

Residential Village (for over 55s)

375 Swansea Road, Lilydale Transport Impact Assessment

PREPARED FOR LILYDALE MANAGEMENT SERVICE PTY LTD | 25 July 2023

Ref. 300303575

We design with community in mind

ADVERTISED



Revision schedule

Rev No	Date	Description	Signature of Typed Name (documentation on file)			
Issue	Date	Description	Prepared by	Checked by	Reviewed by	Approved by
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C	2/05/19	Revised Final	Goran Mihic	Peter Wills	Peter Wills	
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H	25/07/23	Final - Amended	John Kiriakidis	John Kiriakidis	John Kiriakidis	John Kiriakidis



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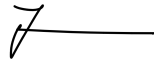
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Quality statement

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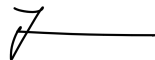
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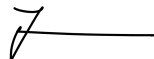
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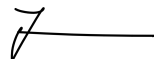
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1 Introduction

1.1 Background & Proposal

A planning application is being submitted for a proposed residential village (for over 55s) on land located at 375 Swansea Road in Lilydale. The development will include 50 dwellings, as summarised in Table 1.1.

Table 1.1: Development Schedule

Dwelling Size	No.
Two-Bedroom	35 dwellings
Three-Bedroom	15 dwellings
Total	50 dwellings

In addition to the above, a communal recreation facility is proposed within the site. This facility will support residents residing in the development and operate as an ancillary use to the overall development.

It is proposed to provide a total of 91 car parking spaces on the site, including 79 resident car spaces and 12 visitor car parking spaces.

Vehicle access is proposed to occur via a single access point to Akarana Road along the site's northern frontage.

Pedestrian access is proposed to be provided via the access point to Akarana Road.

Waste bins will be stored along the side of individual properties. The Waste Management Plan prepared by Leigh Design (dated 15 November 2022) states that waste will be collected on-site by Council's regular waste collection services using the 10.5m long side-lift vehicle.

Stantec has been engaged by Lilydale Management Service Pty Ltd undertake a transport impact assessment of the proposed development.

1.2 Purpose of this Report

The report sets out an assessment of the anticipated parking, traffic and transport implications of the proposed development, including consideration of the following:

- i The adequacy of the proposed pedestrian, bicycle and public transport access arrangements to the site
- ii The adequacy of the proposed bicycle parking provision
- iii The adequacy of the proposed car parking provision
- iv The adequacy of the proposed car park layout
- v The adequacy of the proposed arrangements for waste collection
- vi The acceptability of the traffic impacts of the proposed development.

1.3 References

In preparing this report, reference has been made to the following:

- Yarra Rangers Planning Scheme
- Plans for the proposed development plan prepared by Mondo Architects
- Australian/New Zealand Standard, Parking Facilities Part 1: Off-Street Car Parking (AS2890.1:2004)
- Australian Standard, Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities (AS2890.2:2018)
- Australian Standard, Parking Facilities Part 3: Bicycle Parking (AS2890.3:2015)
- Waste Management Plan prepared by Leigh Design dated 15 November 2022
- An inspection of the site and its surrounds
- Other documents as nominated.



