

Traffic and Transport Assessment

Proposed Mixed Use Development 6 Harvey Road and 15 Spindrift Road, Clinton



27 March 2024

Prepared for:
Stokeston Qld Pty Ltd
Report: 50802-RP01-B

GELEON

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Authorised for issue

Version	Issue date	Purpose of issue	Details	Name / position	Signature
A	26 February 2024	To support development application	Original issue	Luke Seeney RPEQ 23542 Principal Engineer	Original signed by L.Seeney
B	27 March 2024	To support development application	Updated to reflect spilt development applicaitons	Luke Seeney RPEQ 23542 Principal Engineer	

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1. Introduction

1.1 Project background

Geleon has been engaged by Stokeston Qld Pty Ltd (the **Applicant**) to prepare a Traffic and Transport Assessment (TTA) to accompany a Development Application (DA) to establish a mixed use development (child care centre and multiple dwelling land uses) at 6 Harvey Road (Lot 1 on RP615124) and 15 Spindrift Road (Lot 519 on SP296915), Clinton (**Figure 1.1**). The existing 7,924m² site is currently vacant.



Figure 1.1 Locality plan

1.2 Development details

The development proposes to establish two reconfigured allotments on the subject site to accommodate a multiple dwelling land use (townhouses) on proposed Lot 1 and a child care centre land use on proposed Lot 2. Access to and from the development is sought via both road frontages adjacent the site with a two-lane, two-way vehicle crossing proposed on Spindrift Road for access to Lot 1, and a two-lane, two-way vehicle crossing proposed on Harvey Road for access to Lot 2.

Details of the proposed development are provided in **Table 1.2** with the proposed site plan being shown in **Figure 1.2**.

Relevant plans of development are provided in **Appendix A**.

Table 1.2 Development details

Land use	Allotment	Total no. of 3-bedroom townhouses	Gross floor area (GFA)	Child placements	No. of staff
Multiple dwelling	1	13	-	-	-
Child care centre	2	-	918	125	19

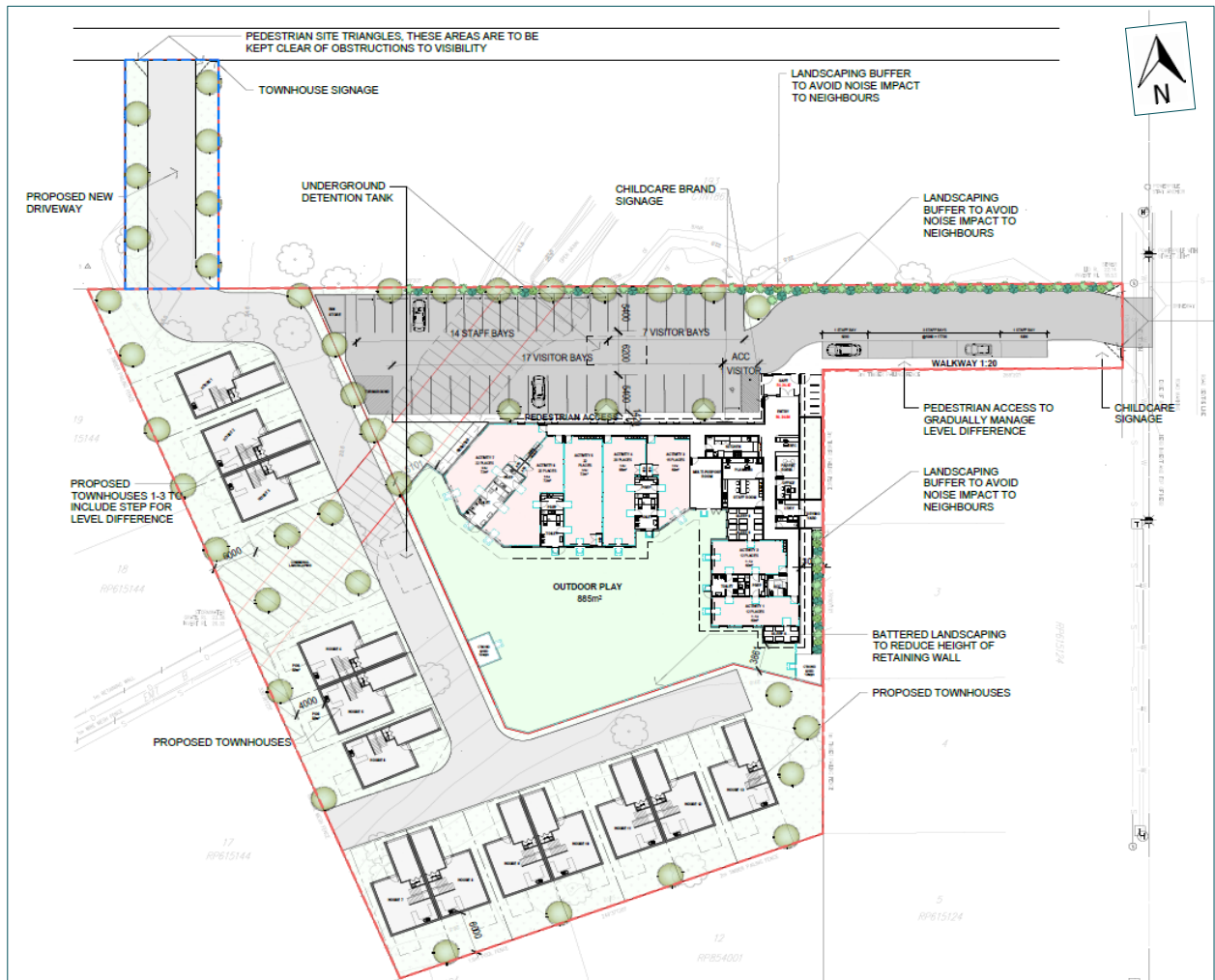


Figure 1.2 Site plan

1.3 Applicable planning scheme

The proposed development site falls under two separate jurisdictions including:

- 6 Harvey Road, Clinton - Gladstone Regional Council which is governed by the *Gladstone Regional Council Planning Scheme 2015, version 2*, and
- 15 Spindrift Road, Clinton - Economic Development Queensland which is governed by the *Clinton Development Scheme*.

1.4 Scope

The scope of the assessment presented in this report is as follows:

- assess public transport, pedestrian and cycling accessibility to/from site and on-site
- calculate the anticipated development traffic generation and its impact to the external road network
- assess proposed car and bicycle parking supply against relevant Council requirements
- review design of on-site traffic and transport operations against Australian Standards and Council's requirements
- assess site access and access configuration against Council requirements, and
- assess servicing arrangements.

2. Existing conditions

2.1 Road network

2.1.1 Road links

The hierarchy of the road network surrounding the development is shown in **Table 2.1.1**.

Table 2.1.1 Surrounding road network

Road name	Jurisdiction	No. of lanes (two-way)	Posted speed limit	Median divided	Hierarchy	Footpath / bicycle lanes	On-street parking
Harvey Road	Council	2	60km/h	No	Collector street	Footpath one side / bicycle lanes limited to intersections	Informal parking both sides
Spindrift Road	Council	2	50km/h	No	Access street	Footpath one side / no bicycle lanes	Formal parking both sides

2.1.2 Key intersections

In addition to the surrounding road network, there is one key intersection in proximity to the proposed development which development generated traffic will utilise. This is the Harvey Road / Spindrift Road 3-leg single lane roundabout as shown in **Figure 2.1.2**.



Figure 2.1.2 Key intersection

2.2 Public transport

The development is located within walking distance (<400m) of three public transport stops (Stop ID's: 760043, 760044, 760048). The closest stop, known as 'Carinya Drive near Harvey Road hail 'n' ride' (Stop ID: 760048) is located approximately 160m south of the development's Harvey Road access (**Figure 2.2**). This stop is serviced by a single public bus route, known as '506', which has an average frequency of 60 minutes throughout the day.



Figure 2.2 Public transport in proximity to site

2.3 Active transport

The subject site is serviced by a reasonable network of pedestrian footpaths as shown in **Figure 2.3.1** which illustrates the active transport network surrounding the proposed development.

