Transport Engineering Report

Lot 18A, 260 MacArthur Avenue, Hamilton

Mixed Use Development

On behalf of Silverstone Developments



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1. Introduction

1.1. Purpose

Colliers International Engineering and Design (TTMC) Pty Ltd has been engaged by Silverstone to prepare a Transport Engineering Report investigating a proposed Mixed-Use development at Lot 18A, 260 MacArthur Avenue, 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 identified as 260 MacArthur Avenue (Lot 18A on SP326594), Hamilton, as shown in Figure 2-1 and Figure 2-2. The site has a total site area of 8,121 m² and is currently vacant.

The subject site is zoned as "Mixed-use High Density" under the Northshore Hamilton PDA and has frontage on MacArthur Avenue to the south, Karakul Road to the north and Angora Road to the east.



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 (MacArthur Avenue, Karakul Road and Angora Road) provide formal indented parking on both sides of the road.

2.3. Public and Active Transport Facilities

2.3.1. Public Transport

Bus Services

There are bus stops on the surrounding roads within a 400m walk of the site. A map showing existing bus stops within a 400m radius of the subject site is shown in Figure 2-3.

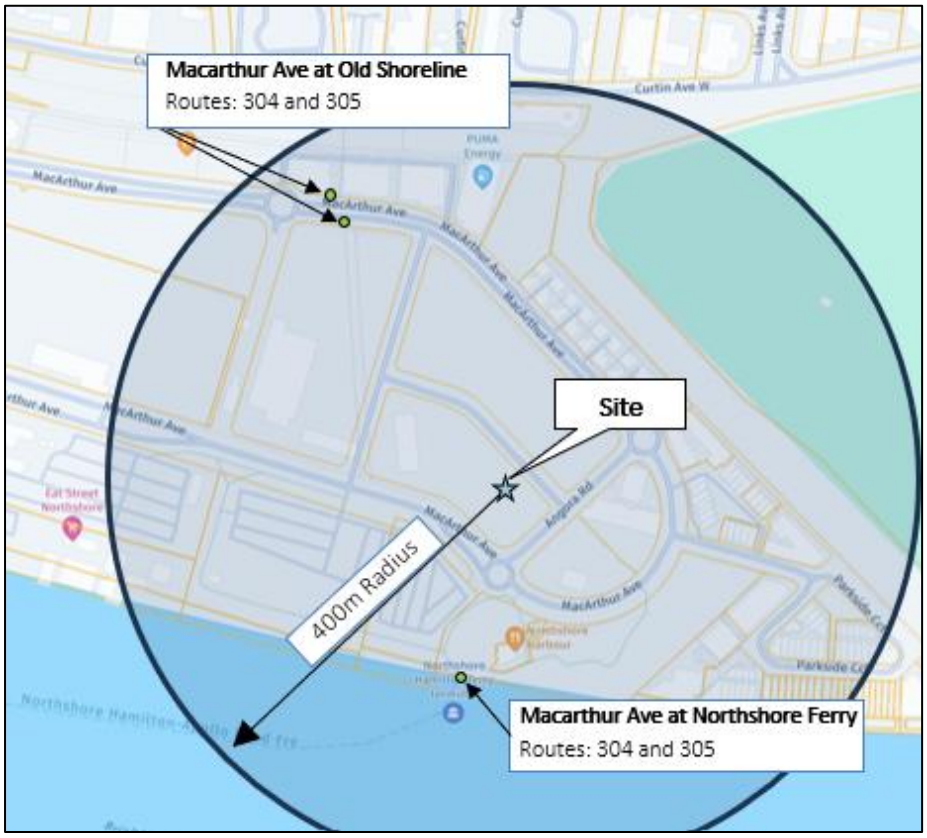


Figure 2-3: Surrounding Public Transport Provisions – Source: Nearmap 2024

The following is a summary of the bus routes currently serviced by these 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 350m 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.

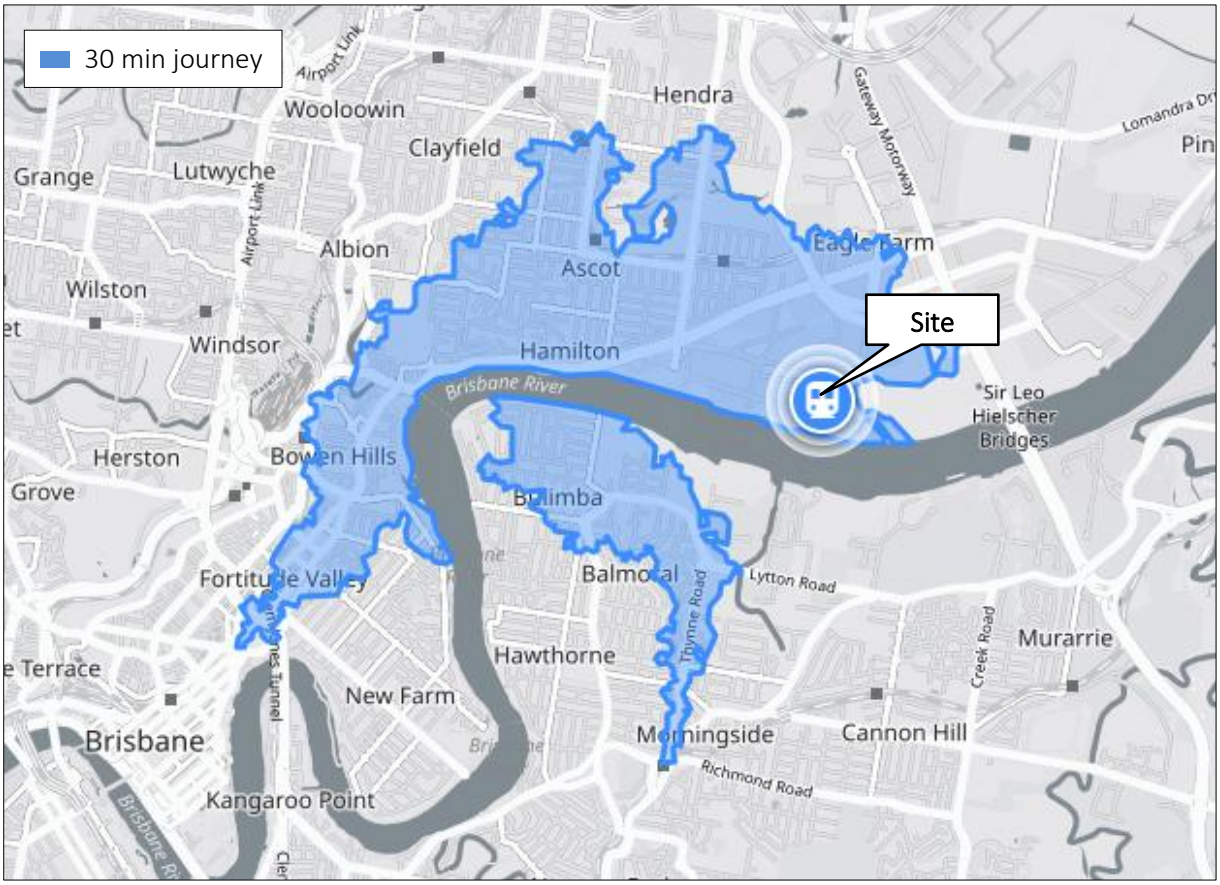


Figure 2-4: Public Transport Trip Catchment – 30 Minute Journey

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.

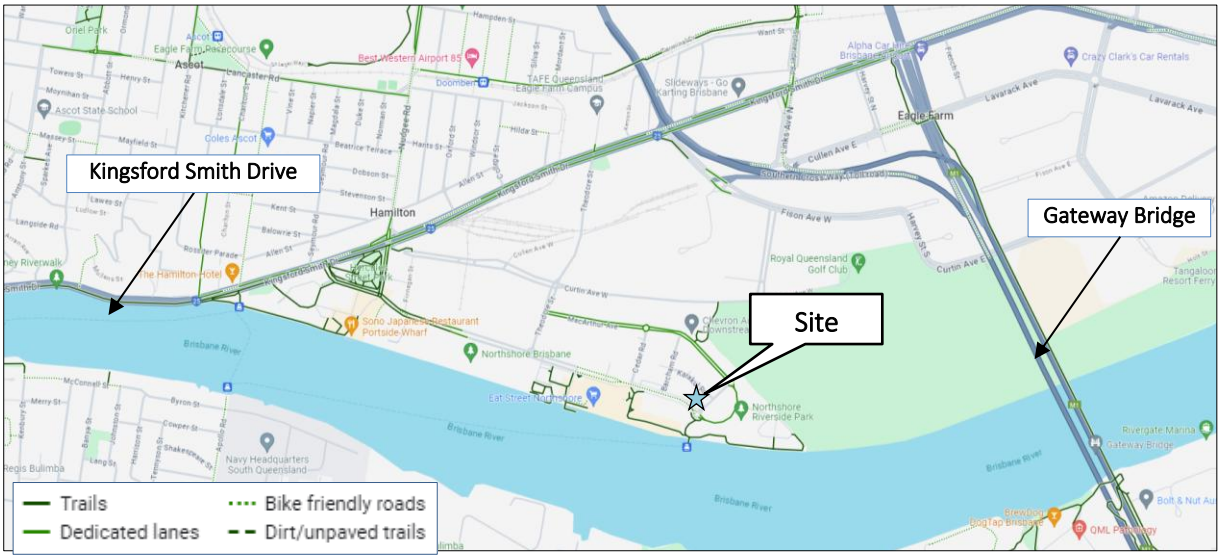


Figure 2-5: Existing Cycle Routes - Map Source: Google Maps

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.

