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Your reference:

16 May 2023

Wrenn Pty Ltd
C/- Planit Consulting Pty Ltd
Level 2, 11-13 Pearl Street
Kingscliff NSW 2487

Attention: **Josh Townsend**

Sent via email: josh@planitconsulting.com.au

Dear Josh,

RE: 225 TERRANORA ROAD, BANORA POINT – TRAFFIC IMPACT STATEMENT

1.0 INTRODUCTION

1.1. Background

Bitzios Consulting (Bitzios) has been engaged to prepare a Traffic Impact Statement (TIS) for a Planning Proposal to facilitate a large-lot residential development at 225 Terranora Road, Terranora. The site location and wider road network is shown in Figure 1.1 below.

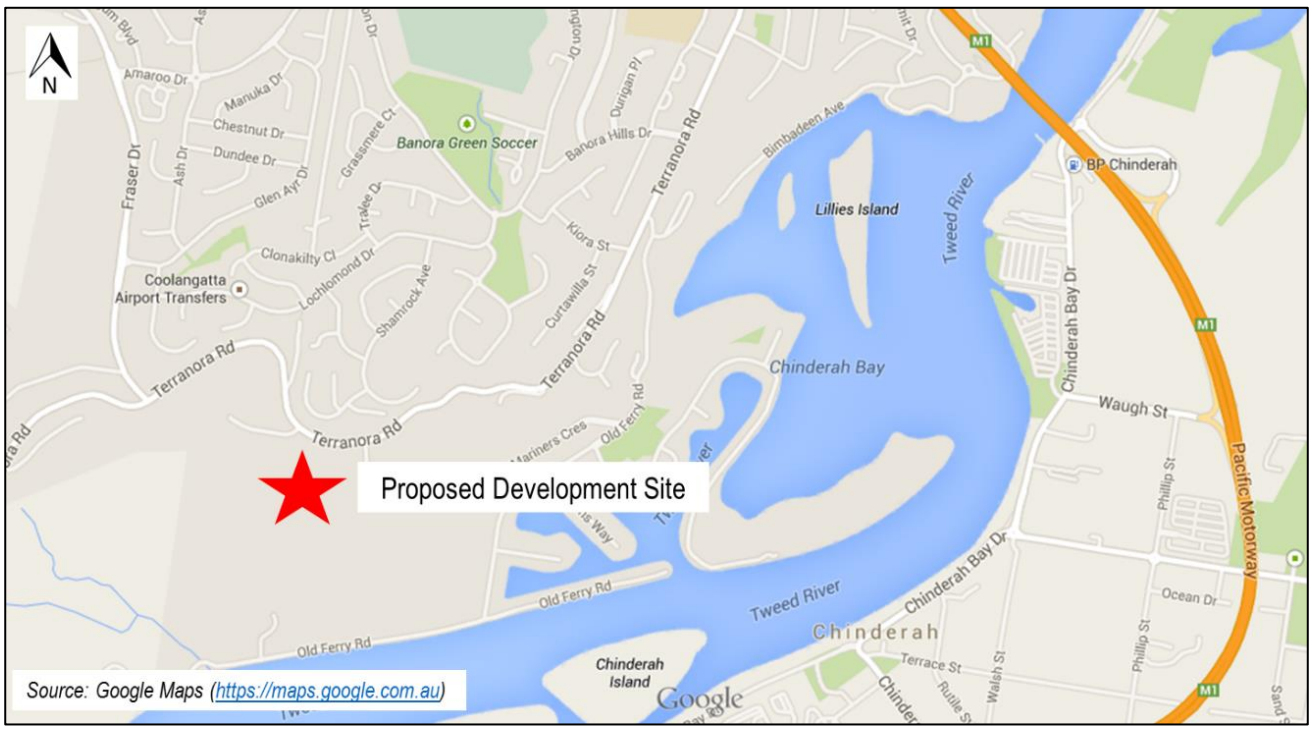


Figure 1.1: Site Location

1.2. Scope of Assessment

The scope of the traffic assessment includes the following:

- Review of the concept development plans, providing traffic and transport considerations for compliance with AS2890 and / or Tweed Shire Council's (Council's) *Parking and Access Code*. Specifically, it includes review of:
  - Access location and form
  - Service vehicle requirements for access and manoeuvring
  - Advice on the suitability of alternative provisions (pedestrian / cyclist) and connections
- Estimation of the development's traffic generation and distribution to the external road network
- Review of the existing access proposed, suitability for use for the proposed development, and any mitigation measures required (if any).

1.3. Existing Site

The existing site is a vacant block, located on 225 Terranora Road, Terranora. Access is via a 10m wide access handle within Lot A DP863169. The existing site and access are shown below in Figure 1.2.