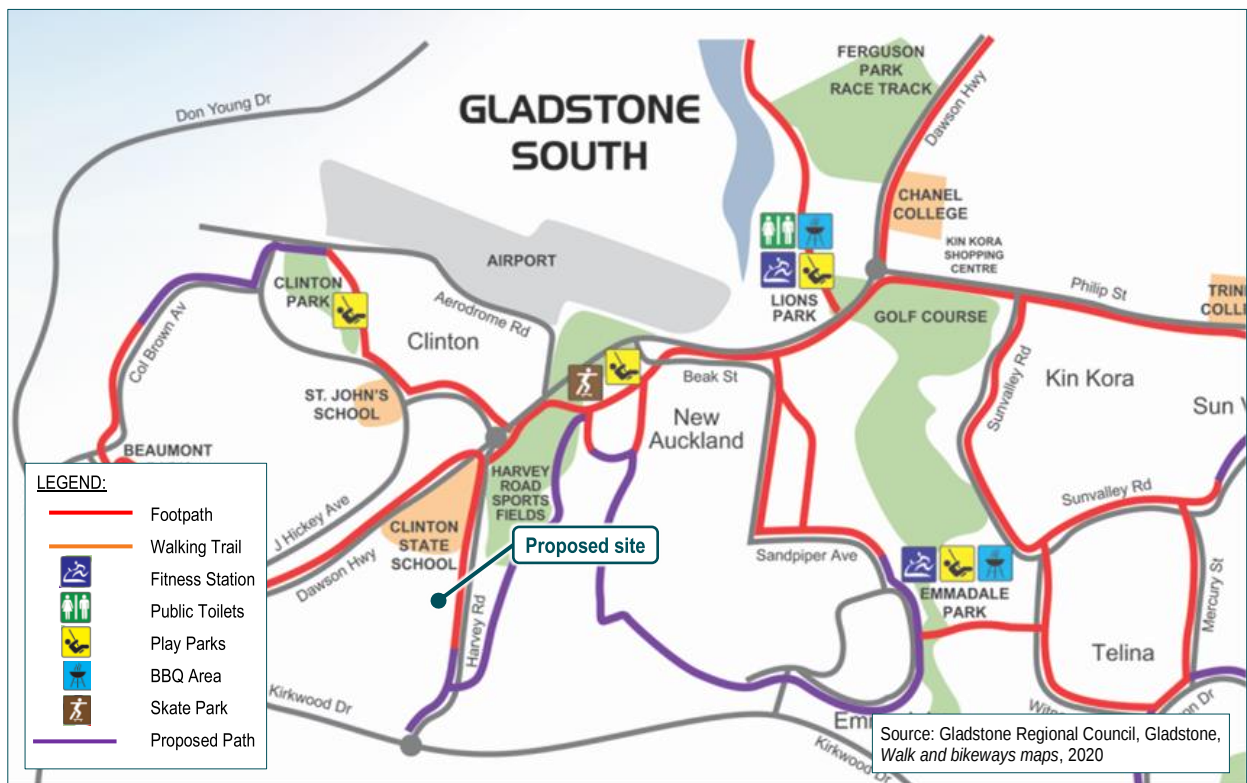


Figure 2.3.1 Active transport network

The subject site is located on Harvey Road and is in proximity to the Dawson Highway and Kirkwood Road which form part of TMR's *Central Queensland Principal Cycle Network*. The principal cycle network surrounding the proposed development and route priorities are illustrated in **Figure 2.3.2** and **Figure 2.3.3**.

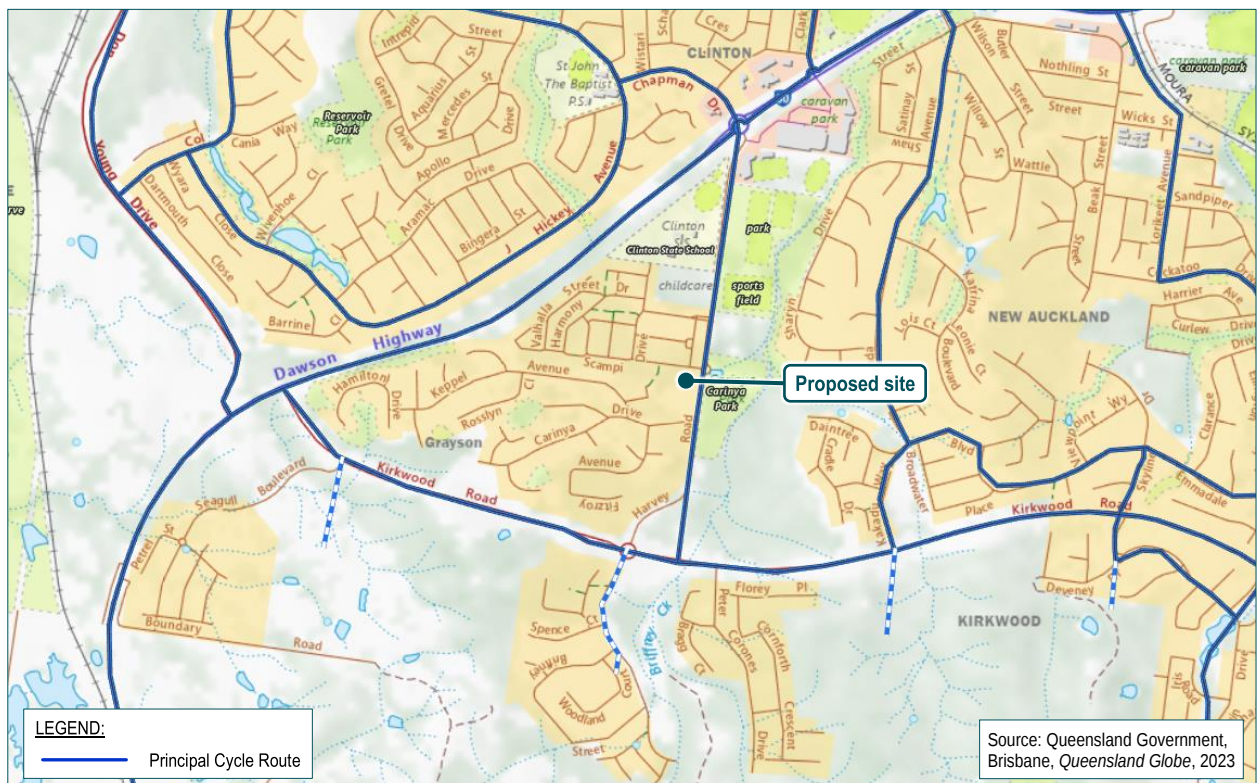


Figure 2.3.2 Principal cycle network

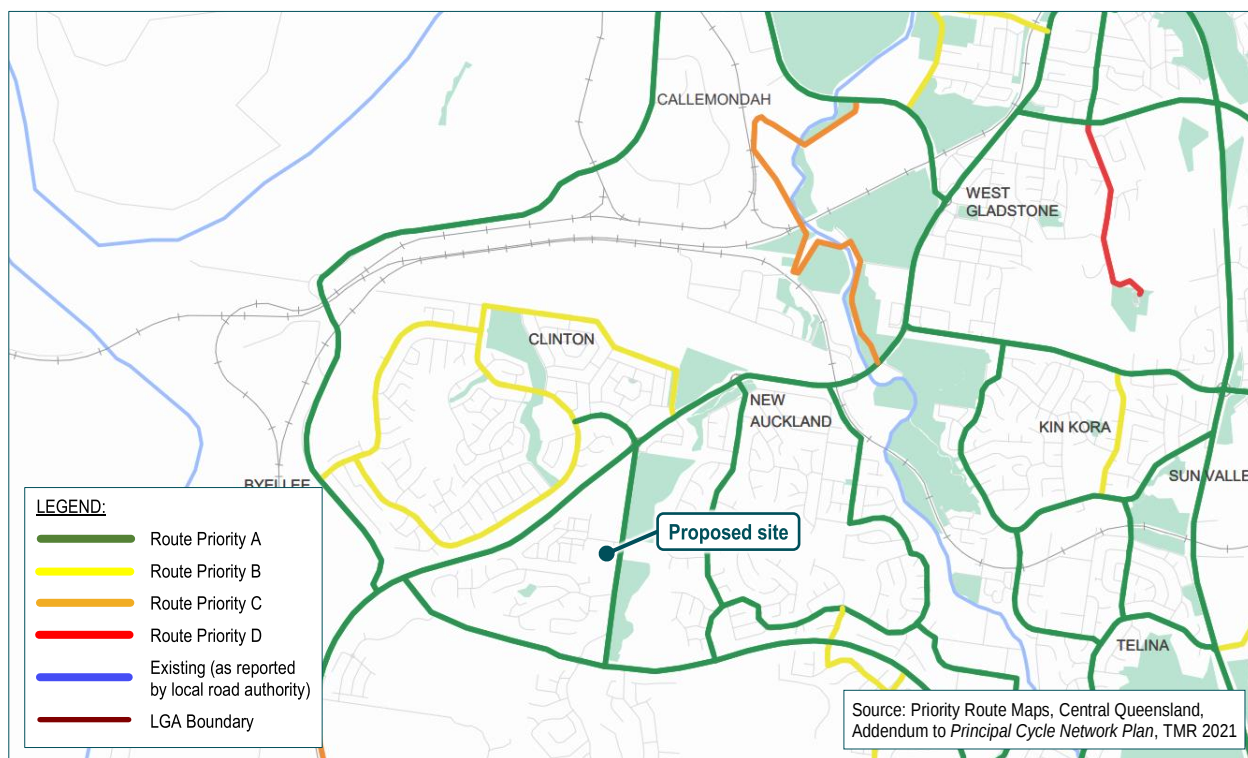


Figure 2.3.3 Priority route map

3. Traffic impact assessment

3.1 Traffic generation

A review of Council's *Planning Scheme – Planning scheme policies (V2)* has not identified traffic generation rates for the proposed land uses. In lieu of Council specific traffic generation rates, traffic generation rates for the proposed development have been based on the rates for child care centre and multiple dwelling uses provided in TMR's *Traffic Generation Data, 2006 – 2018* and the *RMS Guide to Traffic Generating Developments – Technical Direction (TDT 2013/04)* respectively.

A summary of the expected development traffic generation is shown in **Table 3.1**.

Table 3.1 Development traffic generation rates

Land use	Quantity	Peak period	Traffic generation rate	Traffic generation volume
Child care centre	125 child placements	AM	0.66 trips per child placement	83
		PM	0.48 trips child placement	60
Multiple dwelling	24 car parking spaces	AM	0.35 trips per car space	9
		PM	0.26 trips per car space	7
Total AM peak hour trips				92
Total PM peak hour trips				67

3.2 Trip distribution

3.2.1 In / Out directional splits

TMR's guide to Traffic Impact Assessment (GTIA) stipulates:

"Peak hour development-generated traffic volumes need to be split into entry (IN) and exit (OUT) volumes for assignment of this traffic to the access intersection and to the surrounding road network."

Typical residential In / Out traffic splits were adopted for the multiple dwellings (i.e. 30% In / 70% Out in the AM peak hour, and 60% In / 40% Out during the PM peak hour). For the child care centre a traffic split of 50% In / 50% Out was adopted.

The AM and PM In / Out traffic splits of the generated vehicle trips are provided in **Table 3.2.1**.

