

Traffix Group

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Traffic Engineering Assessment

Proposed Museum

24 Churchill Road, Newhaven

Prepared for
National Vietnam Veterans Museum

December, 2023

G28339R-03B

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1. Introduction

Traffic Group has been engaged by National Vietnam Veterans Museum to undertake a traffic engineering assessment for the development of a museum at 24 Churchill Road, Newhaven.

This report provides a detailed traffic engineering assessment of the parking and traffic issues associated with the proposed museum.

2. Proposal

The proposal is for a museum to occupy the south-eastern portion of the site, with associated surrounding garden areas.

The building will accommodate a maximum of 200 patrons (140 museum patrons, and 60 restaurant patrons), with 30 staff across the two uses.

The museum includes exhibition areas and a restaurant, as well as ancillary uses such as a gift shop, library, classrooms and staff training areas. These uses are considered ancillary, as all the uses on the site will be governed by the limit of 200 patrons and 30 staff.

A total of 62 formal car parking spaces will be provided within the primary carpark, with an overflow carpark accommodating a further 37 car spaces. Two bus parking spaces are also provided on the site to allow for affiliated tour companies to operate buses to the site.

Vehicle access to the development is proposed to Phillip Island Road via a fourth leg of the roundabout between Phillip Island Road and Woolamai Beach Road.

Loading is provided at the rear of the site, and is accessed via a road extending from the main accessway.

Opening hours are expected to be from 10am-5pm Mondays-Sundays.

Landscape Concept Plans prepared by Tract (dated December, 2023) and Architecture Plans prepared by Architectus (dated, December, 2023) are attached at Appendix A.

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3. Existing Conditions

3.1. Subject Site

The overall subject site is located on the corner of Churchill Road and Phillip Island Road in Newhaven. An aerial photograph and locality map of the site are presented at Figure 1 and Figure 2.

The site has an approximately 900m frontage to Phillip Island Road along the southern boundary, and approximately 337m of frontage to Churchill Road along the western boundary.

The subject site is currently occupied by a single storey warehouse at the eastern part of the site. Vehicle access to the site is provided in the following locations:

- single width accessway to Phillip Island Road adjacent to the Telstra Exchange,
- single width accessway to Churchill Road at the site's south-west corner, and
- single width accessway to Churchill Road near the site's north-west corner.

The site is zoned Farming Zone (FZ) under the Planning Scheme as presented at Figure 3. Existing land use in the vicinity of the site is a mixture of farming and residential use.

Significant nearby land uses are detailed below:

- **Phillip Island Airport**, located opposite the site, and
- **National Vietnam Veterans Museum**, located opposite the site.

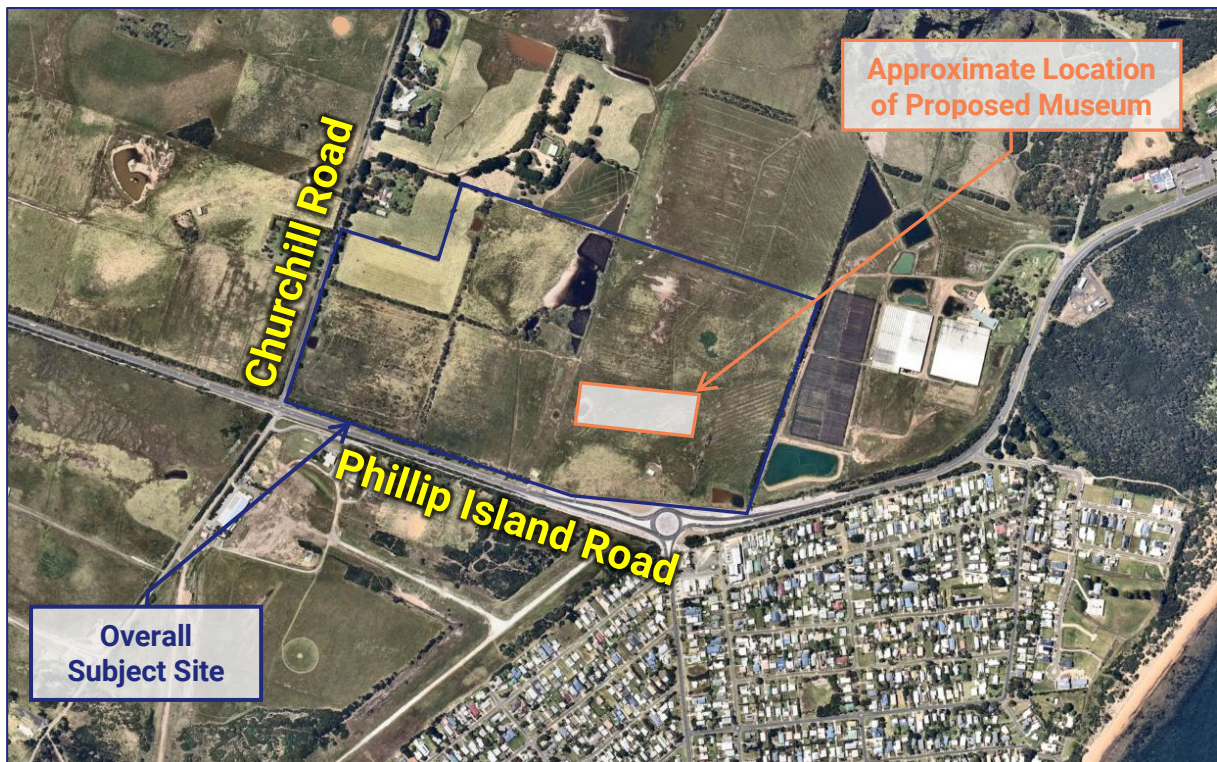


Figure 1: Aerial Photograph (Source: Nearmap)

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Figure 2: Locality Plan (Source: Melway)