Figure 1.2: Proposed Development Site and Location of Proposed Access Point

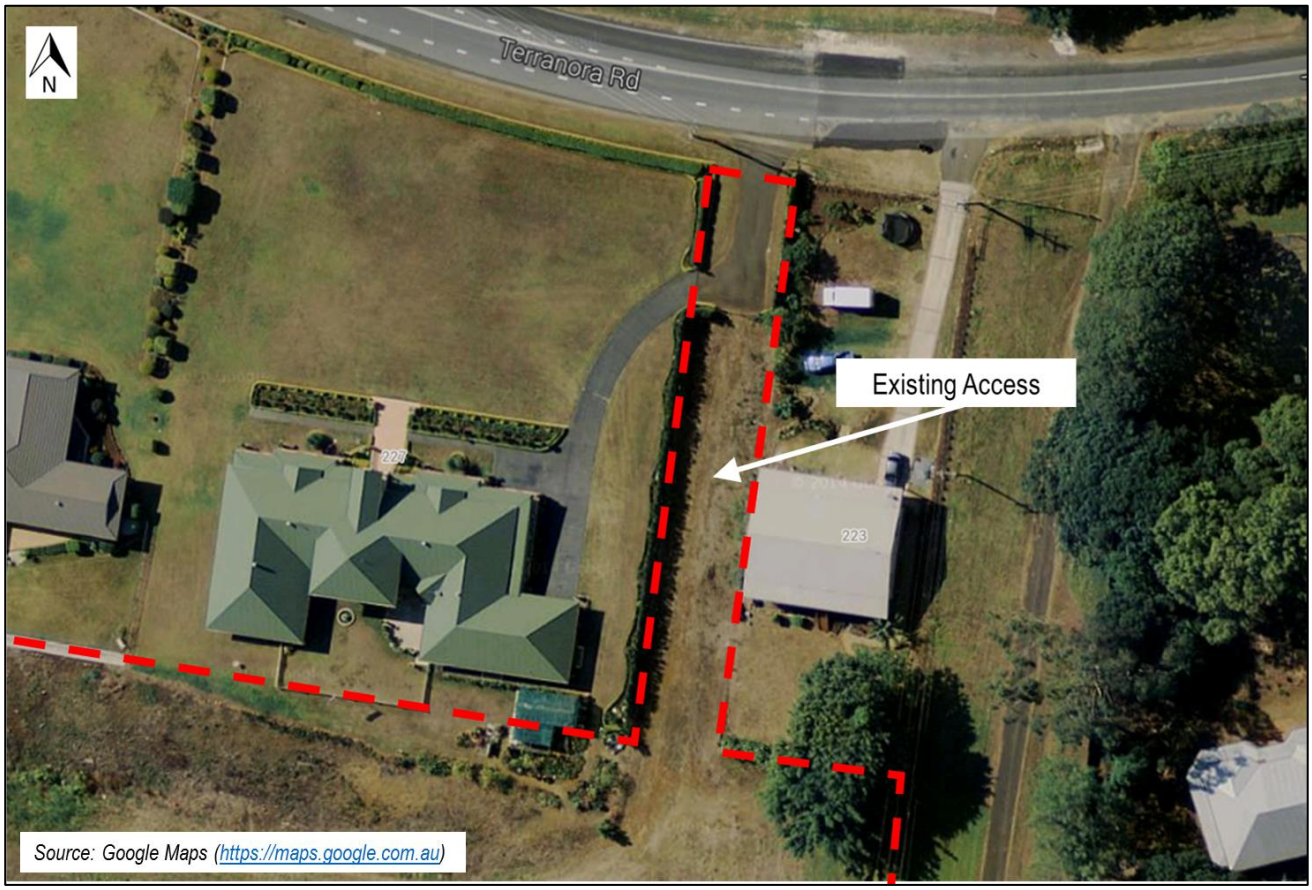


Figure 1.3: Site Access

1.4. Proposed Development Site

The proposed development is for the subdivision of the subject site into three large residential lots. It is proposed that a shared access road / driveway will provide access onto Terranora Road. The proposed location for the access is consistent with the existing access as demonstrated in Figures 1.2. This assessment reviews appropriate access configurations for the lots in consideration of Council's relevant guidelines. The impact of traffic generated during peak periods will also be investigated.

