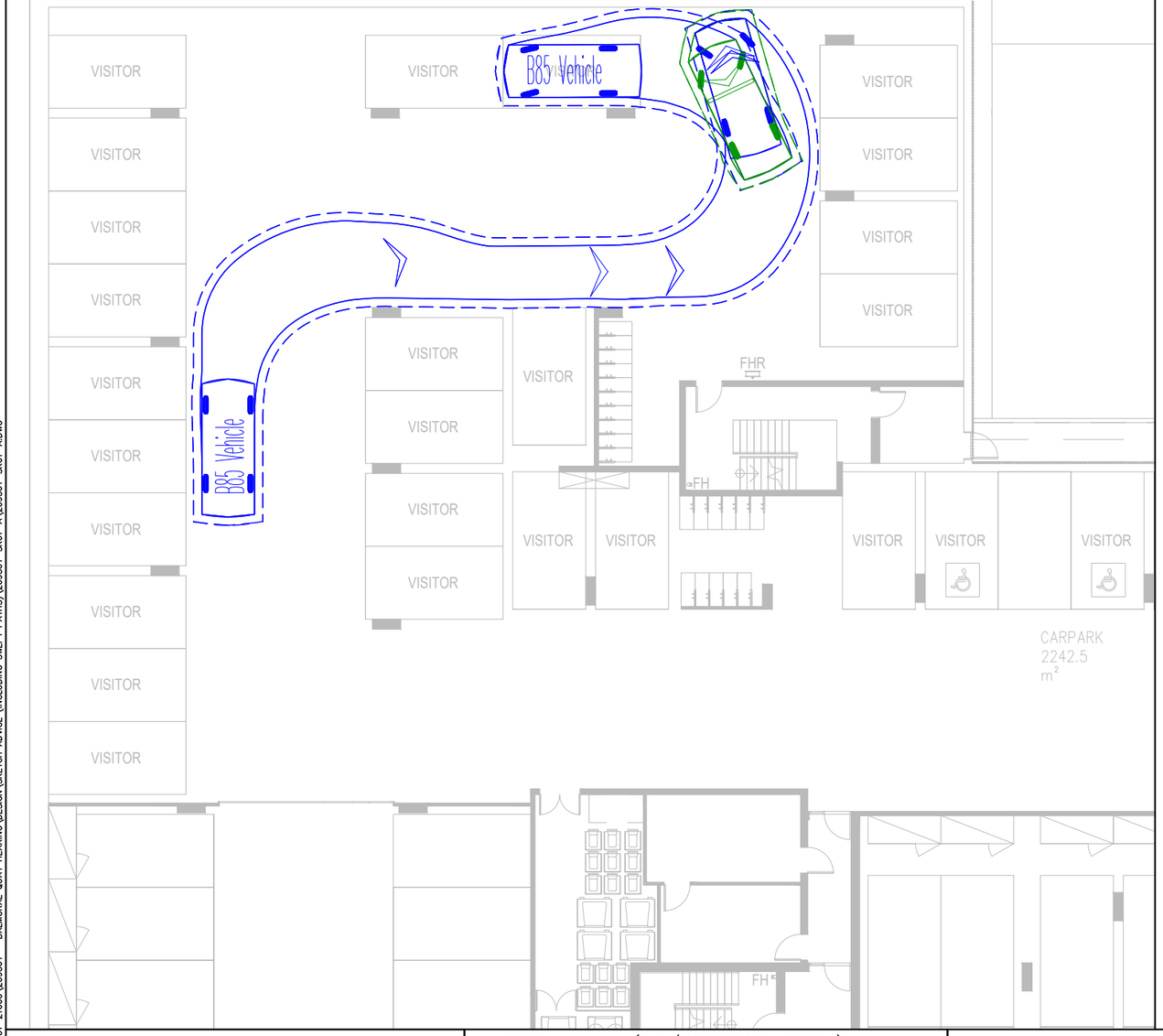
Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	5.80m