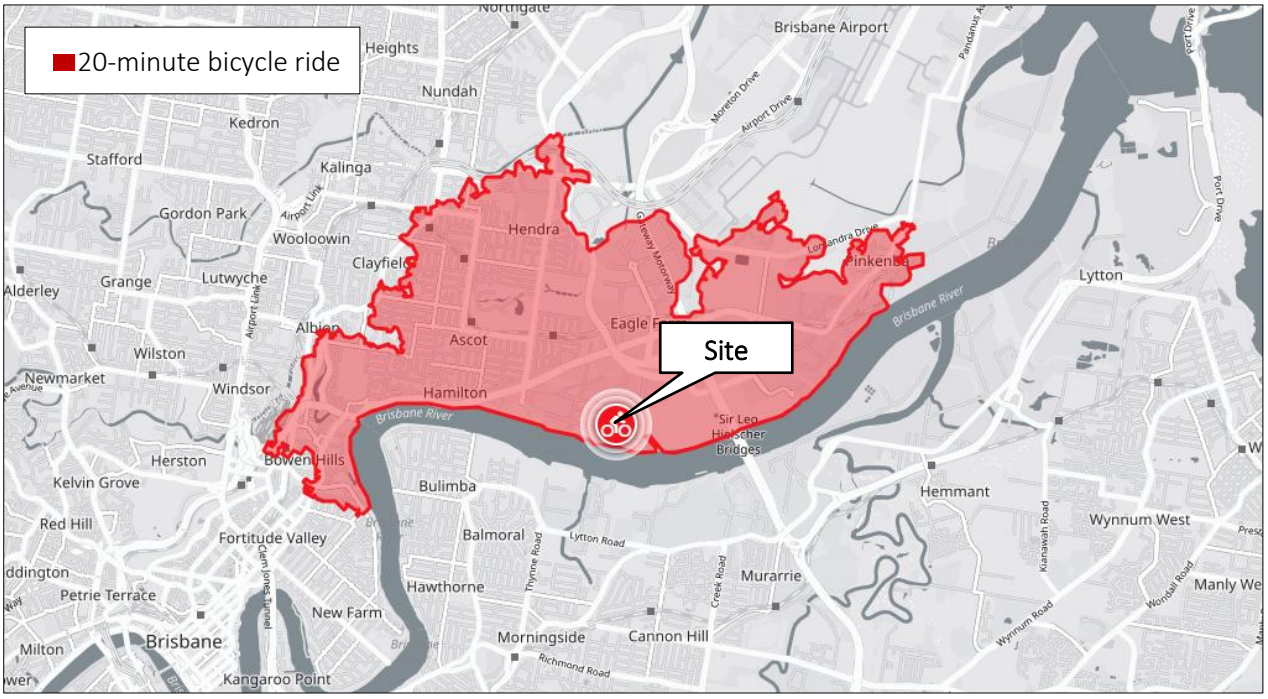


Figure 2-7: Cycle Catchment – 20 Minute Journey

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 new 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 also 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.

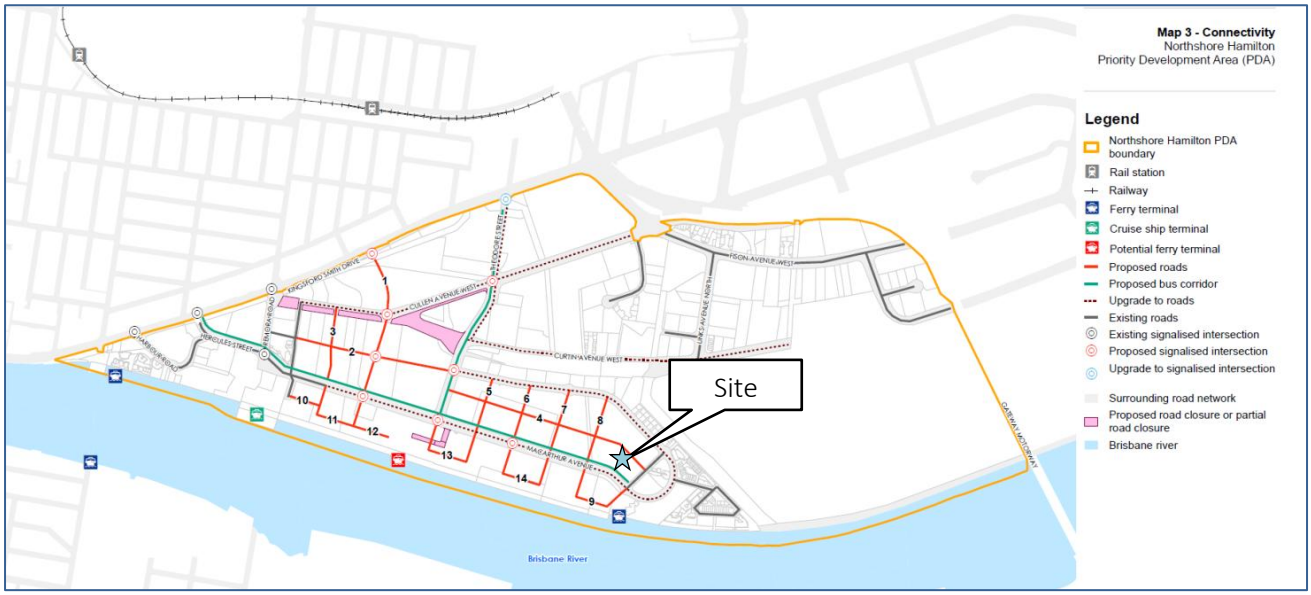


Figure 2-8: PDA Internal Transport Network Upgrades – Roads and Public Transport - Source: PDA Development Scheme

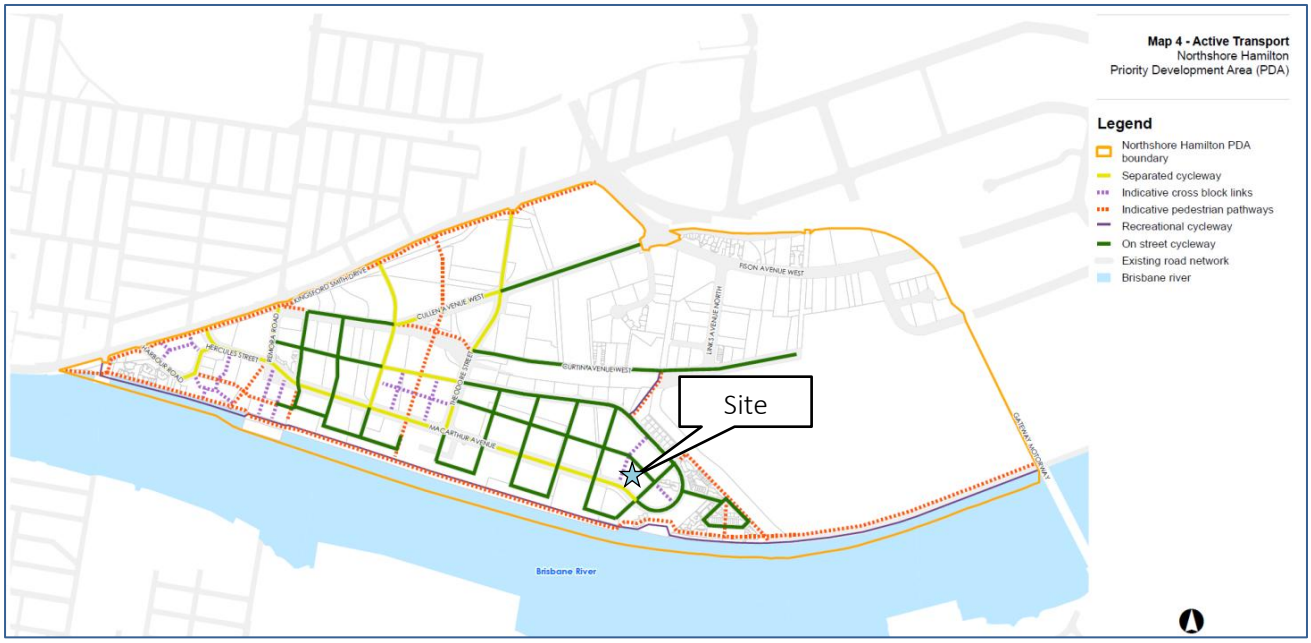


Figure 2-9: PDA Internal Transport Network Upgrades – Active Transport - Source: PDA Development Scheme

Public Transport Provisions

Cardno Transport Masterplan

Colliers has reviewed the 2021 Transport Masterplan Report prepared by Cardno which informed 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 City Glider

It is understood that Brisbane City Council has recently 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-mintutes 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 is to consist of multiple dwelling units and retail uses. The proposed development scheme is summarised in Table 3-1.

Table 3-1: Proposed Development Mix

Land Use	Yield
Multiple Dwellings	**196 units (total)**
• 1 Bedroom unit	60 units
• 2 Bedroom units	77 units
• 3 Bedroom units	59 units
Retail	**833m²**
• Restaurant	205m²
• Hairdresser	73m²
• Bakery	73m²
• Bottle Shop	87m²
• Greengrocer	395m²

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

3.2. Parking

The development scheme provides a total of 306 car parking spaces across the ground and basement, including:

- 268 resident car parking spaces
- 32 visitor car parking spaces, which may be shared between residential and retail visitors
- 6 Persons with Disabilities (PWD) spaces

A total of 247 bicycle spaces are also provided, including:

- 198 resident bicycle spaces on the Basement level.
- 49 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 7.0m wide Type B2 crossover to Karakul Road on the northern site frontage. This access will accommodate all vehicles with all movements permitted.

- Pedestrian access to/from the development from all site frontages (MacArthur Avenue, Karakul Road and Angora Road).
- Direct access to visitor bicycle racks from the footpath and resident access via either vehicle access (Karakul 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 access for vehicles up to the size of a 12.5m Heavy Rigid Vehicle (HRV). Dedicated loading bays are provided on the ground level for a HRV, Refuse Collection Vehicle (RCV) and Van.

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	 196 units	 147 spaces (min) 392 spaces (max)	 268 spaces
PWD Parking	0.02 spaces per unit	196 units	4 spaces	6 spaces
Multiple Dwelling (Visitor)	0.15 spaces per unit	196 units	30 spaces (min)	32 spaces (shared between residential and retail visitors)
Retail • Restaurant [2] • Hairdresser [1] • Bakery [2] • Bottle Shop [1] • Greengrocer [2] **Total**	 Max. 1 space per 100m² GFA Max. 2 spaces per 100m² GFA Max. 1 space per 100m² GFA Max. 2 spaces per 100m² GFA Max. 1 space per 100m² GFA	 205m² 73m² 73m² 87m² 395m² **833m²**	 **10 spaces (max)**	
Total				**306 spaces**

[1] Parking rates as per Northshore Hamilton PDA Development Scheme for Shop land use

[2] Parking rates as per uses within the City Frame, as specified in the BCC TAPS PSP.

As demonstrated in Table 4-1, the proposed residential parking provisions comply with the minimum requirements of the Northshore Hamilton PDA.

The development provides 32 general parking spaces shared between residential and retail visitors. In addition, four PWD parking spaces are provided on the ground level, which are accessible to users associated with both the residential and retail components of the development. This results in a total of 36 parking spaces within the ground-level shared parking area, comprising 32 general spaces and four PWD spaces.

A further two PWD parking spaces are provided within the basement car park, which may be utilised by eligible residents or visitors.

