

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV-2025-NSH-4177

Date: 30/01/2026

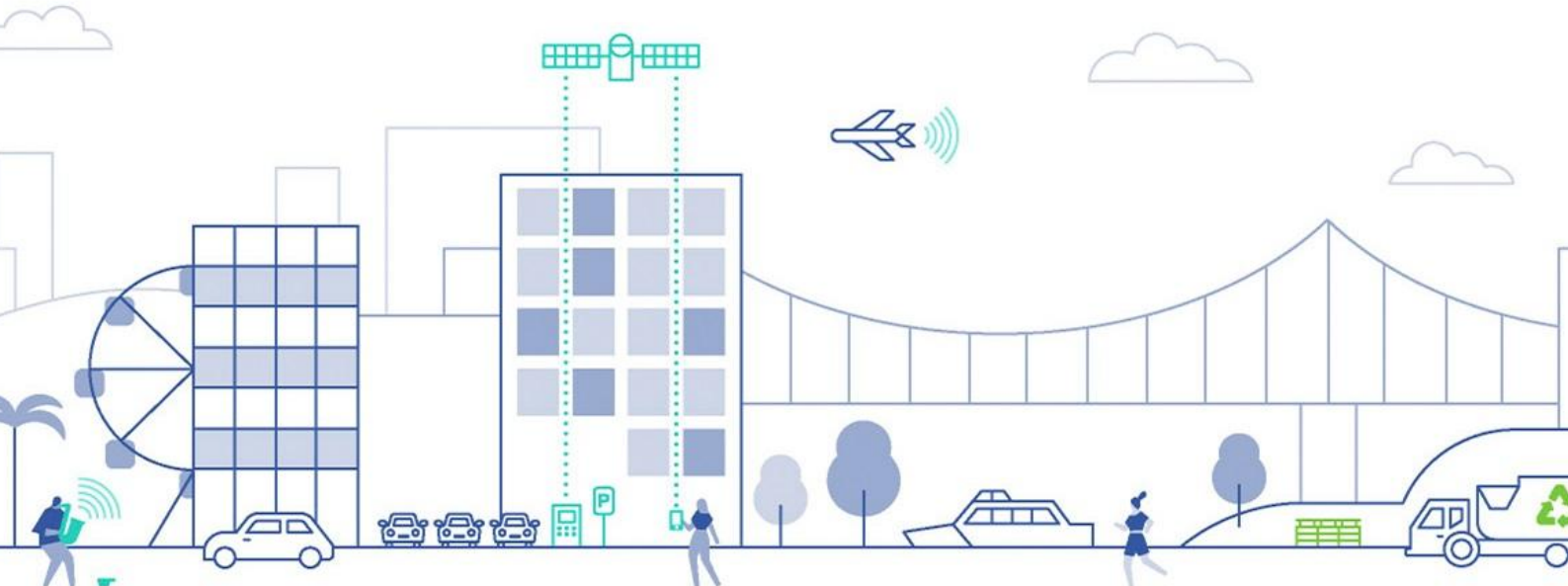


Transport Engineering Report

17 Karakul Road, Hamilton (Lot 17.2 Hamilton)

Multiple Dwelling Development

On behalf of Silverstone Developments



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Revision Record

No.	Author	Reviewed/Approved	Description	Date
1.	J. Harrison		DA Report (Draft)	03.12.25
2.	J. Harrison	M. Grierson RPEQ 31037 	DA Report	17.12.25
3.	J. Harrison	M. Grierson RPEQ 31037 	Updated DA Report	16.1.26
4.				

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1. Introduction

1.1. Purpose

Colliers International Engineering & Design (TTMC) Pty Limited (Colliers) has been engaged by Silverstone to prepare a Transport Engineering Report investigating a proposed multiple dwelling development at 17 Karakul Road, Hamilton. It is understood this report will accompany a Development Application to be lodged with Economic Development Queensland (EDQ), given the site is located within the Northshore Hamilton Priority Development Area (PDA).

Whilst the application will be submitted to EDQ, it is noted that many of the provisions of the Northshore Hamilton PDA Development scheme revert to the respective requirements of the Brisbane City Council Brisbane City Plan 2014.

1.2. Scope

The scope of the transport aspects investigated includes:

- Reviewing the prevailing traffic and transport conditions surrounding the site.
- Identifying parking supply required to cater for development demands.
- Assessing the parking layout to provide efficient and safe internal circulation and manoeuvring.
- Assessing the access configuration to provide efficient and safe manoeuvring between the site and the public road network for cars, service vehicles, cyclists and pedestrians.
- Identifying the service vehicle needs for the site.
- Assessing the internal service vehicle layouts to provide efficiency and safety for on-site service vehicle operation.
- Reviewing access to a suitable level of public and active transport provisions.
- Identification of likely traffic impacts of development on the surrounding road network.

The development plans have been assessed against the following guidelines and planning documents:

- Northshore Hamilton PDA Development Scheme
- Northshore Hamilton PDA Infrastructure Plan Background Report (IPBR)
- Brisbane City Council Brisbane City Plan 2014 (City Plan 2014), specifically:
 - *Transport, Access, Parking and Servicing Code (TAPS Code)*
 - *Transport, Access, Parking and Servicing Planning Scheme Policy (TAPS PSP)*
 - *Infrastructure Design Planning Scheme Policy (Infrastructure PSP)*
 - *Local Government Infrastructure Plan (LGIP)*

- *Refuse Planning Scheme Policy (Refuse PSP)*
 - *Streetscape Design Overlay Code*
 - *Road Hierarchy Overlay Code*
 - *Bicycle Network Overlay Code*
- Australian Standards for Parking Facilities, specifically:
 - *Part 1: Off-street car parking (AS2890.1:2004)*
 - *Part 2: Off-street commercial vehicle facilities (AS2890.2:2018)*
 - *Part 3: Bicycle parking (AS2890.3:2015)*
 - *Part 5: On-street parking (AS2890.5:2020)*
 - *Part 6: Off-street parking for people with disabilities (AS2890.6:2022).*
- Austroads 'Guide to Traffic Management' (GTM)

2. Site Context and Travel Environment

2.1. Site Location

The site is located at 17 Karakul Road, Hamilton, as shown in Figure 2-1 and Figure 2-2. The property description is Lot 1 on SP337697 and has a total site area of 7,980 m². The site is currently vacant.

The subject site is currently zoned as “Mixed-use Medium Density” under the Northshore Hamilton PDA and has frontage on MacArthur Avenue to the north, Barcham Road to the west, and Karakul Road to the south.

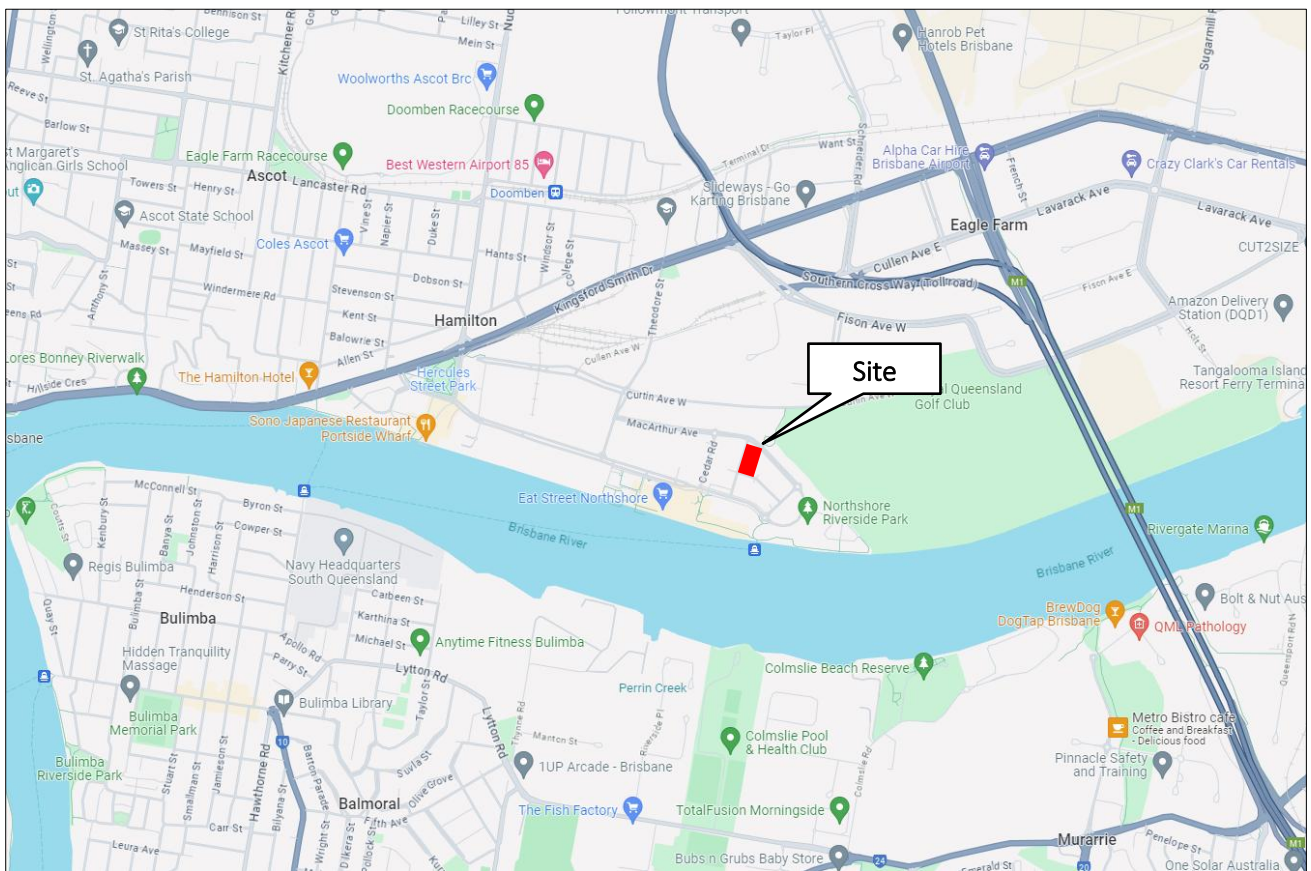


Figure 2-1: Site location (Surrounding Context) - Source: Google Maps



Figure 2-2: Site Location (Immediate Context) - Source: Nearmap 2024

2.2. The Road Network

2.2.1. Road Hierarchy

The hierarchy and characteristics of roads in the immediate vicinity of the site are shown in Table 2-1. The road classification is based on the Northshore Hamilton PDA Infrastructure Plan Background Report (IPBR).

Table 2-1: Local Road Hierarchy

Road	Speed Limit	Road Configuration			Classification
		Reserve Width	Carriageway Width	Lane Configuration	
MacArthur Avenue North/ MacArthur Avenue South	60km/h	28m	20m	2 traffic lanes (divided) Formal kerbside parking on both sides On-street bicycle lane provisions	District Road
Karakul Road	50km/h*	20m	6m	2 traffic lanes (undivided) Formal kerbside parking on both sides	Local Road
Barcham Road	50km/h*	20m	6m	2 traffic lanes (undivided) Formal kerbside parking on both sides	Neighbourhood Road
Angora Road	50km/h*	20m	6m	2 traffic lanes (undivided) Formal kerbside parking on both sides	Neighbourhood Road
Theodore Street	60km/h	35m	14m	2 traffic lanes (undivided)	Suburban Road

*Default speed limit on unsigned roads in built-up areas in Queensland.