2.0 EXISTING CONDITIONS

2.1. Existing Active Transport

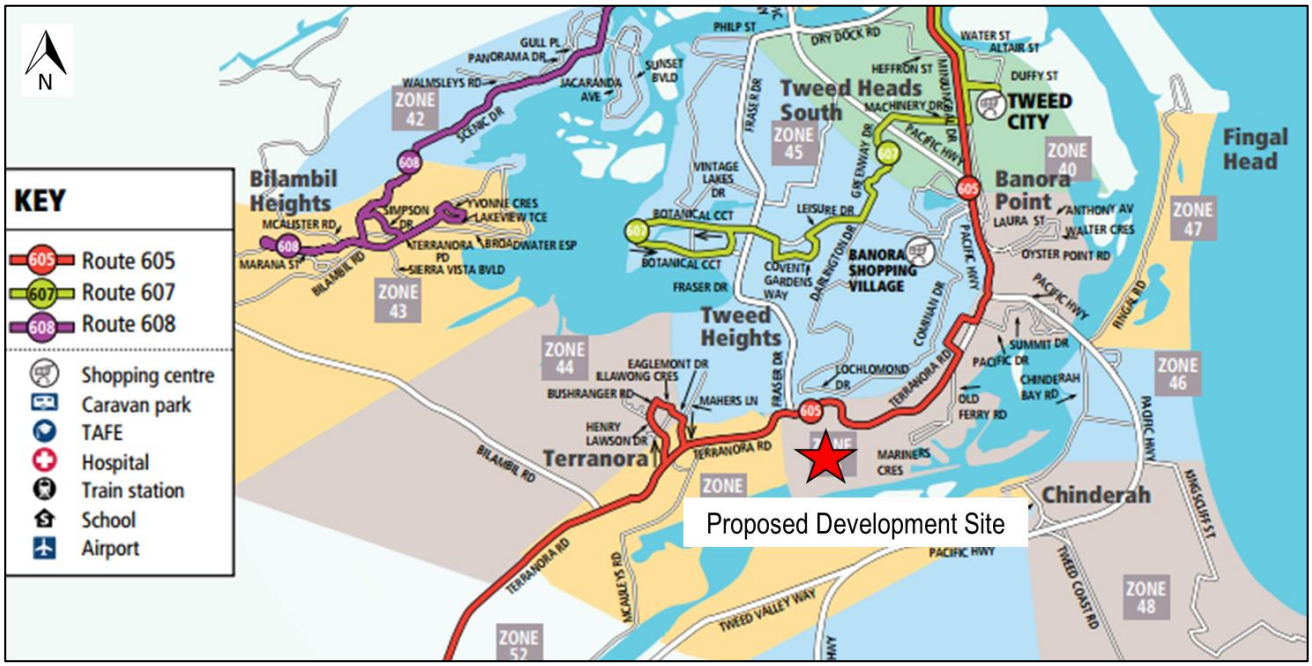
No designated cycle or footpaths are located directly at the front of the proposed site, however designated cycle ways and footpaths are available within close proximity to the site, with the nearest paths shown in Figure 2.1. It is also noted that Terranora Road is a common route for sports cyclists, particularly during mornings and on weekends.

Source: Adapted from Tweed Shire Council – Cycleway Network

Figure 2.1: Surrounding Cycle and Foot Paths

2.2. Existing Public Transport

Existing public transport for the site is provided via Bus Route 605 which travels between Murwillumbah and Tweed Heads, operating at 1-hour peak frequencies during weekdays. The route travels along Terranora Road within close proximity of the development, with the closest bus stop approximately 530m walking distance from the subject site. Public transport connectivity is presented in Figure: 2.2.



Source: Adapted from Surfside (http://www.surfside.com.au/)

Figure 2.2: Location of Local Bus Routes

3.0 TRAFFIC ASSESSMENT

3.1. Road Network

A summary of the surrounding road network is provided in Table 3.1.

Table 3.1: Surrounding Road Network Hierarchy

Road Name	Jurisdiction	No. of Lanes (2-way)	Hierarchy	Median Divided	Posted Speed	Details
Terranora Road	Tweed Shire Council	2	Rural Arterial	No	60km/h	*East-west connection for the area. Provides access to Pacific Highway and local commercial areas.*

3.2. Traffic Generation

Development Traffic has been calculated using a rate of 0.85 peak hour trips per dwelling as sourced from the *Roads and Maritime Service (RMS) - Guide to Traffic Generating Developments* (2002). Table 3.2 shows the proposed development trip generation summary. Whilst this traffic generation is considered low, for the purpose of confirming the need for any potential impacts or resultant widening of the carriageway at the access points a detailed analysis of traffic volumes has been conducted below.

Table 3.2: Development Trip Generation

Land Use	Trip Generation Rate	Quantity	Peak Hour Trips
Residential House	0.85 trips per dwelling	3 dwellings	3
		Total	**3**

The proposed development is expected to generate three (3) vehicle trips / hour in the AM and PM peak periods, equivalent to one (1) 1 trip every 20 minutes. As such, the proposed development will have an insignificant impact on the surrounding road network.