2 Existing Conditions

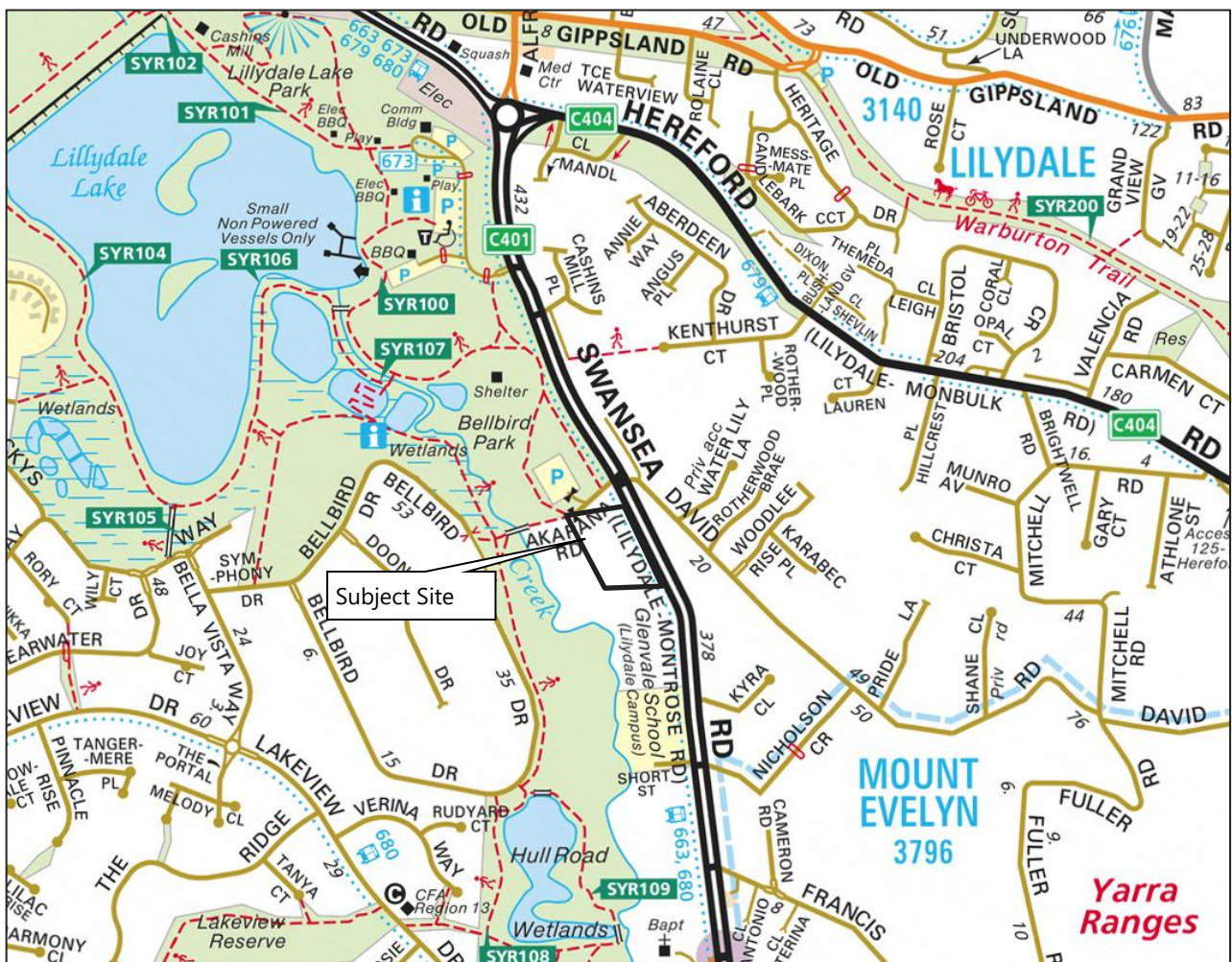
2.1 Subject Site

The subject site is located at 375 Swansea Road in Lilydale. The site of approximately 4.6 hectares has an eastern frontage of approximately 260m to Swansea Road and a northern frontage of approximately 72m to Akarana Road.

The subject site is located within a Rural Living Zone 2 (RLZ2) and is currently undeveloped. The surrounding properties are primarily residential or public open space.

The location of the subject site and the surrounding environs is shown in Figure 2.1, and the land zoning is shown in Figure 2.2.

Figure 2.1: Subject Site and its Environs



(Reproduced with Permission from Melway Publishing Pty Ltd)



Figure 2.2: Land Zoning Map



(Reproduced from Land Channel web site)

2.2 Road Network

2.2.1 Adjacent Roads

Swansea Road

Swansea Road is an arterial road (managed by Department of Transport and Planning). It is a two-way road aligned in a north-south direction and configured with divided carriageways with two through lanes in each direction, within a 40m wide road reserve (approximately). Swansea Road carries approximately 28,600 vehicles per day¹, north of Akarana Road.

Swansea Road in the immediate vicinity of the site is shown in Figure 2.3 and Figure 2.4.

Figure 2.3: Swansea Road looking North (adjacent to site)



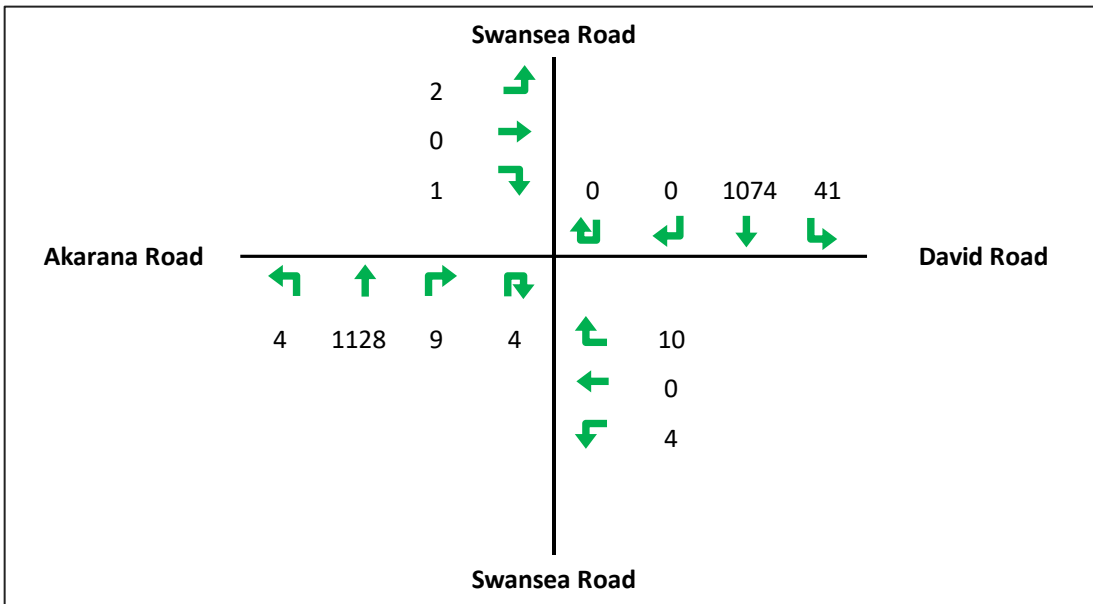
Figure 2.4: Swansea Road looking South (adjacent to site)



¹ Based on the peak hour traffic counts undertaken by Stantec at the Swansea Road/Akarana Road/David Road unsignalised intersection on Tuesday 6 February 2018 and assuming a peak-to-daily ratio of 8% for arterial roads and 10% for local roads.



Figure 2.8: Existing Weekday PM Peak Hour Traffic Volumes



2.2.4 On-site Observations

Observations were undertaken at the Swansea Road/Akarana Road/David Road unsignalised intersection on Tuesday 6 February 2018 during the weekday PM (4:00pm-6:00pm) period. These observations indicated that the Swansea Road/Akarana Road/David Road intersection currently operates at excellent conditions within minimal queues and delays on all approaches.

It was also observed that the intersection of Swansea Road and Hull Road located approximately 800m south of the Swansea Road/Akarana Road/David Road intersection, creates a number of gaps in Swansea Road due to the platooning of vehicles.



3 Statutory Design Requirements

3.1 Preamble

Clause 52.06-10 directs the development to consider a range of requirements in association with any plan prepared for the development. These requirements are reproduced below in bold italics with corresponding responses on each.