MacArthur Avenue is also classified as Primary freight access under the BCC City Plan – Road Hierarchy Overlay.

2.2.2. Intersections

All intersections in the immediate vicinity of the site are priority controlled, with all movements permitted. The key exception being the intersection of MacArthur Avenue North / Barcham Road which is configured as left-in/left-out movements only.

2.2.3. On-Street Parking

There are no on-street parking restrictions surrounding the development site. The three site frontages (Karakul Road, MacArthur Avenue and Barcham Road) provide formal indented parking on both sides of the road.

2.3. Public and Active Transport Facilities

2.3.1. Public Transport

Figure 2-3 shows the public transport facilities within a 400m radius of the subject site.

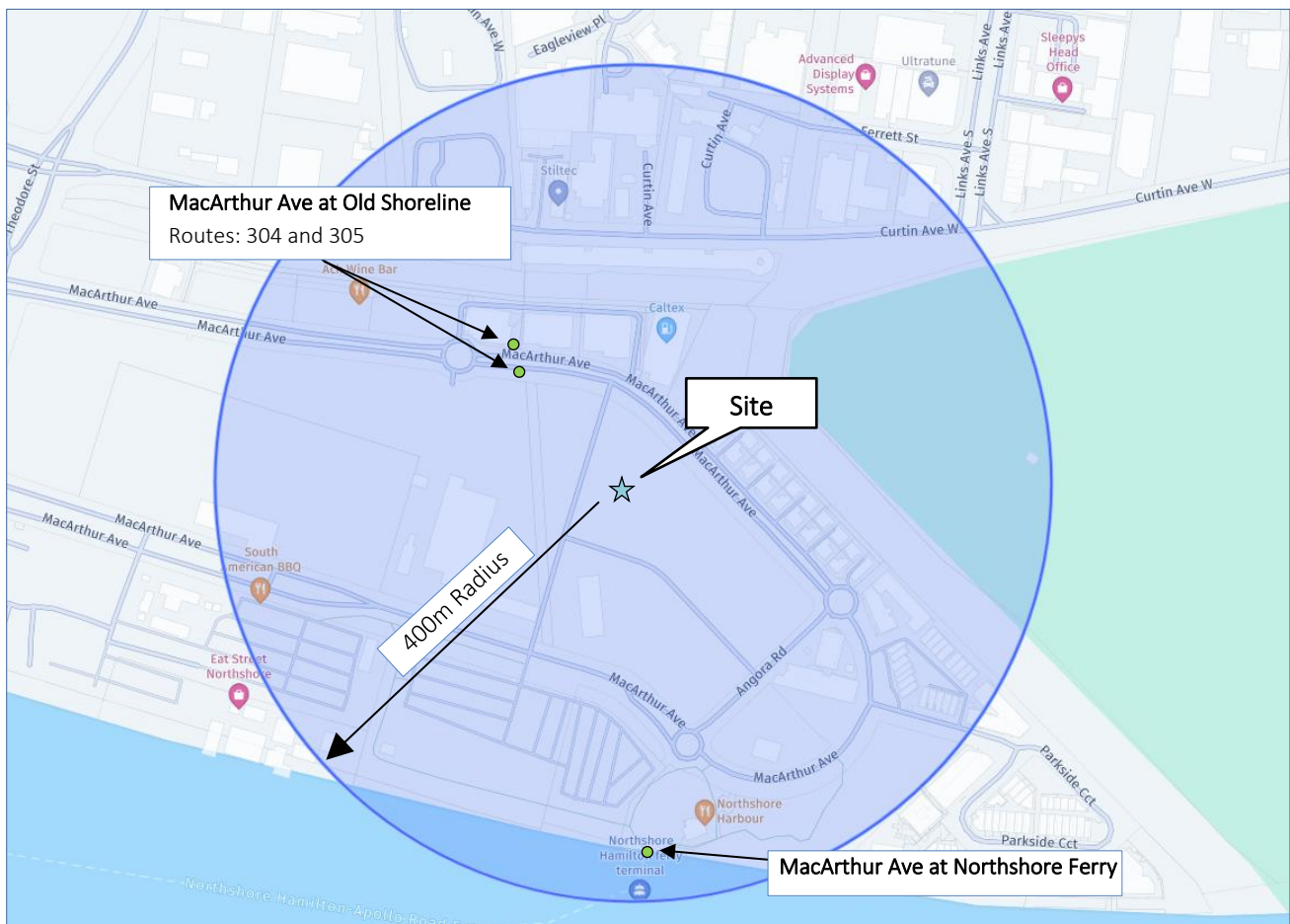


Figure 2-3: Surrounding Public Transport Provisions – Source: Nearmap 2025

Bus Services

The following is a summary of the bus routes currently serviced by the nearby stops:

- Route 304: This service connects the Northshore Hamilton Ferry Terminal to Portside Wharf and Ascot, traveling via MacArthur Avenue, Remora Road, Nudgee Road, and Racecourse Road. It operates Monday to Friday between 9:00am and 4:20pm, with a frequency of every 30 minutes.
- Route 305: This service connects Northshore Hamilton Ferry Terminal to Brisbane City, travelling via Ascot, Hamilton, Newstead, and Fortitude Valley. It operates Monday to Friday, with inbound trips from 6:25am to 8:25am and outbound trips from 4:25pm to 6:35pm, at 15-minute intervals during these times.

There are additional bus services accessible via stops in the wider surrounding area, which includes:

- Route 302: Stops for this route are located on Theodore Street, approximately 800 meters west of the site. It connects Eagle Farm to the City and operates Monday to Friday, with morning services from 6:00am to 7:15am (City to Eagle Farm) and afternoon services from 3:50pm to 4:45pm (Eagle Farm to the City), at 20-minute intervals.

Train Services

The closest train station to the site is Doomben, situated approximately 2.3 km to the northwest. This station services the following lines:

- Doomben – Brisbane City
- Doomben – Beenleigh
- Doomben – Cleveland

The average departure frequency is every 30 minutes on weekdays from 5:45am to 8:00pm, and every 60 minutes on weekends from 7:45am to 8:00pm.

Ferry Services

The Northshore Hamilton Ferry Terminal is located approximately 450m from the site, providing connections from Northshore to UQ St Lucia, with stops along the river at Bulimba, Teneriffe, New Farm Park, QUT Gardens Point, Southbank, Toowong, and West End. Services operate Monday to Friday from 5:30am to 10:15pm, with departures approximately every 15-minutes. On weekends and public holidays, services run from 6:00am to 10:15pm, with a 15-minute frequency.

Figure 2-4 illustrates the estimated area accessible via public transportation within a 30-minute travel time from the development site.

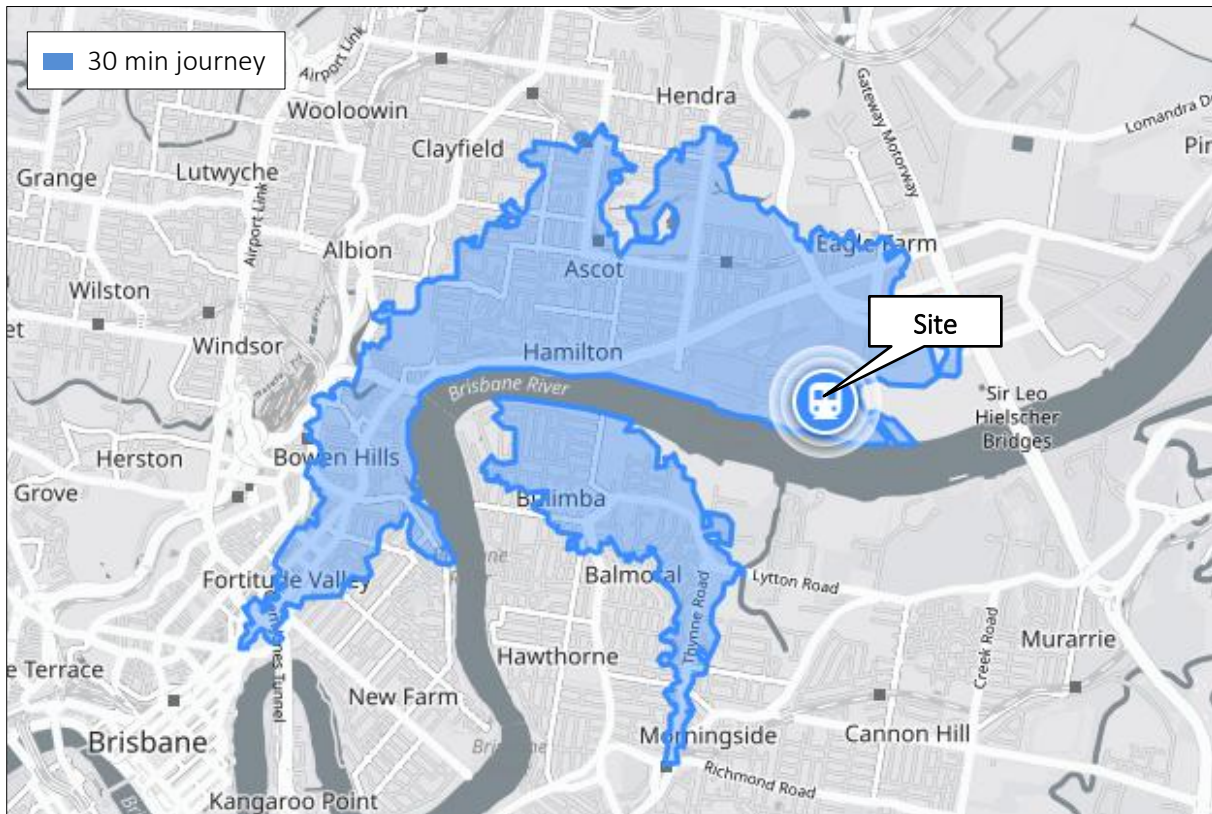


Figure 2-4: Public Transport Trip Catchment – 30 Minute Journey

Overall, the quality of public transportation can be considered satisfactory in facilitating access to/from the site.

2.3.2. Cycle Routes

An extract of existing cycle routes surrounding the subject site is shown in Figure 2-5.



Figure 2-5: Existing Cycle Routes - Map Source: Google Maps

A comprehensive network of bicycle infrastructure within the Northshore Hamilton PDA area is continuing to be delivered as part of the ongoing internal road upgrade works. This will include a mixture of dedicated offroad cycle paths/tracks, shared paths (such as along the river front) and on-road cycle provisions. The proposed ultimate bicycle network hierarchy for the Northshore Hamilton PDA area, as identified in the Cardno Transport Masterplan (discussed further in Section 2.4), is shown in Figure 2-6. Once this is delivered, internal movement within the PDA area by bicycle will be more convenient and therefore an attractive travel mode.



Figure 2-6: Proposed PDA Cycle Network and External Connections - Source: Cardno Transport Masterplan Report

It is also noted that the subject site is well located proximate to other external bicycle routes connecting with the wider Brisbane network. Key external cycle routes include:

- Kingsford Smith Drive, which includes on-road bicycle lanes east of Racecourse Road and a dedicated off-road separated pedestrian/cycle path west towards the Brisbane CBD.
- The Gateway Bridge Bikeway, which features a dedicated pedestrian and bicycle path, linking Hamilton Northshore to Brisbane's southern suburbs.

Figure 2-7 Illustrates the locations that can be reached by a 20-minute bike ride from the development.

