INDIGO JUNCTION

17 AMHERST ROAD, SWAN VIEW

TRAFFIC ENGINEERING NOTE

Job No: P003180

Rev A

12 May 2025

Premise

DOCUMENT AUTHORISATION					
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1. EXECUTIVE SUMMARY

This Traffic Engineering Note **(TEN)** has been prepared by Premise to assess the transport and access implications of a proposed residential development at 17 Amherst Road, Swan View, WA, on behalf of Indigo Junction. The proposal includes ten (10) grouped dwellings and an administration building, replacing an existing single dwelling on the site.

Site Context

- The site is located within the Shire of Mundaring and is bounded by residential uses to the north and west, recreation areas to the south, and Amherst Road to the east.
- The surrounding road network consists of local access roads and a local distributor road (Amherst Road), with bus services operating along Route 323.

Technical Findings

- The development is expected to generate approximately 54 vehicle trips per day, with 6 AM peak and 8 PM peak hour trips.
- This level of traffic generation represents a low to moderate impact on the local road network and is well within the acceptable thresholds set out in WAPC's Transport Impact Assessment Guidelines.
- No crashes were recorded within 100 metres of the site over the last five years, indicating a low crash risk environment.

Parking and Bicycle Provision

- The development provides 13 on-site car parking bays, including 2 ACROD bays, compared to a calculated requirement of 17 bays, resulting in a statutory shortfall of four (4) bays.

  The shortfall can be practically managed given:

  - TPS does not have a suitable comparable land use that would help assessing realistic parking demand. While the residential component of the proposed development can be classified as a Residential Building, the nature of operation (women's refuge centre) in terms of parking demand is closer to a Nursing Home than a Residential Building;
  - Proximity to public transport (350m to bus stops);
  - The typical profile of residents suggests that they may not own a vehicle and they are likely to be accompanied by a minor. The development is positioned in a comfortable walking catchment to schools and shops, enabling residents to access essential services and critical supplementary land uses without a vehicle.
  - Inclusion of Two (2) ACROD spaces, one dedicated to the accessible unit and the other enhancing general accessibility.
- No formal bicycle parking is proposed, which is justified based on low expected demand, on-site private storage availability, and limited surrounding bicycle infrastructure.

Conclusion

- The proposed development is expected to generate a minor and manageable increase in local traffic, and the parking, access, and safety outcomes are consistent with local planning scheme requirements and relevant national guidelines.
- In summary, Premise believe that the proposed development will not have a negative impact on the surrounding road network.

2. INTRODUCTION

2.1 Background

Premise Australia Pty Ltd **(Premise)** has been engaged by Indigo Junction to conduct a Traffic Engineering Note **(TEN)** for the proposed residential development at 17 Amherst Road, Swan View. The development proposal is for ten (10) units and one (1) administration building. It is understood that a development application **(DA)** is to be lodged with the Shire of Mundaring **(SoM).**

2.2 Scope and Study Area

This report outlines the traffic impact statement for the proposed multiple unit dwelling development at 17 Amherst Road, Swan View. The site is currently occupied by an existing dwelling, which is to be replaced.

The purpose of this assessment is to evaluate the suitability of the site for the intended land use from a traffic impact perspective, taking into account local transport networks, safety concerns, and relevant regulatory requirements.

The scope of work for the Traffic Engineering Note is as follows:

- Collate all existing traffic data for relevant traffic networks in the vicinity of the subject site.
- Undertake a detailed review of crash data between in the last five (5) year reporting period and provide commentary on the road safety aspects of the data and potential reasons for the number and type of incidents.
- Provide an assessment of the likely additional traffic impact of the proposed development.
- Calculate trip generation for AM / PM peak and daily traffic based on the proposed yield and land use.
- Assess parking requirements (for vehicles and micro mobility devices).
- Review proposed active transport routes in terms of accessibility and permeability. Review the proposed connections with the surrounding environment.
- Provide further analysis of any site-specific issues that may be encountered during the assessment.

3. EXISTING CONDITIONS

3.1 Site location and description

The subject site is located 17 Amherst Road, Swan View, under the jurisdiction of Shire of Mundaring **(SoM).**

Figure 1: Subject location (Source: Nearmap)

As shown in Figure 2, the subject site is classified as "residential" zone (R12.5). The subject site is bounded by residentials to the north and southwest, Amherst Road to the east, Markham Way to the west and recreation areas to the southeast.

Figure 2: Land use zoning (Source: Shire of Mundaring Intramaps)

3.2 Existing road conditions

Table 1: Road Classification and Description

Road Name	Amherst Road
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	app.20m and above
Road Pavement Width	app.7.5m and above
Classification	Local Distributor
Speed Limit	50kph
Bus Route	YES
If YES Nominate Bus Routes	323 on section south of Beresford Gardens
On-street parking	NO