Table 3.2.1 Development traffic splits

Land use	Traffic generation (trips)	Peak period	IN%	IN trips	OUT%	Out trips
Child care Centre	83	AM peak	50%	41.5	50%	41.5
	60	PM peak	50%	30	50%	30
Multiple dwelling	9	AM peak	30%	3	70%	6
	7	PM peak	60%	4	40%	3
Total AM IN Trips				45	Total AM OUT Trips	48
Total PM IN Trips				34	Total PM OUT Trips	33

3.3 Traffic impacts

Given the geographical location of the development, all inbound and outbound child care centre development generated traffic will utilise Harvey Road to enter / exit the development while all residential traffic will utilise Spindrift Road to enter / exit the development. This results in one inbound and outbound movement every 1.45 minutes in the AM peak hour and one inbound and outbound movement every 2 minutes in the PM peak hour on Harvey Road.

On Spindrift Road, it is expected that one inbound movement will occur every 20 minutes and 15 minutes in the AM and PM peak hours respectively, and one outbound movement every 10 minutes and 20 minutes in the AM and PM peak hours respectively.

Regarding the multiple dwellings, given the low traffic volume expected to be generated, there will be no significant impacts on the safety and efficiency of the Spindrift Road and the Hillclose Estate road network. The construction of a roundabout at the intersection of Harvey Road and Spindrift Road is sufficient to cater for the low volume of traffic expected to be generated from the multiple dwellings.

Regarding the child care centre, Harvey Road is classified as a Collector Road which comprises a daily traffic volume capacity of 3,000 vehicles per day (vpd) in accordance with Council's *Policy No. P-2014/31 Road Hierarchy*. Due to the nature of a child care centre and its concentration of vehicle trips in the peak hours, a daily traffic generation of 375 vpd is likely based on a daily traffic generation rate of 3 trips per child in accordance with TMR's *Traffic Generation Data, 2006 – 2018*. This daily traffic volume being significantly less than the capacity of Harvey Road which currently only services residential developments south of Clinton State School. It is also likely that the proposed development will mostly be used by existing residents in Clinton and therefore a portion of the trips generated by the child care centre could be classified as 'linked' or 'drop in' trips, rather than new trips.

In addition to the above, the Harvey Road / Spindrift Road 3-leg single lane roundabout was recently constructed in 2019 and is assumed to have been designed to cater for future traffic growth in the Clinton area.

Based on the above, the proposed development is not expected to have a significant impact on the surrounding external road network and mitigation measures are not considered warranted.

4. Parking assessment

4.1 Car parking requirements

The car parking requirements for the development have been calculated in accordance with the land use requirements stipulated in Council's *Planning Scheme – Planning scheme policies (V2)* as shown in **Table 4.1.1**.

Table 4.1.1 Car parking requirements

Land use	Quantity	Component	Car parking rate	Car parking requirement
Child care centre	125	Child placements	1 space per 5 child placements	25
	19	staff	1 space per full time employee (staff)	19
Multiple dwelling	13	dwellings	1.5 spaces per dwelling	20
Total car parking requirement				64

The total car parking requirement for the development is 64 car parking spaces comprising 20 resident spaces and 44 spaces for the child care centre. Council's *Planning Scheme – Planning scheme policies (V2)* also requires provision be made for the setting down and picking up of children.

The car parking requirements for people with disabilities (PWD) has been calculated in accordance with the *National Construction Code (NCC) – Volume 1* as shown in **Table 4.1.2**

Table 4.1.2 PWD car parking requirement

Land Use	Class of building	Car parking rate	Parking spaces	PWD parking requirement
Child care Centre	9b	1 space for every 100 spaces	44	1
Multiple dwelling	2	No PWD car parking requirement for Class 2 buildings		

4.2 Car parking provision

A summary of the development's car parking provision is provided in **Table 4.2.1**, which demonstrates compliance with Council's *Planning Scheme – Planning scheme policies (V2)* and the NCC. For the multiple dwelling land use, 13 resident spaces are provided within enclosed garages and 11 freely accessible spaces are provided adjacent to the enclosed garages for townhouses 2-12.

Table 4.2.1 Development car parking provision

Location	Resident spaces	Staff spaces	Visitor spaces	PWD spaces	Totals
Child care centre	-	19	24	1	44
Multiple dwelling	24	-	-	-	24
Sub-totals (by user)	24	19	24	1	68

With respect to Council's requirement for a set down area, it is considered that this requirement is not applicable to the proposed use given that the development comprises a child care centre. Under child care regulations, it is a legal requirement for parents to sign in and sign out their children every day, meaning that all parents must accompany their child into / out of the centre to complete the sign in / out process and cannot simply drop their child off. On this basis, no set down area is proposed as part of the development.

Car parking design for the proposed development has been undertaken generally in accordance with Australian Standard AS2890.1 – *Parking Facilities*. **Table 4.2.2** shows design parameters for each user class in accordance with AS2890.1.

Table 4.2.2 Car parking design requirement

User class	Parking bay width (m)	Parking bay length (m)	Aisle width (m)	Use
1	2.4	5.4	6.2	Staff
1	2.4	5.9-6.2	3.6	Staff (parallel)
1A	2.4	5.4	5.8	Residents
3	2.6	5.4	5.8	Child care centre visitors
4	2.4 ¹	5.4 ¹	5.8	PWD
Notes				
1. In addition to these parameters, a shared area is also provided adjacent to the parking space.				

Other specific design parameters relating to the parking and internal road layout design have been developed generally in accordance with Australian Standard AS2890.1 – *Parking Facilities* and Council's *Planning Scheme – Planning scheme policies (V2)*. For further details regarding the grading design of the internal roadways, refer to the civil engineering design package. In addition, the garage for the multiple dwellings is to comprise a minimum door opening width of 2.4m and internal dimensions comprising a width of 3.0m and length of 6.0m in accordance with AS2890.1 – *Clause 5.4 (a)*.

Any fencing between proposed Lot 1 and proposed Lot 2 shall be designed to withstand vehicle impacts and prevent vehicle penetration as the roadway is located adjacent to the outdoor play area for the child care centre.

4.3 Bicycle parking

Bicycle parking for the development has been calculated in accordance with the land use requirements stipulated in Council's *Planning Scheme – Planning scheme policies (V2)* as shown in **Table 4.3**. There are no requirements for end of trip facilities for the proposed land uses.

In the absence of Council specific user classes, it is assumed that the child care centre bicycle parking will be for staff and the multiple dwelling bicycle parking will be for residents.

Table 4.3 Bicycle parking requirements

Land use	Quantity	Bicycle parking rate	Parking requirement
Child care Centre	918m ² GFA	1 space per 100m ² of GFA (minimum 4 spaces)	10
Multiple dwelling	13 dwellings	1 space per 4 dwellings (minimum 4 spaces)	4
Total bicycle parking requirement			14

4.4 Bicycle parking provision

The development provides a total of 23 bicycle parking spaces comprising 10 spaces for the child care centre and 13 spaces for the multiple dwellings. Bicycle parking for staff of the child care centre will be provided within a secure facility with floor mounted horizontal bicycle rails and residents of the multiple dwellings will use the enclosed garages to store bicycles (**Appendix A**).

Bicycle parking for the proposed development has been designed to comply with AS2890.3 as shown in **Table 4.4**.

Table 4.4 Bicycle parking design requirements

User	Security Level	Min. Parking envelope width (m)	Min. Parking envelope length	Min. Aisle width (m)
Staff / resident	B ¹	0.5	1.8	1.5
Notes				
1. Parking requirements based on a horizontal parking layout with floor mounted rails.				

5. Access and servicing assessment

5.1 Access arrangement

The development proposes access from two road frontages, including Spindrift Road and Harvey Road (**Figure 5.1**). The Spindrift Road access will service the multiple dwelling land use on Lot 1 and cater for all movements. The Harvey Road access will service the child care centre on proposed Lot 2 and be limited to left-in, left-out movements.

Both the Spindrift Road and Harvey Road vehicle crossings have been designed in accordance with the Capricorn Municipal Development Guidelines *Standard Drawing – CMDG-R-042A – Urban Commercial / Industrial Driveway* for a 'B1' type vehicle crossing and comprise widths of 6.4m and 7.0m respectively. With both the Spindrift Road and Harvey Road frontages including a width less than 12.0m, a vehicle crossing of type 'B1' is required which is considered to be a safe and functional outcome for the required vehicle types and volumes (**Appendix B**).