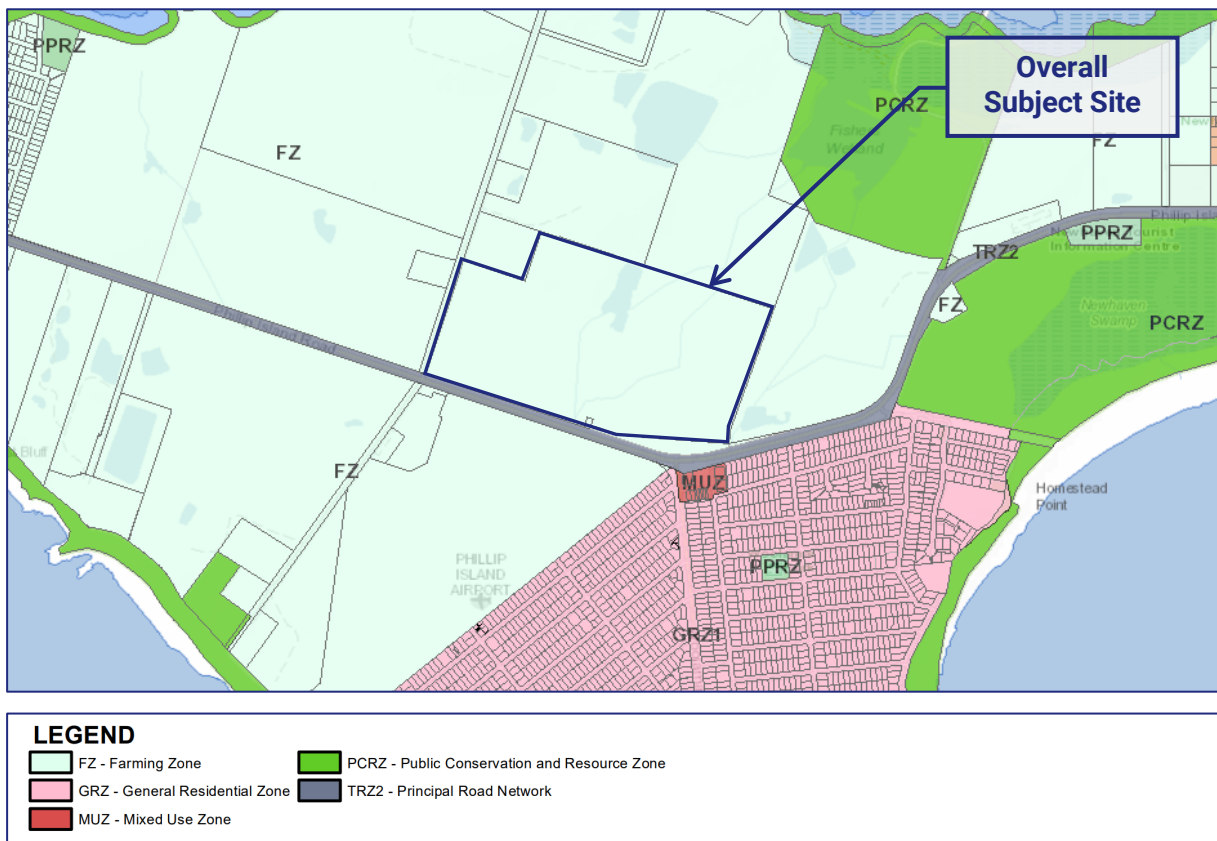


Figure 3: Land Use Zoning Map (Source: Planning Schemes Online)

3.2. Transport Network

3.2.1. Road Network

Phillip Island Road is a Department of Transport and Planning (DTP) declared Arterial Road and a road located within a Transport Zone 2 under the Planning Scheme. Phillip Island Road is generally aligned in an east-west direction between Ventnor Road and Bass Highway

In the vicinity of the site, Phillip Island Road accommodates a traffic lane in each direction. The roundabout between the intersection of Phillip Island Road and Woolamai Beach Road is located at the south-east corner of the site and provides two lanes on the approach and departure sides of the roundabout in each direction.

On-street parking along Phillip Island Road is not permitted.

A posted speed limit of 80km/h applies to Phillip Island Road.

Churchill Road is a Bass Coast Shire Council 'Rural Access 2'¹, extending in a north-south direction between Phillip Island Road in the south and forms a dead end in the north.

In the vicinity of the site, Churchill Road is between 5.1-5.9m wide, which can generally accommodate a traffic lane in each direction. A width of 5.1m can accommodate two-way movements at slow speeds.

A posted speed limit of 60km/h applies to Churchill Road.

Photographs of the surrounding road network are detailed in the Figure 4 to Figure 7.



Figure 4: Phillip Island Road (view east)



Figure 5: Phillip Island Road (view west)

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¹ As defined in the Bass Coast Shire Council Road Register (last updated March, 2022).

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Figure 6: Churchill Road (view north)



Figure 7: Churchill Road (view south)

3.3. Public Transport

The site has access to three bus services, which operate past the site's frontage to Phillip Island Road. The nearest bus stop is located approximately 100m east of the site.

The bus services within walking distance of the site operates between:

- Cowes and Fountain Gate via San Remo and Pakenham,
- Cowes and Wonthaggi via San Remo and Anderson, and
- Cowes/Inverloch and Melbourne via Koo Wee Rup and Dandenong.

The public transport network surrounding the site is shown in Figure 8.