In addition to being compliant, the proposed parking arrangements provide a shared parking model, which is considered an efficient and appropriate solution, ensuring the spaces are utilised effectively based on the differing peak demand periods for each user group.

During the daytime period, retail uses are expected to generate peak demand, requiring up to 10 spaces. This demand aligns well with the availability of shared spaces, as residential visitor parking demand during this time is typically low, ensuring that the needs of retail visitors are met without compromising residential visitor parking.

In the early evening peak, residential visitor demand increases, requiring up to 30 spaces of the total 36 spaces provided (including four PWD spaces). Retail uses during this time, particularly uses such as hairdresser, bakery or grocer are not expected to reach their full peak demand, leaving sufficient capacity to meet the residential visitor parking requirements.

The later evening peak presents an overlap, as both residential visitor demand (30 spaces) and restaurant demand are likely to align. However, with a total of 36 spaces available, this overlap is expected to be catered for. Additionally, a portion of the restaurant demand is anticipated to consist of shared trips, such as residential visitors dining at the restaurant. This overlap in user groups reduces the likelihood of competition for parking spaces.

On weekends, retail uses, particularly the grocer/bottle shop and restaurant, are anticipated to generate higher demand. Even so, the shared arrangement leverages differences in duration and turnover rates between retail and residential visitors to optimise the use of available spaces, minimising conflicts and ensuring sufficient parking for all users.

Table 4-2 estimates the percentage of maximum parking demand for both residential and retail uses during key time periods, relative to their respective minimum/maximum requirements (minimum 30 spaces for residential visitors and maximum 10 spaces for retail). It highlights how the shared parking arrangement accommodates varying demand levels.

Table 4-2: Estimated Parking Demand and Utilisation Across Key Time Periods

Time Period	Total Spaces Provided	Residential Visitor Demand (%) [1]	Residential Visitor Demand (spaces)	Retail Demand (%) [2]	Retail Demand (spaces)	Total Demand (spaces)
Daytime (weekday)	36 spaces	10%	3 spaces	100%	10 spaces	**13 spaces**
Early Evening (weekday)		80%	24 spaces	70%	7 spaces	**31 spaces**
Late Evening (weekday)		100%	30 spaces	30%	3 spaces	**33 spaces**
Weekend		80%	24 spaces	70%	7 spaces	**31 spaces**

[1] – Based on demand of 30 residential visitor spaces (noting that this is the minimum number of visitor parking spaces required)

[2] – Based on demand of 10 (max) retail spaces

Based on the above, the proposed shared parking model effectively balances the needs of both residential and retail users during typical peak periods, supported by the provision of spaces exceeding the residential visitor parking requirements.

4.1.2. PWD Parking

The Northshore Hamilton PDA indicates that PWD parking should be provided at a rate of 0.02 spaces per dwelling, with a minimum of one parking space. This parking supply is separate from the general residential and visitor parking requirements.

For the proposed 196 dwellings, this equates to a requirement for four PWD parking spaces.

The development provides a total of six PWD parking spaces, exceeding the minimum PDA requirement. These are distributed as follows:

- Four PWD parking spaces on the ground level, accessible to eligible users associated with both the residential and retail components of the development.
- Two PWD parking spaces within the basement car park, available for use by eligible residents or visitors, subject to the relevant access arrangements.

The distribution of PWD parking spaces provides accessible parking opportunities across the development, with the four ground-level spaces also contributing to the shared residential visitor and retail parking arrangements discussed in Section 4.1.1.

Accordingly, the proposed PWD parking supply exceeds the minimum requirements of the Northshore Hamilton PDA and is considered acceptable.

4.1.3. 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. Table 4-3 provides a summary of the bicycle parking supply requirements in line with the TAPS PSP, and the proposed provisions, for the development scheme.

Table 4-3: TAPS PSP Bicycle Parking Supply Requirement

Land Use / Component	TAPS PSP Requirement	Extent	Requirement	Provision
Multiple Dwelling (Residents)	1 space per unit	196 units	196 spaces	198 spaces
Multiple Dwelling (Visitors)	1 space per 4 units	196 units	49 spaces	49 spaces
Total			**245 spaces**	**247 spaces**

As seen in Table 4-3, the development scheme proposes a total of 247 bicycle parking spaces, which exceeds the TAPS PSP minimum requirements.

The bicycle parking arrangements, including location, quantum, rack form and access provisions, for the development generally entail the following:

Resident Bicycle Parking

A total of 198 bicycle racks will be located on the basement level, including:

- 88 x Multi-Tier Series racks – the selected system is to comply with AS 2890.3:2015, including the provision of appropriate clearances (e.g., minimum 400mm between rack post centres and adjacent walls or obstructions). The system is to incorporate a dynamic operating mechanism and provide adequate overhead clearance (e.g., 2,700mm to the ceiling), free of any overhead services or fixtures.
- 98 x Wall-Mounted Racks – racks are to provide a minimum spacing of 500mm between centres and 350mm clearance to adjacent walls or obstructions. A portion of the wall-mounted racks will be installed at an angle. All racks are to comply with AS 2890.3:2015 and be installed in accordance with the manufacturer's specifications.

- 12 x Ground-Mounted Racks – racks are to provide a minimum spacing of 500mm between centres and adjacent walls or obstructions, in accordance with AS 2890.3:2015.

Access to the basement bicycle parking will be via the vehicle driveway on Karakul Road, or internal lifts.

Visitor Bicycle Parking

A total of 49 visitor bicycle parking spaces will be provided. All of these spaces will be located at ground level, positioned at the northern site frontage (adjacent to the development driveway), the southern site frontage (in front of the retail uses) and within the visitor/retail car park. These spaces will include a combination of ground racks (36 spaces) and wall rack systems (13 spaces).

The bicycle parking supply for the development meets the minimum requirement of TAPS PSP and is therefore considered acceptable.

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 TAPS PSP provisions.

The development scheme provides parking on the Ground (residential and retail visitors) and Basement (residential only) levels.

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)	 5.4m (min) 5.4m (min)	 5.4m (min) 5.4m (min)	 TAPS PSP Compliant TAPS PSP Compliant
Parking space width: • Standard space (Class 3) • PWD space (Class 5)	 2.6m (min) 2.4m + 2.4m 'Shared Area'	 2.6m (min) 2.4m + 2.4m 'Shared Area'	 TAPS PSP Compliant TAPS PSP Compliant
Aisle Width: • Parking aisle • Circulation road/ramp (two-way)[1]	 6.2m (min) 6.2m (min) + 0.3m kerbs/clearance	 6.2m (min) 6.6m + 0.3m kerbs/clearance	 TAPS PSP Compliant TAPS PSP Compliant
Parking envelope clearance	Located as per Figure f 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%)	 Flat Flat 1:5 (20.0%)	 TAPS PSP Compliant TAPS PSP Compliant Performance Solution
Maximum Gradient Transitions[2]	1:8 (12.5%) summit 1:6.67 (15.0%) sag	1:10 (10.0%) summit 1: 8 (12.5%) sag	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 Further Information Provided Below 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 Parking[1]			
Wall Racks Length	1.2m (min)	1.2m (min)	AS2890.3 Compliant
Ground Rack length	1.8m (min)	1.8m (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
Maneuvering/Access Paths	1.5m (min)	1.5m (min)	AS2890.3 Compliant
Height Clearance	As per supplier specifications (e.g., 2.7m for multi-tier system)	To be as per AS2890.3 and supplier specification	To be as per AS2890.3 and supplier specification

[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.

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). The provisions of AS2890.1:2004 are based on extensive research for the particular needs for both front and rear door opening, regardless of whether the vehicles are parked frontwards or rearwards in the parking bays.

Ramp Grades

The TAPS PSP details that ramp grades should not exceed 1:6 (16.7%). The proposed development generally provides a maximum grade of 1:5 (20%) for the single ramp from ground to basement. This ramp grade satisfies the maximum grades as per AS2890.1:2004 (where less than 20m in length) for 'private or residential car parks', which allows up to 1:4 (25%) grades. As such, the proposed grades represent a suitable compromise between TAPS PSP and AS2890.1:2004 provisions.

The ramp is also located under the building line in an area protected from adverse weather or debris (i.e. leaves) accumulation that may otherwise compromise vehicle traction and is enclosed, limiting any acoustic impact of a steeper grade.

Blind aisle extension

The TAPS PSP details that at the end of terminating/blind parking aisles, a 2.0m aisle extensions needs to 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's 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.

Height Clearance

The basement will provide a general minimum height clearance of 2.3m, with a reduced clearance of 2.1m at the front of tandem bays along the northern and southern walls to accommodate ducting. The Council planning scheme allows for an absolute minimum height clearance of 2.1m, where alternative provisions are made to allow for vehicles with higher clearances. As this clearance impacts only 1 of the 2 spaces that would be allocated to a residence, each resident with a restricted clearance space will also be provided with a space providing at least 2.3m clearance. This effectively allows for a resident with a car that may exceed the 2.1m clearance to appropriately park a vehicle in this space, as an alternative to the low clearance space where a second, smaller, vehicle will be parked. In this sense it is considered that the restricted clearance may be considered acceptable under the TAPS PSP. Any low clearance areas will be clearly signed to provide further compliance with Council requirements.

5. Access Arrangements

5.1. Vehicular Access

The development scheme proposes a single vehicular access to Karakul Road at the site's northern frontage. This access will be configured as a 7.0m wide Type B2 driveway and accommodate vehicles up to the size of an HRV. The access will be priority controlled, with all movements permitted.

The proposed location of the vehicular access is configured to retain maximum on-street spaces. However, the new access will require the removal of 2 existing on-street parking spaces. There is also an existing streetlight that will need to be relocated. This outcome is generally unavoidable, as all frontages for the subject site are fully occupied by existing intended parking zones and existing services.

The Northshore Hamilton PDA nominates that driveway crossovers be located and designed in accordance with TAPS PSP. The design provisions of the Karakul Road access and the requirements of the TAPS PSP are detailed in Table 5-1.

Table 5-1: Karakul Road Access Arrangements

Design Aspect	TAPS PSP Provision	Proposed Provision	Compliance
Width / Crossover Type to accommodate: • Cars[1][2] • Service vehicles[1][3]	6.0-9.0m / Type C1 7.0m (min) / Type B2	7.0m / Type B2	Performance Solution
Distance from: • minor intersection[1] • adjacent driveway[1]	10m (min) 3m (min)	40m – Angora Road >3m (currently there are no other driveways located on Karakul Road in the vicinity of the development site)	TAPS PSP Compliant TAPS PSP Compliant
Sight Distance[1][2]	90m (desirable) 70m (minimum)	West: Approx. ~95m East: ~50m – to the intersection	Performance Solution
Visibility Sight Splays	2.0m wide x 5.0m deep (on each side)	2.0m wide x 4.0m deep (on both sides)	Performance Solution
Minimum Queuing Provisions [2]	8 vehicles / 48m	3 vehicles / 18m	Performance Solution
Maximum Driveway grade	1:20 (5%) maximum within first 6m	1:20 (5%) maximum within first 6m	TAPS PSP Compliant.