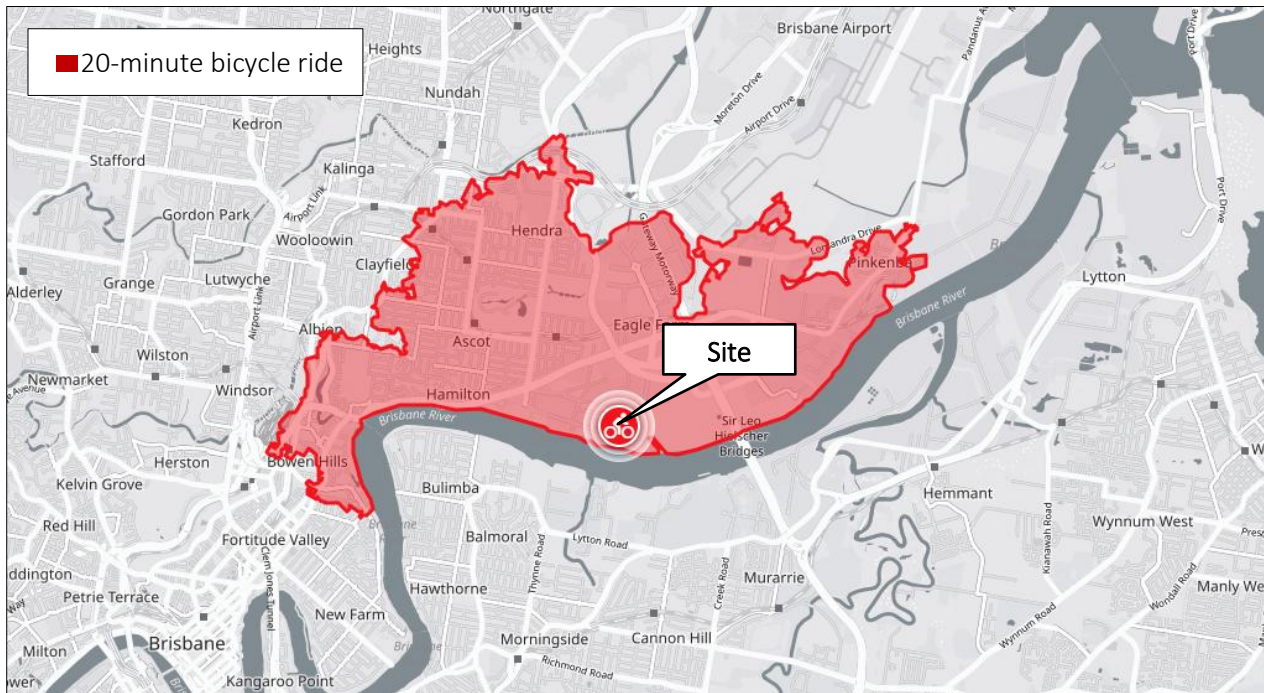


Figure 2-7: Cycle Catchment – 20 Minute Journey

Overall, the site is considered to be well located with good access to established bicycle routes and infrastructure (which is proposed to continue to improve).

2.3.3. Pedestrians

Formal pedestrian footpaths are located on both sides of the roads in the immediate vicinity of the site. Kerb ramps and informal crossings are provided at all nearby intersections.

There is also a proposed cross-block link between Karakul Road and MacArthur Avenue. This aligns with the existing pedestrian link to the north to provide a continuous north-south pedestrian route (which is shown in Figure 2-9).

2.4. Transport Planning

Northshore Hamilton PDA

The PDA Development Scheme and IPBR proposes a new network of internal roads to service the redevelopment of the area. Improvements to public and active transport provisions are also proposed.

Figure 2-8 and Figure 2-9 show extracts of the various PDA planning documents identifying the ultimate roads, public transport, and active transport provisions.



Figure 2-8: PDA Internal Transport Network Upgrades – Roads and Public Transport - Source: PDA Development Scheme

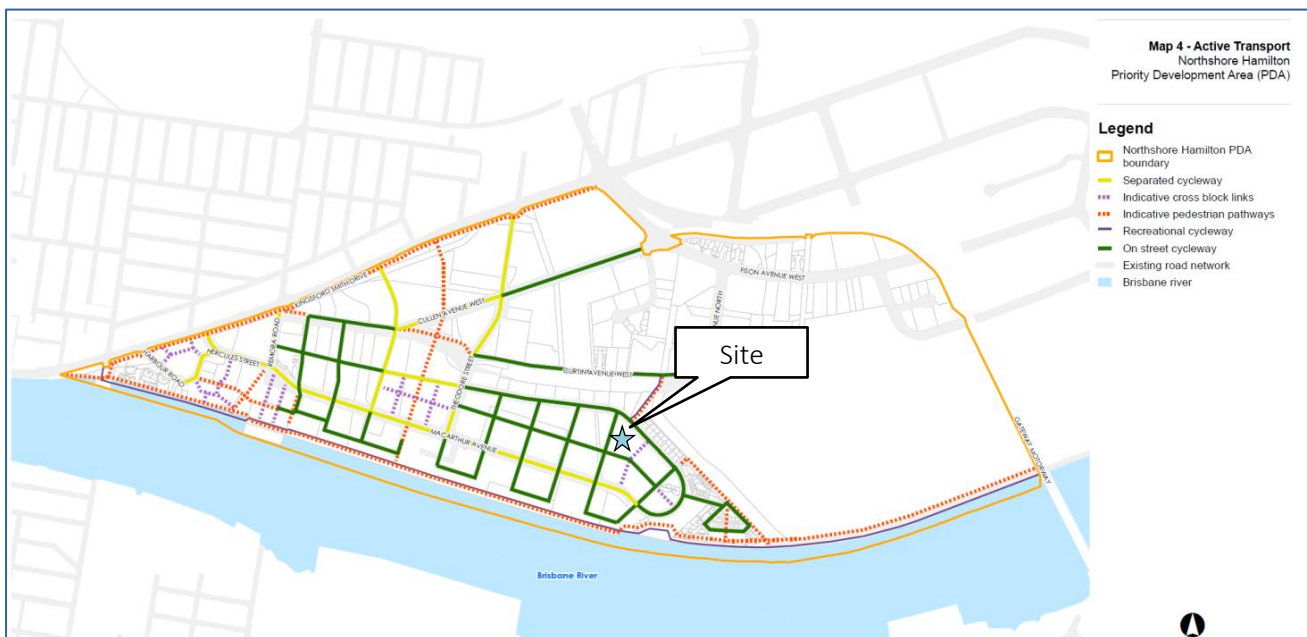


Figure 2-9: PDA Internal Transport Network Upgrades – Active Transport - Source: PDA Development Scheme

Public Transport Provisions

Cardno Transport Masterplan

Colliers has reviewed the 2021 Transport Masterplan Report prepared by Cardno which inform the Northshore Hamilton PDA. This report assessed existing public transport accessibility for the PDA and future improvements to service the redevelopment. This report generally identified the following:

- No upgrade/extension to existing train services on the Doomben line.
- A potential additional ferry terminal (mid-way between the Bretts Wharf and Hamilton Northshore terminals) to provide more proximate access from central redevelopment zones. Potential additional services also suggested if demand dictates.
- New/extended bus services into the internal roads, looping through the PDA via MacArthur Avenue and joining with Kingsford Smith Drive for access to the Brisbane CBD and other high-priority destinations. It has been suggested this take the form of a high-frequency service (5–10-minute peak hour frequencies).

Gold CityGlider

It is understood that Brisbane City Council has submitted a business case to Translink for a new Gold CityGlider route to complement the existing Blue and Maroon routes. The proposed new Gold route would run from Woolloongabba to Hamilton Northshore via Brisbane City, Fortitude Valley and Newstead. The indicative route map suggests this would terminate at the western end of the Northshore Hamilton PDA (near the Hercules Street Park). This would be approximately 1.5km walk from the subject site to the west. This is anticipated to provide a service span and frequency similar to existing routes, which would be at least every 10 minutes in peak hours and 15-minutes off peak periods. Implementation of this route is subject to a joint funding agreement between Translink and Council, and so there is no indicative timeframe for establishment of this route.

Should this route proceed, it is strongly suggested that it is extended further east into the wider Northshore Hamilton PDA area; in effect becoming the high-frequency bus service as recommended in the Cardno Transport Masterplan Report. If this were done, this extended route would potentially have stops much closer to the subject site, as well as all surrounding Mixed-use High Density land uses, making this a more convenient public transport option.

3. The Proposed Development

3.1. Development Profile

The proposed development consists of two 7-storey residential buildings, providing a combination of one, two and three-bedroom apartments. The proposed development scheme is summarised in Table 3-1.

Table 3-1: Proposed Development Scheme

Land Use	Yield
Multiple Dwellings	166 units (total)
• 1 Bedroom unit	26 units
• 2 Bedroom units	60 units
• 3 Bedroom units	80 units

A copy of the architectural plans, prepared by Plus Studio, is included in **Appendix A**.

3.2. Parking

The development scheme provides a total of 262 car parking spaces, including:

- 238 resident car parking spaces
- 23 visitor car parking spaces
- 1 Persons with Disability (PWD) spaces

A total of 172 bicycle spaces are also provided, including:

- 132 resident bicycle spaces on the Ground and Basement levels
- 40 visitor bicycle spaces, located on the ground level

Further details regarding the proposed car and bicycle parking provisions are included in Section 4.

3.3. Access

The development plan includes the following access arrangements:

- A 7.5m wide modified Type B1 crossover to Barcham Road on the western side of the site frontage. This access will accommodate all vehicles with all movements permitted.
- Pedestrian access to/from the development from the northern, southern and western site frontage (Karakul Road, MacArthur Avenue and Barcham Road).
- Direct access to visitor bicycle racks from the footpath and resident access via either vehicle access (Barcham Road) and ramp to basement or building lifts.

Further details regarding the proposed access arrangements are included in Section 5.

3.4. Servicing

The development plan allows occasional access for vehicles up to the size of a 10.7m Large Rigid Vehicle (LRV) and regular access for vehicles up to the size of a 10.235m rear-loading Refuse Collection Vehicle (RCV). A dedicated loading bay is provided on the ground floor accessed from the main vehicular access to Barcham Road.

Further details regarding the proposed servicing arrangements are included in Section 6.

4. Parking Arrangements

4.1. Parking Supply

4.1.1. Car parking

The minimum requirements for car parking supply under the Northshore Hamilton PDA and the proposed provisions for the development scheme are summarised in Table 4-1 below.

Table 4-1: Northshore Hamilton PDA Car Parking Supply Requirement

Land Use / Component	PDA Requirement	Extent	Requirements	Provision
Multiple Dwelling (Resident) - Minimum - Maximum	0.75 space per unit 2 spaces per unit	166 units	125 spaces (min) 332 spaces (max)	238 spaces
Multiple Dwelling (Visitor)	0.15 spaces per unit	166 units	24.9 spaces (min)	24 spaces (incl. 1 PWD space)
PWD Parking	0.02 spaces per unit	166 units	3.32 spaces	
Total				262 spaces

Residential Parking

As seen in Table 4-1, the development scheme proposes a total of 238 residential car parking spaces which achieves compliance within the specified range of parking as per the Northshore Hamilton PDA.