Before deciding that a plan prepared under Clause 52.06-8 is satisfactory the responsible authority must consider, as appropriate:

- ***The role and function of nearby roads and the ease and safety with which vehicles gain access to the site.***

Commentary on the ability of the network to absorb increases in transport activity associated with the proposal are set out at Section 5 and 6 of this report.

- ***The ease and safety with which vehicles access and circulate within the parking area.***

Commentary on the suitability of the proposed layout and design is set out at Section 4 of this report.

- ***The provision for pedestrian movement within and around the parking area.***

Plans prepared for the development include separate pathway provisions along the edge of the main circulating road measuring 1.5m adjacent to the community centre at the entrance and 1.0m on the balance of the internal road system. Despite this provision, traffic volumes on the internal road will be low enough to support and shared use outcome with pedestrians and motorists co-mingling. Traffic loads on the internal road network are detailed at Section 7 of this report and reveal modest levels of traffic activity on the internal road network in support of this operational outcome.

Plans prepared for the development do not include a footpath connection between the site and Swansea Road. Accordingly, we would recommend that the internal footpath network is extended to cross over Akarana Road and run along the north side of the carriageway connecting with the existing footpath network on the west side of Swansea Road, north of Akarana Road. The completion of this network will provide connections to existing bus stops on the north and south sides of Akarana Road along Swansea Road.

These additions are aligned with the objectives set out at Clause 56.06-2 of the Planning Scheme noting additional commentary on this compliance is provided at Section 7.2 of this report.

Detail design matters in relation to these facilities can be addressed by way of planning permit condition.

- ***The provision of parking facilities for cyclists and disabled people.***

Parking provisions are outlined at Section 4 of this report. Provisions for residents and visitors are outlined at this report section.

- ***The protection and enhancement of the streetscape.***

Not a traffic and transport matter, we defer this to the architectural drawing set detail and other expert subject matter reports accompanying the application.

- ***The provisions of landscaping for screening and shade.***

Not a traffic and transport matter, we defer this to the architectural drawing set detail and other expert subject matter reports accompanying the application.

- ***The measures proposed to enhance the security of people using the parking area particularly at night.***

The proposal will include street lighting and security gates at the development entrance.

- ***The amenity of the locality and any increased noise or disturbance to dwellings and the amenity of pedestrians.***

Not a traffic and transport matter, we defer this to the architectural drawing set detail and other expert subject matter reports accompanying the application.

- ***The workability and allocation of spaces of any mechanical parking arrangement.***

No mechanical car parking is proposed as part of the development.

- ***The design and construction standards proposed for paving, drainage, line marking, signage, lighting and other relevant matters.***

The proposed layout and configuration of these elements are detailed in the architectural drawing set. Where further detail is required, this will be provided in detailed design and construction drawings which we expect will be prepared to the satisfaction of the Responsible Authority once a Planning Permit with suitable conditions is issued.



- ***The type and size of vehicle likely to use the parking area.***

Vehicle types and sizes applicable to the development are set out at Section 5.

- ***Whether the layout of car parking spaces and access lanes is consistent with the specific standards or an appropriate variation.***

A review of compliance against the relevant standards is provided at Section 5 of this report.

- ***The need for the required car parking spaces to adjoin the premises used by the occupier/s, if the land is used by more than one occupier.***

This is not relevant to the application.

- ***Whether the layout of car spaces and accessways are consistent with Australian Standards AS2890.1-2004 (off street) and AS2890.6-2009 (disabled).***

The proposed layout meets the requirements of the Planning Scheme. Details on this are provided at Section 5 of this report.

- ***The relevant standards of Clauses 56.06-2, 56.06-4, 56.06-5, 56.06-7 and 56.06-8 for residential developments with accessways longer than 60 metres or serving 16 or more dwellings.***

These clauses are addressed in later sections of this report.

- ***Any other matter specified in a schedule to the Parking Overlay.***

Not applicable.



4 Parking Provision

4.1 Car Parking Facilities

Statutory requirements for the provision of car parking are set out in Clause 52.06 of the Yarra Ranges Planning Scheme, with parking rates specified in Table 1 to Clause 52.06-5. An assessment of the statutory car parking requirements is set out in Table 4.1

Table 4.1: Statutory Car Parking Requirements

Dwelling Type	Quantity	Statutory Parking Rate	Statutory Parking Requirement
Two-Bedroom	35 Dwellings	1 space per dwelling	35 car spaces
Three-Bedroom	15 Dwellings	2 spaces per dwelling	30 car spaces
Visitor Spaces		1 to every 5 dwellings	10 car spaces
Total			75 car spaces

The development proposed has a statutory requirement of 75 car spaces, comprising 65 resident car spaces and 10 visitor car spaces.

The proposed development will include 12 residential visitor car spaces which exceeds the statutory requirement.

The proposed development proposes to provide car parking for residents, as follows:

- One car space to each of the 21 x two-bedroom dwellings: 21 car spaces
- Two car spaces to each of the 14 x two-bedroom dwellings: 28 car spaces
- Two car spaces to each of the 15 x three-bedroom dwellings: 30 car spaces

The above breakdown indicates that the proposed car parking allocation for the proposal meets the statutory requirement.

4.2 Bicycle Parking Facilities

Statutory requirements for the provision of bicycle parking are set out in Clause 52.34 of the Yarra Ranges Planning Scheme. However, there are no statutory bicycle parking requirements for residential developments of less than four-storeys in height. Therefore, there is no statutory requirement to provide any bicycle parking for the proposed development.

No formal bicycle parking areas will be provided for residents. Those residents owning a bicycle will likely store it within their property.



5 Car Parking & Vehicle Access Layout

5.1 Car Parking Layout

The proposed parking layout has been assessed in respect to the relevant Design Standards set out in Clause 52.06-09 of the Yarra Ranges Planning Scheme, and where relevant, the relevant Australian Standards. A summary of compliance is set out below.