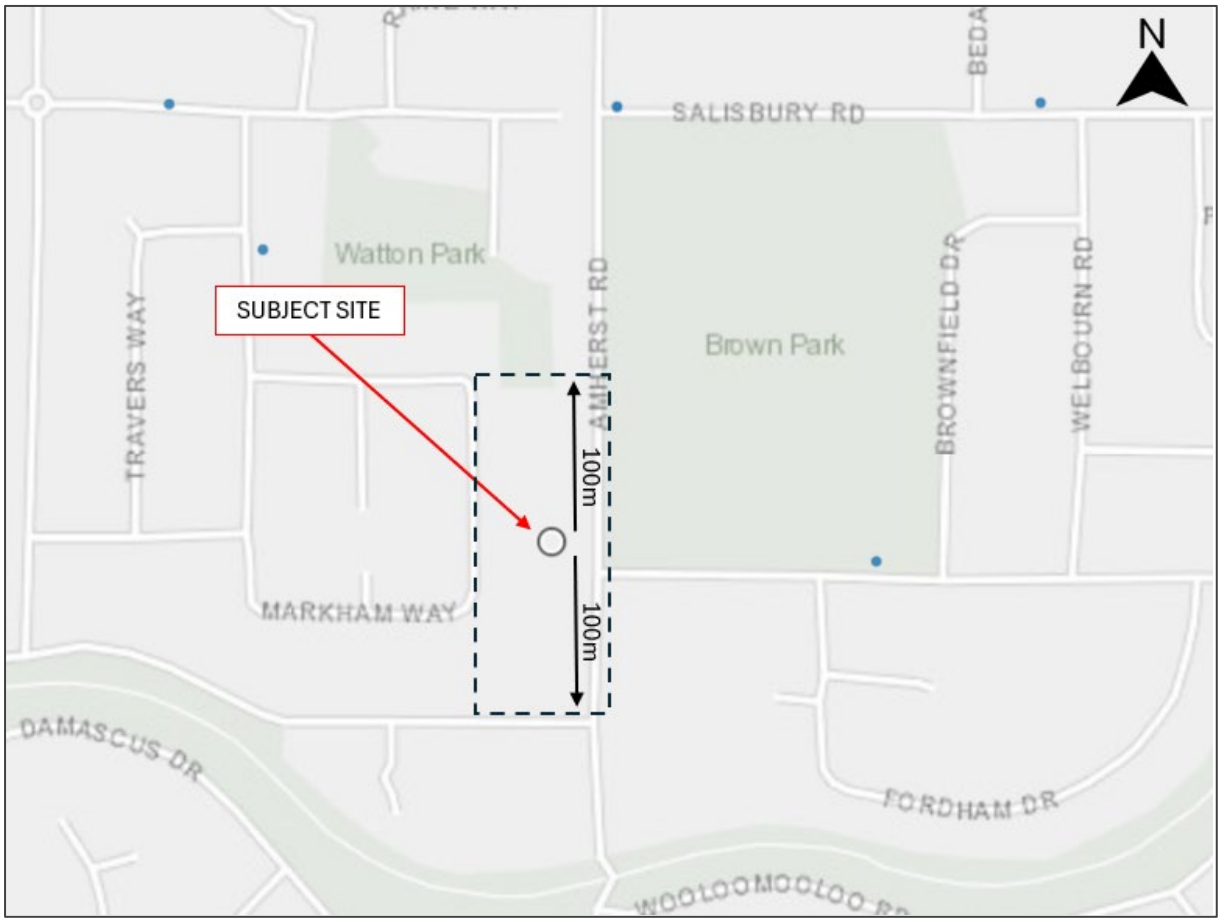
Road Name	Markham Way
Number of Lanes	two way, one lane (no linemarking), undivided
Road Reservation Width	app.20m and above
Road Pavement Width	app.7.5m and above
Classification	Access Road
Speed Limit	50kph
Bus Route	NO
If YES Nominate Bus Routes	-
On-street parking	NO

Road Name	Beresford Gardens
Number of Lanes	two way, one lane (no linemarking), undivided
Road Reservation Width	app.20m and above
Road Pavement Width	app.7.5m and above
Classification	Access Road
Speed Limit	50kph
Bus Route	YES
If YES Nominate Bus Routes	323
On-street parking	NO

3.3 Traffic Safety

A review of the MRWA database for all crashes in the vicinity of the site has been carried out. The crash database provides the location and severity of all crashes for the five-year period from 2019 to 2025.

Figure 3: Crash Map - Subject Area



As shown by Figure 3, there are no recorded crashes within 100 meters of the site in either direction. As a result, no further road crash data analysis is required.

Given the class of road and no crashes, it is concluded that the road network is currently operating in a manner consistent with access roads.

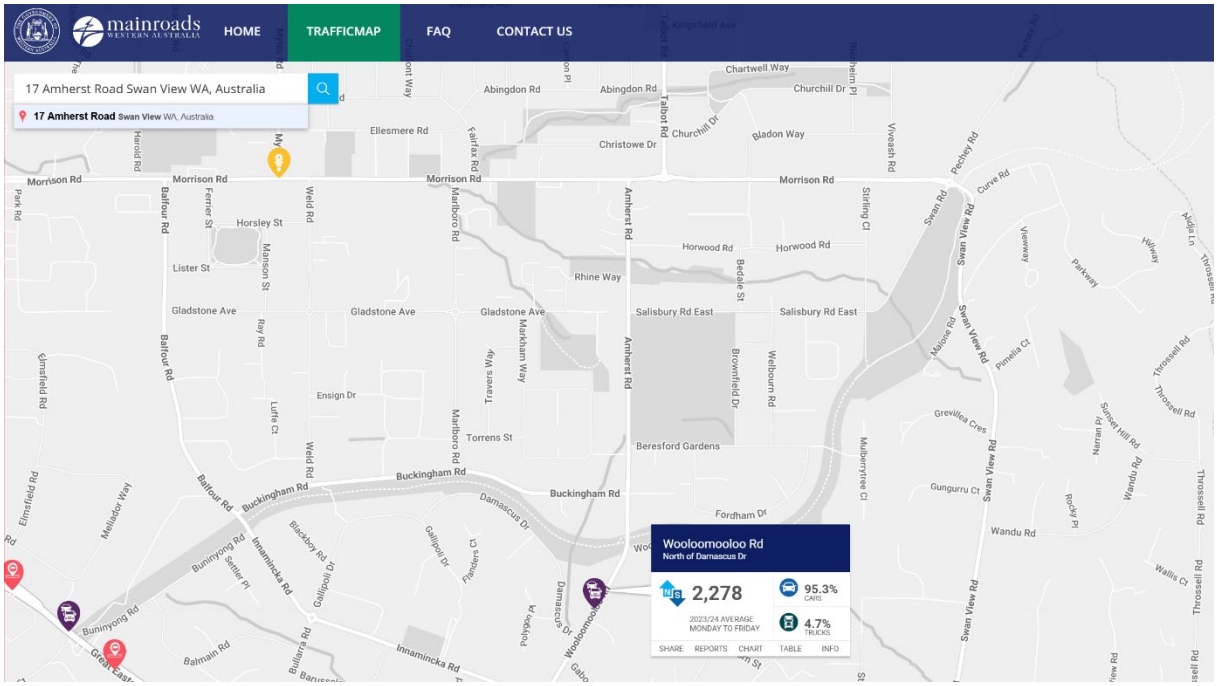
3.4 Existing Traffic Flow

The Shire of Mundaring has advised Premise that traffic data collection was discontinued in 2018, and that no recent traffic volume data is available for roads in the vicinity of the subject site. Notably, no traffic surveys have ever been conducted on Amherst Road and Beresford Gardens, which are of particular relevance to this assessment. Traffic count data sourced from Main Roads WA is summarised in Table 2, with the indicative locations presented in Figure 4.