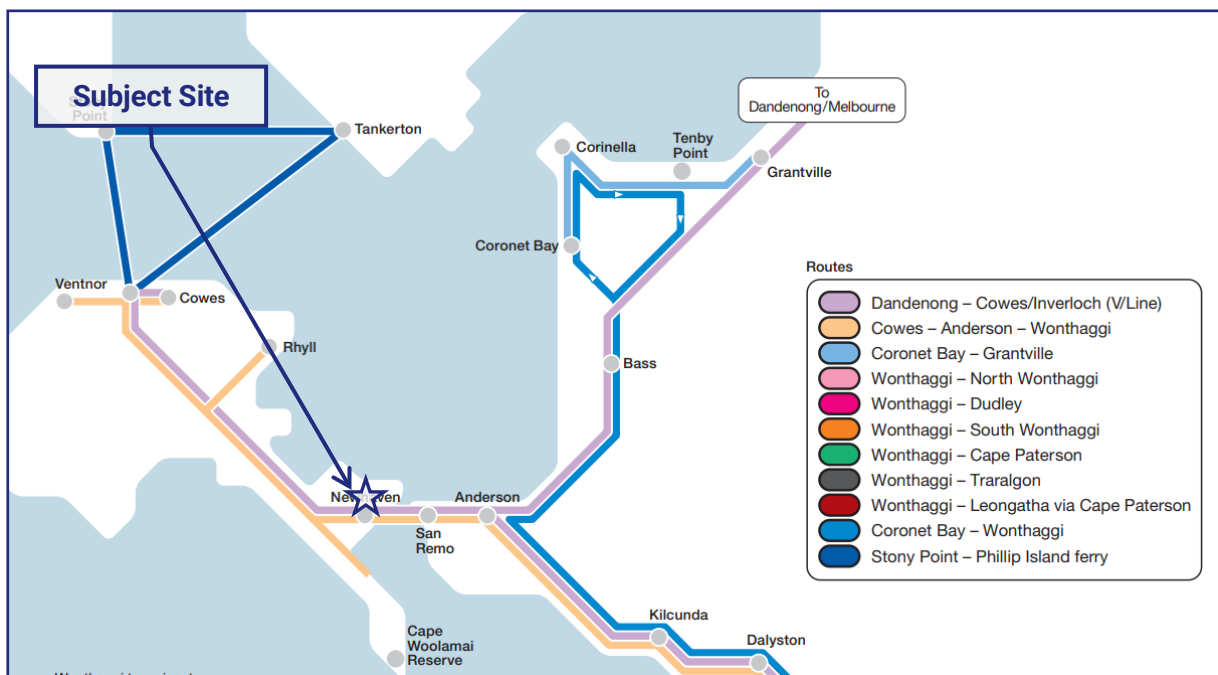


Figure 8: Public Transport Map (Source: ptv.vic.gov.au)

4. Traffic Engineering Assessment

4.1. Statutory Car Parking Assessment

The proposed development falls under the land-use categories of 'museum' and 'restaurant' under Clause 73.03 of the Planning Scheme.

The Planning Scheme sets out the parking requirements for new developments under Clause 52.06.

The purpose of Clause 52.06 is:

- *To ensure that car parking is provided in accordance with the Municipal Planning Strategy and the Planning Policy Framework.*
- *To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.*
- *To support sustainable transport alternatives to the motor car.*
- *To promote the efficient use of car parking spaces through the consolidation of car parking facilities.*
- *To ensure that car parking does not adversely affect the amenity of the locality.*
- *To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.*

The statutory car parking requirements are set out under Column A of Table 1 at Clause 52.06-5 of the Planning Scheme.

The assessment of car parking requirements associated with the proposed development is set out in Table 1.

Table 1: Statutory Car Parking Assessment – Clause 52.06-5

Proposed Use	No.	Statutory Car Parking Rate (Column A)	Parking Requirement	Parking Provision	Shortfall/ Surplus
Museum (Place of Assembly)	140 patrons	0.3 car spaces to each patron permitted	42	62 formal spaces and 37 overflow spaces	+ 33
Restaurant	60 patrons	0.4 car spaces to each patron permitted	24		
Total			66	62 formal spaces and 37 overflow spaces	+ 33

Under Clause 52.06-5, the statutory parking requirement for the proposed uses is 66 car spaces.

The provision of 99 car spaces, including 62 car spaces within a formal arrangement (including 4 DDA compliant car spaces) and 37 car spaces in an overflow carpark exceeds the

statutory parking requirements. Accordingly, a car parking reduction is not required under Clause 52.06-7.

Other Considerations

We understand that there will be certain events or fundraisers that will accommodate up to 300 patrons on the site, i.e. an additional 100 patrons above that which is reflected in the statutory assessment. Accordingly, at these times the car parking requirement would increase to 90 spaces. As there are a total of 99 spaces on the site, we are satisfied that at these times, the car parking requirement will be met on the site.

These events would generally occur in the evening (i.e. 6pm-11pm) and could be on any day of the week.

4.2. Bicycle Parking Assessment

Clause 52.34 of the Planning Scheme specifies bicycle parking requirements for new developments and changes in use. The table below details the statutory bicycle parking requirement of the museum and assesses it as a place of assembly.

Table 2: Statutory Bicycle Parking Assessment - Clause 52.34

Proposed Use	Size	Bicycle Parking Rate ¹		No. of Bicycle Spaces Required
		Employee	Patrons	
Place of Assembly	3,555m ²	1 space to each 1,500m ² of net floor area	2 spaces plus 1 per 1,500m ² of net floor area	2 staff 4 patrons
Restaurant	245m ²	1 space to each 100m ² of floor area available to the public	2 spaces plus 1 to each 200m ² of floor area available to the public if the floor area available to the public exceeds 400m ²	2 staff
Total:				4 staff 2 patrons

The proposed development has a statutory bicycle requirement of 8 bicycles spaces. A total of 16 spaces are provided on the plans, satisfying the requirement of Clause 52.34 of the Planning Scheme.

The bicycle parking spaces will be provided via 'Flat Top' horizontal rails satisfying the specifications of the 'Bicycle Victoria Bicycle Parking Handbook' and AS2890.3-2015.

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4.3. Review of Car Parking Layout and Access Arrangements

A total of 62 spaces are provided within a formal carpark with vehicle access via a 6.5m wide accessway (measured between kerbs).

We have provided design advice to the project architect in order to achieve a satisfactory carpark layout. The proposed parking layout has been assessed under the following guidelines:

- Clause 52.06-9 of the Planning Scheme (Design standards for car parking),
- AS2890.1-2004 – Part 1: Off-Street car parking, where relevant.
- AS2890.6-2022 – Part 6: Off-Street parking for people with disabilities (where relevant)

The key elements of the design include:

Clause 52.06-9 Design Standard 1 – Accessways

- Vehicle access to the on-site car parking is provided via a 6.5m wide accessway with kerbs on both sides which exceeds with the requirements of Clause 52.06-9 (Design Standard 1) and complies with the requirements of AS2890.2-2018 for a two-lane, two-way accessway, when the accessway carries a 12.5m long vehicle (HRV/Bus).
- All vehicles are able to enter and exit the site in a forwards direction in accordance with Clause 52.06-9.
- Pedestrian sight triangles are available on both sides of the exit accessway in accordance with Clause 52.06-9.
- A functional layout plan demonstrating vehicle access to the site from the roundabout between Phillip Island Road and Woolamai Beach Road can be prepared as a condition of permit.

Clause 52.06-9 Design Standard 2 – Car parking spaces

- Standard car spaces are provided at 2.6m wide x 4.9m long with 6.4m wide access aisles in accordance with Clause 52.06-9.
- Four disabled spaces are provided with dimensions in accordance with AS2890.6-2009.
- Access to and from the critical car spaces have been checked for access by the B85 design car (specified at Appendix B of AS2890.1-2004) and found to be acceptable.
- The area set aside for overflow car parking is sufficiently provided to accommodate 37 car spaces, designed in excess of the above specifications.