- Single garages will have a clear internal length of 6.0m and a width of at least 3.5m including an allowance for 600mm side storage with a minimum door opening of 2.4m and a minimum accessible apron width of 7m. Based on these dimensions, the proposed design of single garages is considered acceptable.
- Double garages will have a minimum clear internal length of 6.0m and a width of 5.5m. The garage doors will be provided with a width of at least 4.8m. This provision satisfies the relevant Australian Standard and is considered acceptable.
- 90degree visitor car parking spaces will be 5.4m long by 2.6m wide. These dimensions exceed the Planning Scheme requirement and satisfy the relevant Australian Standard.
- Parallel visitor car parking spaces will be 6.9m long by 2.4m wide. These dimensions satisfy the Planning Scheme requirements.
- The proposed exit driveways provide battered splays extending at least 2m from either edge of the driveway and 2.5m into the driveway (perpendicular to the boundary line). This arrangement is compliant with the pedestrian sight distance requirement at AS 2890.1.
- A minimum floor to ceiling headroom of 2.1m will be provided within each garage. This provision satisfies the Planning Scheme requirements.

5.2 Waste Collection & Emergency Vehicles

The internal loop road will be provided with a minimum 5.5m wide carriageway. This width is typically able to accommodate waste collection and emergency vehicles. In particular, this carriageway width accords with the CFA requirements for fire truck access to a development.

The waste management plan prepared by Leigh Design (dated 15 November 2022) states that waste will be collected on-site by Council's regular waste collection services using the 10.5m long side-lift vehicle.

A vehicle swept path assessment has been undertaken to show that the 10.5m long side-lift vehicle will be able to circulate within the internal loop road in an acceptable manner. The vehicle swept path assessment is presented in Appendix A.

It is understood that the subject site is situated within a flood zone. As such, an emergency access point is proposed along Swansea Road (between townhouse nos.11 and 12), with this access only to be used in the event of a 1 in a 100 year flood (i.e. Q100). Given this flood event has a probability of 1% of occurring in any given year, this arrangement is considered acceptable.



6 Traffic Impact

6.1 Traffic Generation

A single house on a standard lot in an outer metropolitan area will typically generate up to one trip in the peak hour and eight to 10 trips per day. Medium density dwellings generally exhibit a lower traffic generation rate. In the outer metropolitan areas, where public transport accessibility is relatively low, the rate for medium density units is typically in the order of six to eight trips per day. Closer to the Melbourne CBD the rate reduces to in the order of three to six trips per day depending on dwelling size, car parking provision and accessibility to public transport and local amenities, amongst other things. Peak hour rates are typically 10% of daily rates.

Given the location of the site and the type of dwellings proposed, the dwellings are expected to generate up to 6 daily vehicle movements per dwelling, including 0.6 vehicle movements per dwelling in a peak hour. Application of these rates to the proposed 50 dwellings indicates that the site will generate up to 30 peak hour vehicle movements and 300 daily vehicle movements.

6.2 Traffic Distribution & Assignment

The assumed directional distribution of the proposed development traffic has been based on the observed turning vehicle proportions at the Swansea Road/Akarana Road/David Road unsignalised intersection, and are as follows:

- Entry movements from Swansea Road (north): 50%
- Entry movements from Swansea Road (south): 50%
- Exit movements to Swansea Road (north): 50%
- Exit movements to Swansea Road (south): 50%

Based on observations at other residential developments, the assumed directional split of development traffic entering and exiting the site is as follows:

- Weekday AM Peak Hour: 20% inbound/80% outbound
- Weekday PM Peak Hour: 60% inbound/40% outbound.

Based on the above, Figure 6.1 and Figure 6.2 show the estimated development generated vehicle movements at the intersection of Swansea Road/Akarana Road/David Road.