Visitor Parking

Regarding visitor parking, a supply of 24 car spaces (including 1 PWD space) is provided. While this is one space fewer than the minimum requirement under the PDA, the proposed provision is considered appropriate based on the following:

- A substantial proportion of units will be allocated two residential spaces in a tandem arrangement. For these dwellings, a visitor attending for a short period may, where arranged between occupants, park in the second position behind a resident's vehicle. This arrangement provides practical flexibility for short-stay visitor parking.
- On-street parking is available along all three site frontages, providing an easily accessible alternative for short-stay visitor parking. In practice, visitors who are meeting residents at ground level or attending lunch or dinner within the surrounding precinct may find it more convenient to park on-street rather than enter the basement. This provides practical flexibility and reduces reliance on the designated visitor bays.
- The shortfall represents one space, or approximately 4% below the minimum requirement, and is not expected to materially affect visitor parking availability given the operational flexibility afforded by the tandem arrangements and the precinct's on-street parking availability.

On this basis, the proposed visitor parking provision is considered appropriate to support the development.

PWD Parking

Under the Northshore Hamilton PDA Development Scheme, PWD parking is required at a rate of 0.02 spaces per dwelling, to be provided in addition to both resident and visitor parking provisions. For a development comprising 166 units, this equates to 3.32 spaces, rounded up to 4 PWD bays. The practical application of this requirement is, however, challenging in the context of a residential building where parking bays are either allocated to individual units (as part of sales and title arrangements) or form part of the visitor parking supply. If PWD bays were allocated on the secured residential side, they would need to be tied to specific units irrespective of whether those households require accessible parking. Conversely, if all 4 bays were delivered within the visitor supply and reserved exclusively for visitor use, this would represent a considerably higher provision than is typically required.

In most residential developments, PWD parking for visitors is assessed using the standard rate of 1 PWD bay per 50 regular car parking spaces. Applying this approach to the proposed development, where the relevant pool comprises 22 visitor spaces (excluding the PWD bay), results in a requirement for 1 PWD bay. On this basis, the proposed provision of a single PWD space is considered an appropriate and proportionate outcome that aligns with typical practice for residential visitor parking.

Overall, the proposed parking provisions for the site are considered appropriate and fit for purpose.

4.1.2. Bicycle Parking

The Northshore Hamilton PDA refers to the TAPS PSP rates with regards to the bicycle provisions. Therefore, the bicycle parking supply requirements for the proposed development have been determined in line with Table 21 of the TAPS PSP. Alternative supply rates identified in the Cycling Aspects of Austroads Guide have also been considered.

Table 4-2 outlines the comparative bicycle parking requirements for the development based on both Council's TAPS PSP and Austroads, including resident and visitor components.

Table 4-2: Council's TAPS PSP and Austroads Bicycle Parking Requirements

User	TAPS PSP Rates	Extent	TAPS PSP Recommendations	Austroads Recommendations	Extent	Austroads Recommendations
Resident	1 space/unit	166 units	166 spaces	1 space per 4 bedrooms	386 bedrooms	97 spaces
Visitor	1 space/4 units		42 spaces	1 space per 16 bedrooms		24 spaces
Total			208 spaces	Total		121 spaces

A summary of the proposed bicycle parking provision against both Council and Austroads requirements is provided in Table 4.3.

Table 4.3: Council and Austroads Requirements Comparison to Proposed Provision

User	TAPS PSP Requirement	Austroads Requirement	Proposed Provision
Resident	166 spaces	97 spaces	132 spaces
Visitor	42 spaces	24 spaces	40 spaces
Total	208 spaces	121 spaces	172 spaces

While the resident bicycle parking provision is below the Council's TAPS PSP requirement, it exceeds the relevant Austroads recommendation and sits between the two standards, representing a balanced outcome. In practice, a proportion of residents will not utilise dedicated on-site bicycle parking, with some residents also choosing to store bicycles within their units. As a result, the effective demand for formal resident bicycle parking spaces should be typically lower than the theoretical maximum derived from standardised Council rates.

A total of 40 visitor bicycle parking spaces are proposed, which is marginally below the BCC TAPS PSP requirement of 42 spaces. However, the proposed provision exceeds the Austroads recommendation of 24 spaces and is expected to adequately accommodate visitor bicycle parking demand.

Overall, the proposed bicycle parking provision is considered appropriate to meet anticipated demand.

The bicycle parking arrangements, including locations and access provisions entail the following:

Resident Bicycle Parking

A total of 132 resident bicycle parking spaces will be provided across the development, comprising 72 spaces at ground level and 60 spaces within the basement. The ground-level bicycle parking is located within secure rooms close to the pedestrian stairs and ramps at the Karakul Road and MacArthur Avenue frontages. Access to the basement bicycle parking will be provided via the vehicle driveway from Karakul Road, as well as via the building lifts.

Visitor Bicycle Parking

A total of 40 visitor bicycle parking spaces are provided, all of which are ground-mounted racks located at ground level. Ten spaces are distributed along each of the MacArthur Avenue, Barcham Road and Karakul Road frontages, with a further 10 spaces provided along the eastern frontage adjacent to the approved neighbouring cross-block link park. All 40 spaces are located in proximity to designated pedestrian access points to the development.

Further details on the bicycle parking layouts and design compliance are included in Section 4.2.

4.2. Parking Layout

The Northshore Hamilton PDA does not specify the requirements for a car parking design layout. Therefore, the proposed development car parking layout has been assessed against the Council TAPS PSP provisions.

The development scheme provides parking on the Basement Level only. Table 4-4 identifies the characteristics of the proposed parking layouts with respect to the TAPS PSP design provisions. The last column identifies the compliance of each design aspect. Where compliance with the TAPS PSP is not achieved, further information is provided below.

Table 4-4: TAPS PSP Parking Design Requirements

Design Aspect	TAPS PSP Provision	Proposed Provision	Compliance
Car Parking			
Parking space length: - Standard space (Class 3) - PWD space (Class 5) - Small car space	5.4m (min) 5.4m (min) 5.0m (min)	5.4m (min) 5.4m (min) 4.7m	TAPS PSP Compliant TAPS PSP Compliant Performance Solution
Parking space width: - Standard space (Class 3) - PWD space (Class 5) - Small car space	2.6m (min) 2.4m + 2.4m 'Shared Area.' 2.3m (min)	2.6m (min) 2.4m + 2.4m 'Shared Area.' 2.6m	TAPS PSP Compliant TAPS PSP Compliant TAPS PSP Compliant
Aisle Width: - Parking aisle - Circulation road/ramp (two-way)¹	6.2m (min) 6.2m (min) + 0.3m clearance to walls	6.2m (min) 5.9m + 0.3m clearance to walls	TAPS PSP Compliant Performance Solution
Parking envelope clearance	Located as per Figure m of TAPS PSP	Located as per Figure 5.2 of AS2890.1:2004	Performance Solution
Maximum Gradient: - PWD parking - Parking aisle - Ramps	1:40 (2.5%) 1:20 (5.0%) 1:6 (16.7%)	Generally flat Generally flat 1:6 (16.7%)	TAPS PSP Compliant TAPS PSP Compliant TAPS PSP Compliant
Maximum Gradient Transitions	1:8 (12.5%) summit 1:6.67 (15.0%) sag	1:8 (12.5%) summit 1: 8 (12.5%) sag	TAPS PSP Compliant TAPS PSP Compliant
Blind Aisle Extension	2m beyond the last bay or 8.0m aisle width	1.0m aisle extension	Performance Solution
Height Clearance: - General Minimum - Absolute Minimum - Over PWD space	2.3m (min) 2.1m (min) 2.5m (min)	2.3m (min) 2.3m (min) 2.5m (min)	TAPS PSP Compliant TAPS PSP Compliant TAPS PSP Compliant
Tandem car bay allocation	2 spaces are provided for 1 dwelling	2 spaces are provided for 1 dwelling	TAPS PSP Compliant
Bicycle Parking¹			
Ground Rack Length	1.8m (min)	1.8m (min)	AS2890.3 Compliant
Vertical Rack Length	1.2m (min)	1.2m (min)	AS2890.3 Compliant
Rack spacing (Standard)	0.5m (min)	0.5m (min)	AS2890.3 Compliant
Rack spacing (Dynamic)	0.4m (min)	0.4m (min)	AS2890.3 Compliant
Height Clearance	2.2m (min)	2.2m (min)	AS2890.3 Compliant

¹ TAPS PSP is silent with regard to this matter, so revert to AS2890 requirements as per Section 1.2 of the TAPS PSP.

The development parking layout is generally consistent with the provisions of the TAPS PSP. Further details in relation to deemed compliance of required provisions or justification for design aspects resolved with performance solutions are provided following.

Small Car Bay Length

It is noted that two parking spaces, identified on the development plans as 'small vehicle' spaces, are proposed with dimensions of 2.6m in width and 4.7m in length. While the proposed width exceeds the minimum requirement for small vehicle parking, the length is marginally below the typical 5.0m standard.

To provide context for the suitability of these spaces, Australia-wide new vehicle sales data for 2024 (sourced from CarsGuide) has been reviewed. Of the 100 highest-selling vehicle models, representing approximately 85% of total new vehicle sales, small passenger vehicles accounted for approximately 29.3% of sales (vehicle length < 4.7m). Common examples include the Toyota Corolla, Hyundai i30, Mitsubishi ASX, Mazda CX-3, Hyundai Kona, and Volkswagen Golf. On this basis, the proposed small vehicle spaces are considered capable of accommodating a meaningful proportion of the resident vehicle fleet.

In addition, the two small vehicle spaces are provided in a tandem configuration, with the adjoining space behind each bay having a standard length of 5.4m. This arrangement provides additional operational flexibility, allowing minor overhang (within the tandem arrangement) or adjustment in vehicle positioning without compromising aisle clearances or parking functionality, and further mitigates any practical constraint associated with the reduced bay length.

Ramp Width

The TAPS PSP recommends a straight ramp width of 6.8m, comprising 6.5m between kerbs plus 0.3m clearance to adjacent walls. The proposed ramp from Ground Level to the Basement provides an effective width of 6.5m (5.9m between kerbs with 0.3m wall clearance). This arrangement complies with AS2890.1:2004 and is considered appropriate from a traffic engineering perspective. The 6.8m width requirement is primarily intended to accommodate two-way service-vehicle operation. As the ramp will be used exclusively by passenger vehicles, with all servicing activities occurring at ground level, the reduced ramp width is considered suitable and fit for purpose.

Parking envelope clearance (column/walls) intrusion

The development plans make allowance for structure/walls within the allowable envelopes adjacent to car spaces as per Figure 5.2 of AS2890.1:2004. This differs slightly from the provision of Figure f of the TAPS PSP. Notably, there is only a 0.05m difference in the acceptable location of columns closest to the parking aisle and allowance for additional columns to be located adjacent to bays towards the front/end of the parking space. These differences, however, are not expected to have any adverse impacts on the ability of vehicles to manoeuvre into/out of the car spaces or open the doors (the two key considerations driving these design envelopes around car spaces).

Blind aisle extension

The TAPS PSP details that at the end of terminating/blind parking aisles, a 2.0m aisle extensions should be provided to facilitate appropriate manoeuvring from the final parking space/s. The proposed development generally provides a minimum of 1.0m aisle extensions beyond the final parking spaces on each of the dead-end parking aisles, which meets the minimum requirements of AS2890.1:2004. Colliers' experience shows that manoeuvring for a standard car from a dead-end space with a 6.2m wide aisle, 2.6m wide parking bay and 1.0m aisle extension can be completed comfortably.