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

[2] Based on the access servicing 306 low turnover car parking spaces.

[3] Based on the access service vehicles up to the size of an LRV.

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

Crossover Type

While BCC's TAPS PSP identifies a Type C1 crossover for the proposed development based on the number of car spaces, a Type B2 crossover is considered more appropriate given the low-turnover nature of the predominantly residential use. Swept path analysis included in Appendix B, illustrates that the proposed

driveway width can accommodate movements for a 12.5m HRV. The reduced crossover width also reduces any conflict area with pedestrians, which is significant in a higher density zone with moderate to high pedestrian activity. Based on this, the proposed 7.0m wide Type B2 driveway configuration is considered acceptable.

Sight Distance

There is ~50m of sight distance to the Karakul Road / Angora Road. While this is less than the 70m minimum specified in the TAPS PSP, it meets the minimum stopping sight distance (SSD) specified in AS2890.1.2004 (45m). It is also noted that vehicular traffic exiting the driveway crossover will have a clear unobstructed view of the Karakul Road / Angora Road intersection. The speed of traffic turning from Angora Road onto Karakul Road will be relatively low and well below the default speed limit of 50kph.

On this basis, the sight distance provisions are considered acceptable

Visibility Sight Splays

It is noted that the development complies with TAPS PSP requirement of 2.0m wide X 5.0m deep pedestrian visibility splay if the parked cars are not considered as a permanent obstruction. The development plan includes an allowance for a minimum 2.0m wide x 4.0m deep sight splay on both sides of the driveway, which exceed the provisions of 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 3 vehicles / 18m from the boundary through to the first conflict point, being the Van service bay. 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 demands at this access. As detailed in Section 7, the peak hour traffic generation of the development is estimated at 137 vehicles per hour (vph) two-way. Based on a peak hour inflow of 70% (such as during a weekday evening peak hour – when residents are returning home / visitors attending site), this equates to 96vph 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 3 vehicles arriving during any given 30 second period for an average arrival flow of 96vph would be less than 1%. This means that the 3 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 both the MacArthur Avenue, Karakul Road and Angora Road footpaths.

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

- Ride up access to the basement bicycle parking via the Karakul Road vehicular access.

- Use of the pedestrian access points and internal building lifts to access parking on the basement level.
- Direct access to visitor bicycle racks (visitor bicycle parking) from the footpaths on Karakul Road and MacArthur Avenue.

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. Table 6-1 details the design vehicle and loading bay requirements for the respective land uses.

Table 6-1: BCC Service Vehicle Requirements

Land Use	Design Vehicle	
	Regular Access	Occasional Access
Multiple Dwelling	RCV	LRV
Hairdresser	Refer to Table 3 of TAPS PSP	Van
Bottle Shop	Refer to Table 3 of TAPS PSP	AV
Restaurant	Refer to Table 3 of TAPS PSP	RCV
Bakery	Refer to Table 3 of TAPS PSP	RCV
Greengrocer	Refer to Table 3 of TAPS PSP	AV

Van = Council Van (AS2890.1:2004 B99 equivalent) | SRV = 6.4m Small Rigid Vehicle | MRV = 8.3m Medium Rigid Vehicle | LRV = 10.7m Large Rigid Vehicle

Table 3 of BCC's TAPS PSP specifies the number and type of service bays required for shop, food and drink outlet or service industry uses. Based on a total retail GFA of 833m^2, the development is required to provide loading provisions for 1 x Van, 1 x Small Rigid Vehicle (SRV) and 1 x Medium Rigid vehicle (MRV). No dedicated loading provisions are required under the TAPS PSP for Residential use.

6.2. Practical Demands

Design Vehicle - Regular and Occasional Access

The largest design vehicle required to access the site, in accordance with Brisbane City Council (BCC) service vehicle requirements, is an Articulated Vehicle (AV). This vehicle is specified for occasional access to the proposed bottle shop and grocer. However, from a practical perspective, an AV is an excessively large vehicle for these uses, particularly given the moderate gross floor area (GFA) of each of the proposed uses.

For bottle shops, AVs are typically associated with larger, warehouse-style liquor stores. In contrast, smaller, neighbourhood-scale bottle shops, similar to the one proposed for this site, are more appropriately serviced by smaller vehicles, such as LRVs or Medium Rigid Vehicles (MRVs). Similarly, for the grocer, an LRV is more practical and suitable than an AV. Grocers of this scale typically rely on smaller, more frequent deliveries to maintain fresh stock, a requirement that a LRV can readily accommodate.

Therefore, the development scheme proposes to adopt a 10.7m LRV as the largest Occasional Access service vehicle and a 10.24m rear-loading RCV as the Regular Access vehicle.

With regards to the size of the LRV, it is noted that there is some inconsistency within the TAPS PSP as to whether this vehicle should be 10.7m or 12.5m in length (the latter being consistent with the AS2890.2:2018

HRV design vehicle). Notwithstanding this, the adoption of a 10.7m LRV is considered appropriate given the nature and scale of the proposed development uses and their anticipated practical servicing requirements.

As an additional conservative design check, swept path assessments have also been undertaken for a 12.5m HRV. These assessments demonstrate that the larger vehicle can also be accommodated within the development, albeit requiring a minor corrective manoeuvre when exiting the loading area. Accordingly, the proposed arrangements are considered suitable for the adopted 10.7m LRV, while also providing flexibility to accommodate larger vehicles on an occasional basis.

Loading Bay Provisions

As outlined in Section 6.1, the BCC TAPS PSP requirements for the development specify provisions for a Van bay, SRV bay and MRV bay. The development scheme includes a formal loading area on the Ground Level, accommodating a Van bay, a MRV bay and a shared HRV/RCV bay. The MRV bay is designed to service the majority of delivery vehicles, ranging from SRVs to MRVs. The RCV bay is primarily intended for refuse collection but is also capable of accommodating larger service vehicles, up to the size of a 12.5m HRV. This bay will supplement the MRV bay by catering to occasional deliveries or servicing tasks requiring larger vehicles. Staggered delivery schedules and the varying frequencies of service and waste collection activities across different uses will assist in distributing demand, thereby reducing overall pressure on the loading bays.

No formal loading bay provisions are required for the residential component of the development. However, occasional access for a Large Rigid Vehicle (LRV), as detailed in Section 6.1, can be accommodated within the HRV/RCV loading bay, which can also function as a turnaround bay when required.

In summary, the proposed loading bay arrangements are deemed adequate to cater to the proposed development.

6.2.1. Design Provisions and Manoeuvring

The loading area, located on the Ground Level, is accessed via Karakul Road. The driveway has an overall width of 7.0m, ensuring it can accommodate the design service vehicles. The height clearance over the driveway and loading bay areas meets the minimum requirement of 4.5m.

The shared HRV bay / RCV bay is formally marked as 11.0m x 3.5m but can accommodate vehicles up to the size of a 12.5m HRV (as demonstrated in the swept paths provided in Appendix B). The MRV bay measures 10.5m x 3.5m. It is noted that the Van bay currently shown on the development plans measure 5.4m x 2.6m. This bay is to be line marked as 5.4m x 3.0m, consistent with the requirements outlined in Table 12 of the TAPS PSP. It is further noted that there is sufficient width to accommodate this additional width.

Swept path analysis for a 12.5m HRV, 10.7m LRV and a 10.24m RCV accessing and exiting the site is shown in Colliers Drawings provided in Appendix B.

Overall, Colliers considers the proposed service vehicle arrangements to be acceptable for the development.

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 PDA allows a maximum plot ratio of 4:1. Therefore, given the Lot 18A site area is 6,603m^2, the maximum allowable GFA is approximately 26,400m^2 GFA.
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 90m^2 GFA per dwelling average size. For the subject site, which is included in the "Mixed Use High 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 (90m² per unit)	
Residential	95%	25,080m^2	Small 35%	98 units
			Medium 45%	125 units
			Large 20%	56 units
Total				**279 units**
Commercial	4%	1,056m^2		
Retail	1%	264m^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 161vph, 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	98 units	0.29vph / unit	28vph
Medium Units	125 units	0.5vph / unit	63vph
Large Units	56 units	0.65vph / unit	36vph
Commercial	1,056 m^2 GFA	2vph / 100m^2 GFA	21vph
Retail	264 m^2 GFA	5vph / 100m^2 GFA	13vph
Total			**161vph**

5. The proposed development includes 196 residential units, significantly below the 279 units anticipated under the IPBR Yield Scenario. While the proposed retail space of 833m² exceeds the anticipated yield of 264m² for retail alone, no commercial space is included in this proposal. Importantly, the total proposed retail area of 833m² remains below the combined anticipated yield for retail and commercial uses, which is 1,320m².

   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 – Assumed Peak Hour Traffic Generation Potential for Development Scheme

Land Use	Yield / GFA	Traffic Generation	Total Potential Traffic Gen.
Small Units	60 units	0.29vph / unit	17vph
Medium Units	77 units	0.5vph / unit	39vph
Large Units	59 units	0.65vph / unit	39vph
Commercial	0 m^2 GFA	2vph / 100m^2 GFA	0vph
Retail	833 m^2 GFA	5vph / 100m^2 GFA	42vph
Total			**137vph**

   As demonstrated, the proposed development scheme is projected to generate 137 vehicles per hour (vph) during peak periods, compared to the 161 vph anticipated under the IPBR Yield Scenario.

In summary, Colliers considers that the proposed development will not result in a higher traffic generation potential compared to that previously contemplated for the subject site in previous PDA transport modelling. On this basis, no further assessment of the potential traffic impacts of the development is considered necessary.

8. Summary and Conclusions

8.1. Parking Arrangements

The development plan provides a total of 306 car parking spaces, comprising 268 resident spaces, 32 general spaces shared between residential and retail visitors, and six PWD spaces. Of the six PWD spaces, four are provided at ground level and are accessible to eligible residential and retail visitors, while the remaining two are located within the basement car park.

The proposed car parking supply satisfies the minimum requirements of the Northshore Hamilton PDA, with the shared parking arrangement providing flexibility to accommodate the differing peak demands of residential and retail visitors.