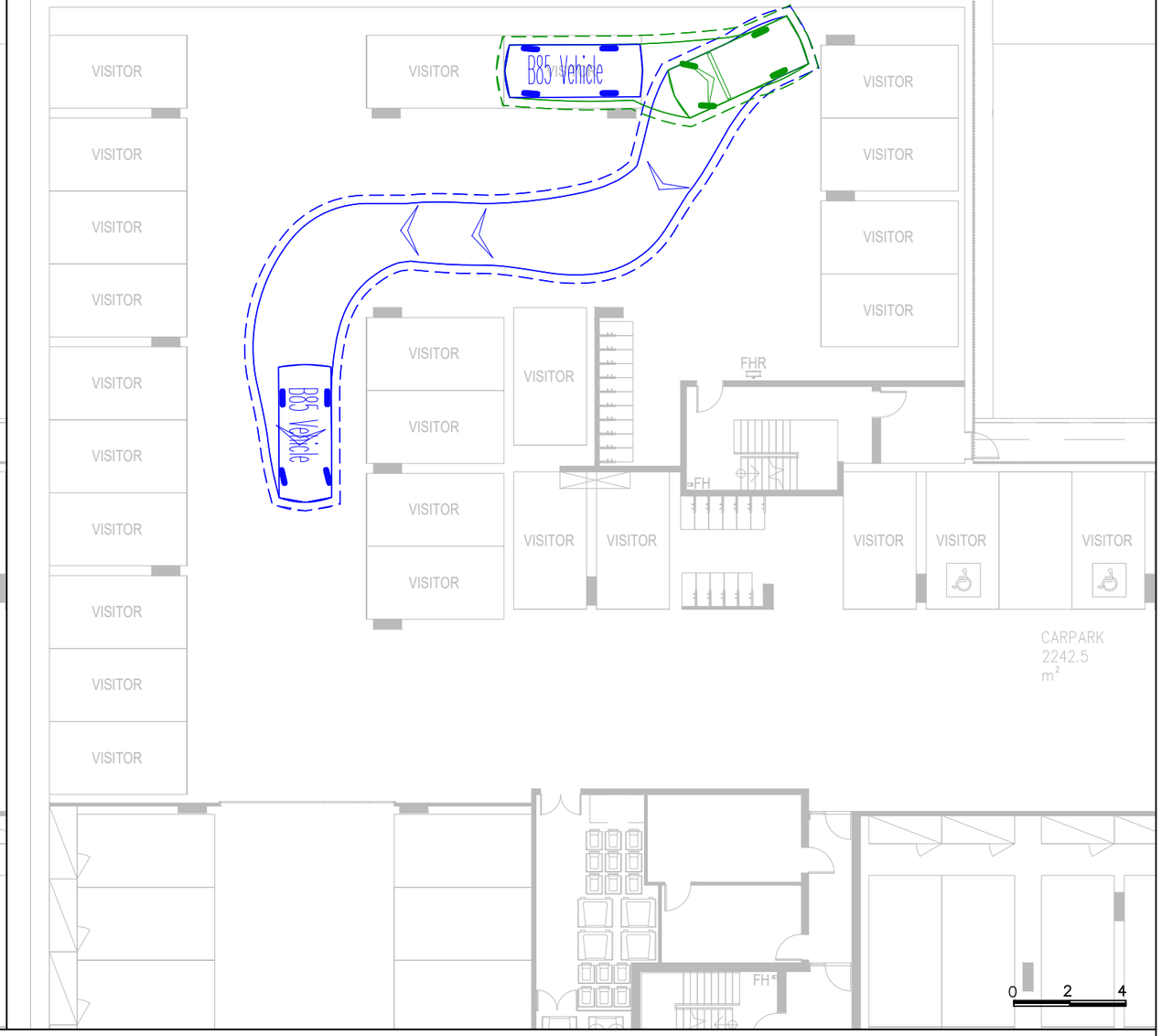
ratio:
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

Proposed Residential Development
1 Harbourside Drive, Rippleside
Swept Path Assessment - Lower Ground Level

NOTE:
1) Base plan supplied by SJB Architects, dated 18 July 2022
2) Maximum design speed - 5km/h

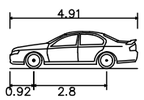
RATIO REFERENCE	SHEET No.	SCALE	DATE
20956T-SK01-A/JHB	03 of 09	1:200@A3	02/02/2024





ratio:
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)



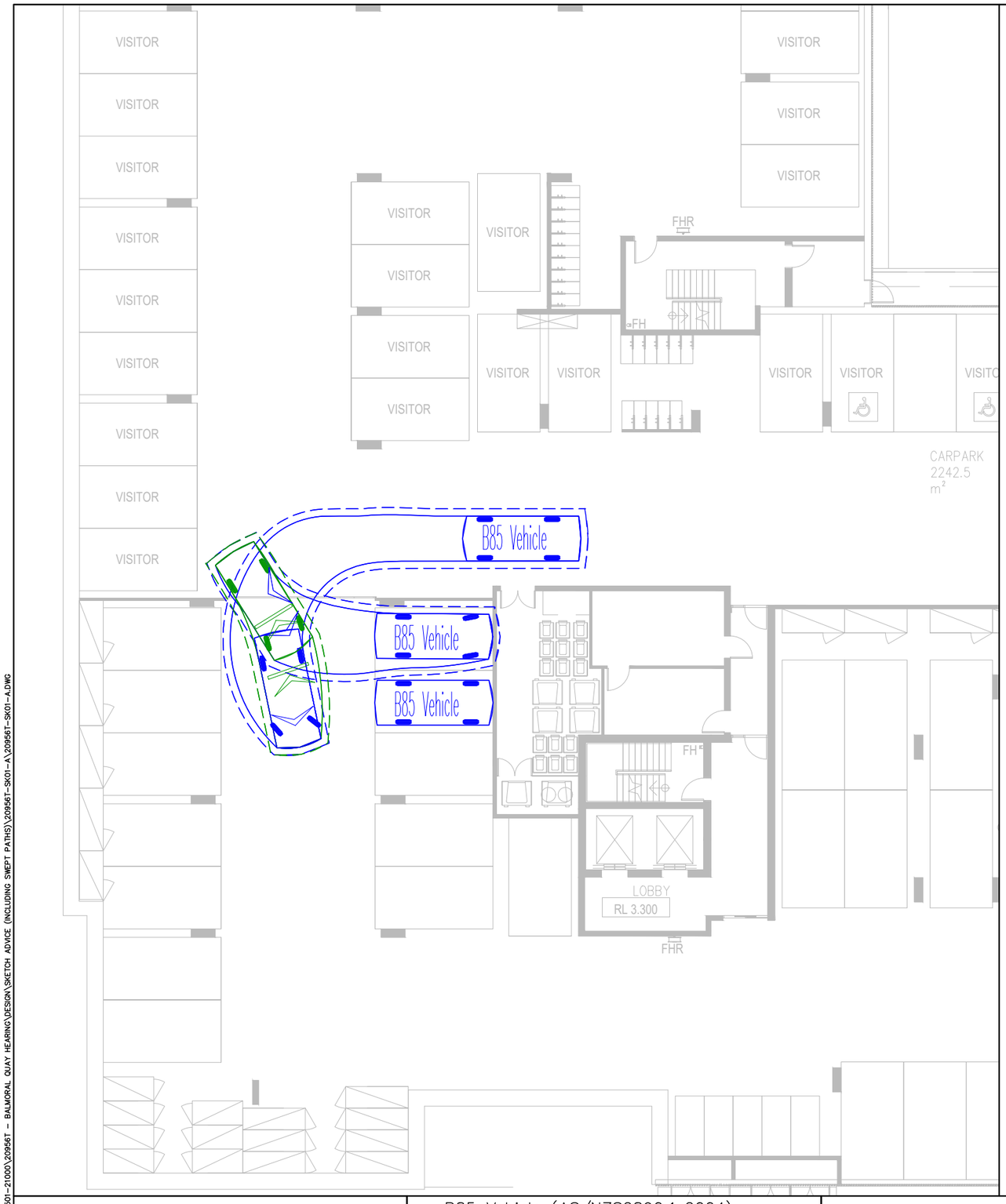
VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