Table 2: Traffic counts data

Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per Peak Hour (VPH) Peak Time - Peak VPH		Heavy Vehicle %	Date
			AM	PM		
Wooloomooloo Rd	North of Damascus Drive	2,278	08:00 – 294	14:30 - 289	4.7%	23/24

Figure 4: Crash Map - Subject Area



3.5 Public Transport

The subject site is well-serviced by public transport. The nearest bus stops (Stop IDs: 15258, 15259, and 15275) are located within approximately 200 to 500 metres walking distance and are serviced by Route 323, providing direct connections to Midland Station and surrounding suburbs. Midland Station, located about 6.5 kilometres west of the site, offers regular train services to the Perth CBD via the Midland Line and serves as a major interchange for various bus routes throughout the eastern suburbs.

Table 3: Bus routes and frequencies

Bus Route	Description	Peak Frequency	Off-Peak Frequency
323	Midland Station – Swan View via Innamincka Road	34 minutes	60 minutes

Walk Score Rating for Accessibility to Public Transport

32	Some Transit. A few nearby public transportation options.

Figure 5 – Public Transport network in a close proximity to the subject site

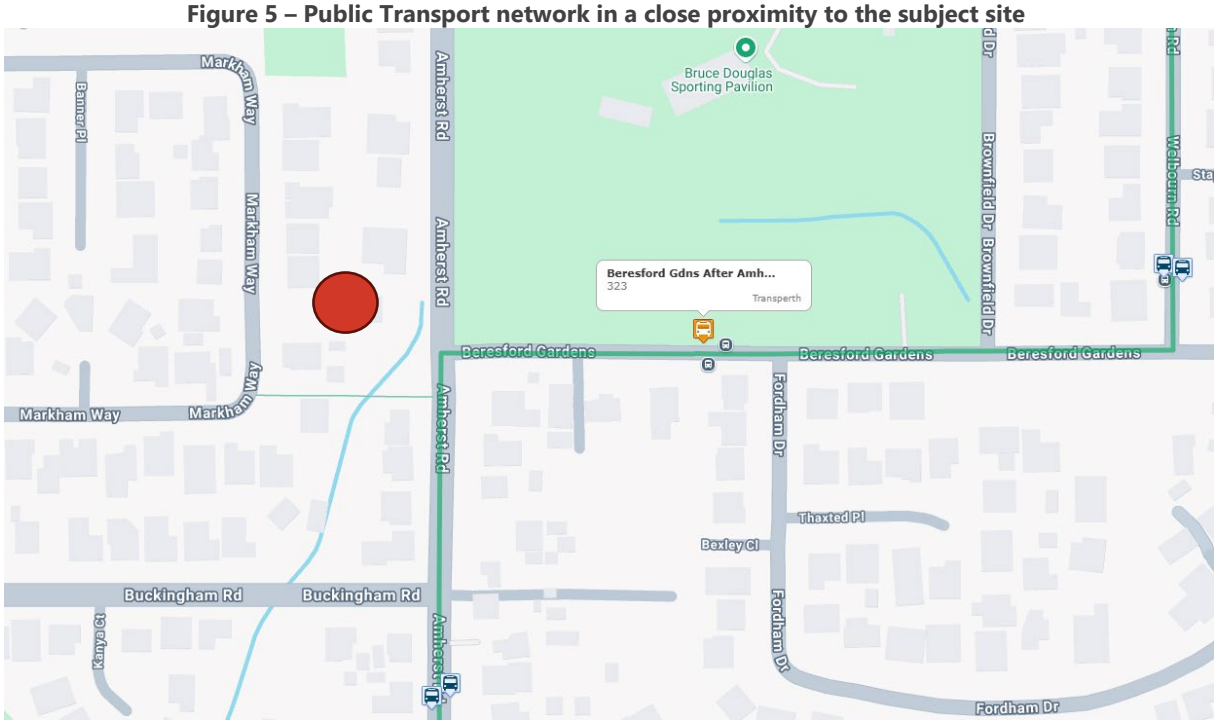
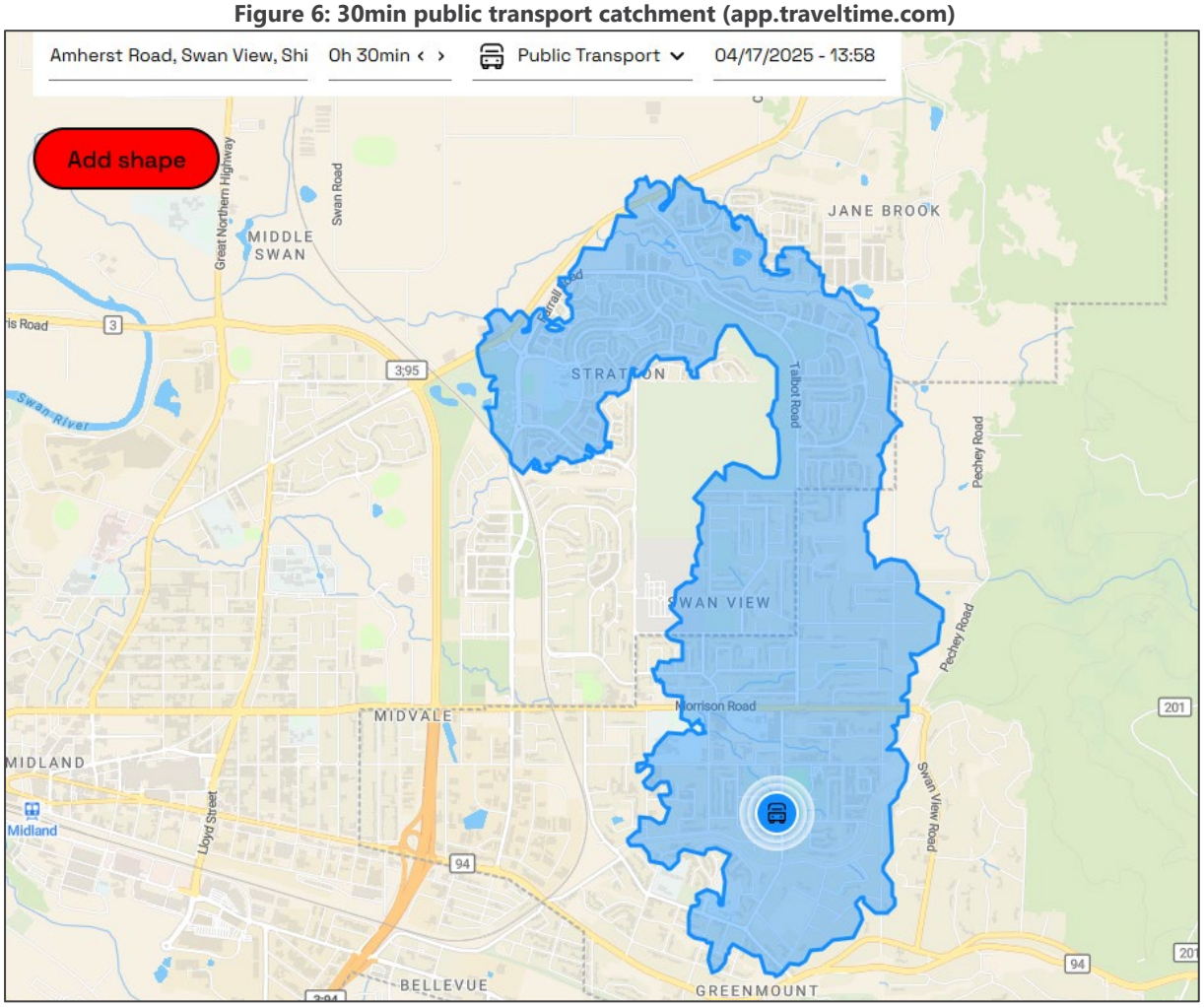