The car parking layout generally complies with the TAPS PSP requirements, aside from several design aspects resolved with performance solutions, as discussed in Section 4.2.

Overall, the car parking arrangements for the proposed development are considered to be acceptable.

8.2. Access Arrangements

Access for the development is provided via a 7.0m wide Type B2 crossover to Karakul Road. This new driveway crossover will result in the loss of 2 on-street parking spaces and require relocation of an existing streetlight, both of which are 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 design provisions of the access generally meet the requirements of the TAPS PSP. However, design aspects of the crossover type, sight distance 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 regular access by 10.24m rear-loading RCVs and occasional access by 10.7m LRVs, which are considered appropriate to accommodate the practical servicing demands of the proposed development uses. Swept path assessments have also been undertaken for a larger 12.5m HRV, demonstrating that this vehicle can be accommodated with a minor corrective manoeuvre when exiting the loading area.

The development plan makes allowance for dedicated loading bays on the ground level, directly adjacent to the main driveway. The spatial allowances for the ground-level loading bays generally meet the requirements of the TAPS PSP.

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 247 bicycle parking spaces meeting the requirements of the TAPS PSP. Bicycle parking is spread throughout the basement and ground level (a portion of the visitor parking is located close to building entries).

8.5. Potential Traffic Impacts

The proposed development is expected to generate approximately 137vph in peak hours, which is less than that contemplated for the subject site based on the IPBR Yield assumptions which fed into the original PDA traffic modelling. Therefore, no further assessment of the potential impacts of the development is considered necessary.

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

BIKE PARKING SCHEDULE				
TYPE	RESIDENTIAL	VISITOR	TOTAL REQ.	TOTAL SUPPLY
REQUIRED AS PER DA SCHEME	196	49	245	
SUPPLY - BASEMENT 1	198			198
SUPPLY - GROUND		49		49
			245	**247**

CAR PARKING SCHEDULE					
TYPE	RESI	SHARED RETAIL / VISITOR	DDA*	TOTAL REQ	TOTAL SUPPLY
REQUIRED AS PER DA SCHEME	198	31	4	229	
SUPPLY - BASEMENT 1	268	0	2		270
SUPPLY - GROUND		32	4		36
	268	**32**	**6**	**229**	**306**

*DDA INCLUDED IN TOTAL COUNT

Builders / Contractors shall verify all dimensions before any work commences. Dimensions shown are nominal. Figured dimensions shall take precedence over scaled dimensions. Any discrepancies are to be made known to the Architects / Designers studio prior to any works commencing on site. All shop drawings shall be submitted for review and manufacture shall not commence prior to the return of stamped shop drawings.

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GENERAL NOTES



Rev	Date	Chkd	Reason for Issue
TP5	15/10/2026	EAAA	DA AMENDMENT
TP4	21/05/2026	TF	DA AMENDMENT
TP3	18/07/2025		DA AMENDMENT
TP2	07/03/2025		DA RFI RESPONSE
TP1	16/12/2024		DA ISSUE

Based on Drawings Received:

RIVER GREEN

NORTH

SCALE 1:200 (0 2 4 10m)

TOWN PLANNING ISSUE

NOT FOR CONSTRUCTION

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Project	NORTHSHORE HAMILTON		
	SITE 18A		
Title	BASEMENT 01		
Date	18/07/2025	Project No	24047
Scale @ A1	1 : 200	Dwg No	TP2-1001
Drawn By	AK/CE Chkd CE	Rev	TP5

BIKE PARKING SCHEDULE				
TYPE	RESIDENTIAL	VISITOR	TOTAL REQ.	TOTAL SUPPLY
REQUIRED AS PER DA SCHEME	196	49	245	
SUPPLY - BASEMENT 1	198			198
SUPPLY - GROUND		49		49
			245	**247**

CAR PARKING SCHEDULE					
TYPE	RESI	SHARED RETAIL / VISITOR	DDA*	TOTAL REQ	TOTAL SUPPLY
REQUIRED AS PER DA SCHEME	198	31	4	229	
SUPPLY - BASEMENT 1	268	0	2		270
SUPPLY - GROUND		32	4		36
	268	**32**	**6**	**229**	**306**

*DDA INCLUDED IN TOTAL COUNT

Builders / Contractors shall verify all dimensions before any work commences. Dimensions shown are nominal. Figured dimensions shall take precedence over scaled dimensions. Any discrepancies are to be made known to the Architects / Designers studio prior to any works commencing on site. All shop drawings shall be submitted for review and manufacture shall not commence prior to the return of stamped shop drawings.

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GENERAL NOTES

KARAKUL ROAD

ANGORA ROAD

MACARTHUR AVENUE

CROSS-BLOCK LINK PARK
REFER TO LANDSCAPE DOCUMENTATION

SITE 18B SHOWN INDICATIVELY ONLY

VEHICLE ENTRY

7000

BIKE RACKS (VISITOR) 12 SPACES

WATER METER

EXHAUST

BOOSTER

LANDSCAPE

FFL 6.295

FFL 6.280

FFL 5.572

FFL 5.580

VOID OVER

PMT

COMMS / NBN

SERVICES

MAIN SWITCHBOARD ROOM

LOBBY

CIRC

CORE

POS

3 BED

2 BED

1 BED

FIRE TANK

RESI WASTE

VISITOR/RETAIL CARPARK - 32 SPACES + 4 PWD

BIKE RACKS (VISITOR) 8 SPACES

BIKE RACKS (VISITOR) 5 SPACES

LINEMARKING TO DENOTE SAFE AND CLEAR ROUTE TO ACCESS BIKE ROOM

STORE

TOWERS OVER - SHOWN DASHED

VAN BAY

MAIL ROOM

MRV ZONE

HRV / RCV ZONE

OFFICE

RETAIL WASTE

RETAIL AMENITIES

RAMP FROM BELOW

POOL PLANT

RETAIL - GROCER 395 m²

RETAIL - RESTAURANT 205 m²

RETAIL - HAIRDRESSER 73 m²

RETAIL - BAKERY 75 m²

RETAIL - BOTTLE SHOP 87 m²

BIKE RACKS(VISITOR) 12 SPACES

SETBACK 6000 ABOVE 4-STOREYS

SETBACK 4000 UP TO 4-STOREYS

SETBACK 6000 ABOVE 4-STOREYS

SETBACK 4000 UP TO 4-STOREYS

TP5	15/10/2026	EAAA	DA AMENDMENT
TP4	21/05/2026	TF	DA AMENDMENT
TP3	18/07/2025		DA AMENDMENT
TP2	07/03/2025		DA RFI RESPONSE
TP1	16/12/2024		DA ISSUE

Rev	Date	Chkd	Reason for Issue

Based on Drawings Received:

RIVER GREEN

NORTH

SCALE 1:200

TOWN PLANNING ISSUE

NOT FOR CONSTRUCTION

carr

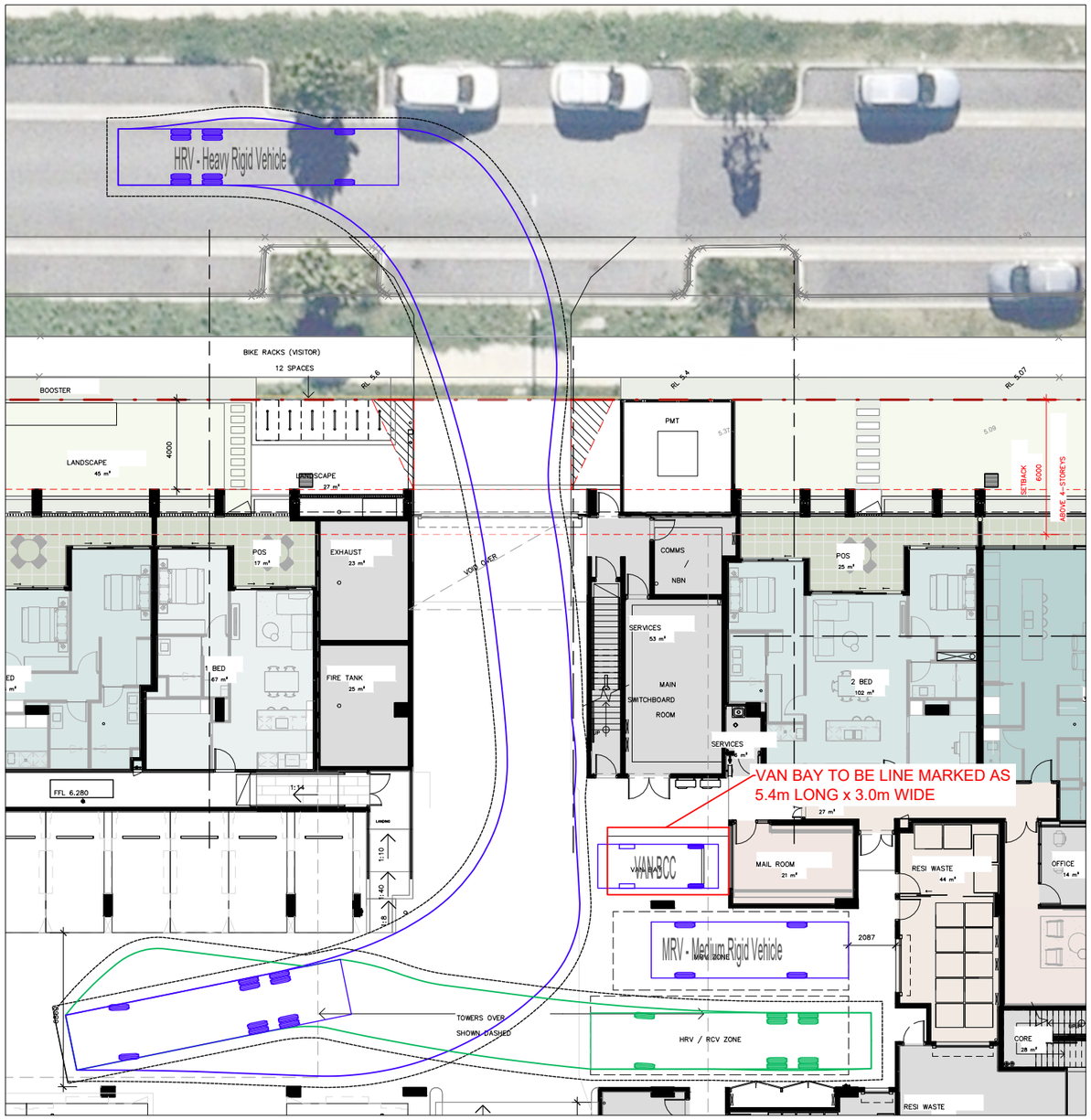
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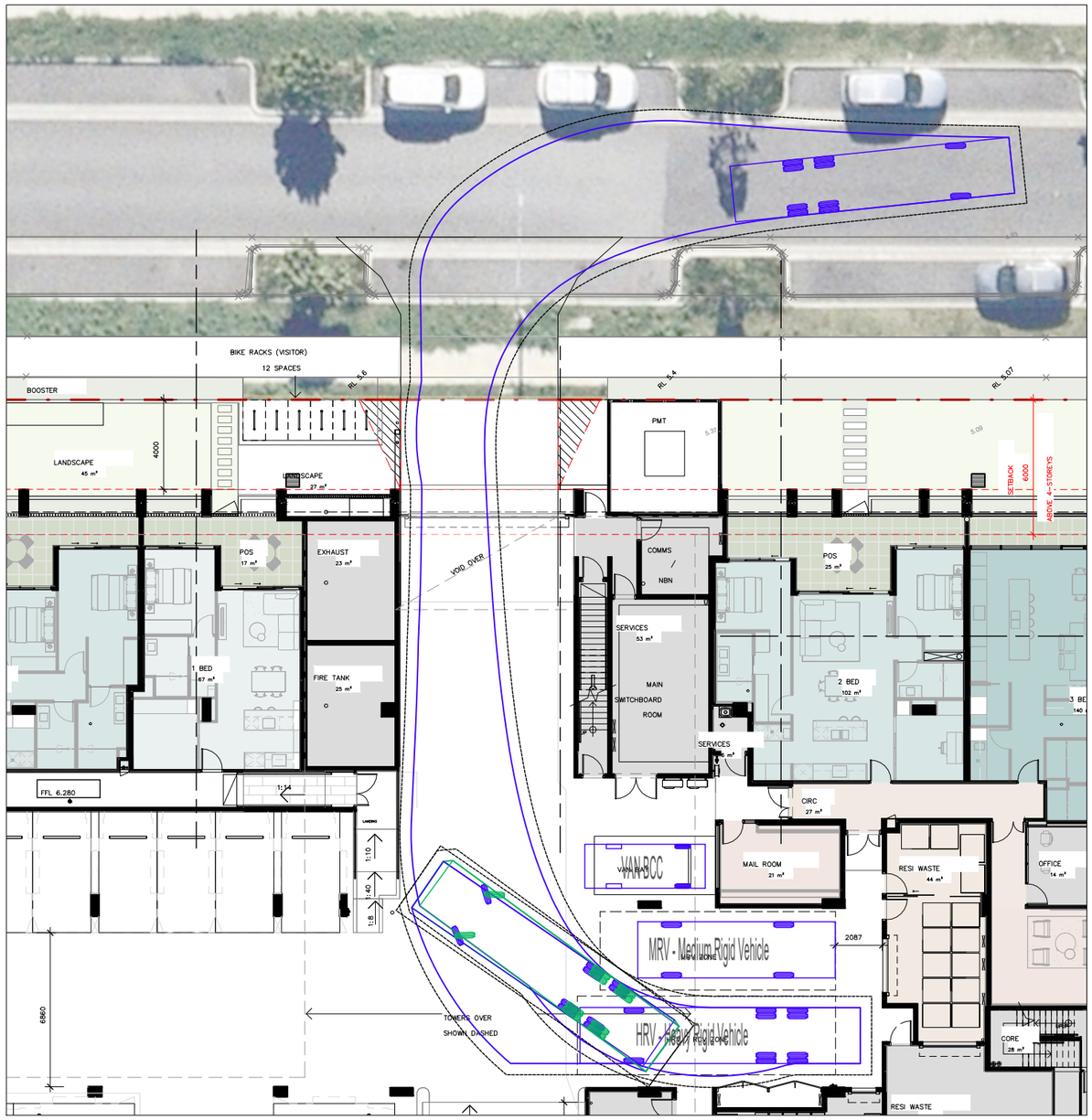
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Project	NORTHSHORE HAMILTON		
	SITE 18A		
Title	GROUND LEVEL		
Date	18/07/2025	Project No	24047
Scale @ A1	1 : 200	Dwg No	TP2-1002
Drawn By	CE	Chkd CE	Rev TP5

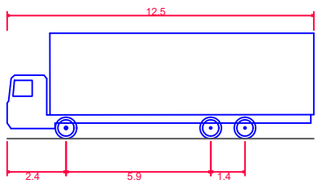
Appendix B Colliers Drawings





HRV INGRESS

HRV EGRESS



HRV 12.5m

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m
Design Speed Forward	5.0km/h
Clearance Envelope	0.500m

PRELIMINARY ADVICE ONLY

21 October 2026

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
B	21.10.2026	UPDATE	JH	SC	SC
A	11.09.2025	ORIGINAL ISSUE	JH	SC	SC

SCALE 0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

NORTH

CLIENT: SILVERSTONE DEVELOPMENTS

Colliers International Engineering & Design

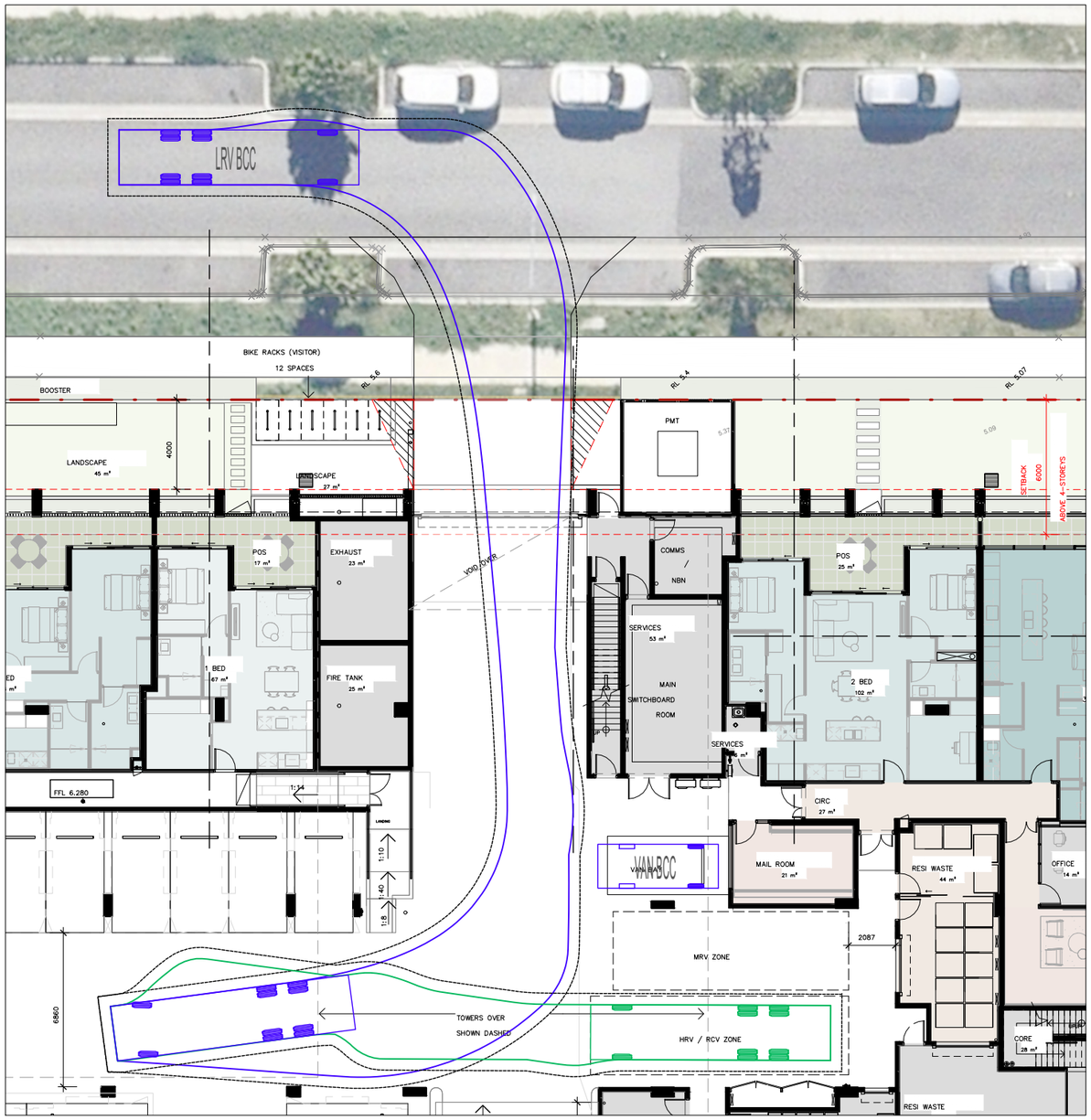
ABN 65 010 868 621
LEVEL 8, 369 Ann Street, BRISBANE QLD 4000
P.O. BOX 12015, BRISBANE QLD 4003

T: (07) 3327 9500 F: (07) 3327 9501
E: ttmbris@ttmgroup.com.au W: www.ttmgroup.com.au