Clause 52.06-9 Design Standard 3 – Gradients

- Grades between the site access point and the car parking areas are generally flat and in accordance with Clause 52.06-9 and AS2890.2-2018.

Overall, we are satisfied that the parking layout and vehicle access arrangements are acceptable and accord with requirements of Clause 52.06-9, AS2890.1-2004, AS2890.6-2022 and AS2890.2.2018 where relevant.

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4.4. Loading and Waste Collection

Loading

Clause 65.01 of the Planning Scheme specifies that:

Before deciding on an application or approval of a plan, the responsible authority must consider, as appropriate:

- *The adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts.*

Loading is proposed to be accommodated at the rear of the museum buildings and will be accessed via a road extending from the main accessway.

This accessway is between 3.5-4.5m wide and allows for one lane for two-way movements for a vehicle up to a 12.5m HRV (Heavy Rigid Vehicle, Specified under AS2890.2-2018).

Vehicle access to the rear loading area is detailed in the swept paths attached at Appendix B.

It is expected that in the order of 5 deliveries per day is expected to occur and accordingly, a single lane accessway is appropriate in this case as the timing of deliveries can be managed.

Waste Collection

Waste will also be collected from the rear of the museum building.

We are satisfied that waste collection is not a significant issue in this development and is appropriate from a traffic engineering perspective and could be formalised within a Waste Management Plan if required by Council.

Bus Access

Bus access will be provided for at the main entrance to the site from the roundabout at Phillip Island/Woolamai Beach Road. Two bus parking spaces are provided at the east end of the carpark.

We understand from the permit applicant that buses up to a size of 12.5m long are expected to access the site associated with affiliated tour companies etc.

Up to two busses are expected to be required to be accommodated on the site, as two spaces are provided, we are satisfied that the bus requirement is met for the site.

4.5. Traffic Impacts

4.5.1. Traffic Generation and Distribution

We have undertaken a first principles assessment of traffic generation associated with the proposed museum.

The following assumptions have been adopted within our analysis:

- The average duration of a visit is in the order of 2-3 hours.
- All car spaces (formal car spaces) will be entered and exited twice over the course of a day. i.e. total traffic generation of 240 vehicle movements.

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- Peak traffic generation occurs between 10am-11am on a Saturday, which corresponds with existing Google 'Popular Times' data for peak operation times.
- The peak time will consist of 50% entry and 50% exit movements.
- Traffic will be distributed 50% towards the east and 50% towards the west.
- The profile of visitation, based on Google 'Popular Times' data across the operation hours are as detailed in the following graph. The graph below details the percentage of daily traffic generated within each opening hour.

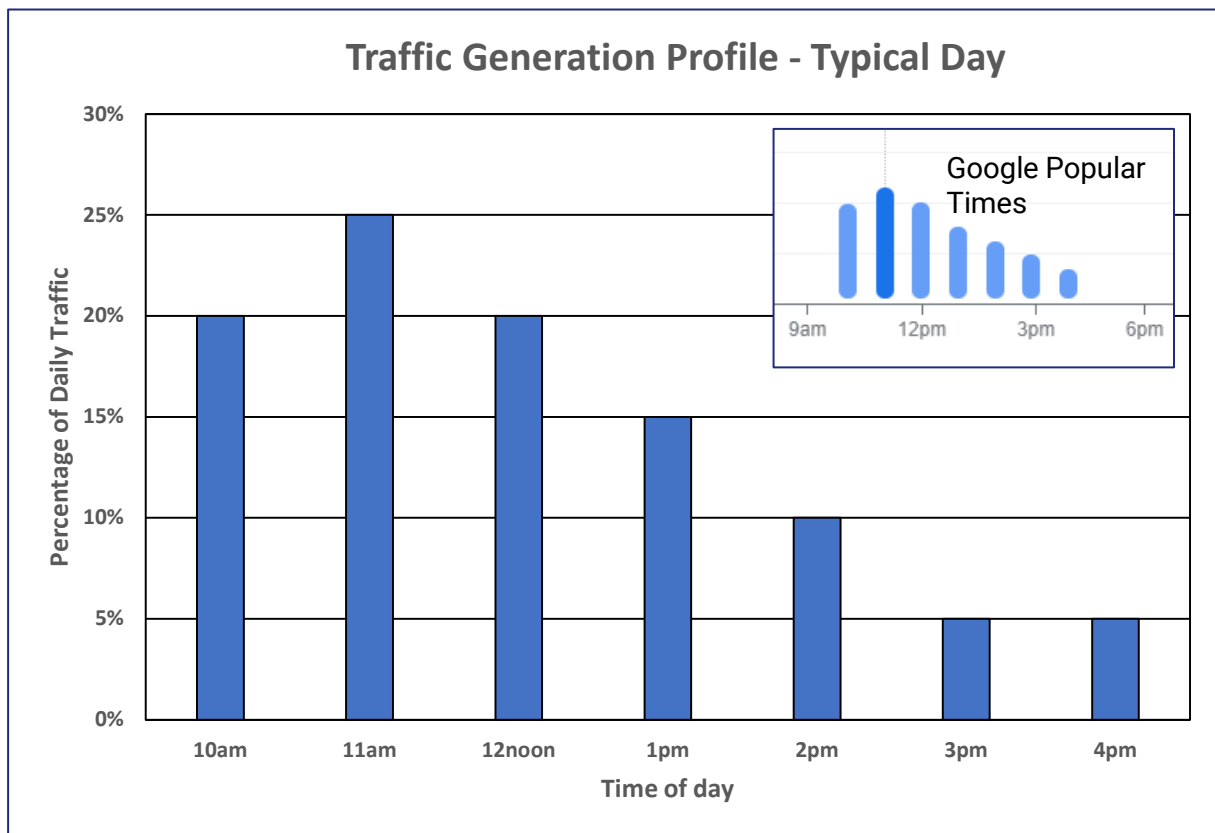


Figure 9: Traffic Generation Profile

Accordingly, based on the above assumptions and traffic generation profile for a typical day. The proposed museum is expected to generate a total of **240 vehicle movements per day**, including **60 vehicle movements** (25% of all movements) between 11am-12noon. A distribution of 50% entry and 50% exit is expected to occur during this time, i.e. 30 arrival movements and 30 departure movements and split evenly between east and west.