Figure 6: 30min public transport catchment (app.traveltime.com)



3.6 Pedestrian and Cyclist Infrastructure

Premise has conducted a desktop assessment of the pedestrian and shared path networks in the vicinity of the proposed facilities. A segment of the Swan and Stirling Comprehensive Bike Map, identifying the subject site with a red dot, is presented in Figure 7. Additionally, a table has been provided detailing the classified PBN routes located nearest to the site.

Table 4: PBN routes in the vicinity of the subject site

Classification	Road Name
"High Quality Shared Path"	Salisbury Road
"Other Shared Path (Shared by Pedestrians and Cyclists)"	Wooloomooloo Road, Stapleford Road, Damascus Drive
"Bicycle Boulevard"	Salisbury Road, View Road, Swan Road

What is the Walk Score Rating?	
42	Car-Dependent. Most errands require a car.

Figure 7: Segment of Swan and Stirling Comprehensive Bike Map

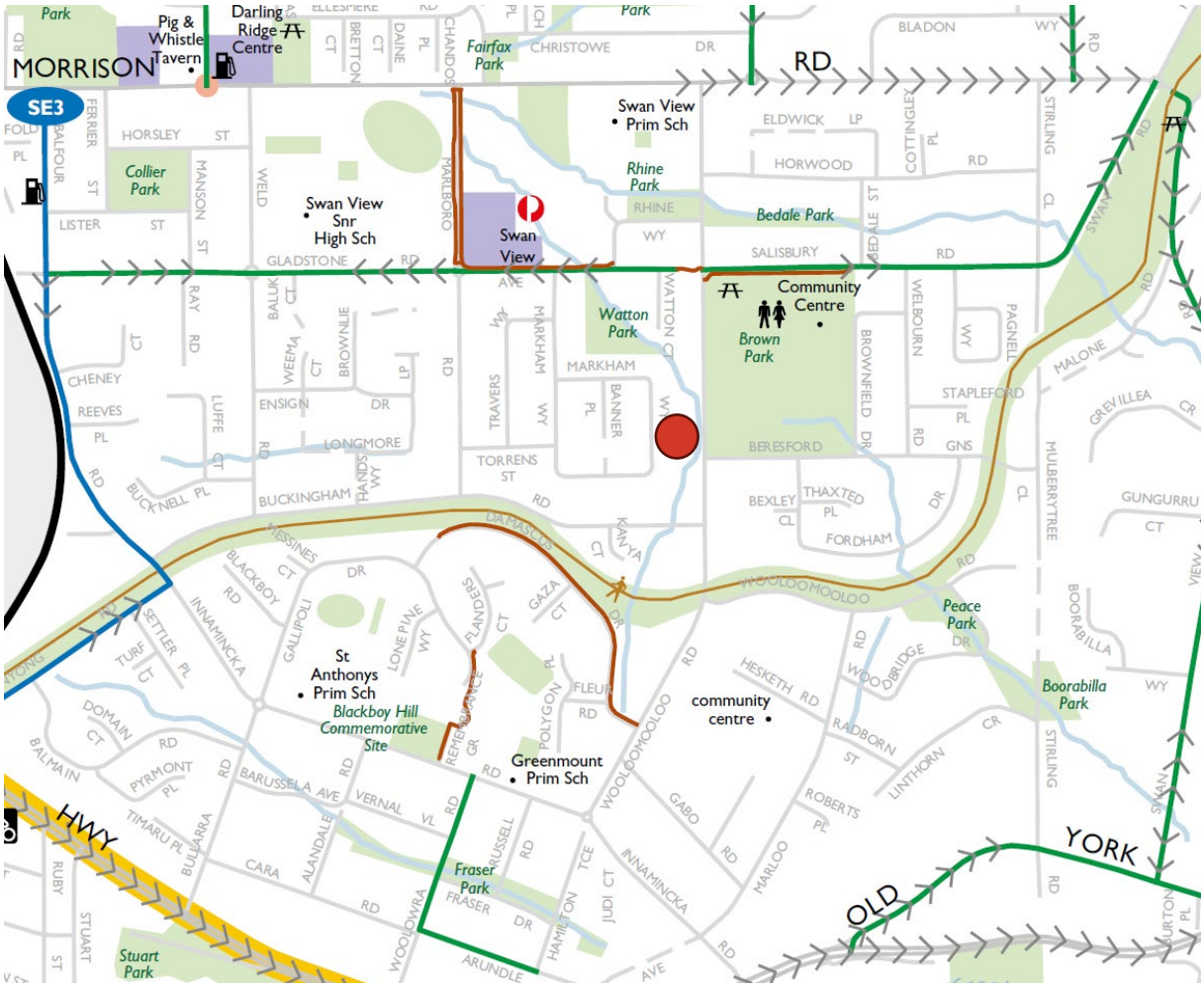


Figure 8: 10min walking catchment (app.traveltime.com)