Bicycle Parking Access

Colliers notes that the basement-level bicycle parking (resident bicycle parking) will be subject to further refinement during the detailed design phase. In particular, any proposed multi-tier bicycle parking systems will need to be designed to provide a minimum access aisle width of 2.0m, with all other bicycle parking spaces providing a minimum access aisle width of 1.5m. These provisions will be in accordance with the requirements of AS2890.3:2015.

5. Access Arrangements

5.1. Vehicular Access

The development proposes vehicular access from Barcham Road, located along the western boundary of the site. This access will be configured as a modified Type B1 driveway, and accommodate vehicles up to the size of a 10.7m Large Rigid Vehicle (LRV). The access will be priority controlled, with all movements permitted. The driveway internal to the crossover splits to provide a basement access ramp and a ground level loading bay.

The proposed location of the vehicular access is currently configured to provide an indented parking zone with capacity for up to 2 on-street spaces. Therefore, the new access will require the removal of 2 existing on-street parking spaces. This outcome is generally unavoidable, as all frontages for the subject site are fully occupied by existing intended parking zones and existing services. It appears that when the surrounding roads were designed and built (by EDQ) the assumption was that the land on the northern side of Karakul Road would be redeveloped as one large land parcel only (with the assumed access point for this lot located further east along Karakul Road). Subsequent to construction of the road, a subdivision application for this northern lot has been approved, with subsequent new western lot representing the subject site and requiring an additional access.

The proposed crossover location is approximately centred along the site's western frontage, midway between the Karakul Road and MacArthur Avenue, which maximises separation from both intersections. To facilitate the proposed new access driveway, it is proposed that the indented parking bays will be infilled (with concrete and/or landscaping) and the kerbline crossover shifted to the edge of the through carriageway as is provided for all other already constructed driveway crossovers in the area.

In accordance with the Northshore Hamilton PDA requirements, driveway crossovers must be designed in accordance with the TAPS PSP. The compliance of the proposed Barcham Road access with the relevant TAPS PSP design provisions is summarised in Table 5-1.

Table 5-1: General Vehicle Access Arrangements

Design Aspect	TAPS PSP Provision	Proposed Provision	Compliance
Width / Crossover Type to accommodate: - Cars¹² - Service Vehicles¹³	6.0 - 9.0m Type C1 7.0m (min) Type B2	To be 7.5m Type B1	Performance Solution
Distance from: - minor intersection¹ - adjacent driveway¹	10m (min) 3m (min)	60m – MacArthur Avenue No other driveways are currently located in the vicinity of the site	TAPS PSP Compliant TAPS PSP Compliant
Sight Distance ¹²	90m (desirable)	60m to the north (clear to intersection) >90m to the south	Further Information Below
Visibility Sight Splays ⁴	2.0m wide x 5.0m deep (on each side)	2.0m wide x 4.0m deep (on exit side)	Performance Solution
Minimum Queuing Provisions	8 vehicles / 48m	4 vehicles / 26m	Performance Solution
Maximum Driveway grade	1:20 (5%) maximum within first 6m	1:24 (~4.2%) maximum within first 6m	TAPS PSP Compliant.

¹ Based on Barcham Road being classed as a 'minor road' and speed limit of 50km/h.

² Based on the access servicing ~262 low turnover car parking spaces.

³ Based on the access servicing service vehicles up to the size of an LRV

⁴ All landscaping within the pedestrian visibility splay zone, as nominated in the development plans, will need to be limited to a maximum height of 0.6m

Further details in relation to the general vehicular access design aspects resolved with performance solutions are provided as follows.

Crossover Type & Width

While Brisbane City Council's TAPS PSP identifies a Type C1 crossover for the proposed development based on the total number of car parking spaces, a Type B1 crossover is considered more appropriate given the low-turnover nature of the residential use. The proposed Type B1 crossover has been designed in response to EDQ feedback to minimise the width and associated impacts on the verge and footpath. A 7.5 m wide Type B1 crossover is therefore considered an appropriate and fit-for-purpose outcome for the development.

Sight Distance

There is approximately 60m of available sight distance from the site access to the Barcham Road / MacArthur Avenue intersection located to the north. While this is less than the 90m desirable sight distance specified in the TAPS PSP, drivers exiting the site will have a clear and unobstructed view of the intersection. Vehicle speeds for traffic turning from MacArthur Avenue into Barcham Road are expected to be relatively low, generally below 40 km/h, which further enhances driver perception and reaction time.

The available sight distance of approximately 60m satisfies the minimum SSD requirement of 45m for a 50 km/h speed environment in accordance with AS 2890.1:2004. Moreover, when adopting a more realistic operating speed of 30–40 km/h, the available sight distance exceeds the desirable 5-second gap sight distance of 55m.

On this basis, the sight distance available at the site access is considered adequate and acceptable from a traffic safety perspective.

Visibility Sight Splays

The development plan includes an allowance for minimum 2.0m wide x 4.0m deep sight splay on the exit side of the driveway (a compliant 2.0m x 5.0m splay is provided on the entry side), which exceed the provisions outlined in AS2890.1:2004. On this basis, provision for an AS2890.1:2004 compliant sight splay arrangement is considered an acceptable performance solution.

Minimum Queuing Provisions

The development plan provides internal queuing of 4 vehicles / 24m from the boundary through to the first conflict point, that being the parking spaces located in proximity to the bottom of the ramp on the basement level. Whilst the queuing provision falls below the provision of the TAPS PSP requirement for 8 vehicles / 48m, this is considered an acceptable performance solution based on the practical movement demands at this access. As detailed in Section 7, the peak hour traffic generation of the development is estimated to be 91 vehicles per hour (vph) two-way. Based on a worst-case peak hour inflow of 70% (such as during a weekday evening peak hour – when residents are returning home / visitors attending site), this equates to 64 vph at most entering the site. Based on the 'Poisson Distribution' for queueing theory as detailed in the Austroads

GTM, Part 2: Traffic Theory the chances of more than 4 vehicles arriving during any given 30 second period for an average arrival flow of 64vph would be less than 1%. This means that the 4-vehicle queuing capacity is sufficient to satisfy in excess of the 99th percentile queuing demands expected for the driveway.

Overall, the proposed access arrangements are considered suitable for the proposed development and 'fit for purpose'.

5.2. Active Transport Access

Pedestrian access to the development is available from the Karakul Road, MacArthur Avenue and Barcham Road footpaths.

Cyclist access to the development is provided via multiple means, including:

- Ride up access to the bicycle parking via the Barcham Road vehicular access (and via the basement ramp).
- Use of the pedestrian access points (including a ramp located at the Karakul Road frontage) and internal building lifts to access bicycle parking on the basement level.
- Direct access to visitor bicycle racks (visitor bicycle parking) from the footpaths on Karakul Road, MacArthur Avenue and Barcham Road. As per recommendations made in Section 4.1.2, visitor bicycle parking is to be provided on and accessed via the approved neighbouring cross-block link park (located along the site's eastern frontage).

6. Service Vehicle Arrangements

6.1. PDA Requirements

Similar to other transport related elements, the Hamilton Northshore PDA Development Scheme refers to the TAPS PSP for the service vehicle needs for the development. Section 3 of the TAPS PSP indicates that a Multiple Dwelling land uses requires “Occasional Access” for a Large Rigid Vehicle (LRV) and “Regular Access” for a Refuse Collection Vehicle (RCV).

6.2. Proposed Loading Provisions

6.2.1. Design Vehicle

The development proposes to adopt a 10.7m LRV as the Occasional Access service vehicle, and a 10.235m RCV as the Regular Access vehicle. This is consistent with the design vehicle requirements set out in the TAPS PSP.

6.2.2. On-Site Servicing Provisions

A dedicated on-site loading area has been provided adjacent to the main driveway. The bay measures a minimum 11m long x 3.5m wide, allowing formal standing for vehicles up to a 10.7m LRV. The space will also accommodate a 10.235m RCV as well as smaller service vehicles such as an 8.8m Medium Rigid Vehicle (MRV) or 6.4m Small Rigid Vehicle (SRV).

The TAPS PSP nominates a minimum 4.5m vertical clearance over loading areas. The proposed development provides a 4.0m vertical clearance, which is considered a performance-based solution and is discussed in further detail below.

Suitability for Typical Service and Delivery Vehicles

The majority of servicing, delivery and moving activities associated with multiple dwelling developments are typically undertaken by medium or small rigid vehicles (MRV / SRV), rather than large rigid vehicles.

Australian Standards identify two key vertical clearance design parameters for service vehicles, being 3.5m and 4.5m. It is noted that the design height clearance is typically set 0.2m above the physical height of the service vehicle, such that a 4.5m design clearance accommodates vehicles up to approximately 4.3m in physical height.

Research undertaken by Colliers into commonly used Medium Rigid Vehicle (MRV) delivery vehicles indicates that typical vehicle heights fall well within the proposed clearance envelope. Examples of commonly used MRVs include:

- Isuzu Tautliner – approximately 3.8m physical vehicle height; and
- Mitsubishi Fighter – approximately 3.5m physical vehicle height

Further investigation of a broader range of MRV truck types and storage-unit truck assemblies indicates that the maximum combined physical vehicle and load height identified was approximately 3.68m.

Applying the Australian Standards design logic, a vehicle with a physical height of approximately 3.68m corresponds to a design clearance of approximately 3.9 m. Accordingly, the proposed 4.0m vertical clearance is sufficient to accommodate the vast majority of MRV-based servicing and delivery vehicles expected to access the site.

Infrequent Demand for Larger Vehicles

Service vehicles exceeding a 4.0m physical height are expected to access the site only infrequently, given the scale and nature of the development. In most instances, residents are anticipated to move personal effects using hire vehicles that can be operated under an open car licence, which are typically equivalent to an SRV and comfortably within the proposed clearance envelope.

LRV Access Considerations

The site layout and loading bay geometry are capable of accommodating a 10.7m LRV in terms of length and manoeuvrability. However, it is acknowledged that certain LRVs may exceed the proposed 4.0m vertical clearance. As such, LRVs are able to access the site subject to vehicle height, with any restriction relating to vertical clearance rather than site geometry or swept-path capability.

6.2.3. Refuse Collection Provisions

Refuse collection will be undertaken by a 10.235m rear-loading RCV. The RCV will complete a single reversing movement from Barcham Road into the loading area and exit the site in a forward gear. As Barcham Road is a minor road, this manoeuvre is consistent with the TAPS PSP for Occasional Access (LRV) and with the Refuse PSP for Regular Access (RCV).

The loading/standing area has a maximum grade of 1:24 and provides a 4.0m vertical clearance, exceeding the minimum requirements of Table 3 of the Refuse Planning Scheme Policy.

The manoeuvring requirements for the proposed development's design service vehicles are provided in **Appendix B**. Individual manoeuvring figures are as follows:

- Colliers Drawing 25BRT0087-01: 10.7m LRV
- Colliers Drawing 25BRT0087-02: 10.235m RCV
- Colliers Drawing 25BRT0087-02: B99 Passenger Vehicle Passing on Driveway

7. Potential Development Traffic Impacts

It is noted that the 2021 Transport Master Plan report prepared by Cardno included detailed modelling of the full development potential of the Northshore Hamilton PDA to inform road upgrade requirements. It is understood the outcomes of this report fed into the PDA IPBR. Therefore, in terms of quantifying the potential impacts of the proposed development Colliers considers the primary aim is to compare the traffic generation potential to what would have been assumed under the original modelling for the subject site. The following process was adopted to complete this exercise:

1. The preliminary approval for the site assumes a total development allowance of 11,970m² GFA for the subject site (generally site area x allowable plot ratio).
2. Table 2 in Appendix B of the IPBR identifies the assumed breakdown in GFA to different land uses based on the site's zoning. Conversion of GFA for residential uses into number of dwellings is also based on a 90m² GFA per dwelling average size. For the subject site, which is included in the "Mixed Use Medium Density" zoning, the breakdown of contemplated land uses would be as shown in Table 7-1.