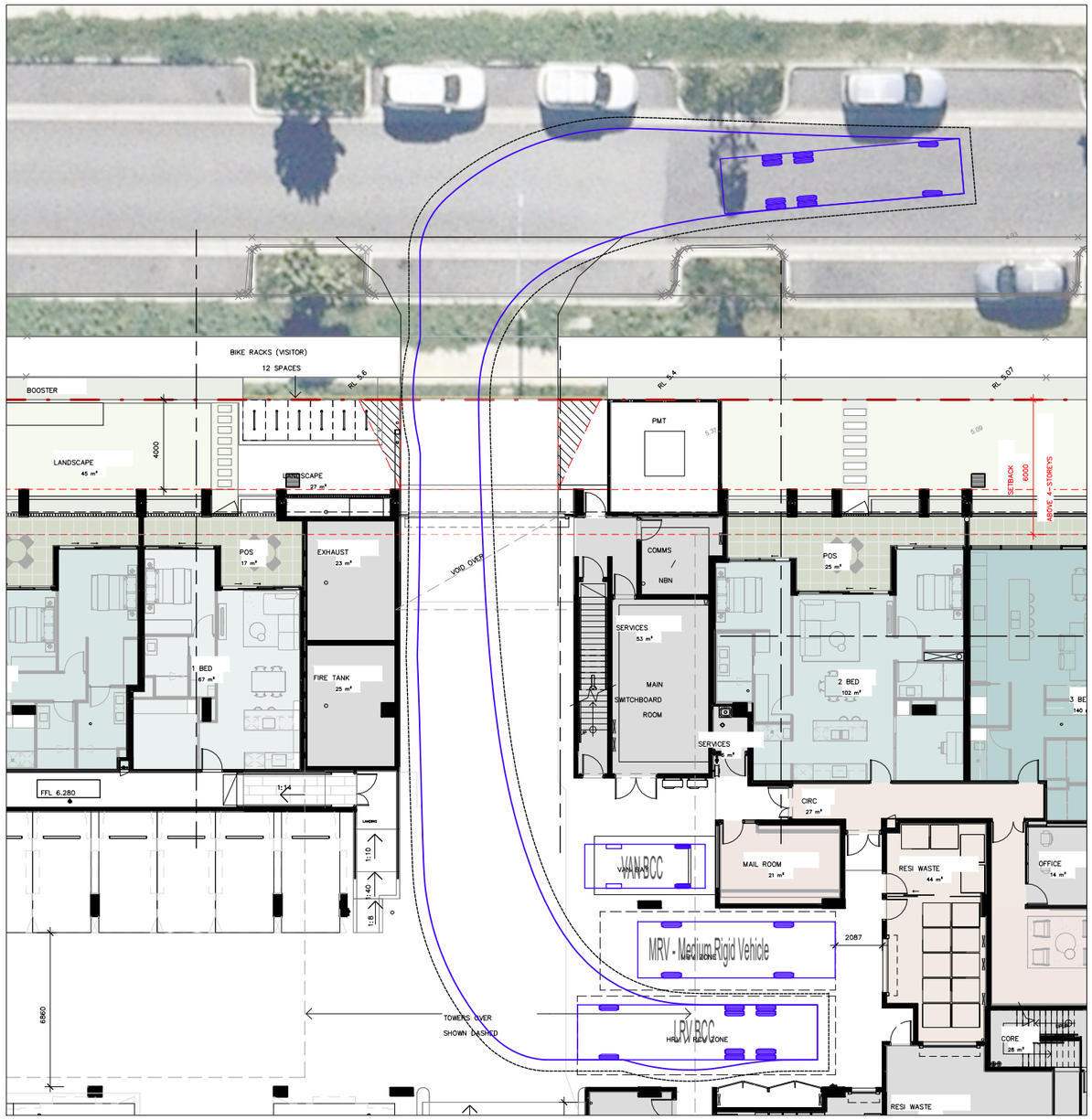
PROJECT: **LOT 18A, 260 MACARTHUR AVENUE, HAMILTON**

DRAWING TITLE: **SWEPT PATH ANALYSIS**
- 12.5m HEAVY RIGID VEHICLE (HRV)

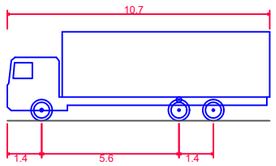
PROJECT NUMBER	24BRT0529
ORIGINAL SIZE	A3
DRAWING NUMBER	24BRT0529-01
REVISION	B
DATE	21 Oct 2026
SHEET	1 OF 1



LRV INGRESS



LRV EGRESS



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

PRELIMINARY ADVICE ONLY

21 October 2026

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	23.10.2026	ORIGINAL ISSUE	JH	SC	SC

SCALE 0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

NORTH

CLIENT: SILVERSTONE DEVELOPMENTS

Colliers International Engineering & Design

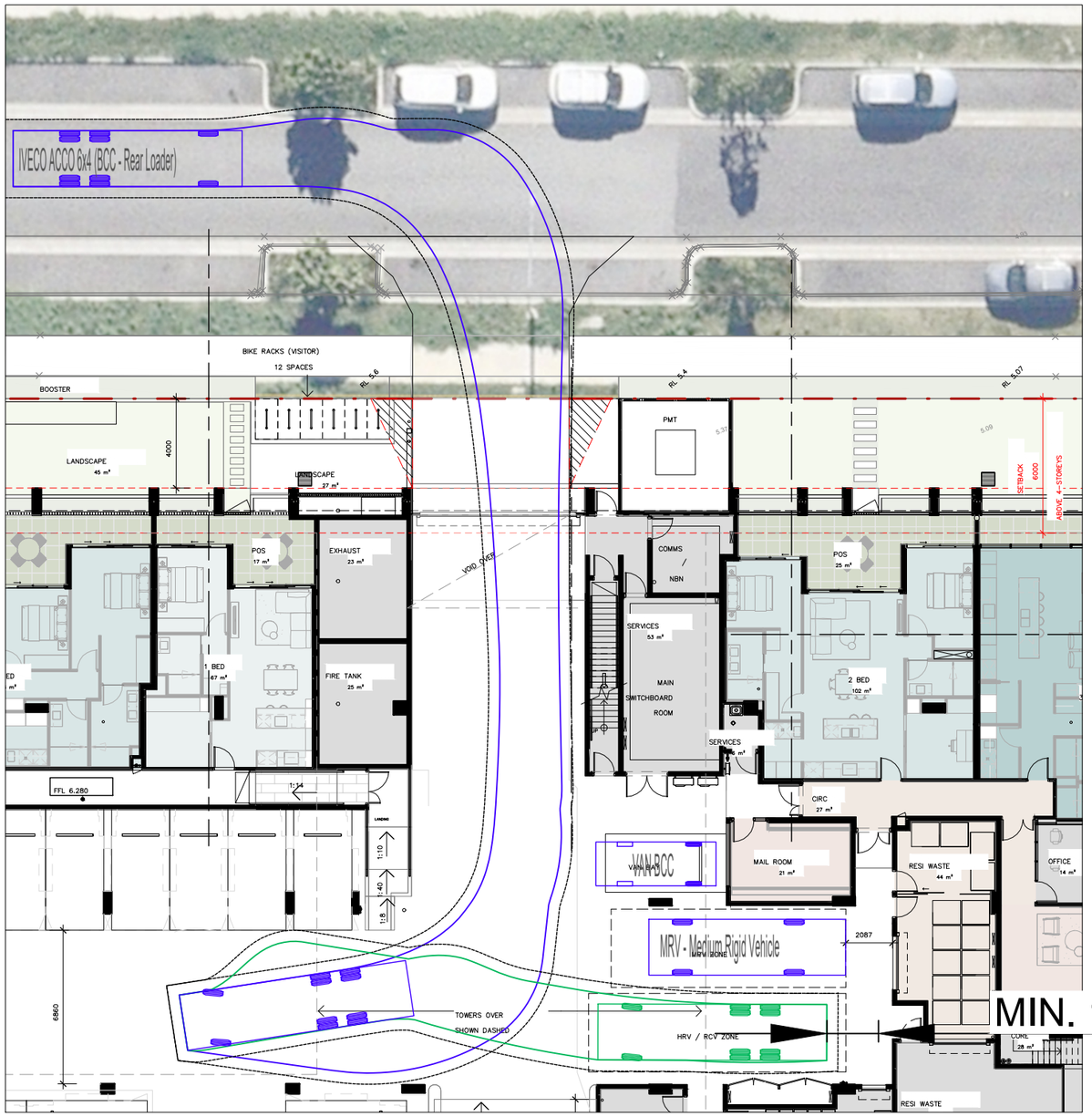
ABN 65 010 868 621
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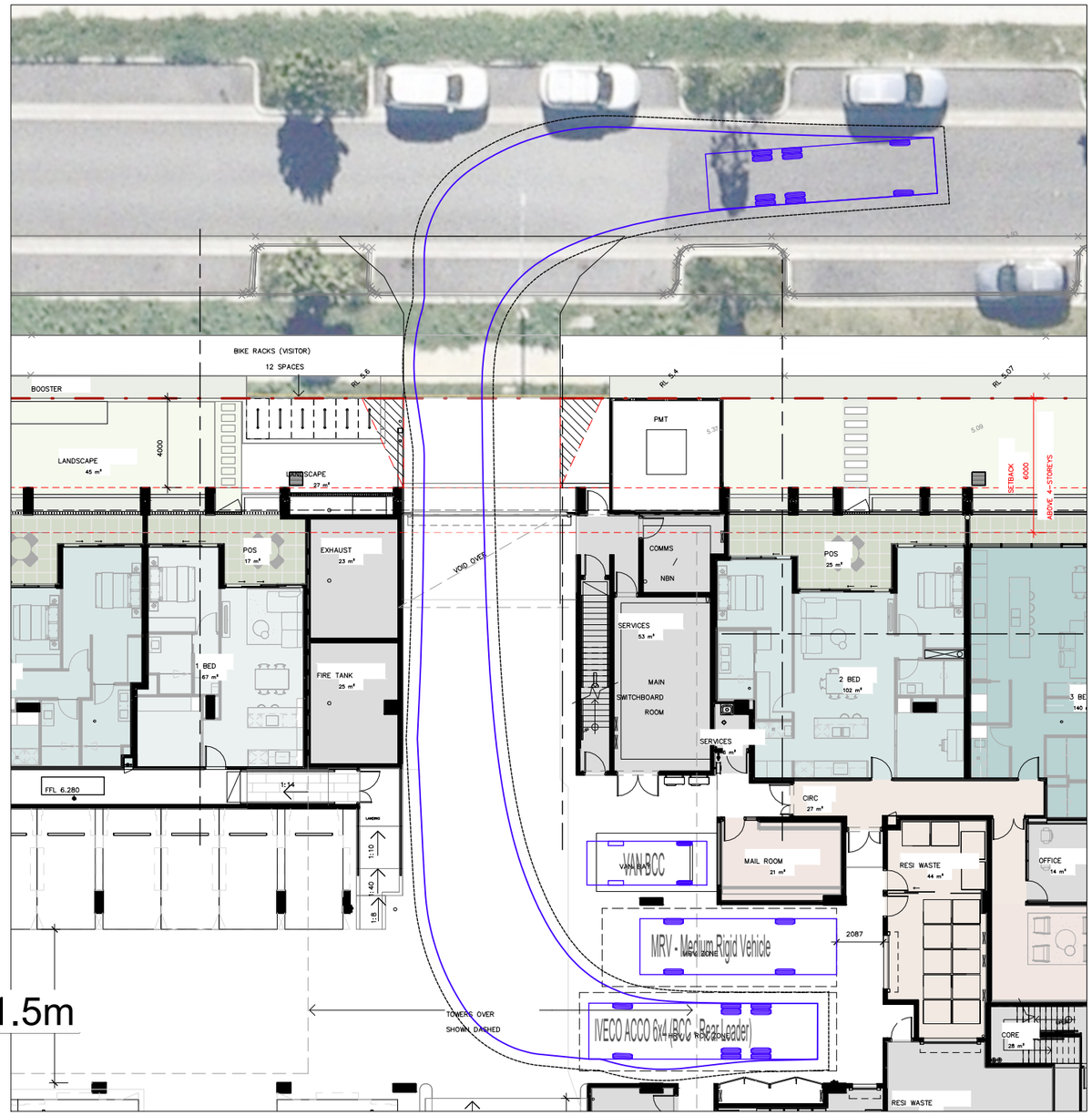
PROJECT: **LOT 18A, 260 MACARTHUR AVENUE, HAMILTON**