Figure 6.1: Weekday AM Peak Hour Development Generated Traffic Volumes

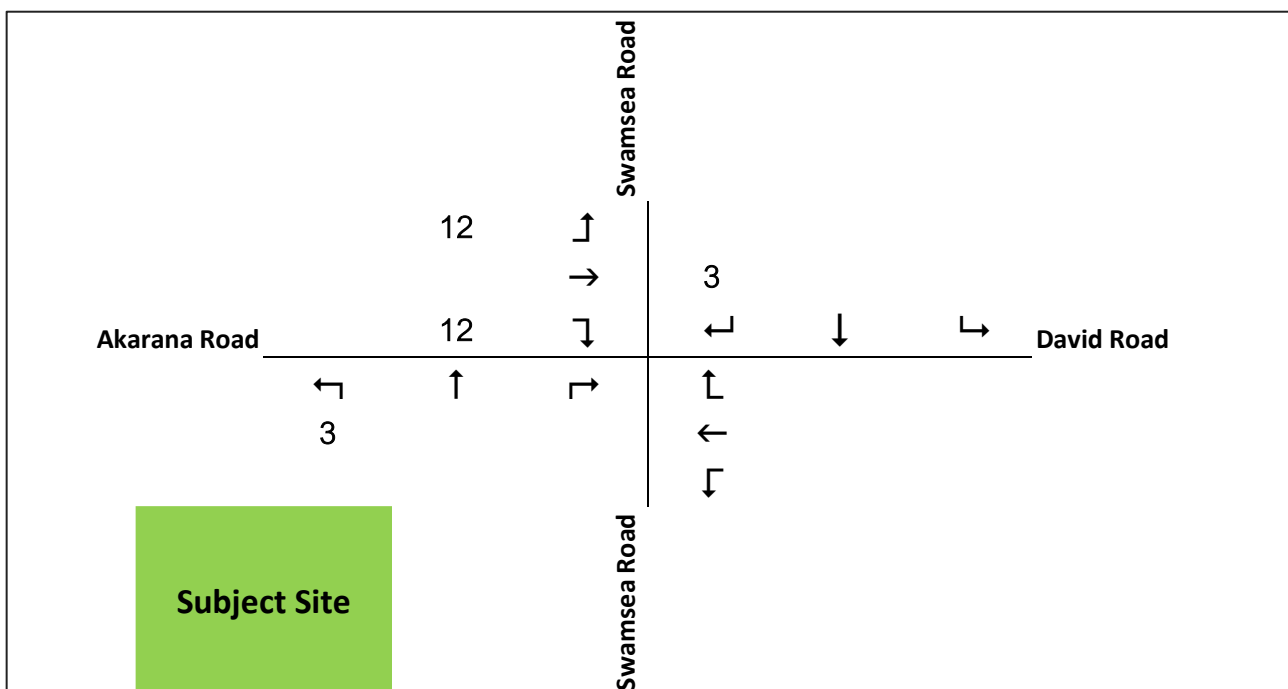
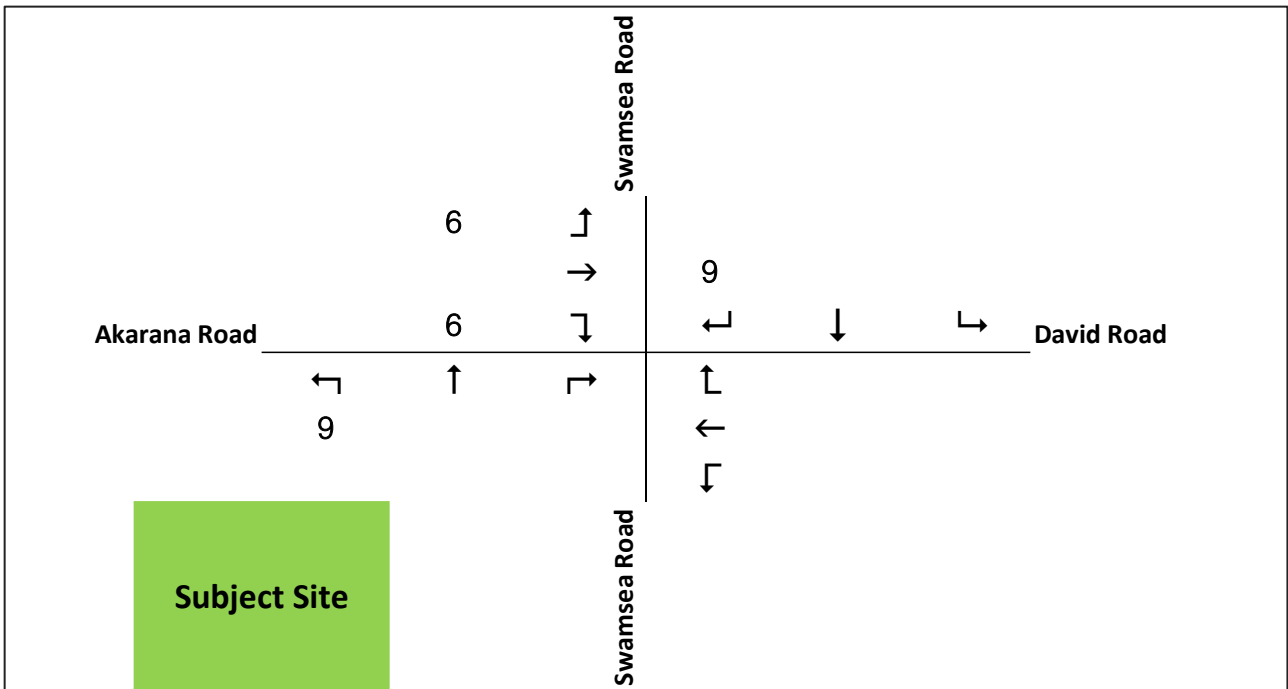


Figure 6.2: Weekday PM Peak Hour Development Generated Traffic Volumes



6.3 Post Development Conditions

By adding the development traffic to the existing traffic flows we can obtain the Post-Development traffic volumes. These are shown in Figure 6.3 and Figure 6.4.