Table 7-1: Subject Site – Assumed Development Potential/Breakdown under IPBR Yield Scenario

Land use	% GFA Allocated	GFA Distribution	Equivalent Unit Yield (90m ² per unit)	
Residential	95%	11,372m ²	Small 35%	44 units
			Medium 45%	57 units
			Large 20%	25 units
Total				126 units
Commercial	4%	497m ²		
Retail	1%	120m ²		

3. The peak hour traffic generation potential for the assumed land uses/extent has been adopted as follows:
 - a. Small units = 0.29 vehicles per hour (vph) per unit (Source: RTA GTGD "High Density" rate)
 - b. Medium units = 0.5vph per unit (Source: RTA GTGD "Medium Density", small/medium unit rate)
 - c. Large units = 0.65vph per unit (Source: RTA GTGD "Medium Density", large unit rate)
 - d. Commercial = 2.0vph per 100m² GFA (Source: RTA GTGD)
 - e. Retail = 5.0vph per 100m² GFA (Source: RTA GTGD, 'Restaurant' rate).
4. Based on the IPBR assumed yield as demonstrated in the Table 7-1 and assumed generation rates above, Colliers estimates the assumed peak hour traffic generation for the site contemplated under the IPBR is 74vph, as shown in Table 7-2.

Table 7-2: Subject Site – Assumed Peak Hour Traffic Generation Potential under IPBR Yield Scenario

Land Use	Yield / GFA	Traffic Generation Rate	Total Potential Traffic Gen.
Small Units	44 units	0.29vph / unit	13vph
Medium Units	57 units	0.5vph / unit	29vph
Large Units	25 units	0.65vph / unit	16vph
Commercial	497 m ² GFA	2vph / 100m ² GFA	10vph
Retail	120 m ² GFA	5vph / 100m ² GFA	6vph
Total			74vph

5. The proposed development includes 166 residential units, which is more than the 126 units anticipated by the IPBR Yield Scenario. However, the development does not propose any commercial/retail space. Therefore, the traffic generation potential on-balance may not be significantly different. To quantify this, the peak hour traffic generation of the proposed development scheme has been estimated, adopting the same generation rates as above. Table 7-3 provides a summary of the assumed traffic generation potential of the development scheme.

Table 7-3: Subject Site – Assessed Peak Hour Traffic Generation Potential for Development Scheme

Land Use	Yield / GFA	Traffic Generation	Total Potential Traffic Gen.
Small Units	26 units	0.29vph / unit	8vph
Medium Units	60 units	0.5vph / unit	30vph
Large Units	80 units	0.65vph / unit	53vph
Commercial	0 m ² GFA	2vph / 100m ² GFA	0vph
Retail	0 m ² GFA	5vph / 100m ² GFA	0vph
Total			91vph

As demonstrated, the proposed development scheme is projected to generate 91 vehicles per hour (vph) during peak periods, compared to the 74 vph anticipated under the IPBR Yield Scenario (+17vph).

On this basis, the proposed development is estimated to generate approximately 17 additional vehicle trips per peak hour period relative to the traffic generation assumed for the subject site under the IPBR Yield Scenario adopted in the PDA-wide transport modelling. This increase equates to approximately 1 additional vehicle movement every 3–4 minutes during the peak hour periods. When distributed across the surrounding road network in accordance with established travel patterns, this increase is considered modest and operationally negligible and is not expected to materially alter the traffic impacts previously contemplated for the Northshore Hamilton PDA or the road upgrade requirements identified through the earlier precinct-wide transport assessments.

8. Summary and Conclusions

8.1. Parking Arrangements

The development plan provides a total of 262 car parking spaces. This includes 238 resident car spaces and 23 visitor car spaces. One (1) PWD space is provided in addition to the residential and visitor spaces. All parking is provided on a single basement level.

The car parking layout generally complies with the TAPS PSP requirements, aside from performance solutions for the parking envelopes, end of aisle extensions and ramp width, which are deemed fit for purpose.

Overall, Colliers considers the car parking arrangements for the development to be acceptable.

8.2. Access Arrangements

All vehicle access to the development (general traffic and service vehicles) will be provided via a 7.5m wide Type B1 crossover on Barcham Road. Beyond the crossover, the driveway splits to accommodate two functions:

- A basement access ramp for general (residential/visitor) vehicle movements, and;
- A ground-level loading area for service vehicles.

This driveway crossover will result in the loss of two (2) on street parking spaces, which is generally unavoidable given the recent construction of the surrounding roads provided on-street parking along all frontage space and did not consider allowance for vehicular access to the subject site.

The access design generally meets the requirements of the TAPS PSP. However, design aspect of the crossover type and queueing provisions are proposed as a performance solution.

Overall, the access arrangements for the proposed development are considered acceptable.

8.3. Service Vehicle Arrangements

The development scheme makes allowance for service vehicle access for occasional 10.7m LRVs and regular 10.235m rear-loading RCVs. The development plan makes allowance for a dedicated loading bay on ground level, directly adjacent to the main driveway. The spatial allowances for the ground level loading bay meet the requirements of the TAPS PSP, with the exception of the height clearance which represents a performance solution.

Overall, the proposed service vehicle arrangements for the development are considered acceptable.

8.4. Public and Active Transport

The site is located proximate to public and active transport infrastructure that will encourage alternative transport options for residents. This will continue to improve as the Northshore Hamilton PDA develops and new provisions are brought online.

The development provides a total of 172 bicycle parking spaces, comprising 132 resident spaces and 40 visitor spaces. The visitor bicycle parking supply is compliant with BCC TAPS PSP requirements.

The resident bicycle parking provision represents an approximate midpoint between the requirements of the TAPS PSP and Austroads guidance and is considered to provide a balanced and reasonable level of bicycle parking for the development.

Bicycle parking is distributed across both the basement and ground levels, with all visitor bicycle parking located at ground level in close proximity to building entrances.

8.5. Potential Traffic Impacts

The proposed development is estimated to generate approximately 91vph in peak periods, representing an increase of approximately 17vph compared to the traffic generation assumed for the subject site under the IPBR Yield Scenario. This equates to around one additional vehicle movement every 3–4 minutes, which is considered modest and operationally negligible once distributed across the surrounding road network, and is not expected to materially alter the PDA-wide traffic impacts previously assessed.

8.6. Conclusion

Based on the assessment contained within this report, Colliers sees no traffic engineering reason why the relevant approvals should not be granted.