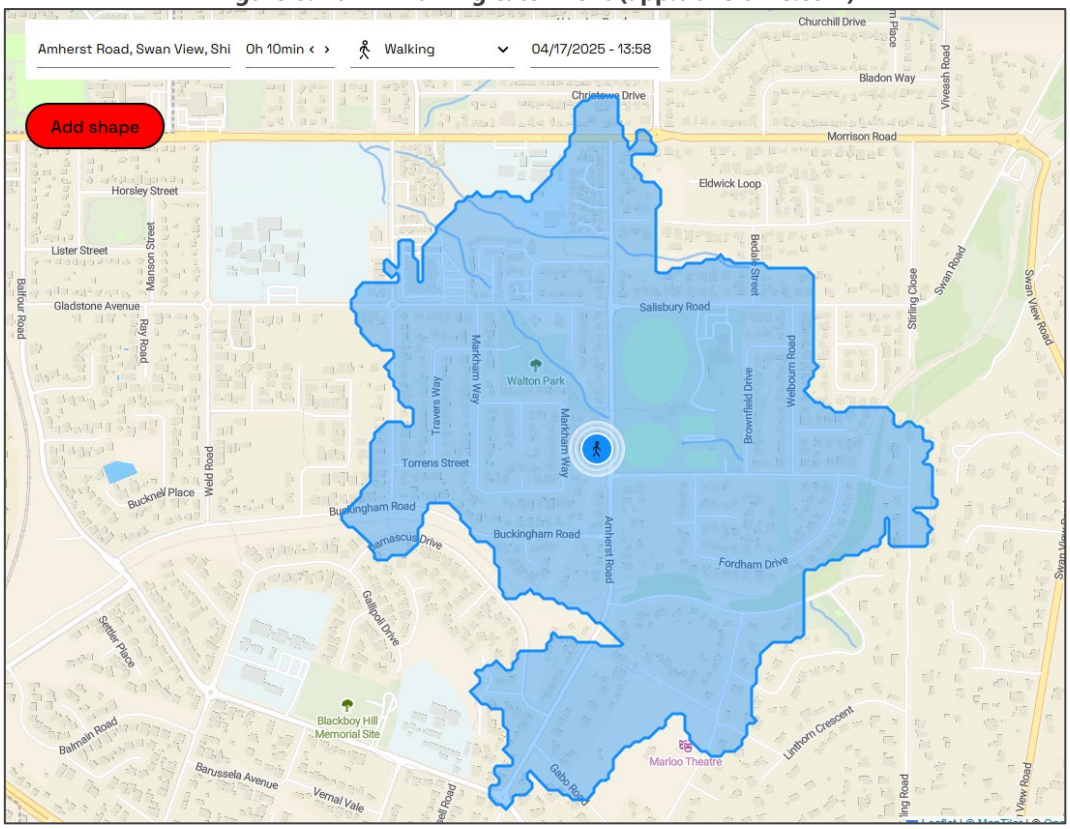
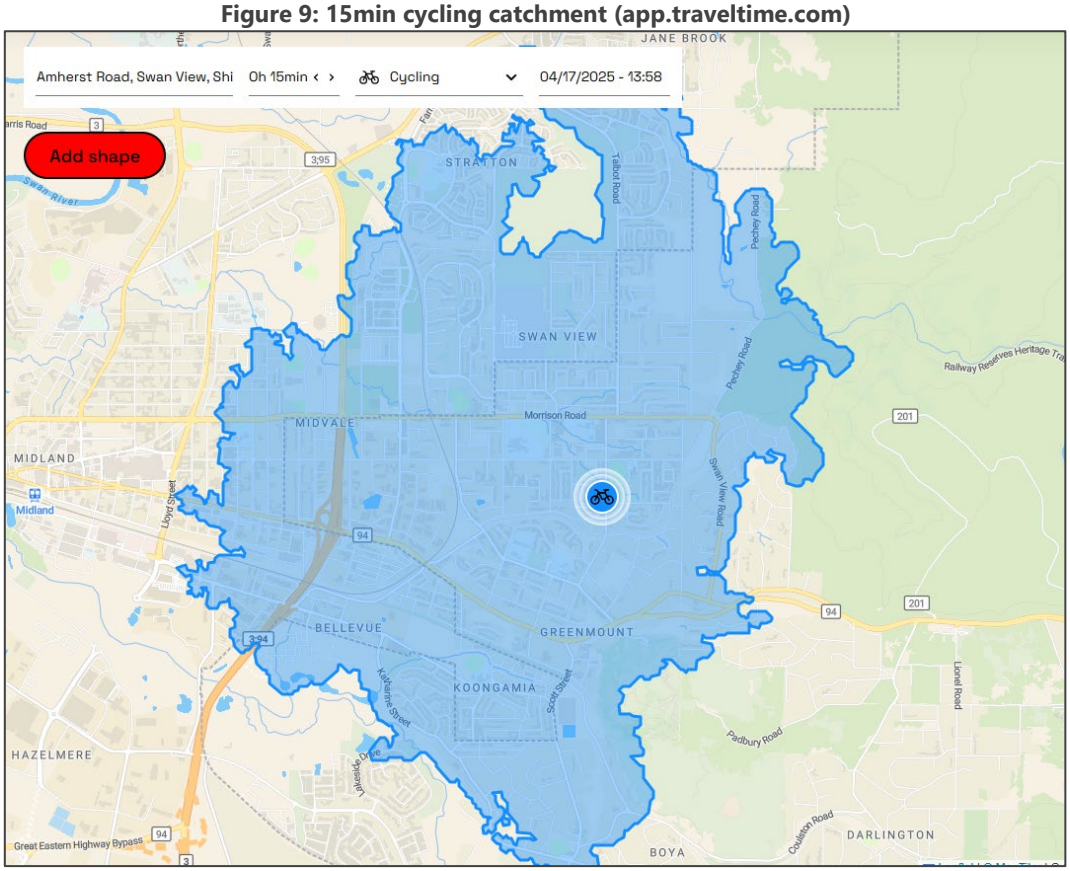


Figure 9: 15min cycling catchment (app.traveltime.com)



4. PROPOSED DEVELOPMENT

4.1 Overview of Proposed Development

The development proposal includes a residential building (Core & Cluster Accommodation) comprising of ten (10) units and an administration building.