DRAWING TITLE: **SWEPT PATH ANALYSIS**
- 10.7m LARGE RIGID VEHICLE (LRV)

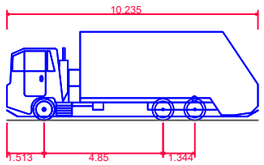
PROJECT NUMBER	ORIGINAL SIZE
24BRT0529	A3
DRAWING NUMBER	REVISION
24BRT0529-02	A
DATE	SHEET
21 Oct 2026	1 OF 1



RCV INGRESS



RCV EGRESS



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

PRELIMINARY ADVICE ONLY

21 October 2026

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
B	21.10.2026	UPDATE	JH	SC	SC
A	11.09.2025	ORIGINAL ISSUE	JH	SC	SC

SCALE 0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

NORTH

CLIENT: SILVERSTONE DEVELOPMENTS

Colliers International Engineering & Design

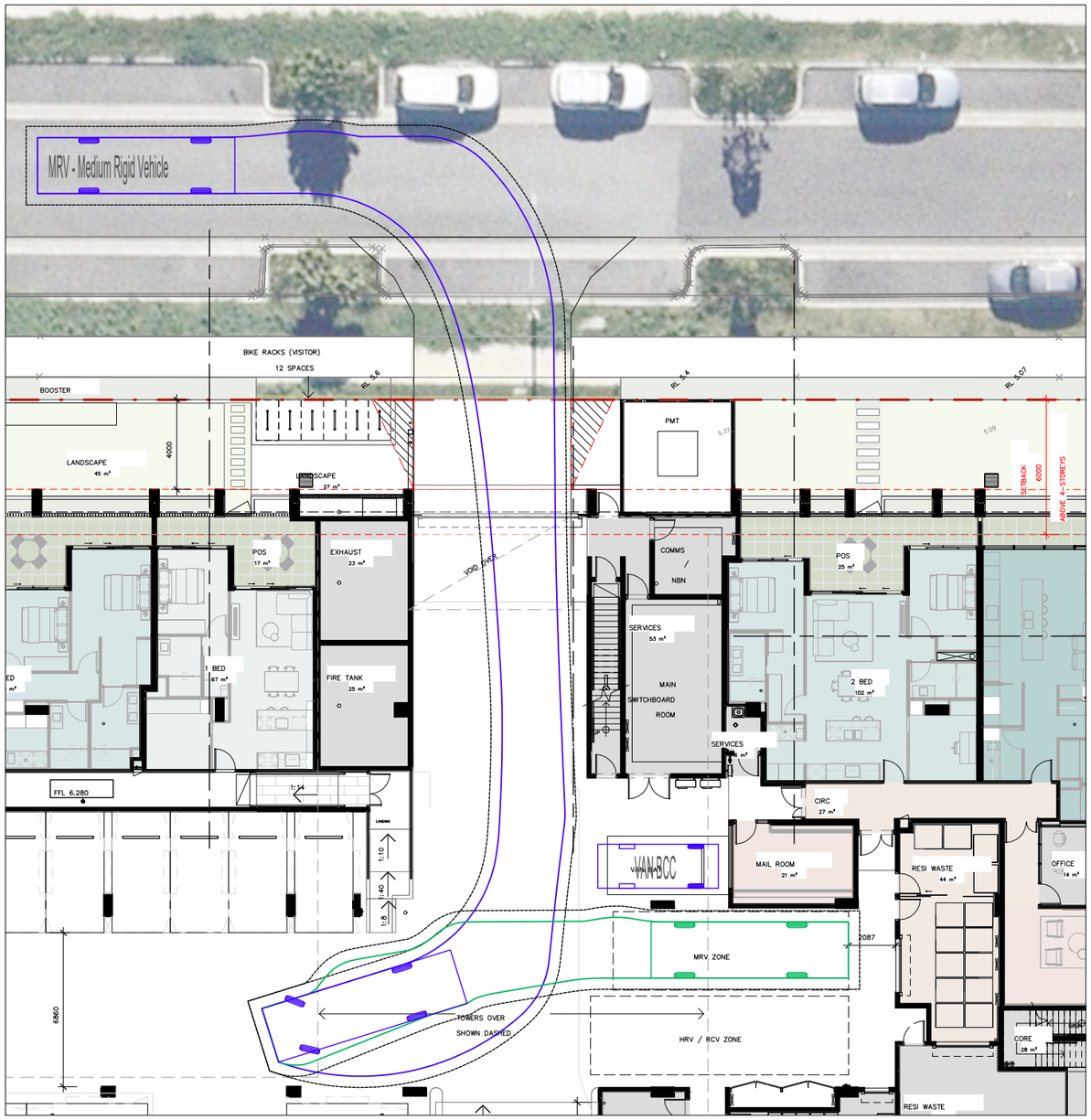
ABN 65 010 868 621
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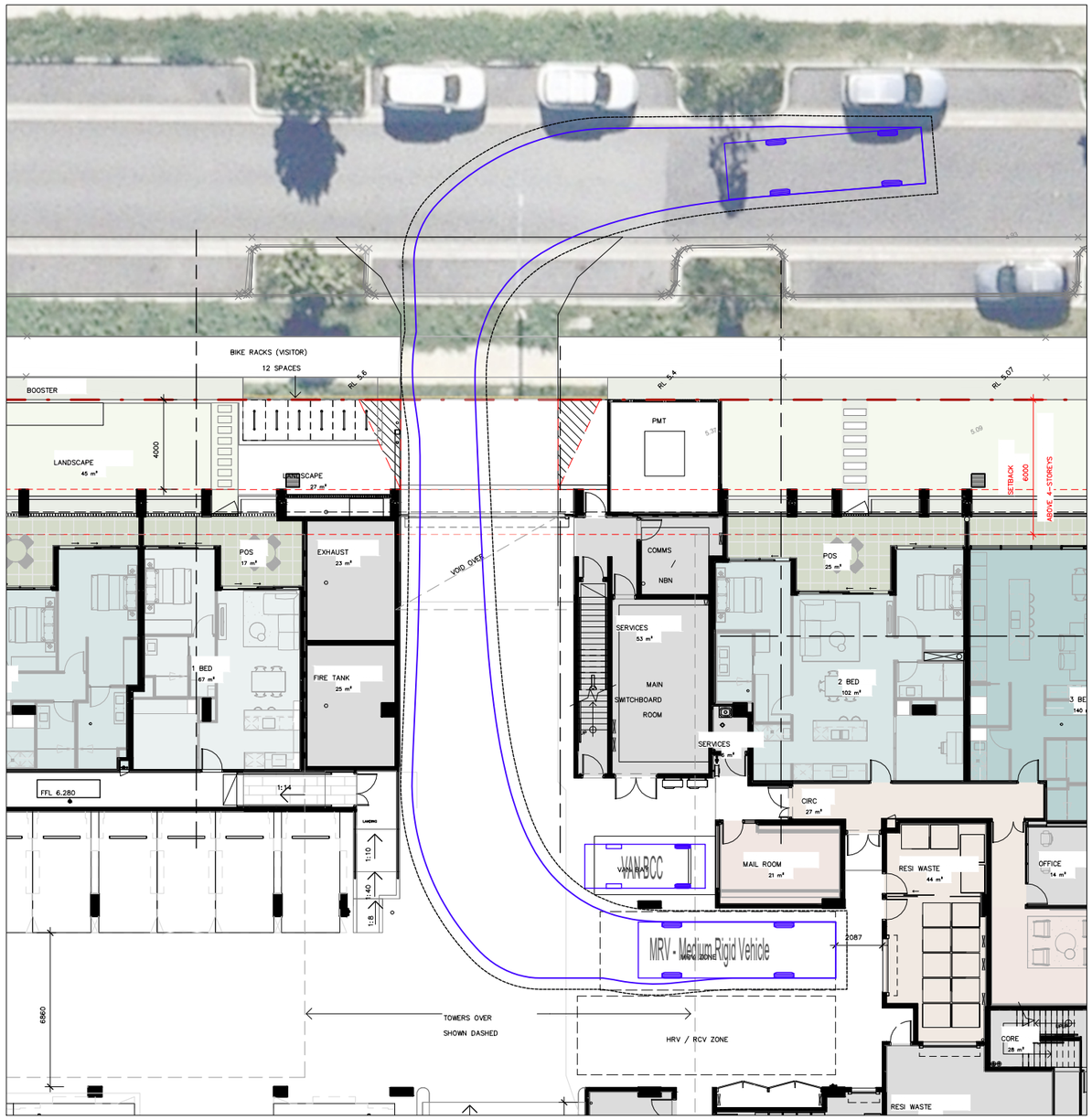
PROJECT: **LOT 18A, 260 MACARTHUR AVENUE, HAMILTON**

DRAWING TITLE: **SWEPT PATH ANALYSIS**
- 10.23m REFUSE COLLECTION VEHICLE (RCV)

PROJECT NUMBER	24BRT0529
ORIGINAL SIZE	A3
DRAWING NUMBER	24BRT0529-03
REVISION	A
DATE	21 Oct 2026
SHEET	1 OF 1

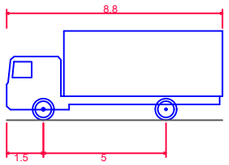


MRV INGRESS



MRV EGRESS

VEHICLE PROFILES



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m
Design Speed Forward	5.0km/h
Clearance Envelope	0.500m

PRELIMINARY ADVICE ONLY

21 October 2026

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
B	21.10.2026	UPDATE	JH	SC	SC
A	11.09.2025	ORIGINAL ISSUE	JH	SC	SC

SCALE 0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

NORTH

CLIENT

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PROJECT
LOT 18A, 260 MACARTHUR AVENUE, HAMILTON

DRAWING TITLE
SWEPT PATH ANALYSIS
- 8.8m MEDIUM RIGID VEHICLE (MRV)

PROJECT NUMBER	24BRT0529
ORIGINAL SIZE	A3
DRAWING NUMBER	24BRT0529-04
REVISION	B
DATE	21 Oct 2026
SHEET	1 OF 1