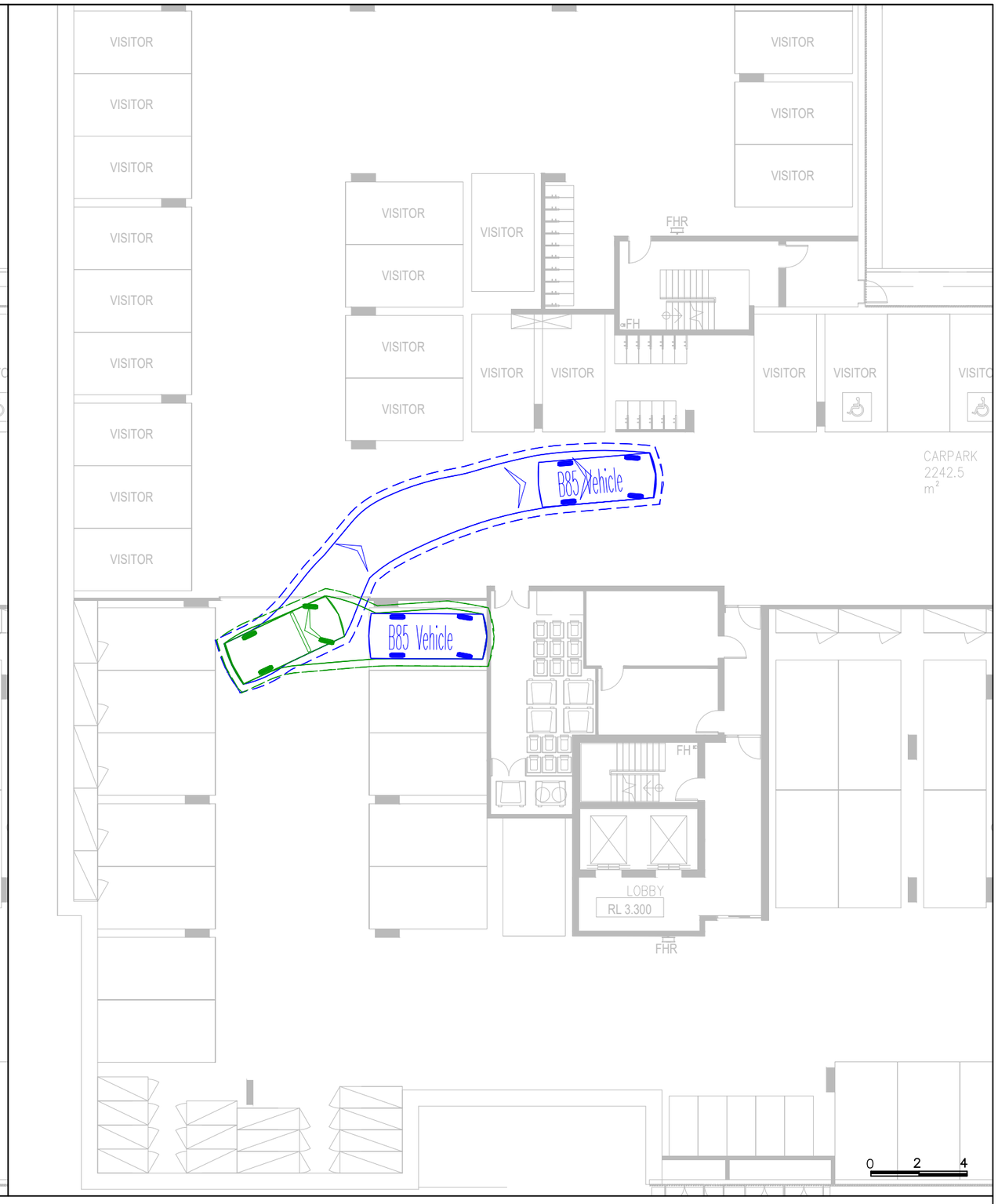
Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	5.80m

Proposed Residential Development
1 Harbourside Drive, Rippleside
Swept Path Assessment - Lower Ground Level

NOTE:
1) Base plan supplied by SJB Architects, dated 18 July 2022
2) Maximum design speed - 5km/h