Figure 6.3: Post-Development AM Peak Hour Traffic Volumes

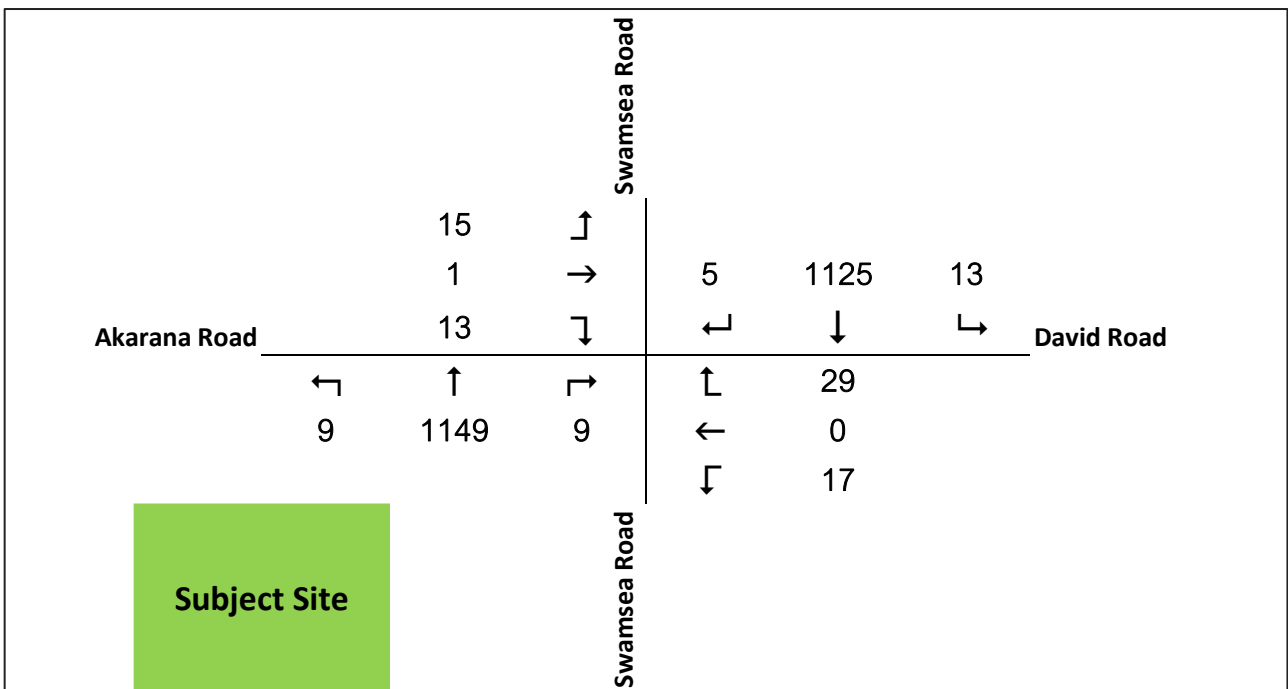
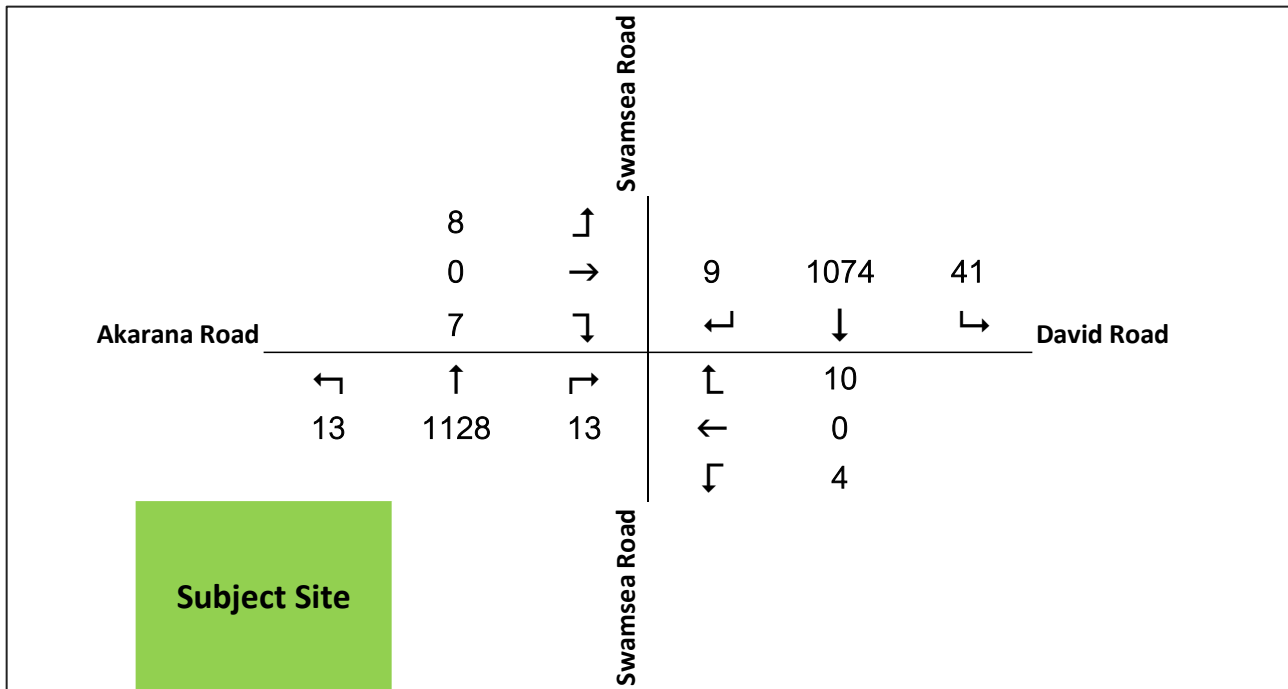


Figure 6.4: Post-Development PM Peak Hour Traffic Volumes



6.4 Post Development Traffic Impact Analysis

6.4.1 Akarana Road

As noted above, it is estimated that the proposed development will add up to 30 vehicle movements in the AM and PM peak hours to the Swansea Road/Akarana Road/David Road unsignalised intersection. This represents one additional vehicle movement at the intersection every two minutes.

As mentioned in Section 2.2 of this report, on-site observations indicate that a number of gaps are available in Swansea Road due to the platooning of vehicles caused by the intersection of Swansea Road and Hull Road located approximately 800m south of the Swansea Road/Akarana Road/David Road intersection. This platooning activity will assist with entry and exit movements to and from the proposed development.

Accordingly, the additional traffic is expected to have minimal impact on the operation of the intersection, and vehicles are expected to be able to exit Akarana Road satisfactorily.

6.4.2 Swansea Road

Swansea Road is an arterial road and carries approximately 28,600 vehicles per day², north of Akarana Road. It is estimated that the proposed development will add up to 432 daily vehicle movements to Swansea Road, of which approximately half will travel to/from the south and half will travel to/from the north. Therefore, following the completion of the proposed development, the volume of traffic using Swansea Road at any one location will increase by less than 1%. Consequently, the proposed development is expected to have minimal impact on the operation of Swansea Road.

6.5 Traffic Impact Analysis Summary

On the basis of the analysis and investigation undertaken as part of this assessment, it is considered that the traffic from the proposed development can be accommodated on the road network in the vicinity of the subject site and could not be expected to compromise its function or safety.