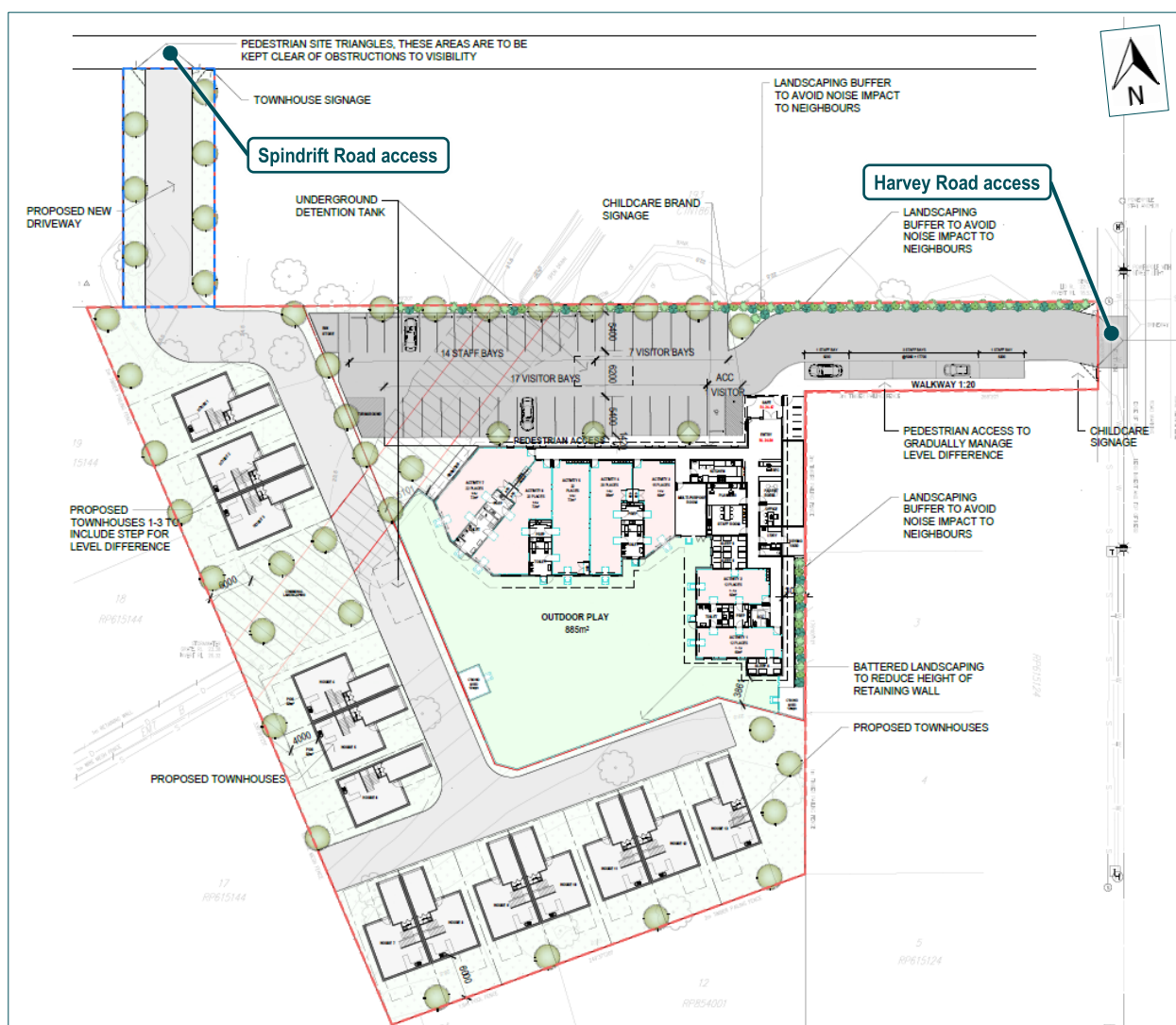


Figure 5.1.1 Access arrangement

To enforce left-in, left-out movements at the proposed Harvey Road access, the existing traffic island on the southern leg of the Harvey Road / Spindrift Road 3-leg roundabout will be extended 21m (**Figure 5.1.2**). The treatment being consistent with the Dixon Drive / Creekview Drive priority-controlled intersection which has the traffic island on the eastern leg of the Dixon Drive / Kahler Close 4-leg roundabout extended beyond Creekview Drive (**Figure 5.1.3** and **Figure 5.1.4**).

The centre median will be 150mm high and at least 500mm wide inclusive of a Type 4 – Semi-Mountable Kerb in accordance with the Capricorn Municipal Development Guidelines *Standard Drawing – CMDG-R-60 – Standard Kerb and Channel Profiles* and Austroads *Guide to Road Design Part 3: Geometric Design (2021)*. Importantly, an absolute minimum through lane width of 3.5m will be maintained at the narrowest point on Harvey Road. Vehicles travelling southbound on Harvey Road will use the Harvey Road / Kirkwood Road roundabout to turnaround and turn left into the development site.

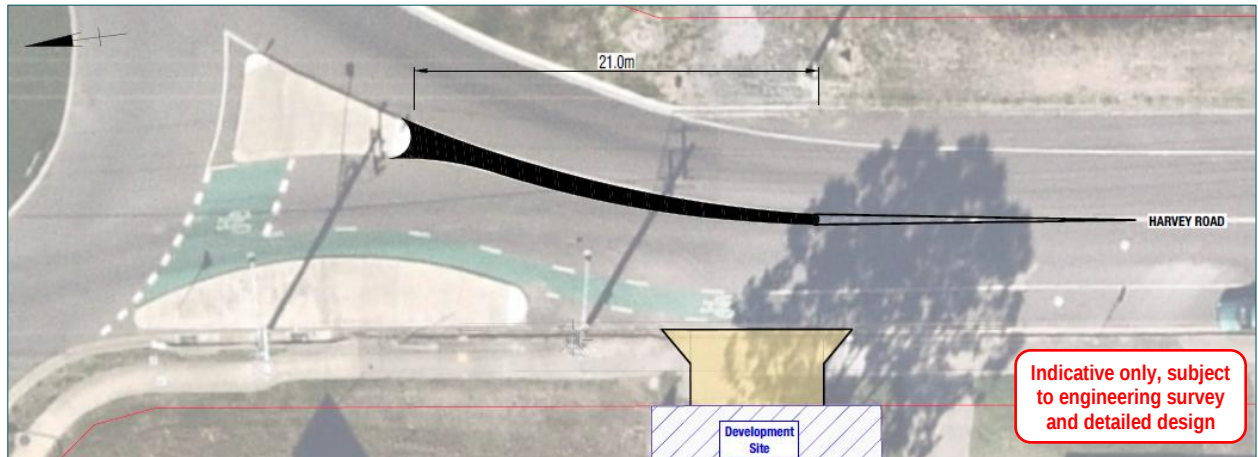


Figure 5.1.2 Extended centre median detail

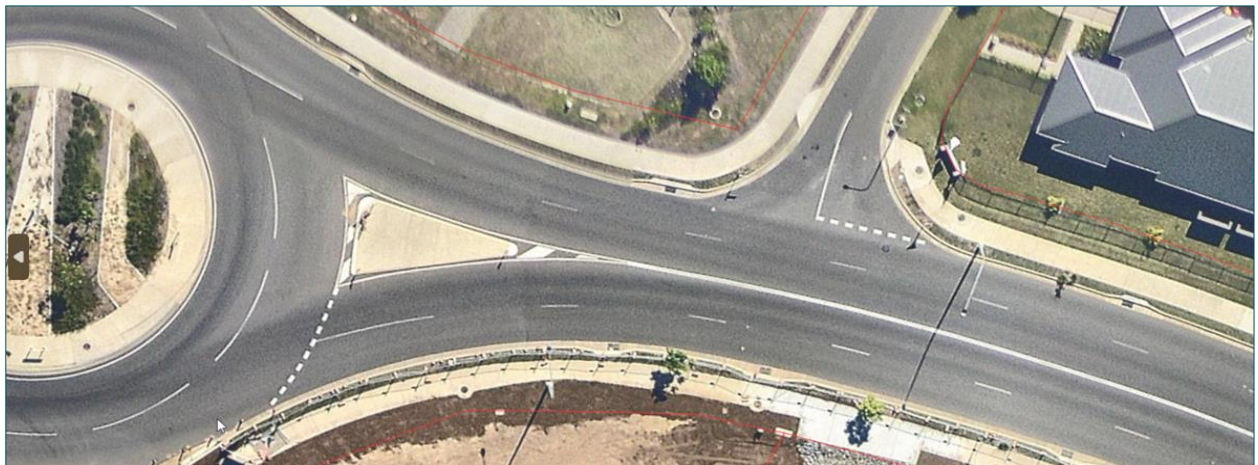


Figure 5.1.3 Dixon Drive / Creekview Drive prior to extension

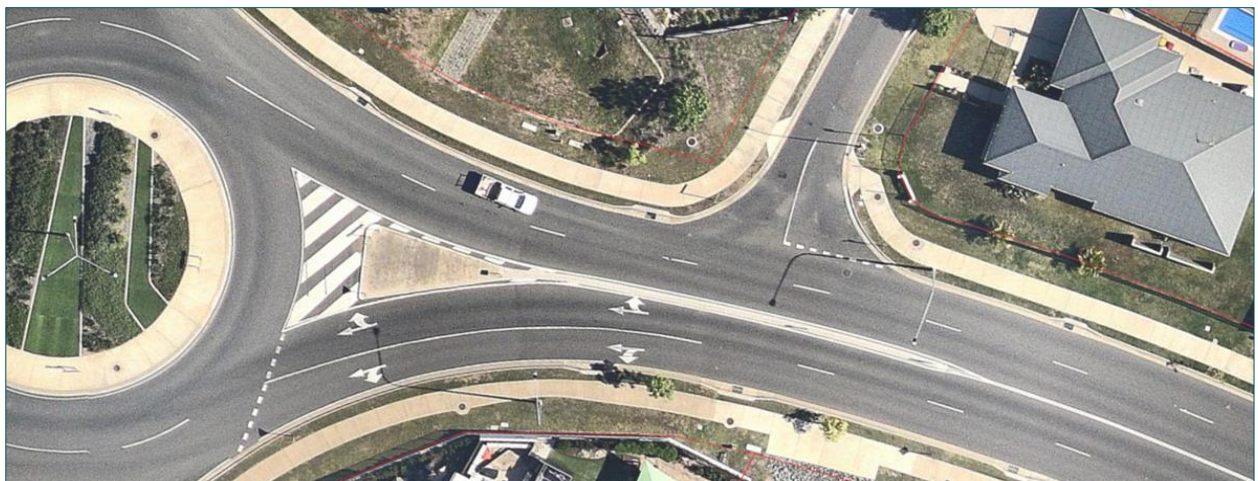


Figure 5.1.4 Dixon Drive / Creekview Drive after extension

5.2 Sight distance assessment

A sight distance assessment has been undertaken in accordance with AS2890.1 and AS2890.2 to ensure that the location of the vehicle crossings provide sufficient sight distance for road users to find a safe gap in oncoming traffic when leaving the site. The minimum gap sight distance requirements (**MGSD**) for a vehicle departing the site are provided in **Table 5.2**. The required sight distance has been calculated based on a frontage road speed of 60km/h along Harvey Road and 50km/h along Spindrift Road.