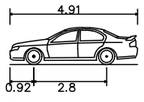
RATIO REFERENCE	SHEET No.	SCALE	DATE
20956T-SK01-A/JHB	04 of 09	1:200@A3	02/02/2024





ratio:
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1: 2004)



VEHICLE ENVELOPE (FORWARD)	
300mm CLEARANCE (FORWARD)	
VEHICLE ENVELOPE (REVERSE)	
300mm CLEARANCE (REVERSE)	
Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	5.80m

Proposed Residential Development
1 Harbourside Drive, Rippleside
Swept Path Assessment - Lower Ground Level

NOTE:
1) Base plan supplied by SJB Architects, dated 18 July 2022
2) Maximum design speed - 5km/h

RATIO REFERENCE	SHEET No.	SCALE	DATE
20956T-SK01-A/JHB	05 of 09	1:200@A3	02/02/2024

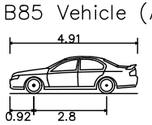
VISITOR
VISITOR
VISITOR
VISITOR
VISITOR
VISITOR
VISITOR
TENANCY
MARINA OFFICE
VISITOR
RL 3.750
CARPARK
2242.5
m²
FHR
RL 3.750
FH
MARINA OFFICE
34.7
m²
RL 3.300
B85 Vehicle
RL 3.900
TENANCY
77.8
m²
RL 3.300
TENANCY SEATING
77.5
m²
B85 Vehicle
RL 3.300
RL 3.900

VISITOR
VISITOR
VISITOR
VISITOR
VISITOR
VISITOR
VISITOR
TENANCY
MARINA OFFICE
VISITOR
RL 3.750
CARPARK
2242.5
m²
FHR
RL 3.750
FH
MARINA OFFICE
34.7
m²
RL 3.300
B85 Vehicle
RL 3.900
TENANCY
77.8
m²
RL 3.300
TENANCY SEATING
77.5
m²
B85 Vehicle
RL 3.300
RL 3.900

0 2 4

ratio:
RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)



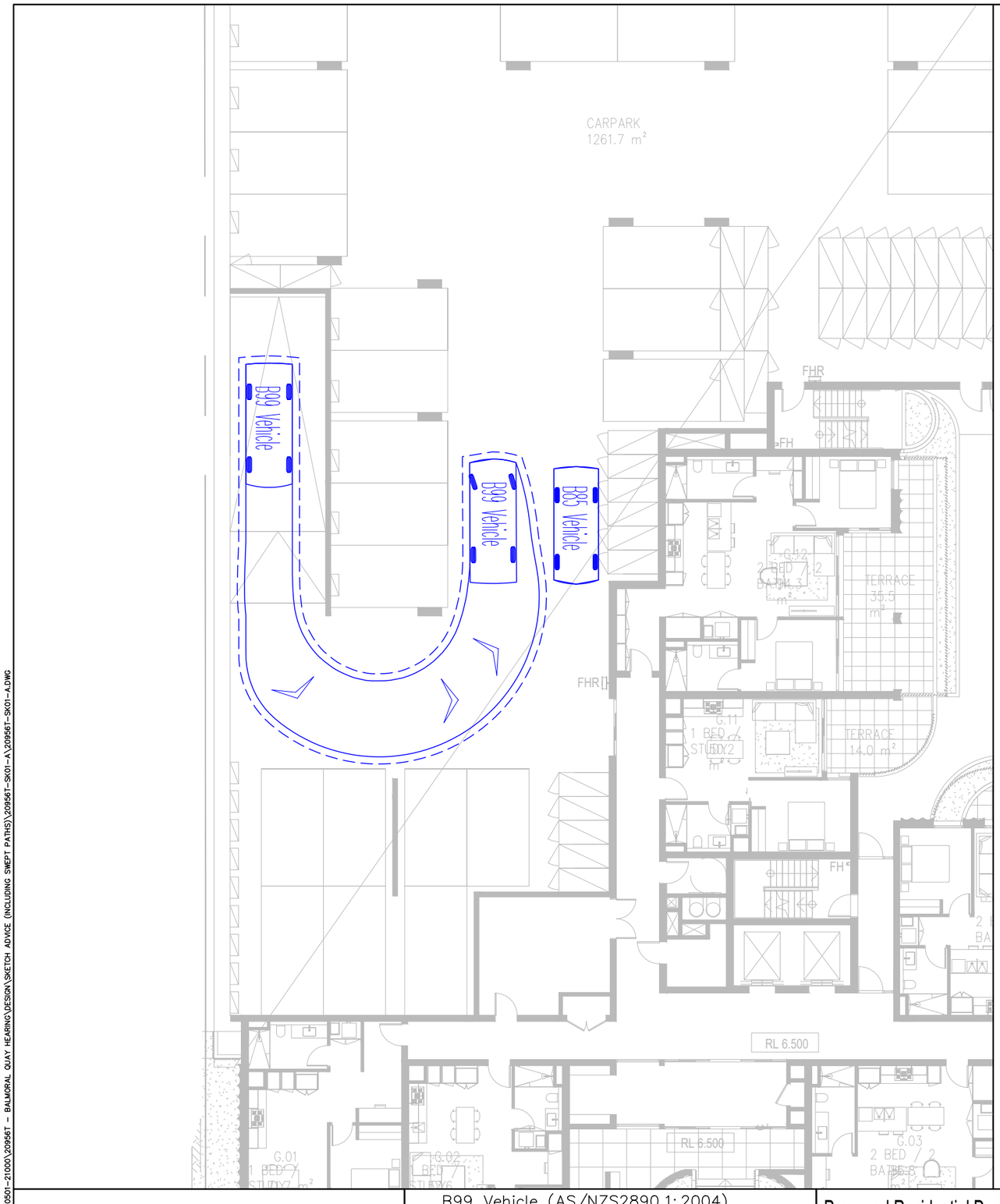
VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