4.5.2. Traffic Analysis

Vehicle access is proposed to be undertaken via the creation of a 4th approach to the existing roundabout between Woolamai Beach Road and Phillip Island Road. The existing and post-development operation of the roundabout has been modelled within Sidra 9.0.

The intersection analysis assumes the following peak hour traffic volumes recorded by DoT for a typical Saturday during a long weekend/public holiday for Phillip Island Road:

- Eastbound movements on a Saturday (during a long weekend/public holiday) 11am-12noon – 663 movements
- Westbound movements on a Saturday during a long weekend/public holiday) 11am-12noon – 1,045 movements

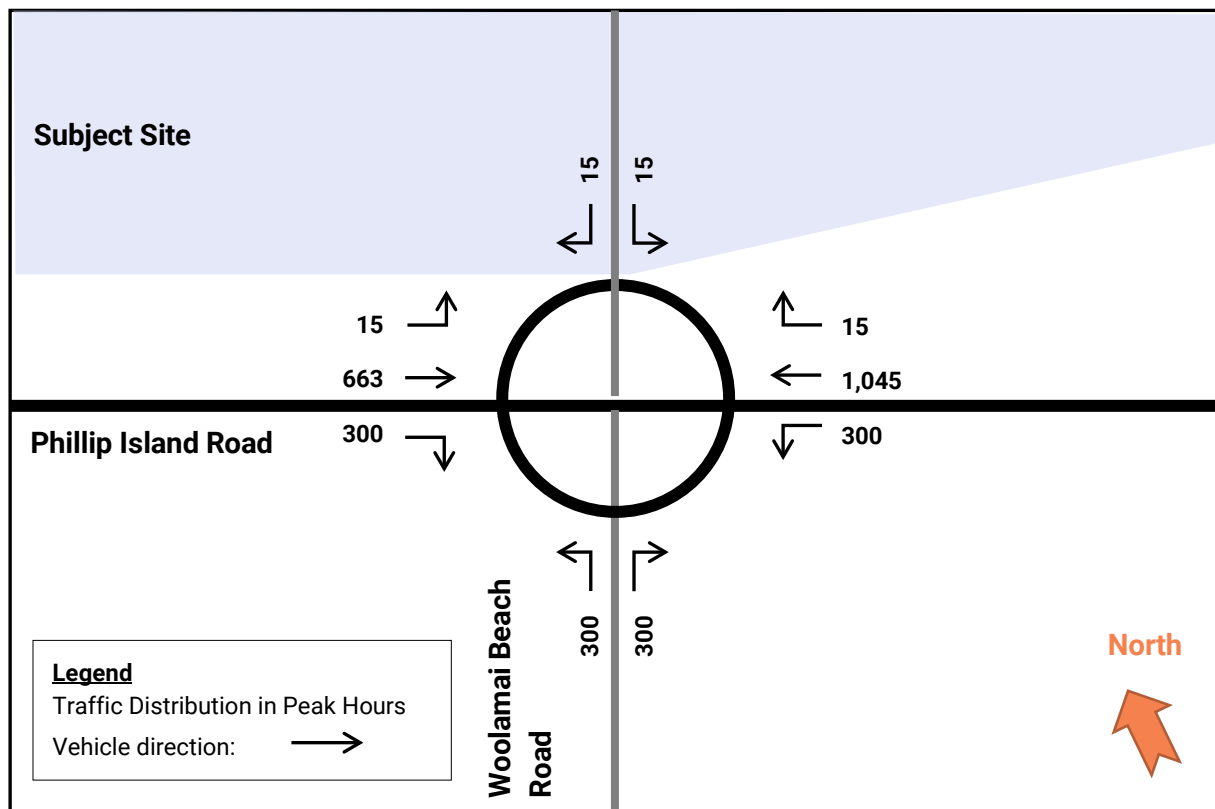


Figure 10: Expected Post-Development Traffic Volumes - Phillip Island Road/Woolamai Beach Road Intersection

Assuming that traffic is distributed 50% entry movements and 50% exit movements as well as distributed 50% to the east and 50% to the west at the intersection. Each turning movement at the roundabout to and from Woolamai Beach Road is conservatively assumed to be approximately 300 movements.

The intersection capacity analysis allows an estimation of key operating parameters such as intersection degree of saturation (DoS) and Level of Service (LoS), which are described below:

- **Degree of Saturation (DoS)** – measure of intersection performance expressed as a ratio of demand/capacity. A DOS greater than 0.9 is generally regarded as unsatisfactory for an unsignalised intersection, see shown in the table below.

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Level of Service		Intersection Degree of Saturation		
		Unsignalised Intersection	Signalised Intersection	Roundabouts
A	Excellent	≤ 0.60	≤ 0.60	≤ 0.60
B	Very Good	0.60 – 0.70	0.60 – 0.70	0.60 – 0.70
C	Good	0.70 – 0.80	0.70 – 0.90	0.70 – 0.85
D	Acceptable	0.80 – 0.90	0.90 – 0.95	0.85 – 0.95
E	Poor	0.90 – 1.00	0.95 – 1.00	0.95 – 1.00
F	Very Poor	≥ 1.0	≥ 1.0	≥ 1.0

- **Level of Service (LOS)** – the level of service is based on the Degree Of Saturation.
- The existing peak hour traffic volumes were recorded as per the above discussion and the traffic generation estimates of the development at Section 4.5.1.
- We have not altered any of the default SIDRA values for peak flow factors, gap acceptance values, etc.

The following figures detail the existing intersection layout with the three approaches and the proposed four-approach intersection.