Table 5.2 Sight distance requirements

Frontage road	Vehicle speed assessed (km/h)	Sight distance requirement
Harvey Road	60km/h	83m
Spindrift Road	50km/h	69m

Figure 5.2.1 and **Figure 5.2.2** show the required sight distance and associated sight lines for vehicles travelling along Harvey Road and Spindrift Drive to vehicles departing the development site, demonstrating compliance with specified requirements.



Figure 5.2.1 Sight distance assessment – Harvey Road



Figure 5.2.2 Sight distance assessment – Spindrift Drive

5.3 Servicing

A review of Council's *Planning Scheme – Planning scheme policies (V2)* does not stipulate service vehicle requirements for the proposed land uses. In the absence of Council specific service vehicle requirements, the service vehicle requirements for the proposed development have been based on its operation as summarised in **Table 5.3**.

Table 5.3 Proposed service vehicle requirement

Land use	Proposed service vehicle
Child care centre	Van (B99 passenger vehicle)
Multiple dwelling	8.8m Medium Rigid Vehicle (MRV) / removalist vehicle

Based on the operation of a child care centre, typical servicing is undertaken using a van to deliver supplies to the site and transport children. These vehicles can utilise the proposed car parking spaces to stand on site, undertake servicing and then depart the site. A van is typically 5.2m in length and comprises the same vehicle characteristics as a B99 design vehicle described in *AS2890.1*. As the proposed car parking layout complies with the spatial requirements stipulated in *AS2890.1*, a van will be able to utilise the proposed staff / visitor parking spaces. Deliveries will be scheduled outside of peak pickup and drop-off times to avoid this activity taking place at these times.

Regarding the multiple dwelling component of the development, the largest vehicle expected on site comprises an 8.8m Medium Rigid Vehicle (MRV) / removalist vehicle. Servicing for the individual dwellings is expected to occur within the driveway which is 6.4m wide and therefore sufficient for a passenger vehicle to pass a standing MRV.

A swept path assessment has been undertaken using AutoTURN software to demonstrate that a MRV can satisfactorily enter proposed Lot 1 in a forward gear, circulate the site, utilise the driveway to turnaround and then exit the development in a forward gear (**Appendix B**).

6. Conclusion

This report presents the findings related to assessment of traffic and transport related matters for a proposed development located at 6 Harvey Road and 15 Spindrift Road, Clinton. Based on the assessment undertaken, it can be concluded that the proposed development will not introduce adverse traffic or transport impacts which would prevent its approval with appropriate conditions.

7. References

1. Gladstone Regional Council, *Gladstone Regional Council Planning Scheme, 2015 Version 2*, Gladstone.
2. Queensland Government (Department of Transport and Main Roads), *Traffic Generation Data - 2006 - 2018*, November 2018, Brisbane.
3. New South Wales Government (Roads and Maritime Services), *Guide to Traffic Generating Developments - Technical Direction (TDT2013/04)*, Sydney, 2014.
4. Queensland Government (Department of Transport and Main Roads), *Guide to Traffic Impact Assessment*, December 2018, Brisbane.
5. Australian Building Codes Board, *National Construction Code (NCC) Volume 1*, May 2019.
6. Standards Australia/Standards New Zealand 2004, *AS2890.1: Off-street Car Parking Facilities*.
7. Standards Australia/Standards New Zealand 2002, *AS2890.2: Off-street Commercial Vehicle Facilities*.
8. Standards Australia/Standards New Zealand 2016, *AS2890.3: Bicycle Parking*.

Appendix A Plans of development

PRELIMINARY

Rev	Amendment	Date
-	-	-
-	-	-

SITE COVER	
PROPOSED LOT 1 - 13 TOWNHOUSES	23.1%
PROPOSED LOT 2 - CHILD CARE CENTRE	24.3%

PEDESTRIAN SITE TRIANGLES, THESE AREAS ARE TO BE KEPT CLEAR OF OBSTRUCTIONS TO VISIBILITY

 ECONOMIC DEVELOPMENT
QUEENSLAND (EDQ) JURISDICTION

 GLADSTONE REGIONAL COUNCIL
(GRC) JURISDICTION

SITE PLAN

1:500



Project
PROPOSED DEVELOPMENT
6 HARVEY RD, CLINTON, QLD, 4680

Drawing
SITE PLAN

Scale	As indicated	Drawn	MD
Client	-		
Date	14/02/2024		
Job No.	202300054		
Dwg No.	DA02		Rev