This additional trip generation can be considered negligible from a traffic engineering perspective and is not expected to result in any significant traffic issues that would require mitigation measures or further analysis.

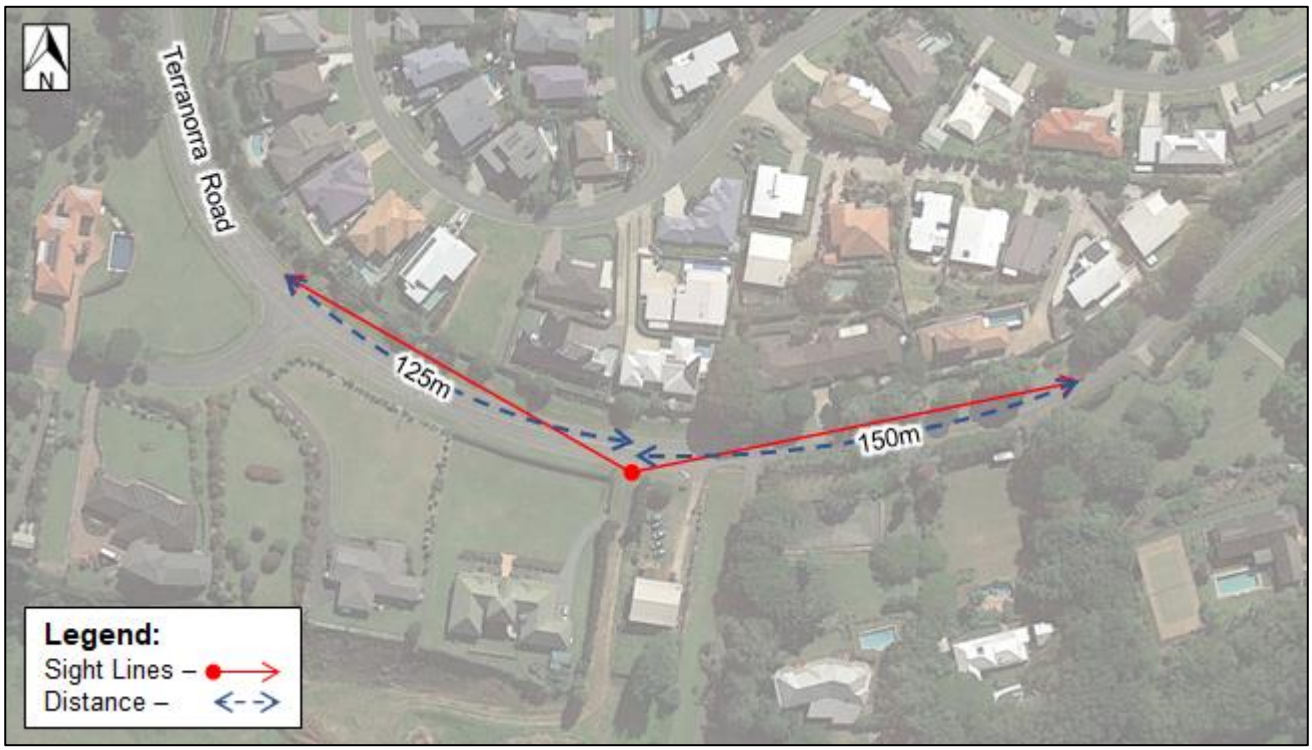
4.0 SITE ACCESS

4.1. Sight Distance

The proposed driveway access point has been assessed using sight distance requirements specified by AS2890.1 and Council's Driveway Access to Property – Design Specification (2022). Specifically, 55m sight distance which is for a domestic property on a 60km/h road speed. Figure 4.1 and Figure 4.2 show the north and south facing sight lines respectively, taken from the site visit, and Figure 4.3 shows the sight distance provision for the subject site.

Figure 4.1: West Facing Sight Distance

Figure 4.2: East Facing Sight Distance



Source: Google Earth

Figure 4.3: Available Sight Distance

As shown, the access location has sufficient sight distance given the excepted land use and speed environment.

4.2. Access Form

The existing access form currently used for access to the subject site and adjacent property are to be retained for the proposed development. The existing access is generally in accordance with the access form and widths required in Standard Drawing 017 *Driveway Access to Properties Fronting Roads with Kerb and Gutter* (2013). Based on the excepted level of traffic and nature of the proposed development, this is considered acceptable.

No additional infrastructure is warranted (e.g. turning lanes etc) is required due to the following:

- The level of traffic proposed is considered low with approximately four (4) trips in each peak hour using the existing crossover
- Most traffic is expected to go to and from the east, towards the M1, which will reduce the amount of traffic that turn right from Terranora Road to the subject site
- The parking lane on Terranora Road is generally not used fronting the subject site and as such, may be utilised by vehicles turning left into the subject site. This will decrease the likelihood of any conflicts between turning vehicles and through traffic.