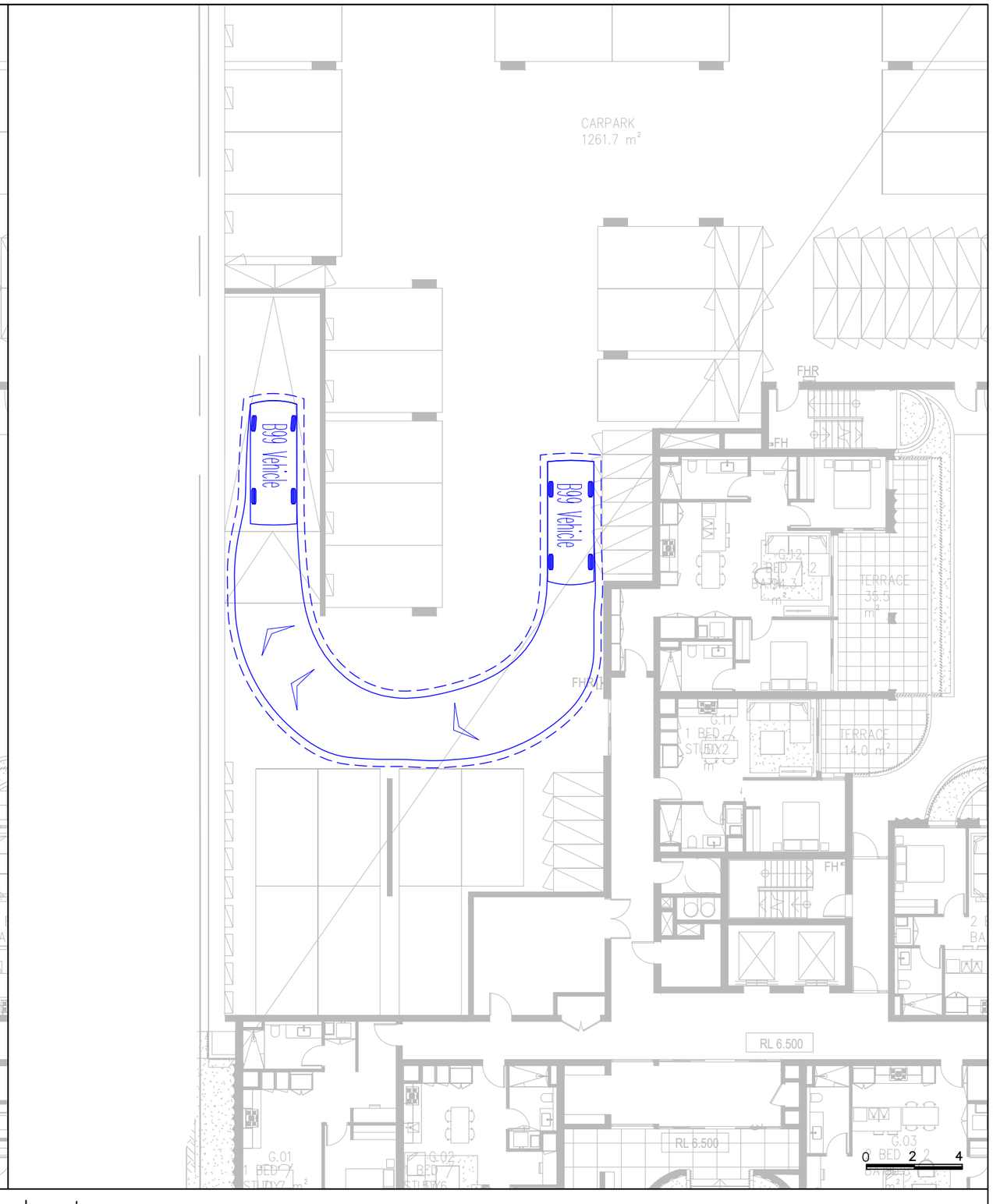
Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	5.80m

Proposed Residential Development
1 Harbourside Drive, Rippleside
Swept Path Assessment - Lower Ground Level

NOTE:
1) Base plan supplied by SJB Architects, dated 18 July 2022
2) Maximum design speed - 5km/h

RATIO REFERENCE	SHEET No.	SCALE	DATE
20956T-SK01-A/JHB	06 of 09	1:200@A3	02/02/2024

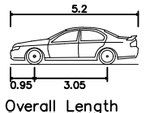




ratio:

RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

B99 Vehicle (AS/NZS2890.1: 2004)