Appendix A Development Plans

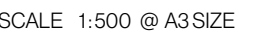
CAR SCHEDULE

<u>RESIDENTS</u>	
TANDEM	= 158
STANDARD	= 78
SMALL CAR	= 2

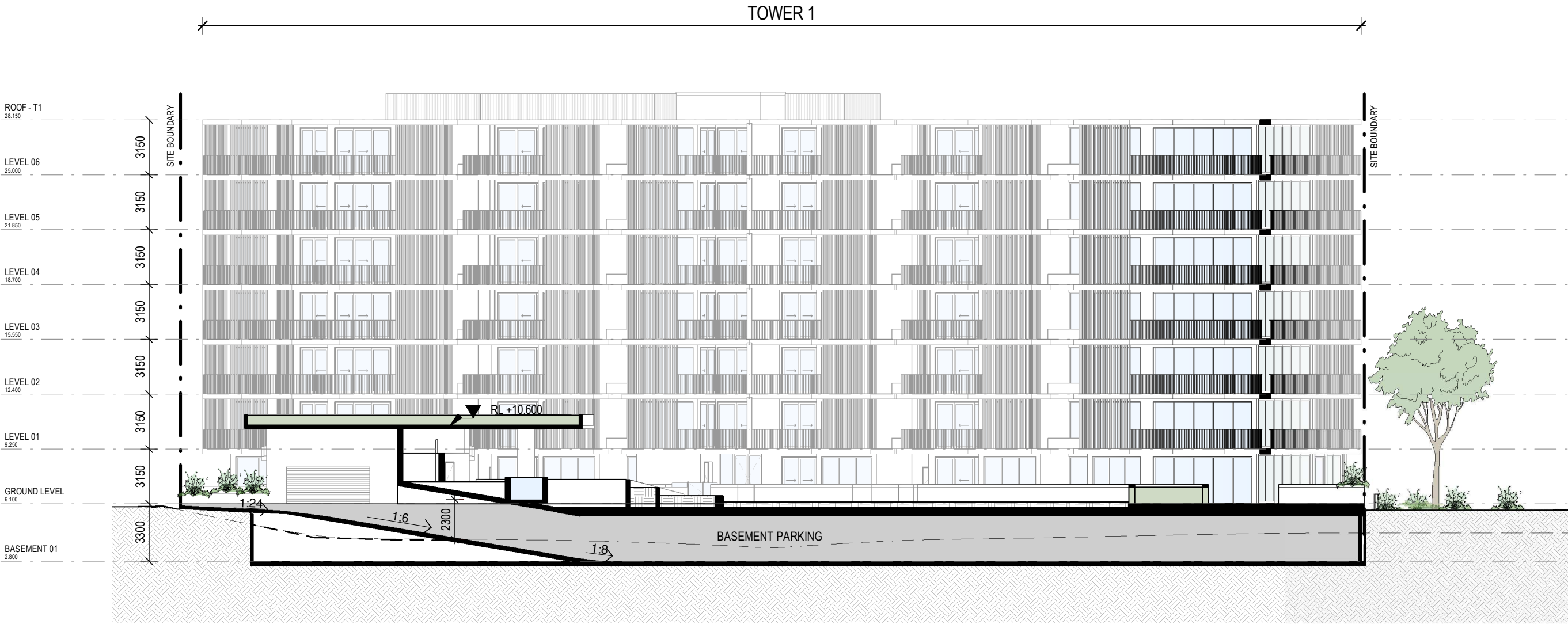
GRAND TOTAL | = 262

NOTE:
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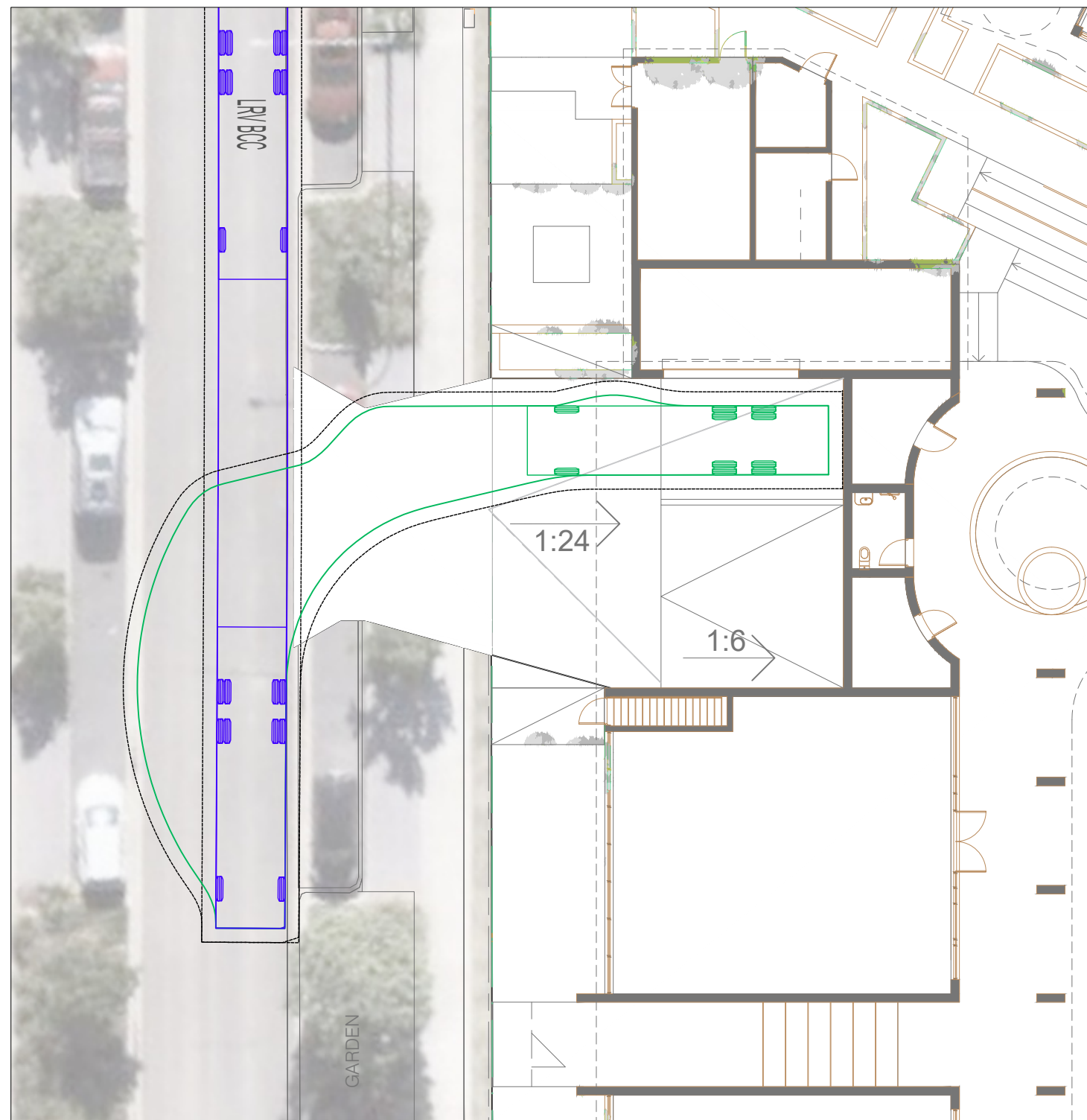




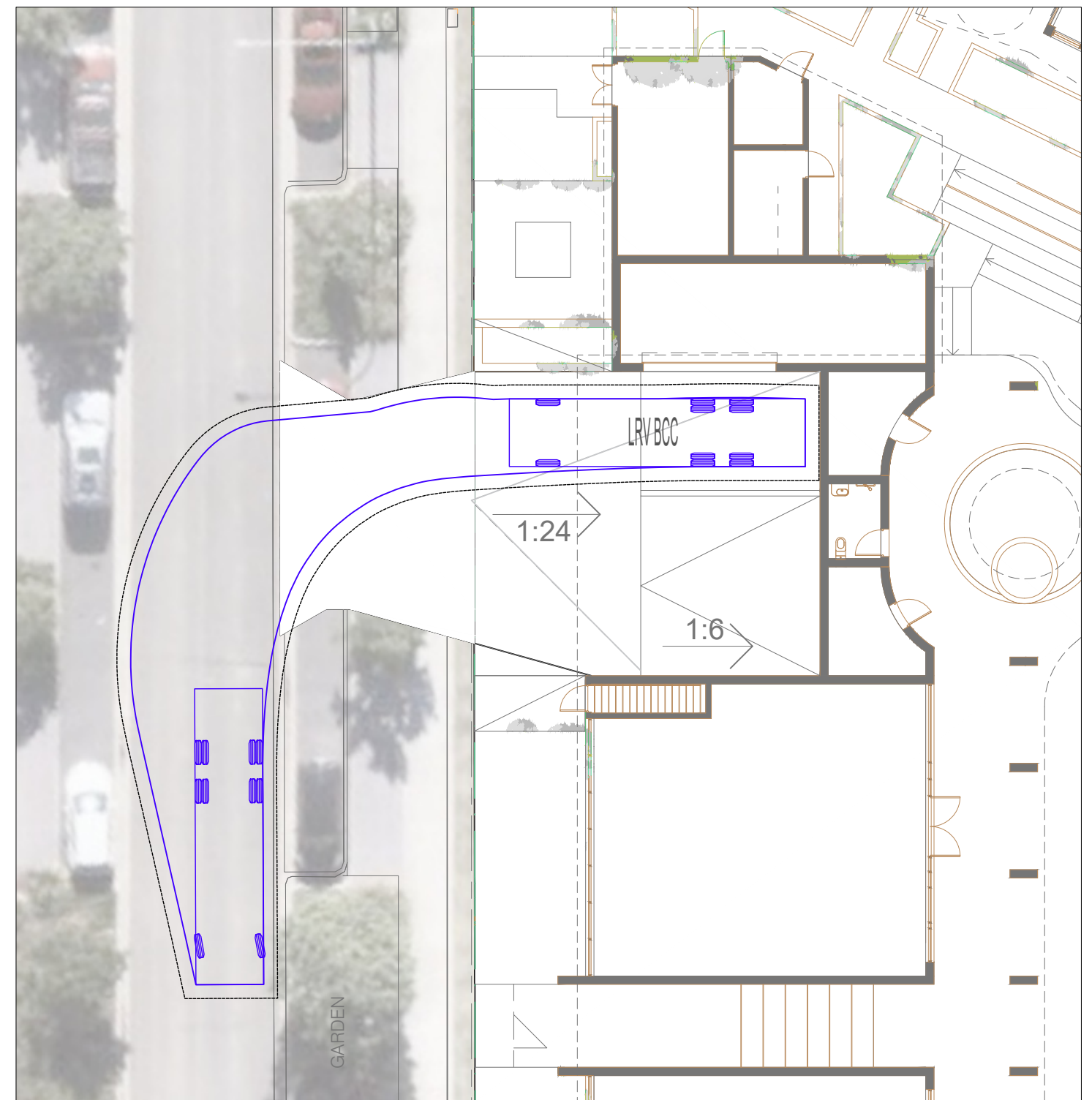
SECTION C



Appendix B Colliers Drawings

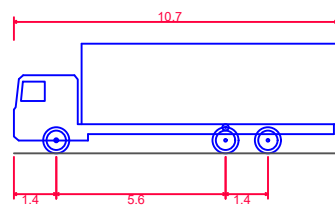


LRV INGRESS



LRV EGRESS

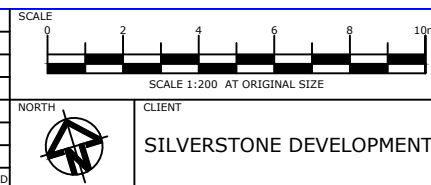
VEHICLE PROFILE



LRV BCC

Overall Length	10.700m
Overall Width	2.450m
Overall Body Height	3.623m
Min Body Ground Clearance	0.419m
Track Width	2.450m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	11.000m
Design Speed Forward	5.0km/h
Clearance Envelope	0.500m

A	17.12.2025	ORIGINAL ISSUE	JH	SC	MGr
REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVE



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PROJECT **17 KARAKUL ROAD, HAMILTON**

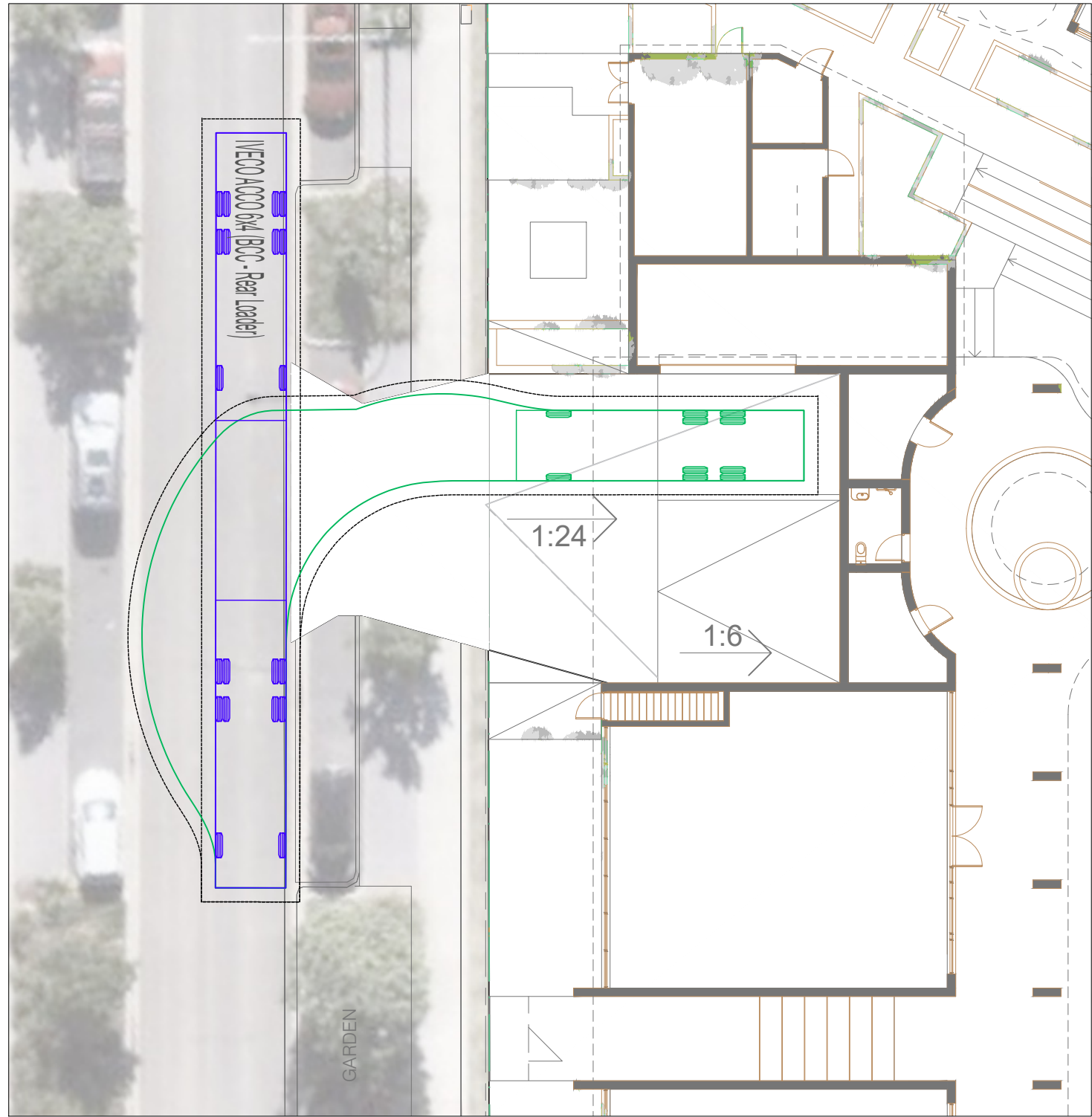
DRAWING TITLE

SWEPT PATH ANALYSIS
- 10.7m LARGE RIGID VEHICLE (LRV)