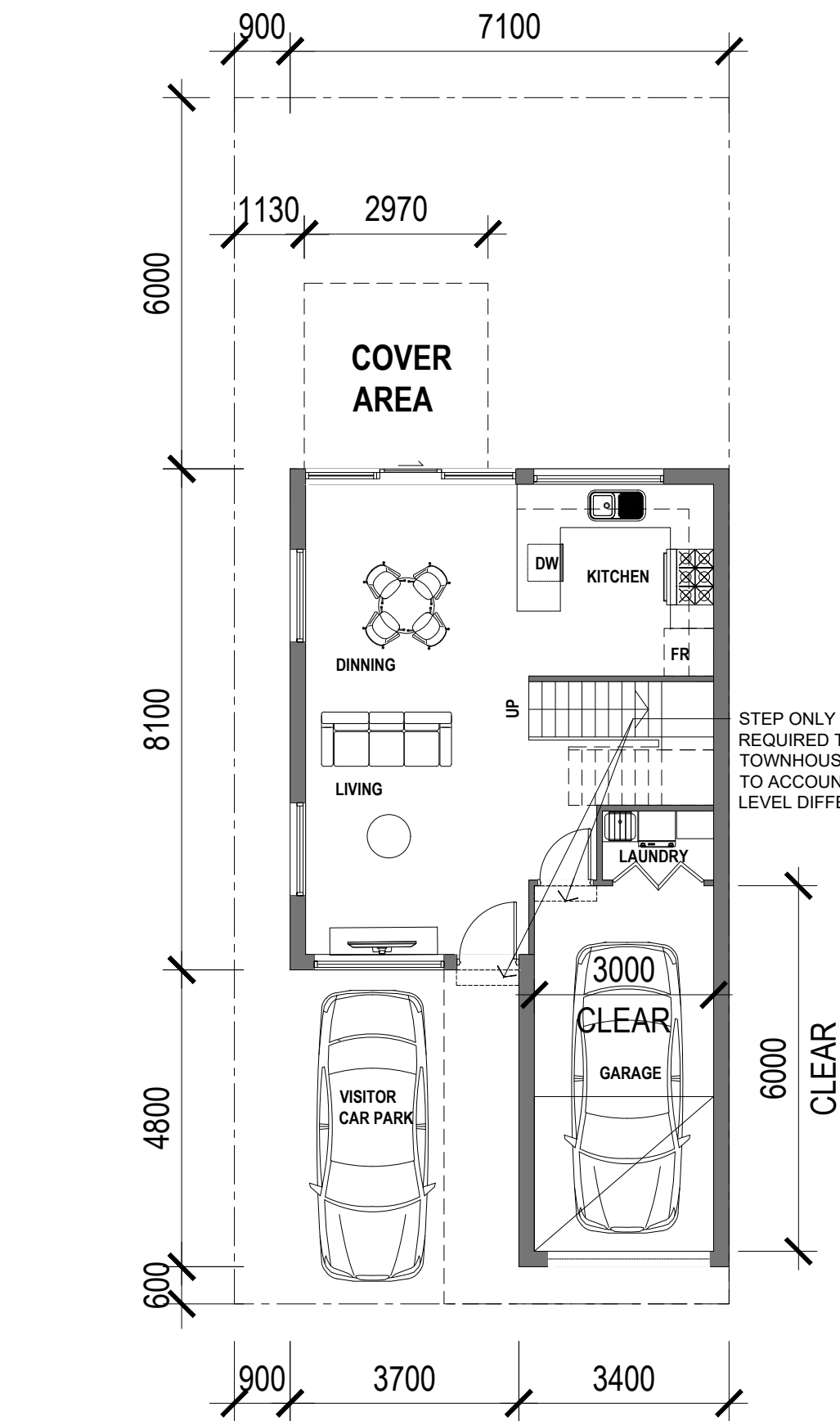


Rev: - A3 SHEET

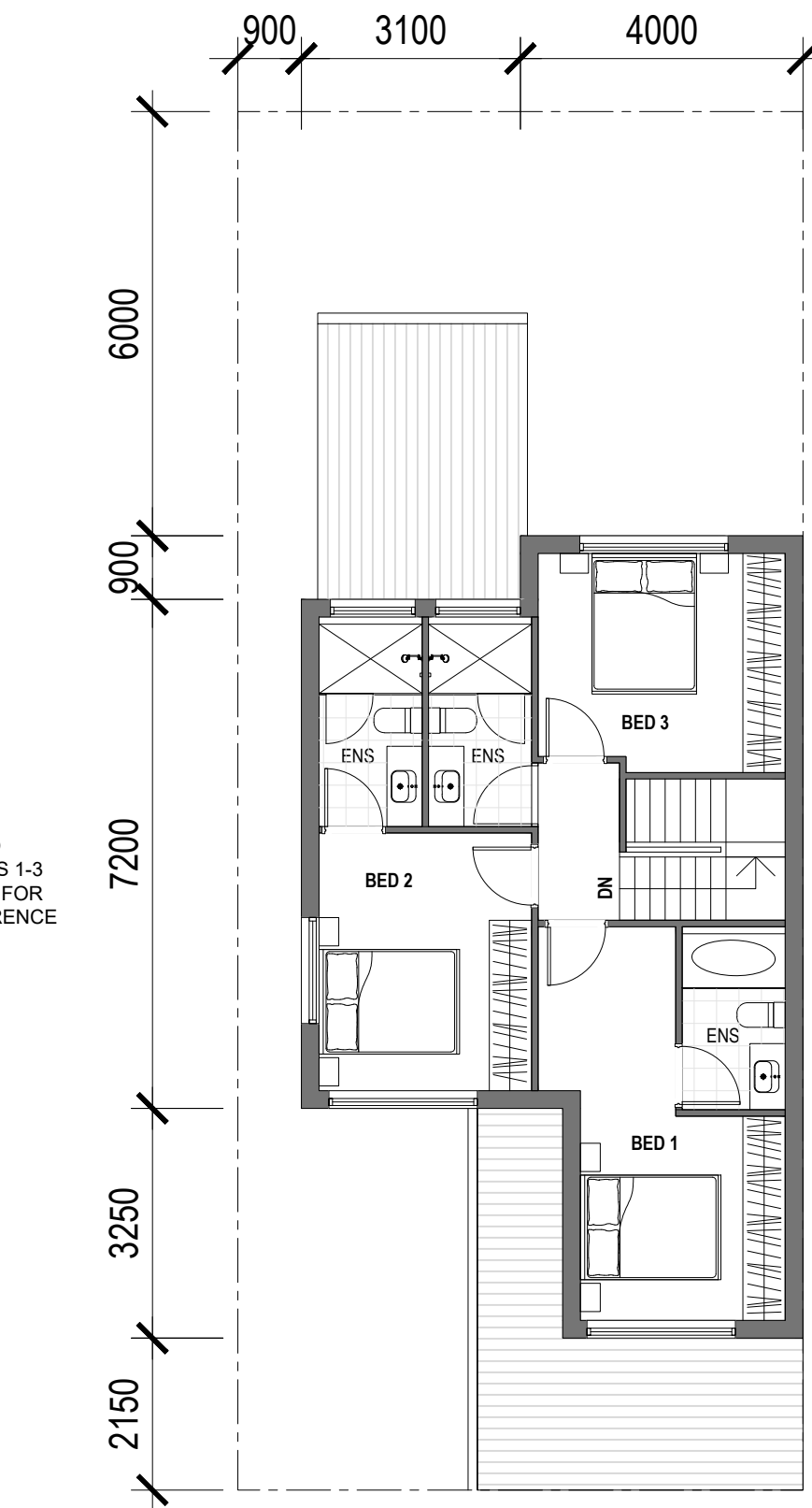


PRELIMINARY

Rev	Amendment	Date
-	-	-
-	-	-



GROUND FLOOR PLAN
1:100



FIRST FLOOR PLAN
1:100

SITE DATA	
13 HOUSES' AREAS	
PER HOUSE DATA	
GROUND LEVEL (GFA):	64m ²
EXTERNAL COVERED AREA:	9m ²
CAR PORT AREA:	17m ²
FIRST FLOOR (GFA):	52m ²
BOUNDARY AREA	156m ²

NOTE:
ALL TOWNHOUSE
ARRANGEMENTS ARE SIMILAR,
MAIN DIFFERENTIATION BEING
SITE BOUNDARIES AND DESIGN
ELEMENTS/ FINISHES

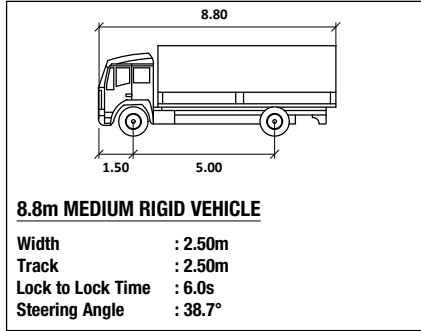
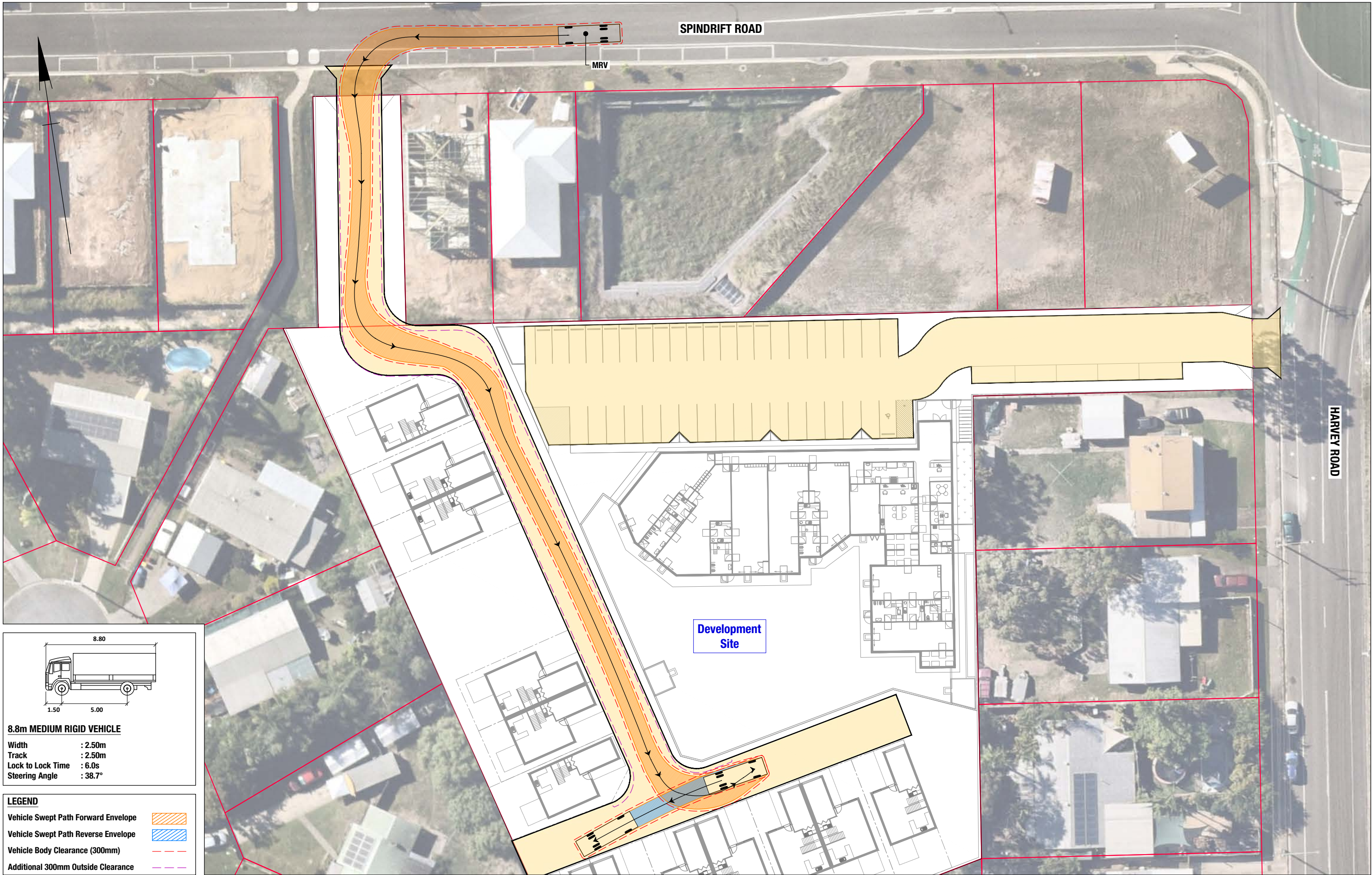