Table 5: Proposed land uses and yields

Proposed Land Use	Yield
Residential (Core & Cluster Accommodation)	Ten (10) units – total of 24 beds: - 5 x 2-bedroom units, - 4 x 3-bedroom units, - 1 Accessible 2-bedroom units. up to 24 persons accommodated based on the number of the proposed beds
Administration building	170m^2 GFA / 165m^2 GLA

NOTE * - The multiplier of 97% GFA as measured in AUTOCAD file, has been used in order to derive the value of GLA, needed for calculating the parking requirements, having in mind the following definition taken from The Shire of Mundaring Local Planning Scheme No. 4:

"Gross lettable area (GLA)" means, in relation to a building, the area of all floors capable of being exclusively occupied and used by a tenant, which area shall be measured from the centre lines of joint partitions or walls and from the outside faces of external walls or the building alignment, including shop fronts, basements, mezzanines and storage areas;

4.2 Vehicular Parking

The Shire of Mundaring Local Planning Scheme No. 4 outlines the following parking requirements:

"5.7.20.2 The car parking requirements for residential uses shall be in accordance with the Residential Design Codes.
5.7.20.3 Where the car parking requirement for a use listed in Table 2 is not a whole number, the requirement shall be rounded up to the next highest whole number.
5.7.20.4 In cases where a proposed land use is not specified in Table 2, the car parking requirement for that use shall be determined at the discretion of the Shire."

Additionally, the car parking requirements are prescribed as outlined in Table 6 below.

Table 6: Shire of Mundaring's LPS No.5 Car parking provision rates

Land Use	Car parking requirement
Residential Building	1 space per 2 occupants
Office	1 space per 35 m^2 GLA
Aged Persons Village	As per Residential Design Codes for Aged and Dependent Persons Dwellings, plus 1 space per employee or staff member on premises at any one time

The subject lot is located within a Residential Zone (R12.5). Part B of the Residential Design Codes applies to "single houses in R40 and below, grouped dwellings in R25 and below, and multiple dwellings in areas coded R10-R25." This section provides the relevant car parking provision rates for residential developments within these R Codes. However, it is important to note that the proposed development is classified as Core & Cluster Accommodation, specifically as a Women's Refuge, and therefore does not fall under the standard residential building categories such as Single Houses, Grouped Dwellings, or Multiple Dwellings.

Women's Refuges typically offer accommodation for multiple unrelated individuals in a supported living arrangement, with shared facilities and on-site support services. As such, the proposed development aligns more closely with the definition of Residential Buildings with supportive services, which could be considered similar to an office building in terms of use.

Given the lack of specific car parking rates for this type of land use and considering its unique characteristics, Premise has calculated the required car parking provisions as shown in the table below.

Table 7: Car parking requirements

Land Use	Car parking requirement	Yield	Car parking requirement
Residential Building	1 space per 2 occupants	24 persons	12
Office / Administration building	1 space per 35 m^2 GLA	165m^2 GLA	4.71
		Total Car Parking Requirement	17

The proposed development provides a total of 13 on-site car parking bays, including eight (8) bays allocated to staff and residents (one of which is designated as a small bay), three (3) bays dedicated for visitors and two (2) ACROD bays. Based on the applicable parking requirements, this car parking provision results in a shortfall of four (4) car parking bays.

The statutory shortfall is unlikely to impact practical demand for following reasons:

> **Specifics of land use**

Women's Refuge provides assistance to individuals typically feeing current unacceptable living arrangements. The prospective tenants typically arrive with few belongings and often do not have a vehicle. Unfortunately, the TPS does not have a suitable comparable land use for parking allocation (such as Lodging House). Perhaps the nearest comparable land use in terms of parking demand could be Nursing Home, where the resident parking requirement would be 6 parking bays for 24 residents, complying with the statutory requirement.

> **Profile of residents**

Women seeking refuge are often accompanied by underaged children. The location is ideally positioned and is within a reasonable walking catchment to both – local primary and high school.

> **Street Context and Verge Availability:**

Amherst Road is a low-traffic local access street with available verge and kerbside space suitable for occasional overflow or visitor parking. There are no parking restrictions along the site frontage, and additional demand is unlikely to impact neighbouring properties.

> **Access to Public Transport:**

The site is located approximately 350 metres from existing bus stops on Amherst Road and Gladstone Avenue, serviced by Transperth Route 323, which provides regular access to Midland Train Station and surrounding suburbs. This proximity supports reduced reliance on private vehicles.

> **Anticipated Low Visitor Demand:**

Grouped dwellings in suburban areas typically generate intermittent and low visitor parking demand. With 13 bays provided on site (including two (2) ACROD bays), the majority of day-to-day parking demand will be accommodated, and any infrequent visitor needs can be met through on-street options without adverse impact, if required.

4.2.1 OVERVIEW OF COMPLIANCE WITH AS2890 PARKING FACILITIES

The proposed development should adhere to the Australian/New Zealand Standard for parking facilities (AS 2890.01), which prescribes geometric and design requirements for off-street car parking facilities; and Part 6: Off-street parking for people with disabilities – AS2890.06.

The site will provide 13 parking bays.

Parking areas are designed to accommodate User Class 1A - Residential, domestic and employee parking and User Class 4 - Parking for people with disabilities

The access driveway is classified as Category 1, allowing direct access to the parking bays from Wistow Lane.

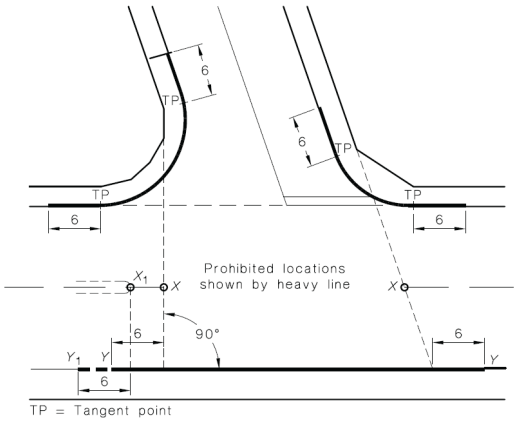
4.2.1.1 Comparison of proposed layout to AS2890.01 requirements

Table 8: Parking dimensions comparisons

Parking Bay Type	AS2890.1:2004 Off-street car parking					
	Parking Bay Length		Parking Bay Width		Aisle Width	
	Required	Proposed	Required	Proposed	Required	Proposed
All bays at 90° (User Class 1A) **RESIDENTS**	5.4m	5.4m	2.4m	2.4m	5.8m	6.1m
All bays at 90° (User Class 2) **VISITORS**	5.4m	5.4m	2.5m	2.4m	5.8m	6.1m
ACROD Parking	5.4m	5.4m	2.4m–ACROD 2.4m–shared space	2.4m 2.4m	5.8m	6.1m

The parking bays are generally compliant with AS 2890.1. While the visitor parking bays are separated from those allocated to residents and employees, they do not meet the minimum width requirements. However, the aisle width exceeds the minimum standard, which should mitigate any impact on vehicle manoeuvrability and access.