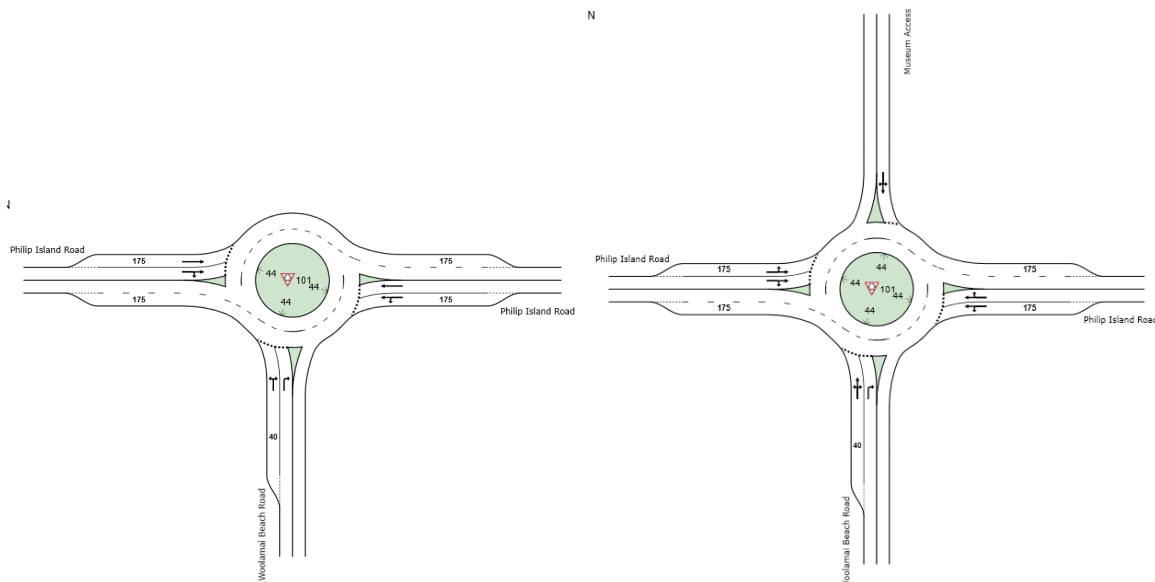


Figure 11: SIDRA Intersection Layouts

The SIDRA assessment results are set out in the following table for the 11am-12noon Time Period for a Saturday during a long weekend/public holiday time period. The table details the changes in the Degree of Saturation, Level of Service, Average Delay and 95th Percentile Queue for each of the existing approaches to the roundabout.

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Table 3: Intersection Traffic Analysis – 11am-12noon Saturday (Long weekend/public holiday)

Intersection Approach	Change to LoS	Change to Degree of Sat.	Change to Average Delay	Change to 95 th Percentile Queue (veh)
Woolamai Beach Road	LoS A > LoS A	+ 0.009	+ 0.1s	+ 0.1
Phillip Island Road – East Approach	LoS A > LoS A	+ 0.013	+ 0.3s	+ 0.3
Phillip Island Road – East Approach	LoS A > LoS A	+ 0.009	+ 0.1s	+ 0.1

The assessment of the additional approach added to the roundabout indicates that the impact to the operation of the intersection is negligible.

Accordingly, we are satisfied that the traffic generated by the site will be appropriately accommodated at the Woolamai Beach Road/Phillip Island Road roundabout.

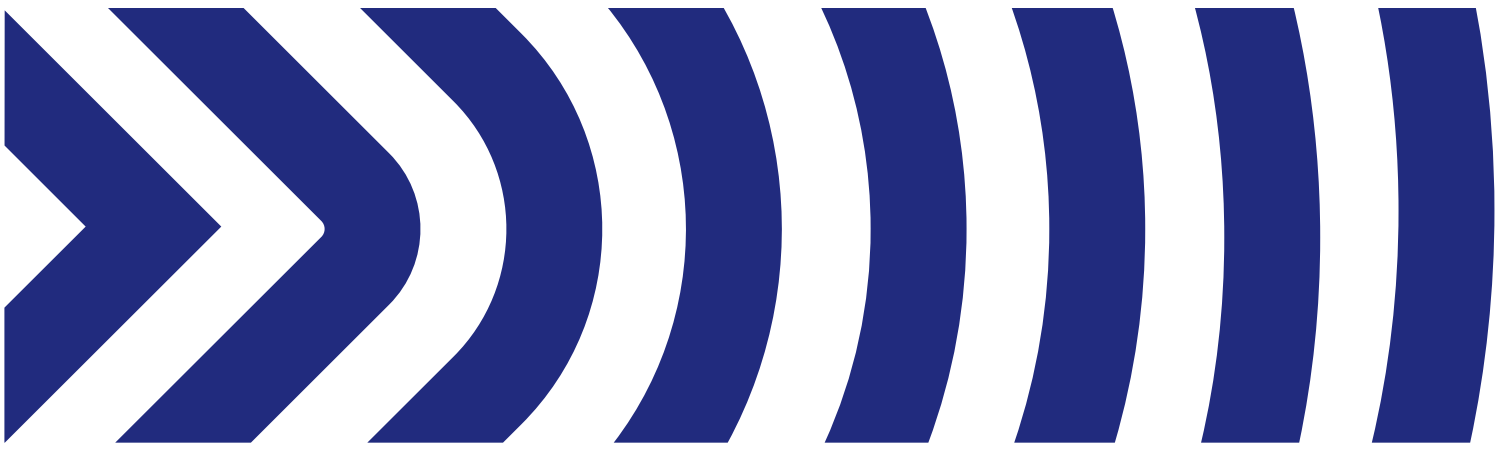
Furthermore, we note that the proposed access arrangements were accepted by the Road Authority in relation to the previous application on the site, which is of the same scale of development as is currently proposed.

Based on the above, we are satisfied that the traffic impacts of the development can be accommodated by the fourth leg of the roundabout appropriately and the traffic impact of the development will not have detrimental impact on the broader road network.

5. Conclusions

Having undertaken a detailed traffic engineering assessment of the proposed museum at 24 Churchill Road, Newhaven, we are of the opinion that:

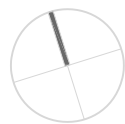
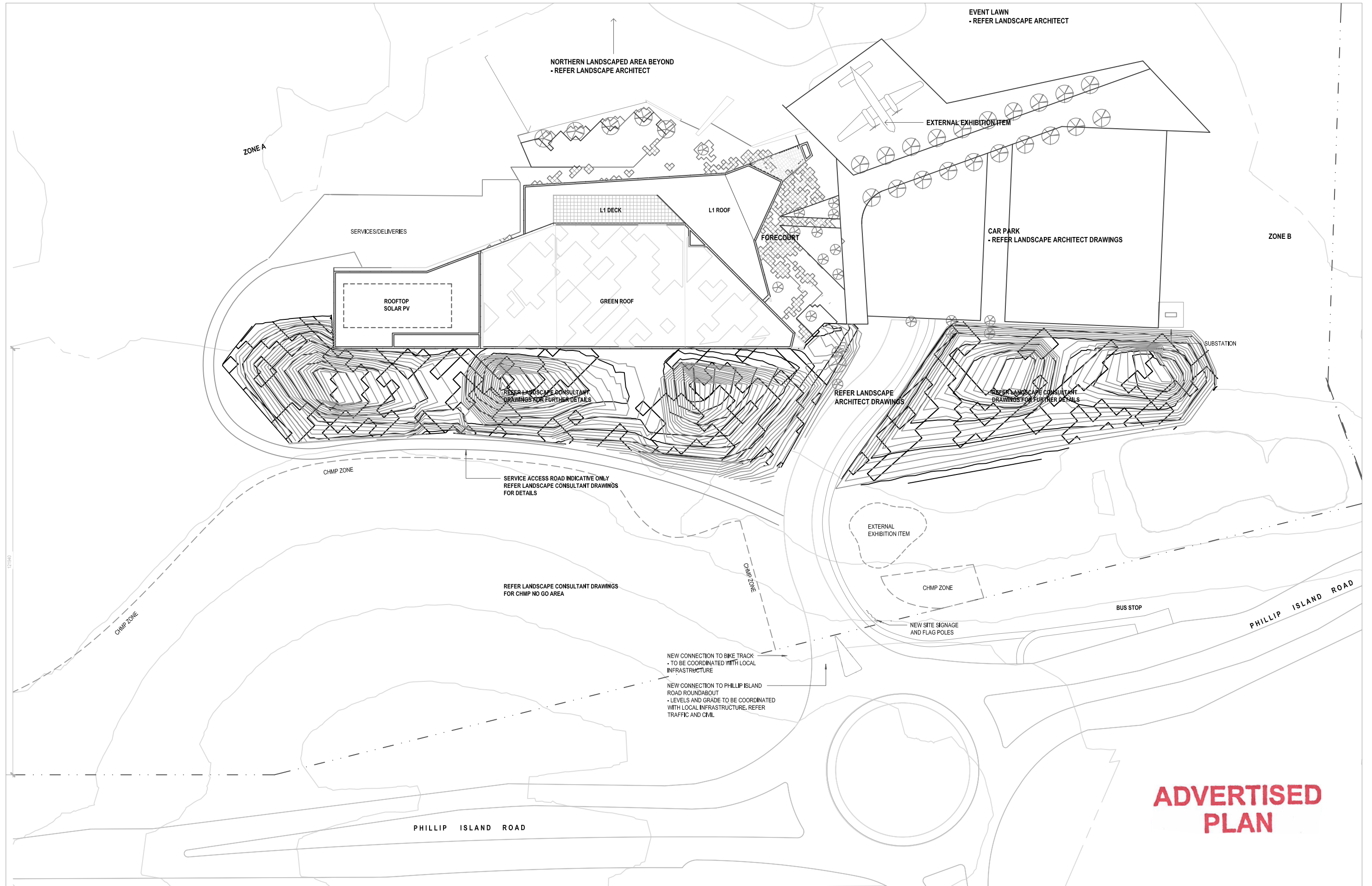
- the proposed museum (place of assembly) and restaurant generates a statutory car parking requirement of 66 car spaces under Clause 52.06-5,
- the provision of 62 formal spaces and 37 overflow spaces exceeds the statutory car parking requirement,
- the proposed development requires a total of 8 bicycle spaces under Clause 52.34. A total of 16 spaces are provided on the plans, satisfying this requirement,
- the layout of the on-site car parking areas and accessways accords with the relevant requirements of Clause 52.06-9, AS2890.1-2004 and AS2890.6-2009 (where relevant),
- loading and waste collection will be undertaken at the rear of the site and can be managed appropriately,
- the level of traffic generated by the site and the creation of the 4th leg of a roundabout will have a negligible impact to the operation of the Woolamai Beach Road/Phillip Island Road roundabout and will not have detrimental impact on the broader road network,
- there are no traffic engineering reasons why a planning permit for the proposed museum at 24 Churchill Road, Newhaven, should not be granted, subject to appropriate conditions.