² Based on the peak hour traffic counts undertaken by Stantec at the Swansea Road/Akarana Road/David Road unsignalised intersection on Tuesday 6 February 2018 and assuming a peak-to-daily ratio of 8% for arterial roads and 10% for local roads.



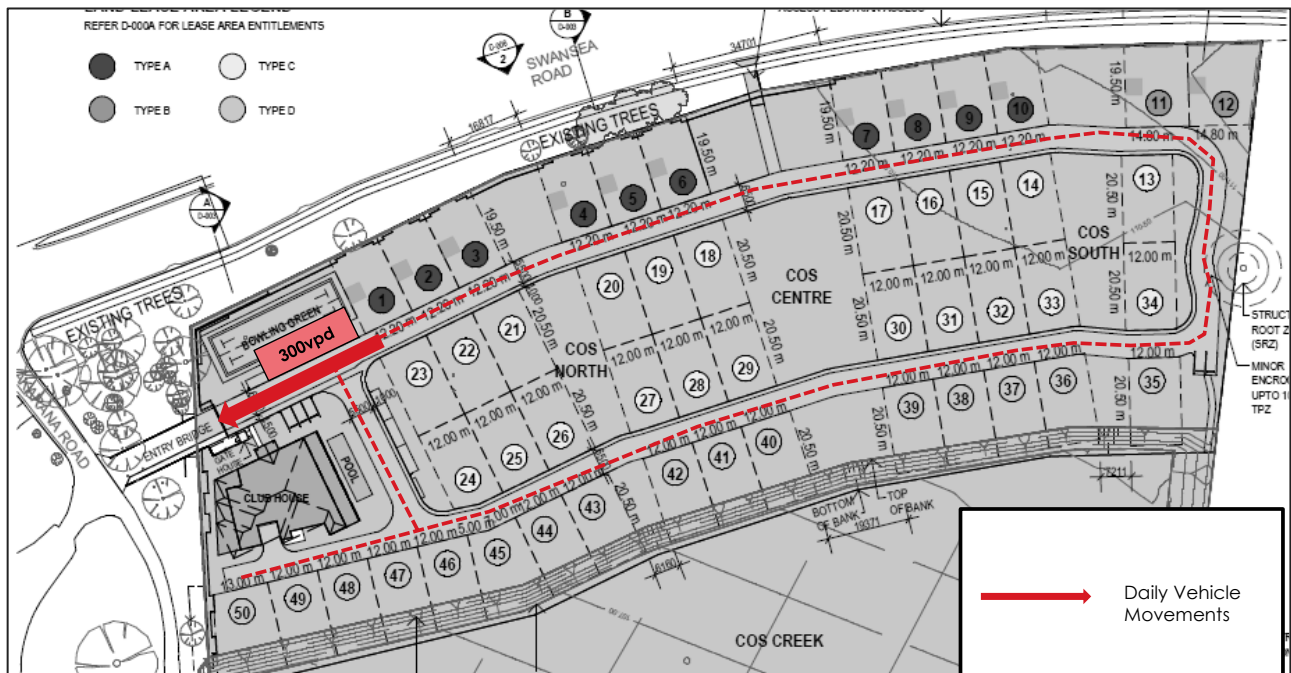
7 Internal Road Network

7.1 Daily Traffic Volumes

As outlined in Section 6 of this report, it is anticipated that upon completion of the full development the internal road network will be required to accommodate up to 300 vehicle movements per day.

The estimated distribution of the development generated daily traffic volumes along with the internal roads is shown in Figure 7.1.

Figure 7.1: Internal Road Network - Estimated Daily Traffic Volumes



7.2 Internal Road Design

The internal road network will be privately managed by an Owners Corporation. Notwithstanding, the proposed internal road network will function as an 'Access Lane' as described at Clause 56.06 of the Yarra Ranges Planning Scheme. The internal carriageway will include a carriageway width of 5.5m plus separate 1.5m and 1.0m pathway provisions on the heaviest traffic sections. Based on forecast traffic levels these separate pathway provisions are not required and should provide a higher than required level of service and operational performance.

The internal road network has been designed to avoid cul-de-sacs or court bowls in order to maximise vehicle circulation.

The proposed design aligns with the neighbourhood street network objective contained at Clause 56.06-4, the walking and cycling network objectives contained at Clause 56.06-5, the neighbourhood street network detail objective contained at Clause 56.06-7, and the lot access objective contained at Clause 56.06-8 of the planning scheme noting that these clauses relate to street sections which are vested as Council roads.

In this case, the internal road system is planned to remain as private property upon which strict application of the clause requirements are not mandatory but rather discretionary subject to a satisfactory demonstration of operational performance and function. Commentary provided elsewhere in this report demonstrates this level of performance.



8 Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- i The development proposed has a statutory requirement of 75 car spaces, comprising 65 resident car spaces and 10 visitor car spaces.
- ii The proposed development will include 65 resident spaces and 12 residential visitor car spaces which exceeds the statutory requirement.
- iii The proposed development will include a walking and cycling network consistent with the objectives of Clause 52.06-10 and 56.06 of the Yarra Ranges Planning Scheme.
- iv The proposed car parking layout will generally comply with the dimensional requirements as set out in the Planning Scheme, and where appropriate, the relevant the Australian Standard.
- v The waste management plan prepared by Leigh Design (dated 15 November 2022) states that waste will be collected on-site by Council's regular waste collection services using the 10.5m long side-lift vehicle. A vehicle swept path assessment has been undertaken to show that the 10.5m long side-lift vehicle will be able to circulate within the internal loop road in an acceptable manner.
- vi The internal road layout will not prejudice emergency vehicle access to any part of the development.
- vii There is no statutory requirement to provide any bicycle parking. Residents owning a bicycle will be expected to store them within their property.
- viii The proposed development is expected to generate up to 30 peak hour vehicle movements and 300 daily vehicle movements.
- ix The additional traffic volumes from the proposed development are unlikely to have a perceptible impact on the performance of the Swansea Road/Akarana Road/David Road intersection and the surrounding road network.