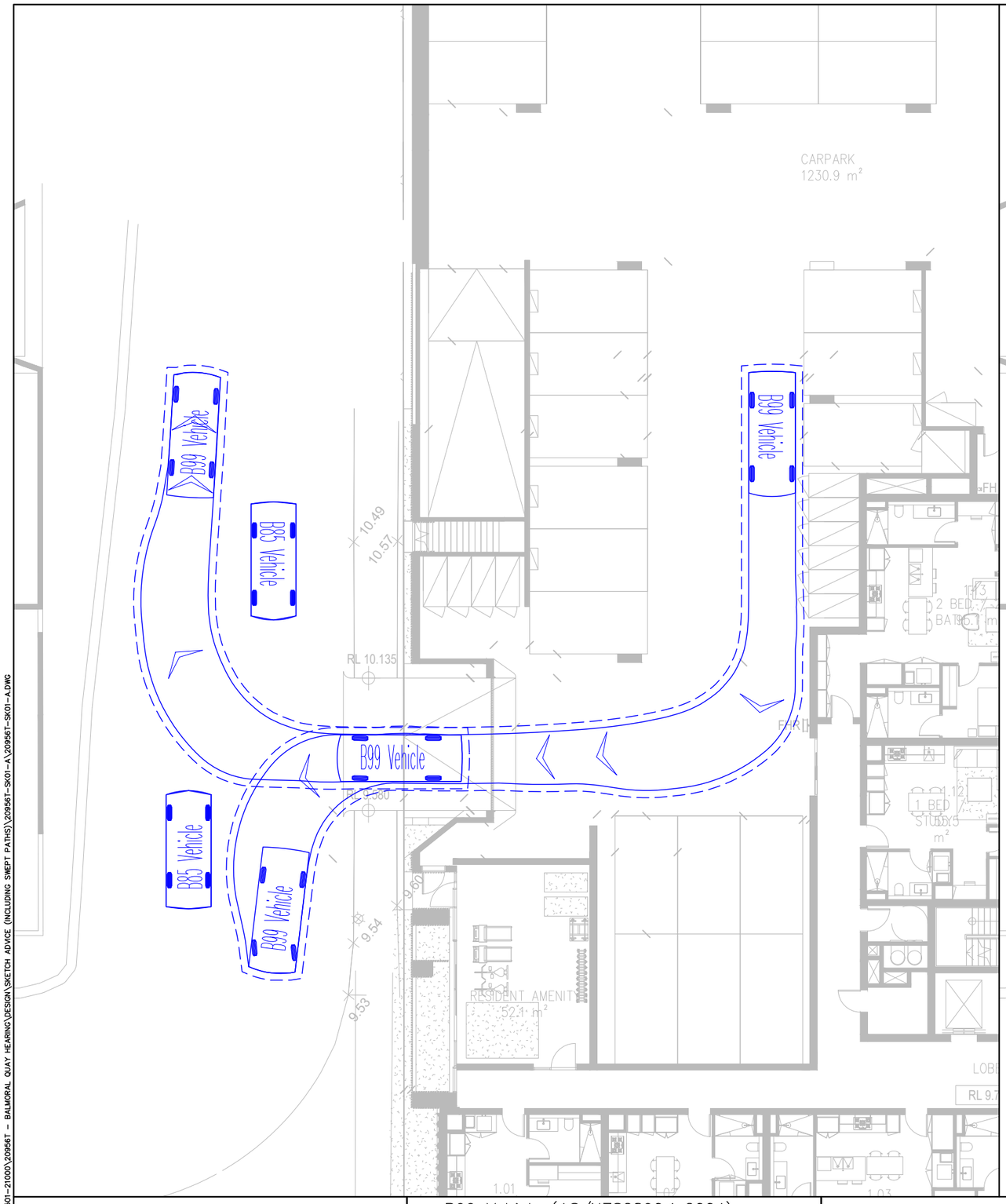
VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

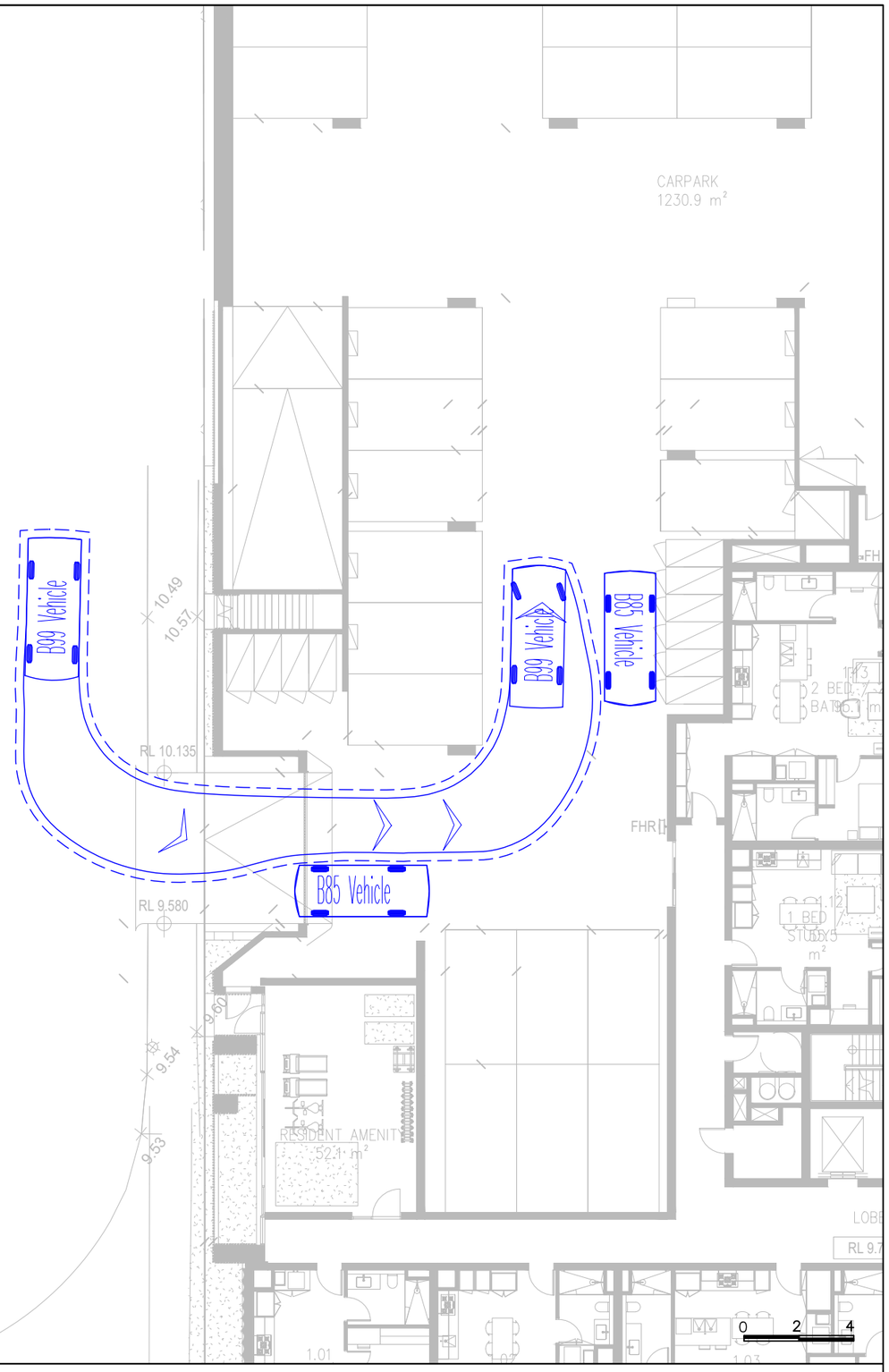
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