5.0 Layout Assessment

5.1. Internal Road Requirements

Internal layout and grade requirements shall be in accordance with AS2890.2 Off-street commercial vehicle facilities, Council's Driveway Access to Property – Design Specification and Council's Development Design Specification – Road Design. The following requirements ensure compliance with the above documentation and allow for a service vehicle (including a refuse vehicle) to access the site:

- Between the road frontage and the proceeding 3m; a maximum grade of 1 in 40 (2.5%)
- Across pedestrian footpath area (as outlined by Tweed Shire Council) grade shall be a maximum of 2.5% (it is noted that no pedestrian footpath is present, or likely to be constructed, along this section of Terranora Road)
- Maximum grade shall be 15.4% for the internal road, with the grade measured along the inside curve (Table 3.2 AS2890.2)
- Maximum 'rate of change' grade shall be 6.25% over 7 metres of travel
- The internal service road width shall have a minimum width of 6 meters to allow for passing between two vehicles.

5.2. Residential Driveways

Grade requirements for each residential driveway shall be in accordance with Council's *Driveway Access to Property – Design Specification* (2013), as outlined below:

- Across pedestrian footpath area (as outlined by Tweed Shire Council) grade shall be a maximum of 2.5%
- Maximum grade of driveway shall be 25%.

5.3. Heavy Vehicle Servicing

Refuse collection can occur on-street via a side-loading refuse collection vehicle (RCV) consistent with the existing and surrounding sites. It is recommended that a 'bin pad' or similar is provided adjacent to the driveway for bin storage. There is adequate space for bins along the frontage and such storage is consistent with the community expectations in this area.

For regular servicing (e.g. removalists, deliveries etc.) an 8.8m long MRV is able to enter, turnaround, and exit the subject site as shown in the swept path assessment at **Attachment B**. This size of heavy vehicle is considered to be reasonable to access the subject

6.0 CONCLUSIONS

The key findings of the 225 Terranora Road Traffic Impact Statement are as follows:

- The site is forecasted to generate a total of three (3) peak hour trips
- Access to the lots is proposed via an internal access road / driveway, connecting to Terranora Road
- Sight distance for the access driveways is considered acceptable in accordance with AS2890.1 and Council's requirements
- The existing access form is considered acceptable for the level of development proposed and no additional infrastructure is warranted
- Internal roadways shall be designed to comply with Australian Standards AS2890, Tweed Shire Council's Driveway Access to Property – Design Specification and Tweed Shire Council's Development Design Specifications
- A swept path analysis has been undertaken and show that a service vehicle (MRV) can successfully enter, turnaround, and exit the site at the proposed access point
- Refuse collection is proposed to occur from the road frontage by a side-loading RCV
- The proposed development site has minimal access to pedestrian footpaths due to lack of an existing path network. Public transport facilities are also minimal. However, due to the location and expected use of the development lots as standalone dwellings, the available amenities are deemed adequate.

Based on the above assessment, it is concluded that the proposed development poses no significant traffic or transport impacts to preclude its approval and relevant conditioning on transport planning grounds.

Yours faithfully

Ben James
Senior Traffic Engineer / Transport Planner
BITZIOS CONSULTING

Attachments:

A: Proposed Development Plans

B: Swept Path Analysis

Attachment A

Proposed Development Plans

NOTE: LANDSCAPING WILL BE PROVIDED AT VARIOUS SCALES ALONG THE SOUTHERN SIDE OF THE DRIVEWAY TO MITIGATE ITS VISUAL INTRUSION INTO THE VIEW FIELD FROM TWEED VALLEY WAY AND THE PACIFIC HIGHWAY, AS WELL AS ESTABLISH A VISUAL BUFFER BETWEEN THE FUTURE LOTS AND THE EXISTING DEVELOPMENTS ON TERRANORA ROAD AND THE PARAPET.

16//716222
3//716222
2//716222
1//716222
1050//1067598
1051//1067598
1022//1067598
1021//1067598
1025//1067598
1023//1067598
1024//1067598
12//270385
2//270385
11//270385
TERRANORA ROAD

VEHICLE CROSSOVER 9m WIDE AT KERB, 6m WIDE AT BOUNDARY

PEDESTRIAN SIGHT TRIANGLES 2.5x2m

LOW SCALE PLANTING ALONG BATTLE AXE ENTRY POINT

Lot 1
10,000m²

Lot 2
10,000m²

Lot 3
21,816m²

Residual Lot
58,709m²

MAXIMUM DRIVEWAY GRADIENTS:
- 2.5% FROM TERRANORA ROAD KERB LINE
- 5% FOR A MINIMUM OF 6M INTO PROPERTY
- 25% MAXIMUM THEREAFTER
- 1:8 MAXIMUM TRANSITIONS FOR 2m