The proposed internal loop road will be capable of comfortably accommodating the daily traffic volume estimated to be generated by the proposed development.



Appendices

We design with community in mind



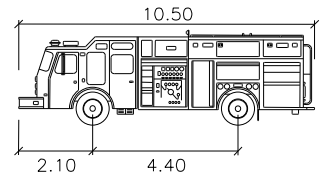
Appendix A Vehicle Swept Path Assessments



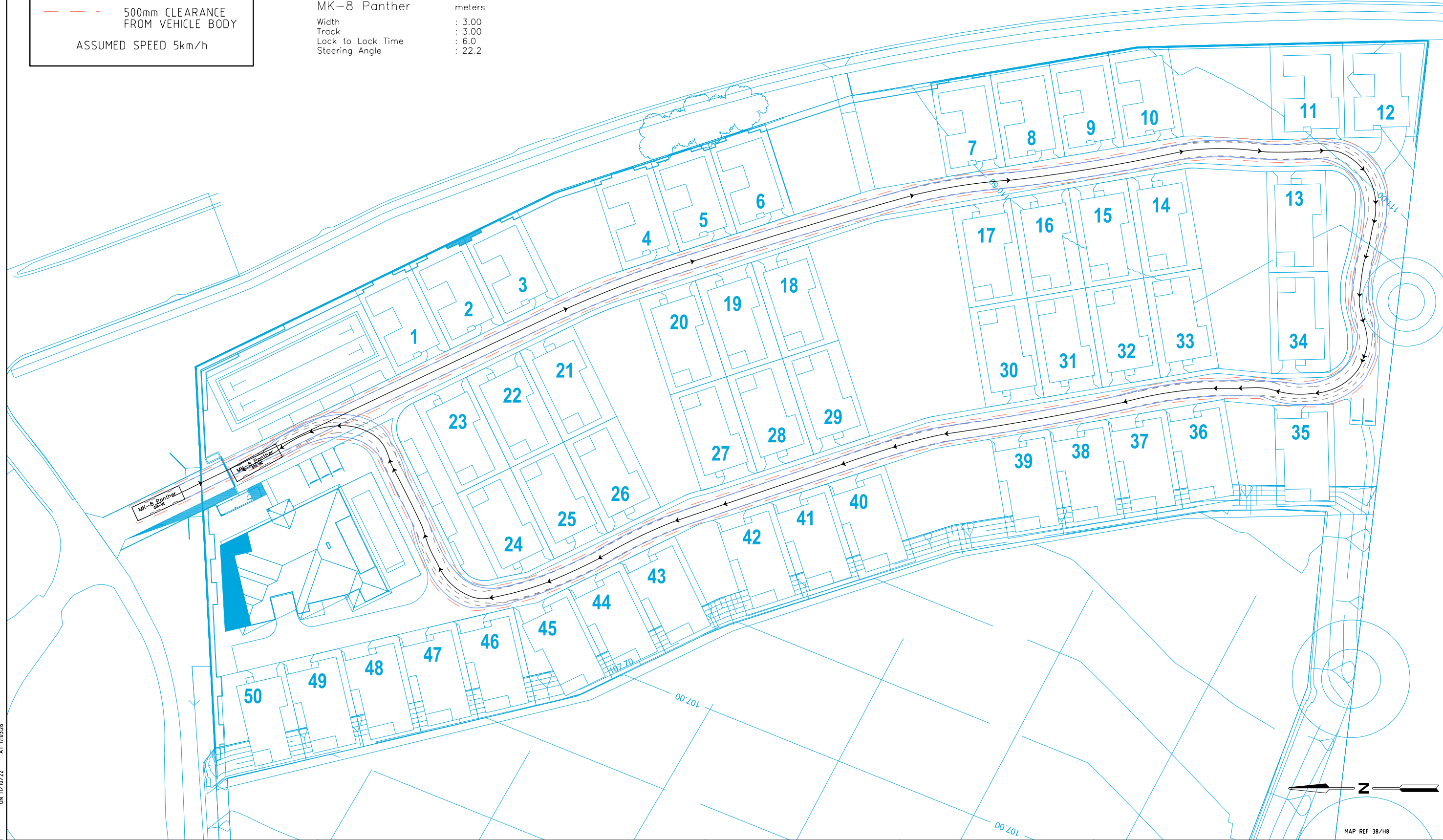
SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



MK-8 Panther	metres
Width	: 3.00
Track	: 3.00
Lock to Lock Time	: 6.0
Steering Angle	: 22.2



PLOTTED BY : paulinguyen ON 11/10/22 AT 17:03:26

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE
APPROXIMATE ONLY AND THEIR EXACT POSITION
SHOULD BE PROVEN ON SITE. NO GUARANTEE IS
GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DESIGNED
P. NGUYEN

APPROVED BY
J. KIRIAKIDIS

DESIGN CHECK

DATE ISSUED
10 NOVEMBER 2022

SCALE
A3 CUSTOM 750

CAD FILE NO.
300303575-AT01-P1.dgn

RESIDENTIAL DEVELOPMENT
375 SWANSEA ROAD
LILYDALE
SWEPT PATHS ASSESSMENT
DRAWING NO. 300303575-AT01-P1 SHEET 01 OF 01 ISSUE P1

DESIGN WITH COMMUNITY IN MIND

Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging. That's why at Stantec, we always design with community in mind.

We care about the communities we serve—because they're our communities too. This allows us to assess what's needed and connect our expertise, to appreciate nuances and envision what's never been considered, to bring together diverse perspectives so we can collaborate toward a shared success.

We're designers, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

Stantec trades on the TSX and the NYSE under the symbol STN.
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