Proposed Residential Development
1 Harbourside Drive, Rippleside
Swept Path Assessment - Ground Level

NOTE:
1) Base plan supplied by SJB Architects, dated 18 July 2022
2) Maximum design speed - 5km/h

RATIO REFERENCE	SHEET No.	SCALE	DATE
20956T-SK01-A/JHB	07 of 09	1:200@A3	02/02/2024

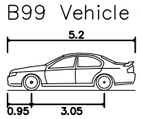




ratio:

RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

B99 Vehicle (AS/NZS2890.1:2004)



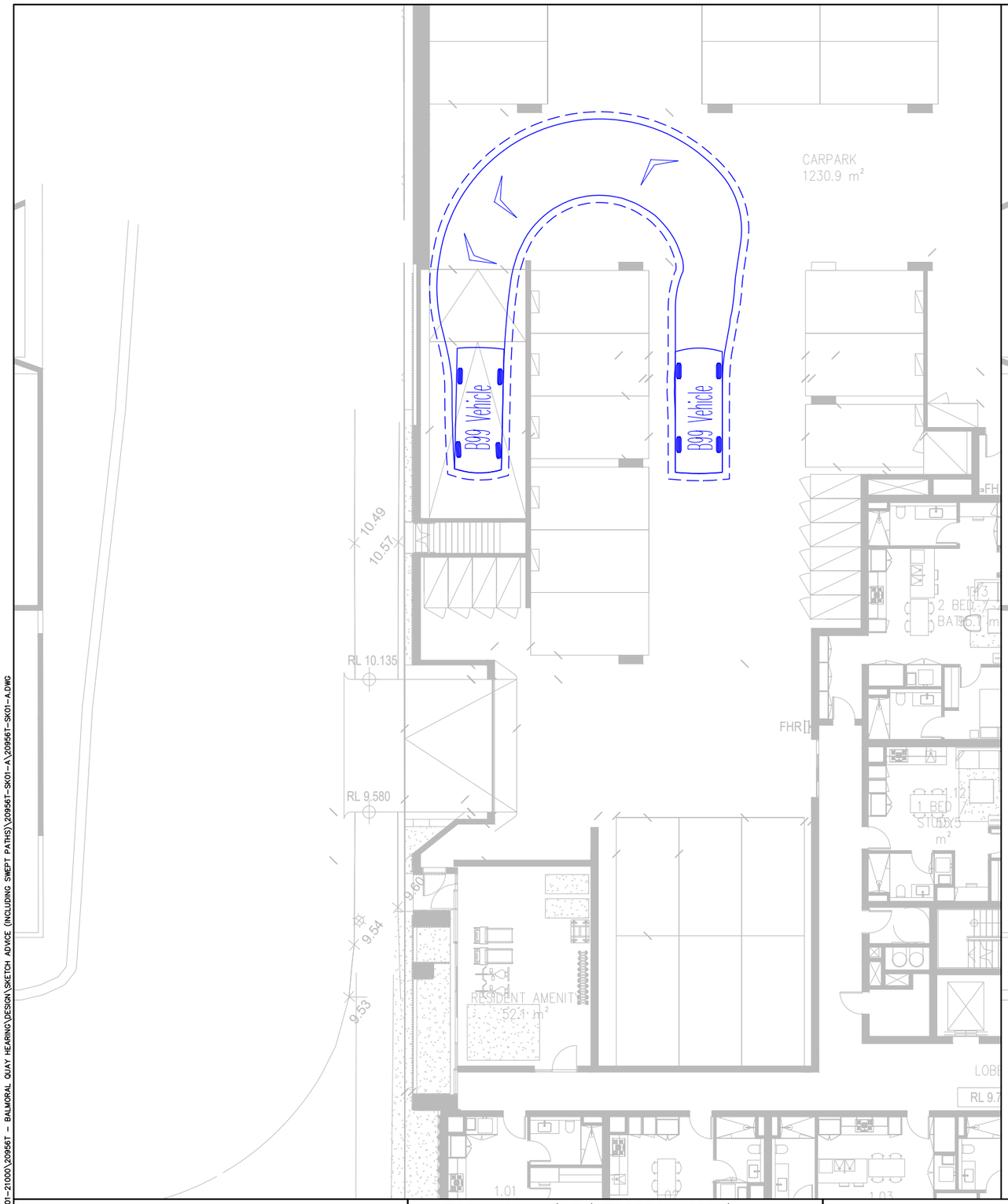
VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