Project
PROPOSED DEVELOPMENT
6 HARVEY RD, CLINTON, QLD, 4680

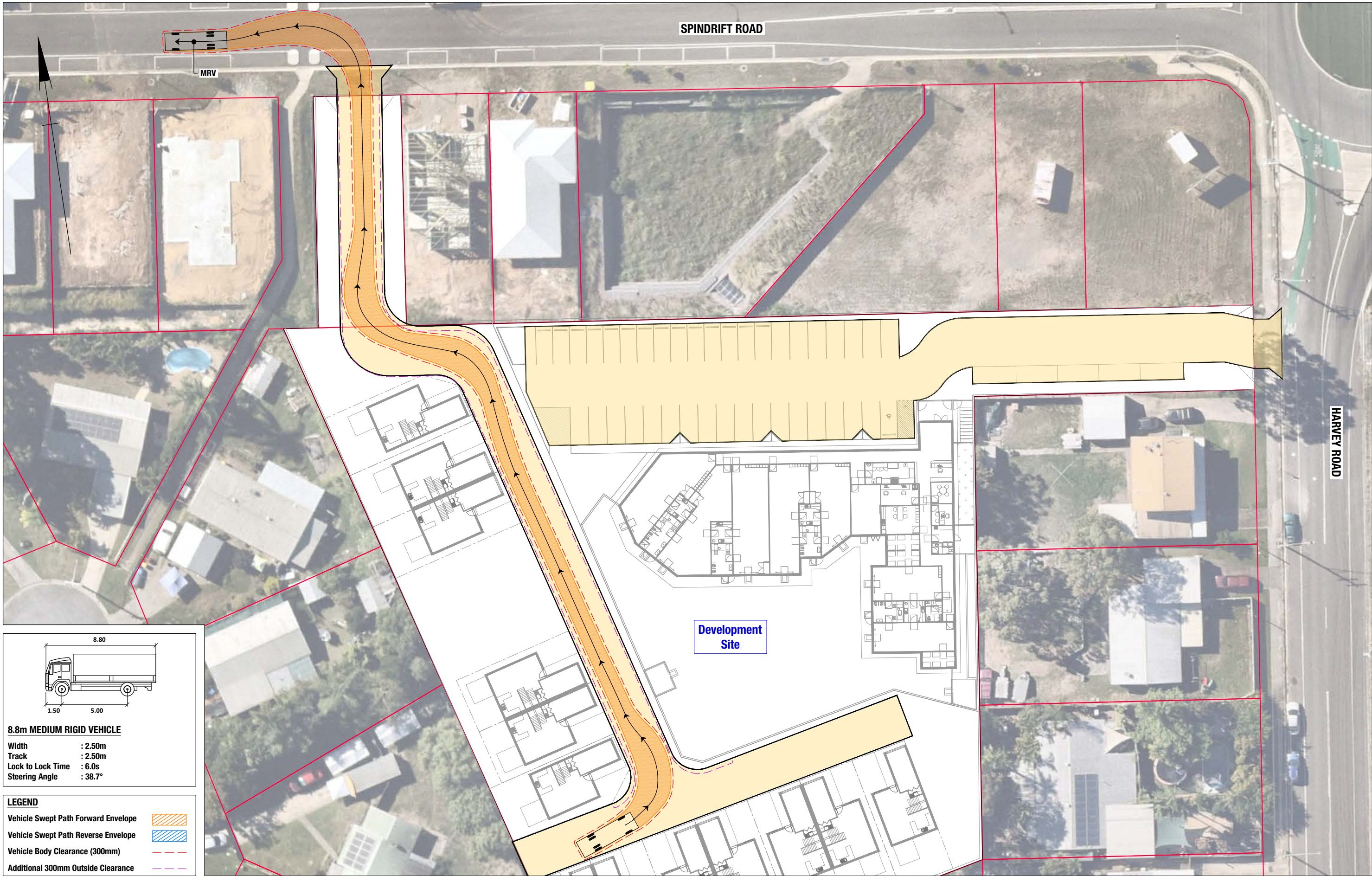
Drawing
TOWNHOUSE FLOOR PLANS

Scale	As indicated	Drawn	XL
Client	-		
Date	14/02/2024		
Job No.	202300054		
Dwg No.	DA08	Rev: -	A3 SHEET

Appendix B Swept path assessment



LEGEND	
Vehicle Swept Path Forward Envelope	
Vehicle Swept Path Reverse Envelope	
Vehicle Body Clearance (300mm)	
Additional 300mm Outside Clearance	



GELEON

ABN 53 143 670 071
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
Tel +61 7 5594 4473

0 2 4 6 8 10m

6 HARVEY ROAD, CLINTON
PROPOSED MIXED USED DEVELOPMENT

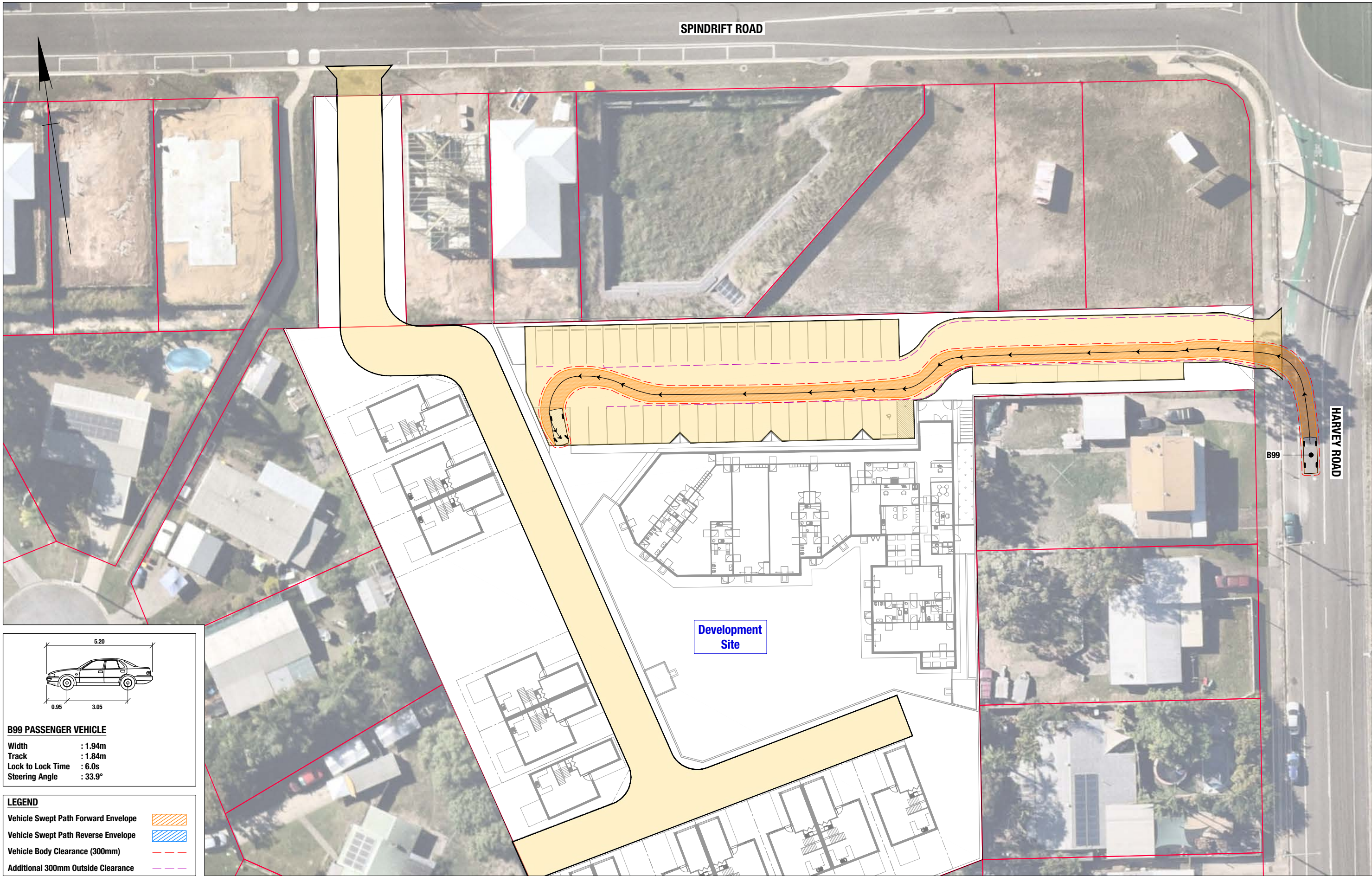
SWEPT PATH ASSESSMENT
8.8m MEDIUM RIGHT VEHICLE (MRV)
CIRCULATION MANOEUVRE OUT OF DEVELOPMENT