Table 9: Parking design and layout comparison

REQUIREMENT	COMPLIANCE
"2.4.2 Angle parking aisle c) Blind aisles At blind aisles, the aisle shall be extended a minimum of 1 m beyond the last parking space, as shown in Figure 2.3, and the last parking space widened by at least 300 mm if it is bounded by a wall or fence. In car parks open to the public, the maximum length of a blind aisle shall be equal to the width of six 90 degree spaces plus 1 m, unless provision is made for cars to turn around at the end and drive out forwards.''	• Blind aisle has a suitable extension. • A dedicated reversing bay is not required, as access to the parking area is controlled by a gated entry
"3.2 ACCESS DRIVEWAYS — WIDTH AND LOCATION *(a) Driveway Categories 1 and 2* *At unsignalized intersections of sub-arterial, collector or local streets with each other or with an arterial road, access driveways in Categories 1 and 2 (see Table 3.1) shall not be located in the sections of kerb shown by heavy lines in Figure 3.1. This requirement shall not apply to accesses to domestic driveways in the kerb section opposite the entering road at any intersection including signalized intersections. Furthermore, it shall not apply to any access driveway serving a property which would otherwise be denied access due to the physical impossibility of meeting the requirement."*  	• The proposed driveway is located approximately 20m from the intersection of Amherst Road and Gladstone Avenue, which is in accordance with the standard.
"3.2.4 Sight distance at access driveway exits *(b) Sight distance to pedestrians* *Clear sight lines as shown in Figure 3.3 shall be provided at the property line to ensure adequate visibility between vehicles leaving the car park or domestic driveway and pedestrians on the frontage road footpath."*	Sight lines at the proposed driveway comply with Clause 3.2.4(b), ensuring clear visibility between exiting vehicles and pedestrians on the footpath. The driveway design provides unobstructed sight lines at the property boundary in accordance with Figure 3.3 requirements, thereby supporting pedestrian safety and meeting the relevant standards.

4.2.2 VEHICLE SWEPT PATHS

The proposed parking area has been tested using a B99 Passenger Vehicle (5.2m) and B85 Passenger Vehicle (4.91m). No navigability issues were found. For further details, please refer to the swept path analysis plans in Appendix B.

4.3 ACROD Parking

Under the National Construction Code (NCC) 2015 – Building Code of Australia (BCA), Volume One, Class 1a dwellings (i.e. single houses or grouped dwellings) are not generally required to provide accessible (ACROD) parking unless a dwelling is specifically designed or designated as an accessible unit.

As such, accessible parking requirements for residential developments are only triggered when an individual unit is constructed to meet universal access standards.

Table 10: Accessible car parking provision rates

Guideline document	Building class	Car parking provision
NCC 2015 Building Code of Australia - Volume One	Class 1a — a single dwelling being— • Accessible unit	One (1) ACROD space

In this development, two (2) ACROD bays are proposed:

> One (1) ACROD bay is provided specifically for the accessible dwelling, as required by the BCA.
> One (1) additional ACROD bay is provided to contribute to the overall car parking supply, aligning with inclusive design principles and offering flexibility for residents or visitors with mobility needs.

While not strictly mandated, the provision of a second ACROD space demonstrates a commitment to universal accessibility and ensures adequate accommodation for a diverse resident population.

4.4 Bicycle Parking

Bicycle parking requirements are to be in line with Bicycle Parking Facilities: Austroads Guide to Traffic Management provisions as outlined in Table 11 below:

Table 11: Bicycle parking provision rates and calculation

Guideline document	Bicycle parking requirement	Yield	Calculation
Bicycle Parking Facilities: Austroads Guide to Traffic Management	0.02 spaces per dwelling	Nil – N/A	Two (2) bicycle spaces
		Total Required:	**Two (2) bicycle spaces**

Based on a yield of ten (10) dwellings, this equates to a total requirement of two (2) bicycle parking spaces.

Premise notes no bicycle parking are proposed as part of this development, and the variation is considered reasonable and supportable for the following reasons:

> **Low Demand Expected:**

Grouped dwelling developments in low-density suburban contexts such as Swan View typically generate minimal bicycle parking demand, particularly where garages or storage areas are integrated within each dwelling and can accommodate personal bicycle storage.

> **On-Site Storage Availability:**

Each dwelling will include private open space and access to enclosed areas (e.g. garages, sheds, or storage units), enabling residents to securely store bicycles within their own premises. This form of provision is often preferred by occupants and offers greater security than communal bicycle facilities.

> **Lack of Supporting Infrastructure:**

The immediate locality does not include dedicated bicycle lanes, end-of-trip facilities, or high-frequency cycling infrastructure that would typically support or generate significant demand for shared bicycle parking.

Given these factors, and noting the minor scale of the calculated requirement, the omission of formal bicycle parking bays is not expected to result in adverse transport or accessibility outcomes. The approach is consistent with the performance-based objectives of the Austroads guidance and appropriate to the context of the development.

4.5 Delivery and Service

Delivery and service vehicles, including waste removal trucks, are not expected to require designated parking spaces within the residential area. Waste collection is planned to occur from the verge, with bin placement designed to facilitate efficient and unobstructed servicing.

4.6 Traffic Impact of the Proposed Development

Data on the trip-generating potential of the various land uses is fairly limited in Western Australia. WAPC TIA Guidelines suggest trip rates for residential land uses have been sourced from the PARTS survey data averaged over the range of dwelling types as well as Guide to Traffic Generating Developments Version 2.2, October 2002 – Roads and Traffic Authority, New South Wales (RTA Guide).

The NSW Guide to Transport Impact Assessment (GTIA) was updated and published in 2024, after extensive engagement with industry professionals, therefore these new rates will be used.

The proposed development can be classified as medium design with reasonable transport accessibility since bus stops are 200-350m of walking distance from the subject lot.