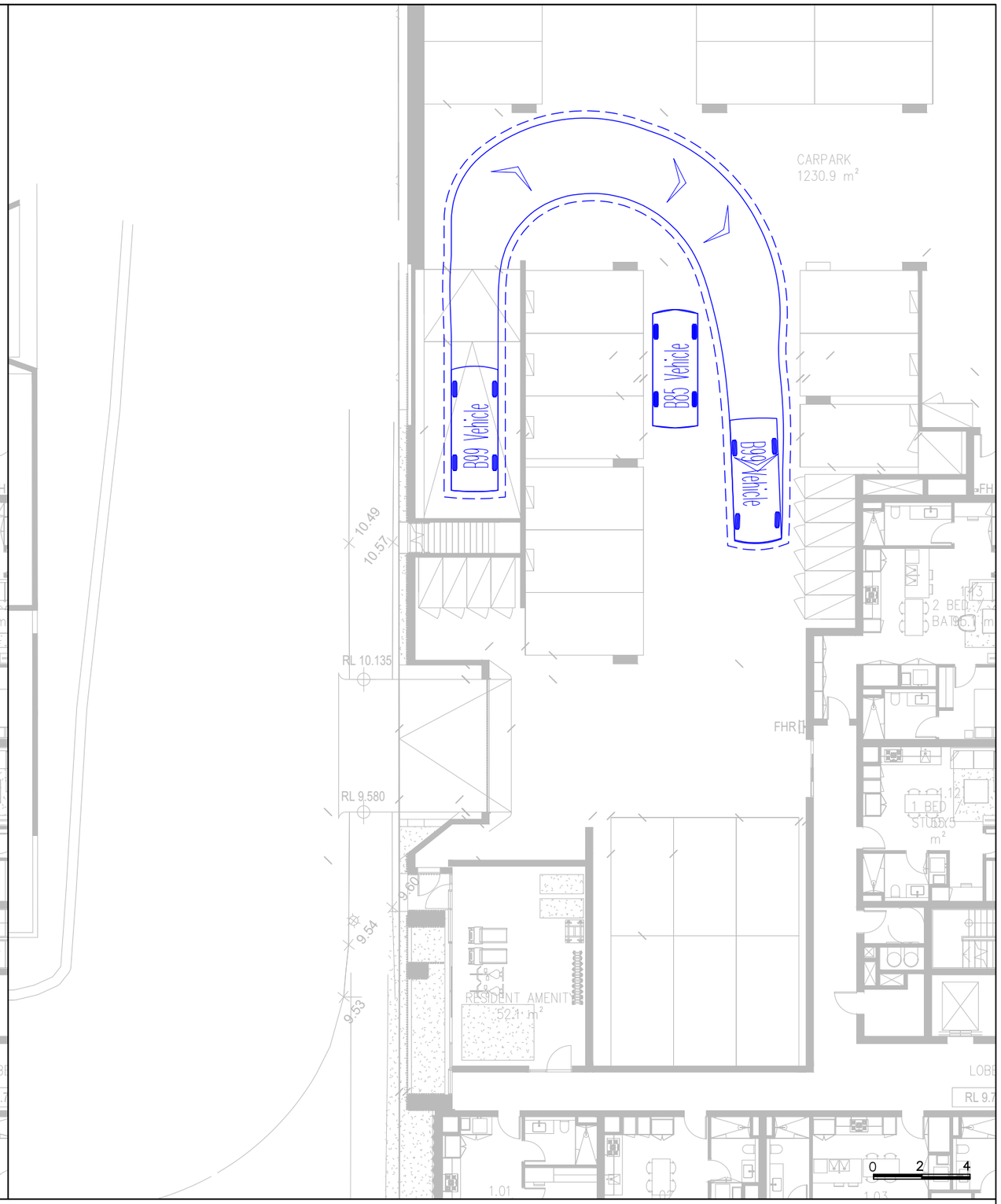
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

Proposed Residential Development
1 Harbourside Drive, Rippleside
Swept Path Assessment - Level 01

NOTE:
1) Base plan supplied by SJB Architects, dated 18 July 2022
2) Maximum design speed - 5km/h

RATIO REFERENCE	SHEET No.	SCALE	DATE
20956T-SK01-A/JHB	08 of 09	1:200@A3	02/02/2024

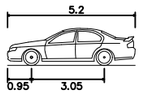




ratio:

RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

B99 Vehicle (AS/NZS2890.1:2004)



VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)
VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

Proposed Residential Development
1 Harbourside Drive, Rippleside
Swept Path Assessment - Level 01

NOTE:
1) Base plan supplied by SJB Architects, dated 18 July 2022
2) Maximum design speed - 5km/h

RATIO REFERENCE	SHEET No.	SCALE	DATE
20956T-SK01-A/JHB	09 of 09	1:200@A3	02/02/2024