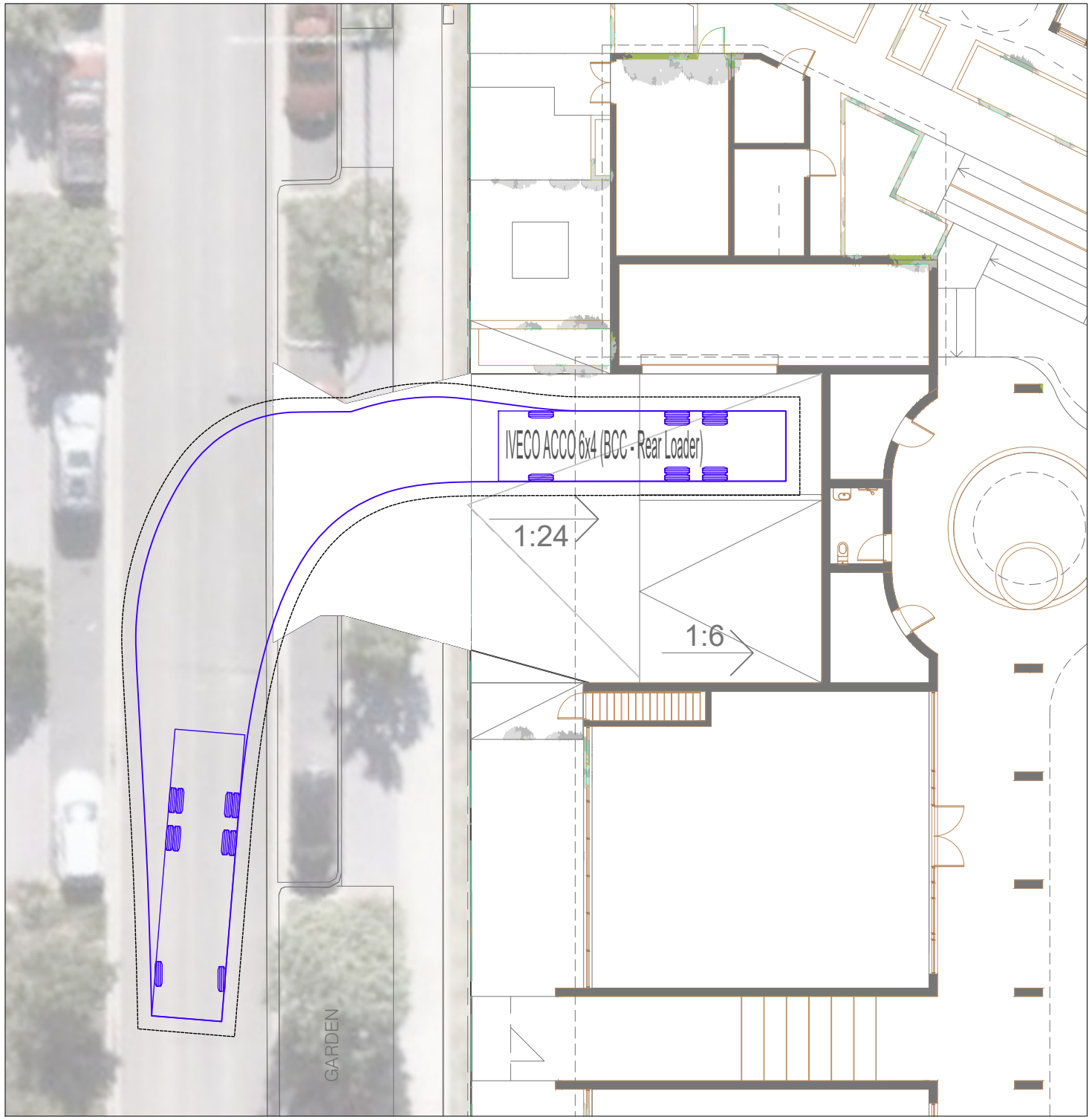
**PRELIMINARY
ADVICE ONLY**

17 December 2025

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DRAWING NUMBER	25BRT0613-01	REVISION	A
DATE	17 Dec 2025	SHEET	1 OF 1

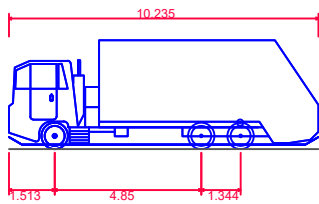


RCV INGRESS



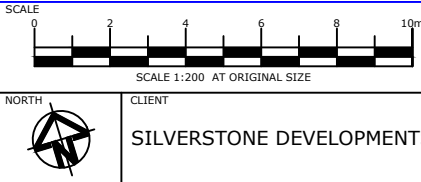
RCV EGRESS

VEHICLE PROFILE



IVECO ACCO 6x4 (BCC - Rear Loader)
Overall Length 10.235m
Overall Width 2.500m
Overall Body Height 3.600m
Min Body Ground Clearance 0.260m
Track Width 2.500m
Lock-to-lock time 6.00s
Curb to Curb Turning Radius 9.757m
Design Speed Forward 5.0km/h
Clearance Envelope 0.500m

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	17.12.2025	ORIGINAL ISSUE	JH	SC	MGr



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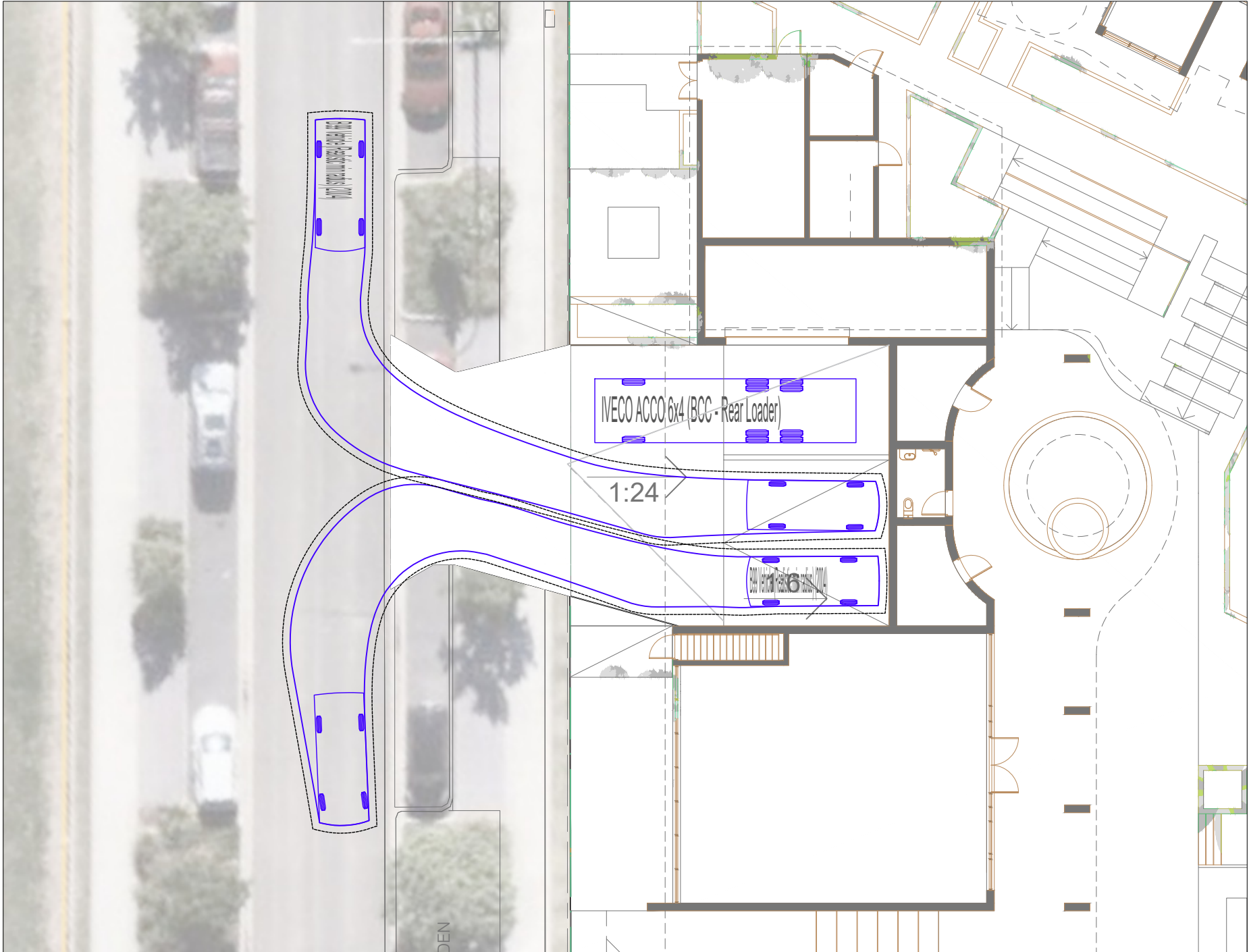
ABN 65 010 868 621
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PROJECT	17 KARAKUL ROAD, HAMILTON
DRAWING TITLE	SWEPT PATH ANALYSIS - 10.235m REFUSE COLLECTION VEHICLE (RCV)

PRINCIPAL CONSULTANT
MATT GRIERSON RPEQ 31037
APPROVED 17 Dec 2025

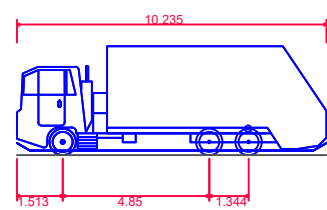
PRELIMINARY
ADVICE ONLY
17 December 2025

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DRAWING NUMBER	25BRT0613-02	REVISION	A
DATE	17 Dec 2025	SHEET	1 OF 1

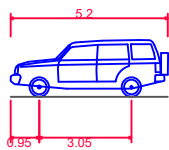


RCV STANDING & B99 PASSENGER VEHICLE PASSING

VEHICLE PROFILE



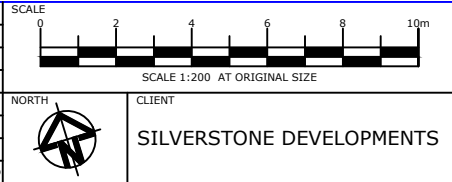
IVECO ACCO 6x4 (BCC - Rear Loader)
Overall Length 10.235m
Overall Width 2.500m
Overall Body Height 3.600m
Min Body Ground Clearance 0.260m
Track Width 2.500m
Lock-to-lock time 6.00s
Curb to Curb Turning Radius 9.757m
Design Speed Forward 5.0km/h
Clearance Envelope 0.500m



B99 Vehicle (Realistic min radius) (2004)
Overall Length 5.200m
Overall Width 1.940m
Overall Body Height 1.878m
Min Body Ground Clearance 0.272m
Track Width 1.840m
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 6.250m
Design Speed Forward 5.0km/h
Clearance Envelope 0.300m

PRELIMINARY
ADVICE ONLY
17 December 2025

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	17.12.2025	ORIGINAL ISSUE	JH	SC	MGr



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PROJECT
17 KARAKUL ROAD, HAMILTON

DRAWING TITLE
SWEPT PATH ANALYSIS
- 10.235m REFUSE COLLECTION VEHICLE (RCV) &
B99 PASSENGER VEHICLE PASSING

PROJECT NUMBER 25BRT0613	ORIGINAL SIZE A3
DRAWING NUMBER 25BRT0613-03	REVISION A
DATE 17 Dec 2025	SHEET 1 OF 1