LEGEND

- SITE BOUNDARY
- LOWLAND RAINFOREST IN NSW NORTH COAST AND SYDNEY BASIN BIOREGION
- PROPOSED R5 ZONE
- HMC AVAILABLE EFFLUENT LAND APPLICATION AREA (600m²)
- NOMINATED DEVELOPMENT ENVELOPE - MAXIMUM HEIGHT OF 9m
- 5.5M TWO-WAY ACCESS ROAD
- CONTOUR LINES - 1m INTERVALS

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Project
CONCEPT PLAN

Property ID
225 Terranora Road. Banora Point. 2486
16/DP856265

Client
Wrenn Pty Ltd

Sub Consultant

Rev.	Date.	Description.	Dwn.	Chk.
01	07.06.21	FOR COORDINATION	AB	AH
02	09.06.21	FOR COORDINATION	AB	AH
03	14.07.21	FOR COORDINATION	AB	JT
04	19.12.22	FOR COORDINATION	DM	JT
05	03.05.23	FOR COORDINATION	BT	JT

Stamp
DRAFT

Approval Details
APPROVAL NO: 00000

Drawing
CONCEPT PLAN

Scale Bar
10 0 10 20 30 40 50 metres
SCALE 1:1000 @ A1 1:2000 @ A3
N

Project No.
J5950

Drawing No. 001
Rev No. 05

Attachment B

Swept Path Analysis

B99	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 38.0

DESIGN VEHICLE

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	A.S	16.05.2023

Scale @ A3 0 5 10 15 20 25 1:500

Project: 225 Terranora Road, Banora Point TIA

Title: B99 Access Passing

Design	Drawn	Checked
A.S	A.S	B.J

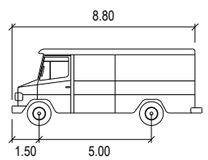
CONCEPT ONLY

Date: 16.05.2023

Project Number	Sheet Number	Issue
P6051	1	001

Legend

600mm Clearance



MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	A.S	16.05.2023

Scale @ A3 0 5 10 15 20 25 1:500

Project: 225 Terranora Road, Banora Point TIA

Title: MRV Access IN

Design	Drawn	Checked
A.S	A.S	B.J

CONCEPT ONLY

Date: 16.05.2023

Project Number	Sheet Number	Issue
P6051	2	001

Legend

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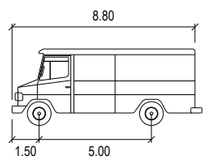

MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

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REVISIONS

Issue	Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	A.S	16.05.2023

Scale @ A3 0 5 10 15 20 25 1:500

Project: 225 Terranora Road, Banora Point TIA

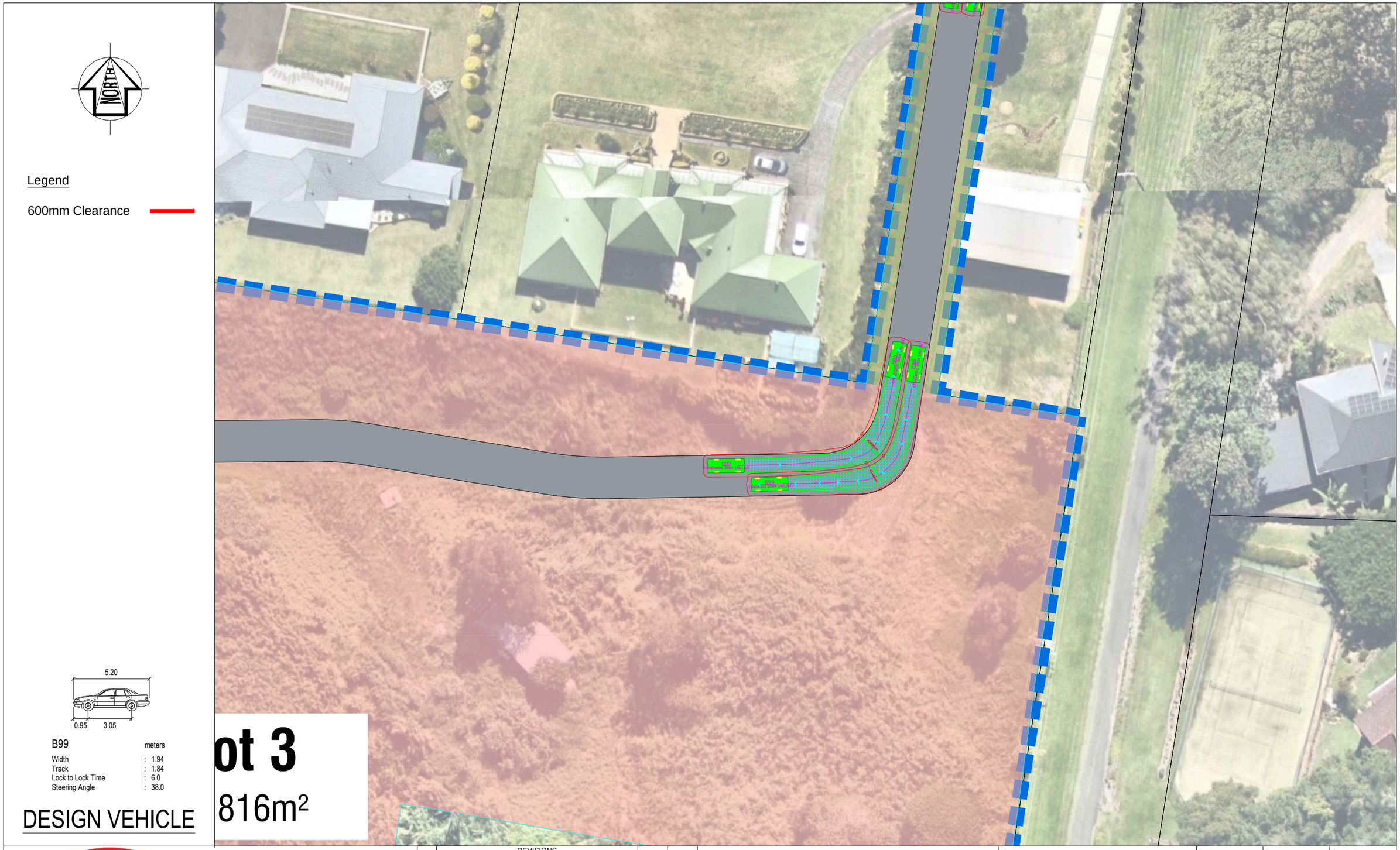
Title: MRV Access OUT

Design	Drawn	Checked
A.S	A.S	B.J

CONCEPT ONLY

Date: 16.05.2023

Project Number	Sheet Number	Issue
P6051	3	001



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	A.S	16.05.2023

Scale @ A3 0 5 10 15 20 25 1:500

Project: 225 Terranora Road, Banora Point TIA

Title: B99 Passing

Design	Drawn	Checked
A.S	A.S	B.J

CONCEPT ONLY

Date: 16.05.2023

Project Number	Sheet Number	Issue
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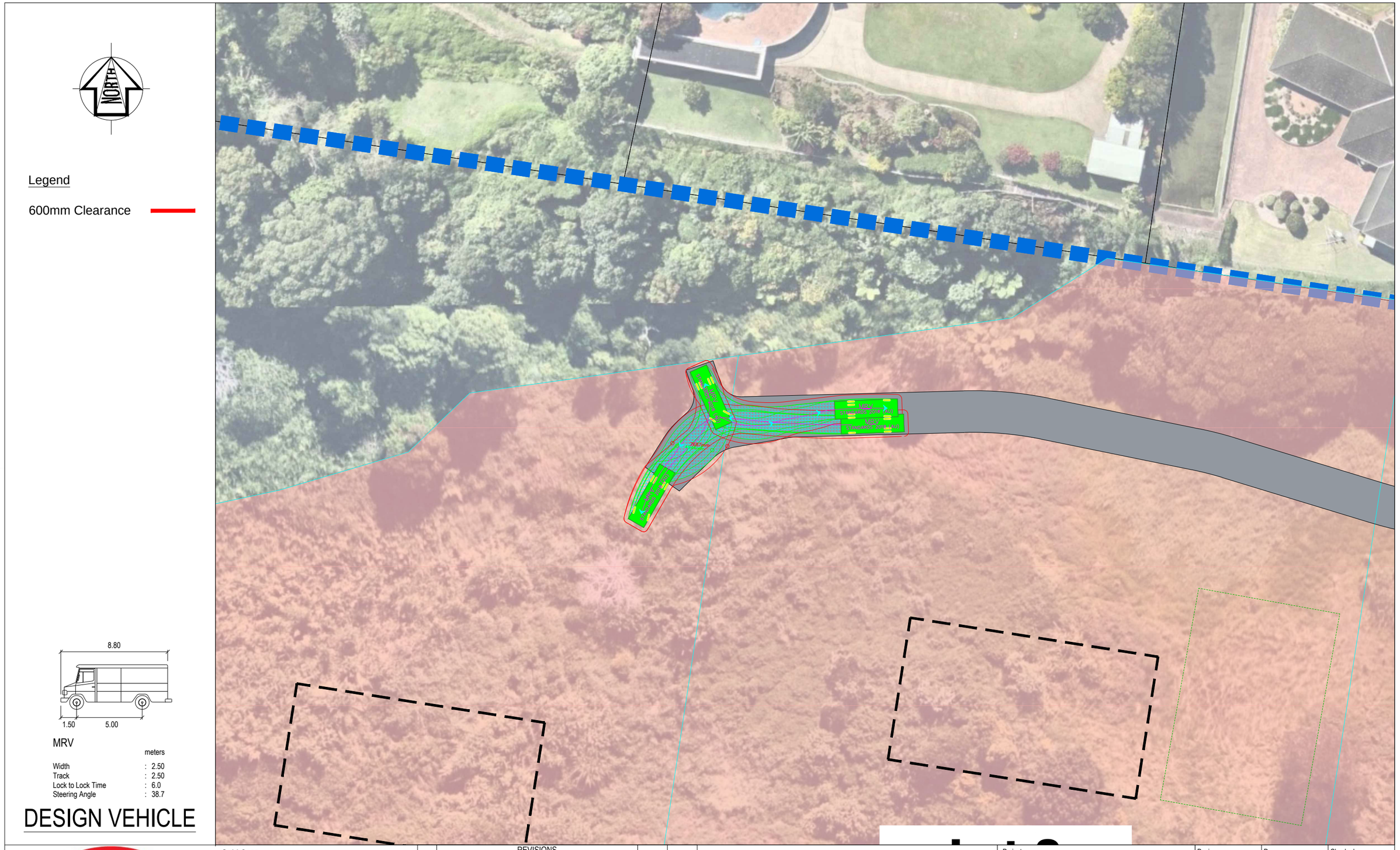