Table 12: Trip generation rates

Guideline document	Trip generation rates
NSW Guide to Transport Impact Assessment (GTIA)	Medium Density Residential • AM peak hour = 0.41 vehicle trips/dwelling • PM peak hour = 0.60 vehicle trips/dwelling • Daily = 3.67 vehicle trips/dwelling
	Office blocks (Admin building) • AM peak hour = 0.99 vehicle trips/100m^2 Gross Floor Area • PM peak hour = 0.96 vehicle trips/100m^2 Gross Floor Area • Daily = 9.87 vehicle trips/100m^2 Gross Floor Area

A directional split of 30% IN and 70% OUT has been adopted for the AM peak and 70% IN, 30% OUT for the PM peak.

Table 13: Calculation of vehicular trips

Land Use Type	Yield	Daily Traffic Generation	Peak Hour Traffic Generation	
			AM	PM
Multiple Unit Dwelling (Medium Density)	10 dwellings	37	4	6
Office / Administration building	170m^2 GFA	14	2	2
Total		**54**	**6**	**8**

According to WAPC guidelines, developments generating between 10-100 vehicular trips in the peak hours can be considered to have a moderate impact on the road network.

The proposed development is expected to generate 54 daily trips, 6 vehicular trips in the AM peak and 8 vehicular trips in the PM peak. The surrounding road network is expected to successfully absorb the additional traffic.

4.7 Trip Distribution

Table 14 outlines the anticipated traffic distribution based on the above description.

Table 14: Trip Distribution Routes

Route	Percentage
Travelling northbound at Wooloomooloo Road >> subject site and reverse	30% [16 VPD; AM 2 VPH; PM 2 VPH]
Travelling southbound at Wooloomooloo Road >> subject site and reverse	70% [38 VPD; AM 4 VPH; PM 6 VPH]

4.8 Site-Specific Issues and Proposed Remedial Measures

The assessment of the additional traffic generated by the proposed development, concluded the following:

How many site-specific issues need to be discussed?	One (1)
Site-Specific Issue No 1	Parking provision supply
Remedial Measure / Response	The proposed development provides 13 on-site car parking bays, resulting in a shortfall of 4 bays against the calculated requirement of 17 spaces based on estimated occupancy. This shortfall is considered manageable and has been addressed through the following: > There is no parking requirement specific to the land use. Residential building parking requirement may be too onerous for this type of land use. > The site is located within 350m of public transport services, encouraging modal shift. > Kerbside space along Amherst Road can accommodate occasional visitor overflow without adverse impact. > Two (2) ACROD bays are included, one of which supports the accessible unit and the other enhances site-wide accessibility.

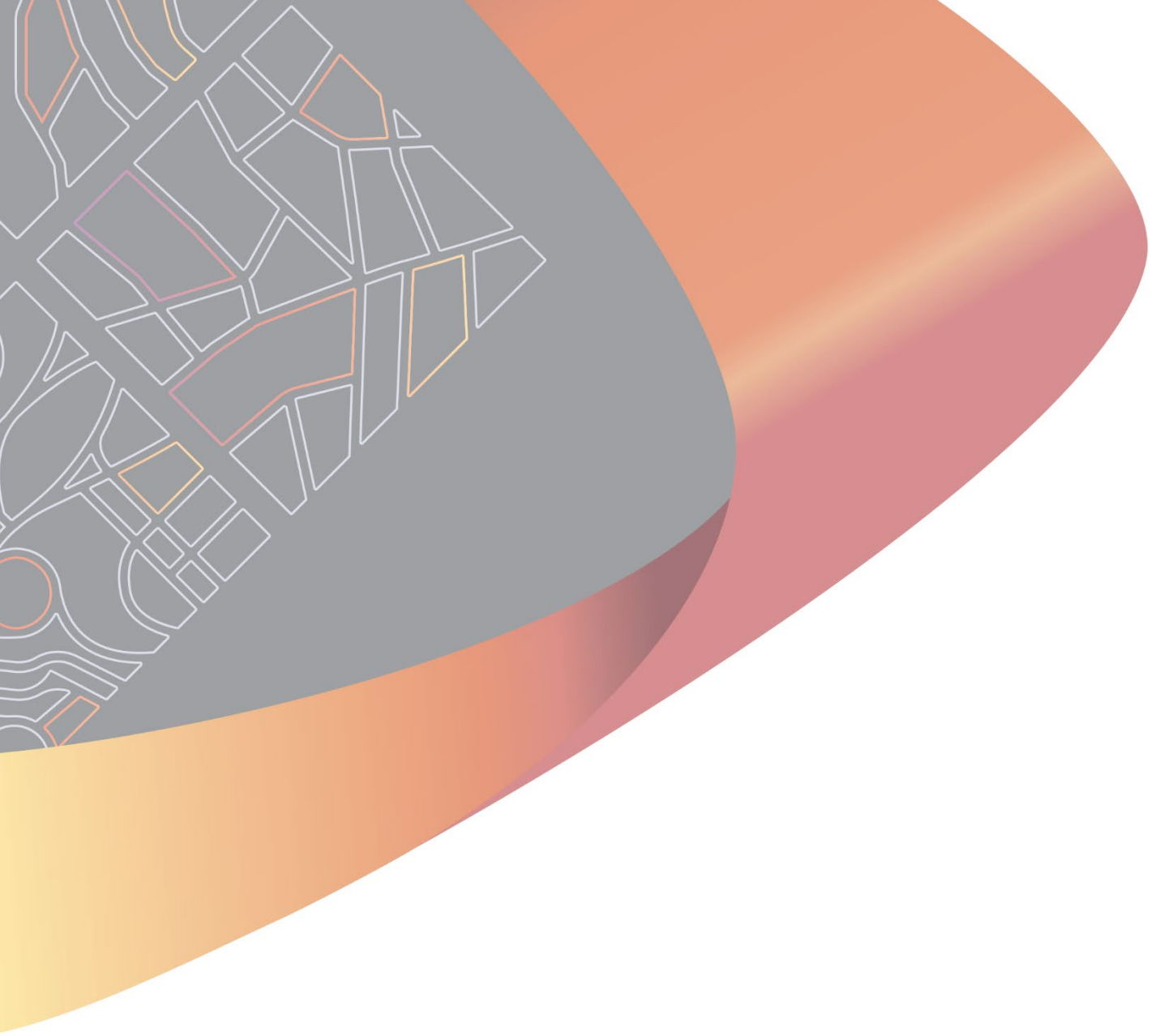
APPENDICES

APPENDIX A

DEVELOPMENT SITE PLAN

APPENDIX B

VEHICLE SWEPT PATH ANALYSIS



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