Project No.
50802

Issue Date
26/02/24

Drawing No.
50802-SP002-A

Series No. 2 of 6



GELEON

ABN 53 143 670 071
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

0 2 4 6 8 10m

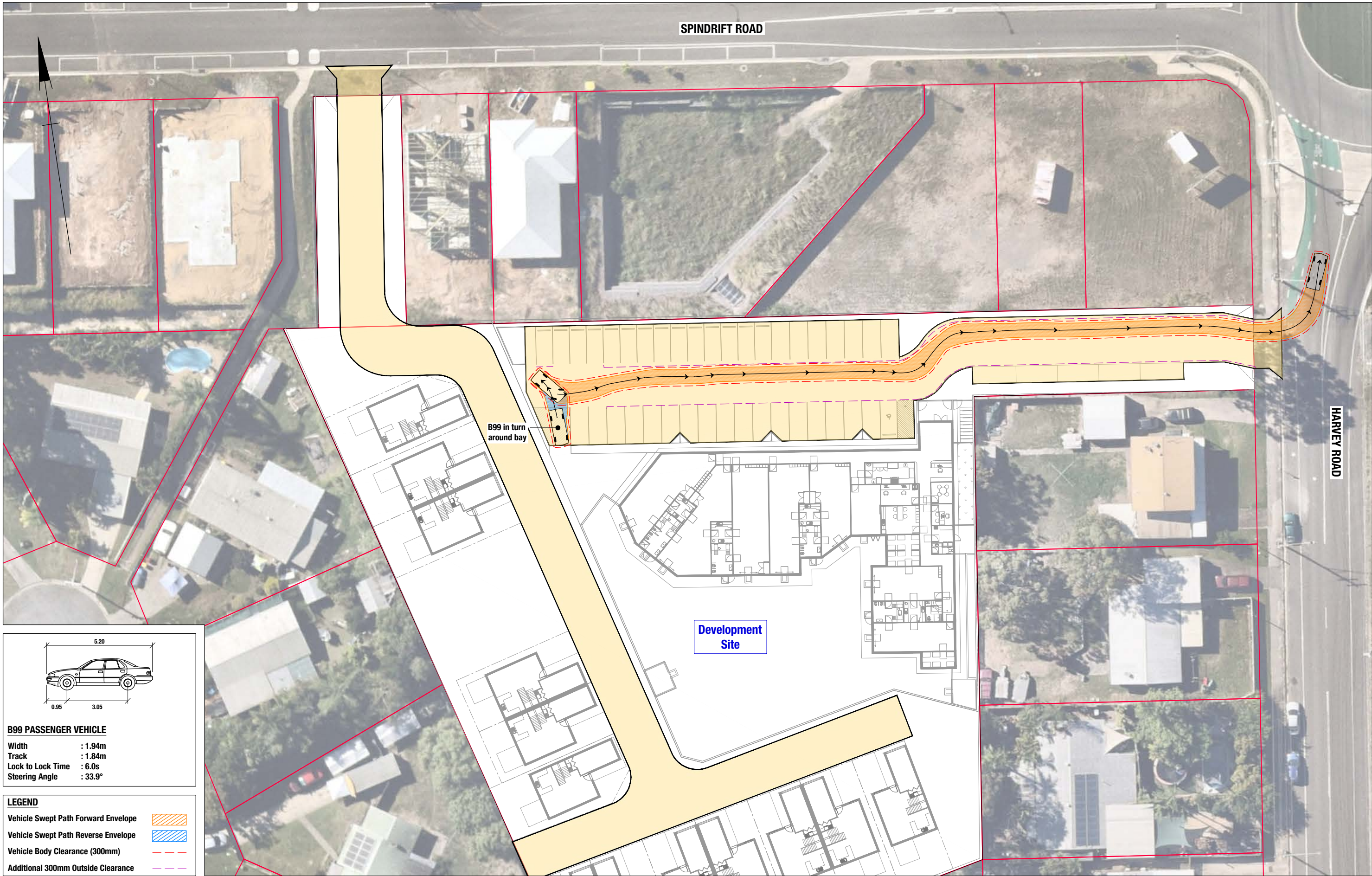
6 HARVEY ROAD, CLINTON
PROPOSED MIXED USED DEVELOPMENT

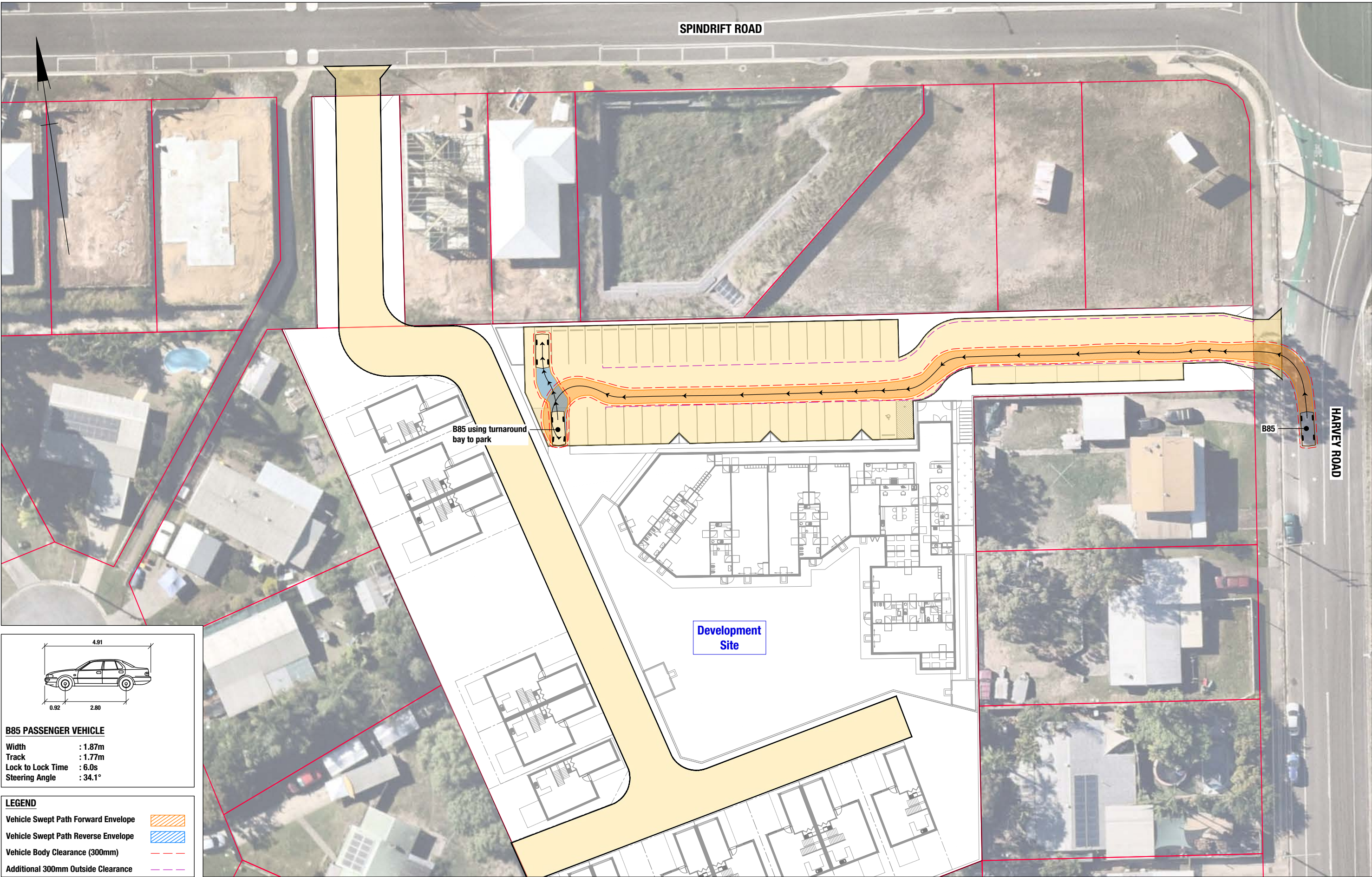
SWEPT PATH ASSESSMENT
B99 PASSENGER VEHICLE
ENTRY MANOEUVRE INTO TURNAROUND BAY

Project No.
50802 Issue Date
26/02/24

Drawing No.
50802-SP003-A

Series No. 3 of 6





GELEON

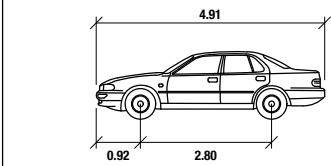
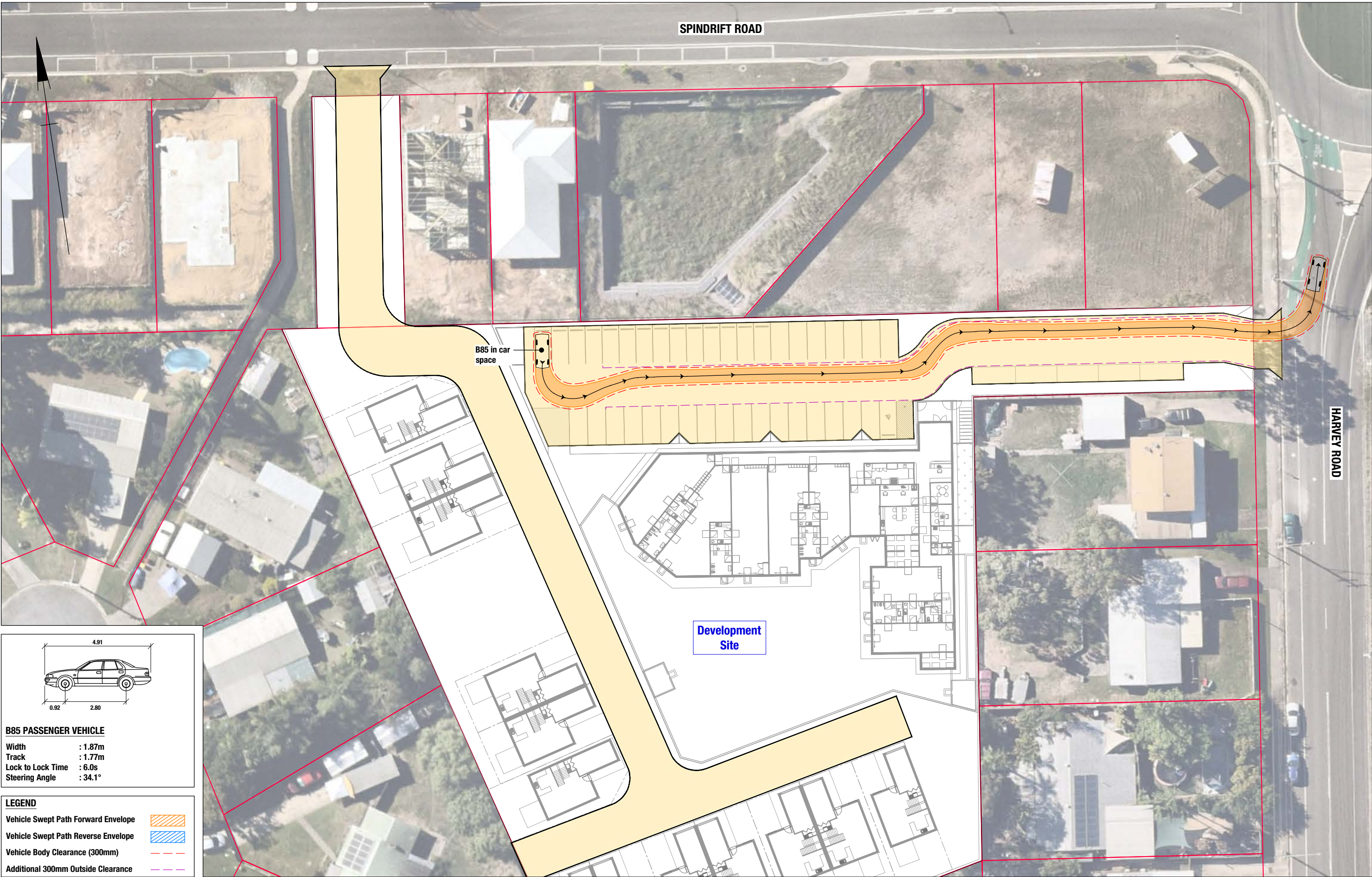
ABN 53 143 670 071
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0 2 4 6 8 10m

6 HARVEY ROAD, CLINTON
PROPOSED MIXED USED DEVELOPMENT

SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
ENTRY MANOEUVRE INTO CAR SPACE

Project No. 50802	Issue Date 26/02/24
Drawing No. 50802-SP005-A	
Series No.	5 of 6



B85 PASSENGER VEHICLE

Width : 1.87m
Track : 1.77m
Lock to Lock Time : 6.0s
Steering Angle : 34.1°

LEGEND

- Vehicle Swept Path Forward Envelope
- Vehicle Swept Path Reverse Envelope
- Vehicle Body Clearance (300mm)
- Additional 300mm Outside Clearance



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0 2 4 6 8 10m

6 HARVEY ROAD, CLINTON
PROPOSED MIXED USED DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE FROM DEVELOPMENT**

Project No.
50802

Issue Date
26/02/24

Drawing No.

50802-SP006-A

Series No. 6 of 6



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