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	A.S	16.05.2023

Scale @ A3 0 5 10 15 20 25 1:500

Project: 225 Terranora Road, Banora Point TIA

Title: MRV Turnaround

Design	Drawn	Checked
A.S	A.S	B.J

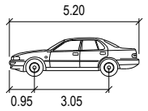
CONCEPT ONLY

Date: 16.05.2023

Project Number	Sheet Number	Issue
P6051	5	001

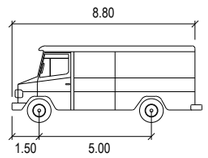
Legend

600mm Clearance



B99 meters

Width	:	1.94
Track	:	1.84
Lock to Lock Time	:	6.0
Steering Angle	:	38.0



MRV meters

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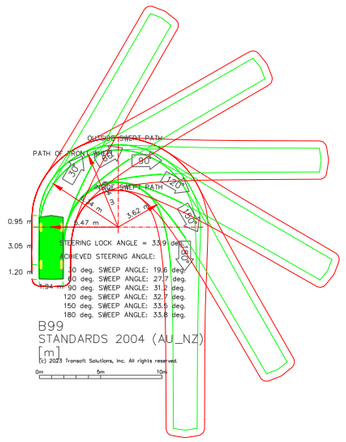

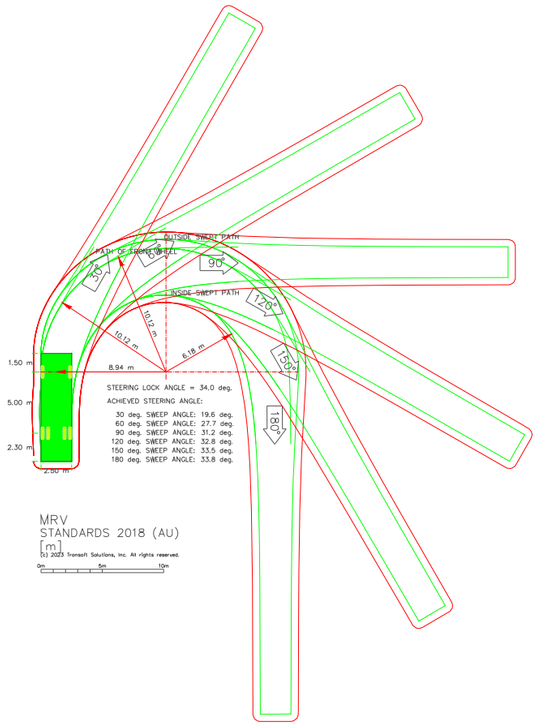

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Swept Path Assessment	A.S	16.05.2023

Scale @ A3 0 5 10 15 20 25 1:500

Project: 225 Terranora Road, Banora Point TIA	Design: A.S	Drawn: A.S	Checked: B.J
Title: Turning Templates	CONCEPT ONLY		Date: 16.05.2023
	Project Number: P6051	Sheet Number: 6	Issue: 001