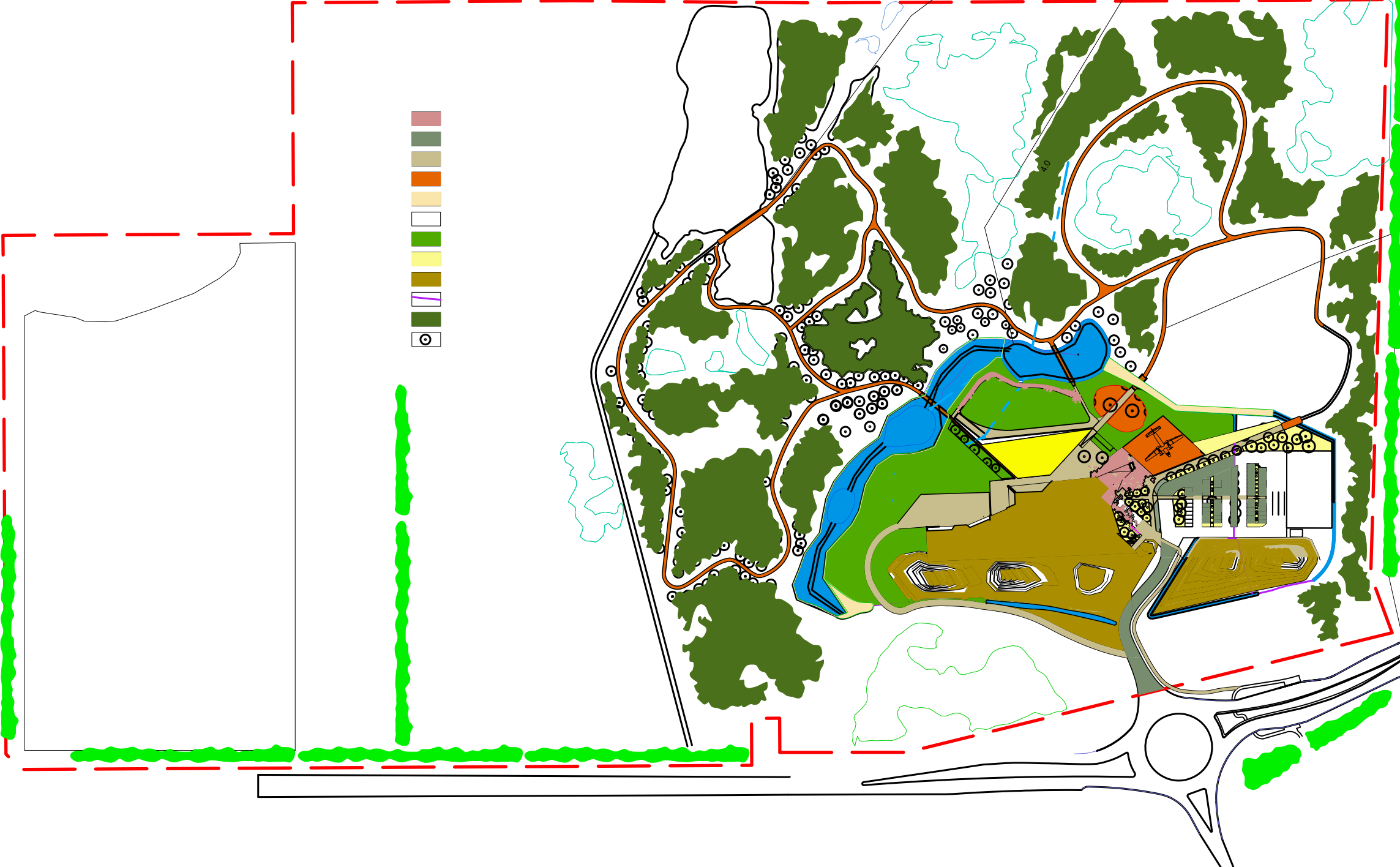
Appendix A

Development Plans

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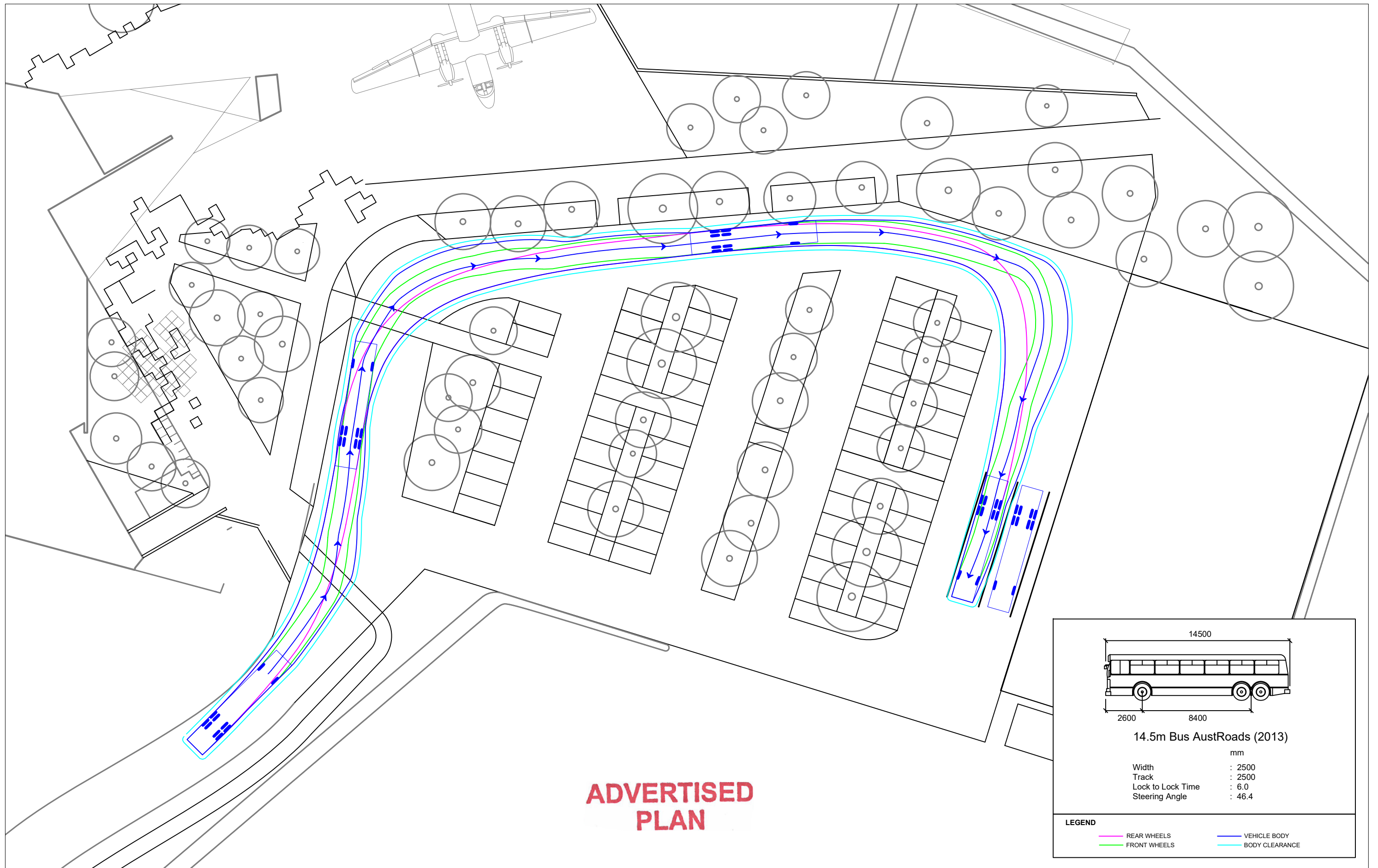




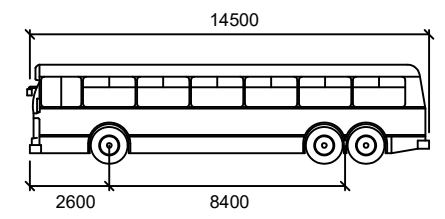
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Swept Path Diagrams



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14.5m Bus AustRoads (2013)

	mm
Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 46.4

LEGEND

— REAR WHEELS	— VEHICLE BODY
— FRONT WHEELS	— BODY CLEARANCE

REV	DATE	NOTES	DESIGNED BY	CHECKED BY
A	21/12/2023	TOWN PLANNING	K. EWE	M. WOOLLARD

24 CHURCHILL ROAD, NEWHAVEN
PROPOSED MUSEUM

GENERAL NOTES:
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DRAWINGS BY: Tract, dated 15/12/2023

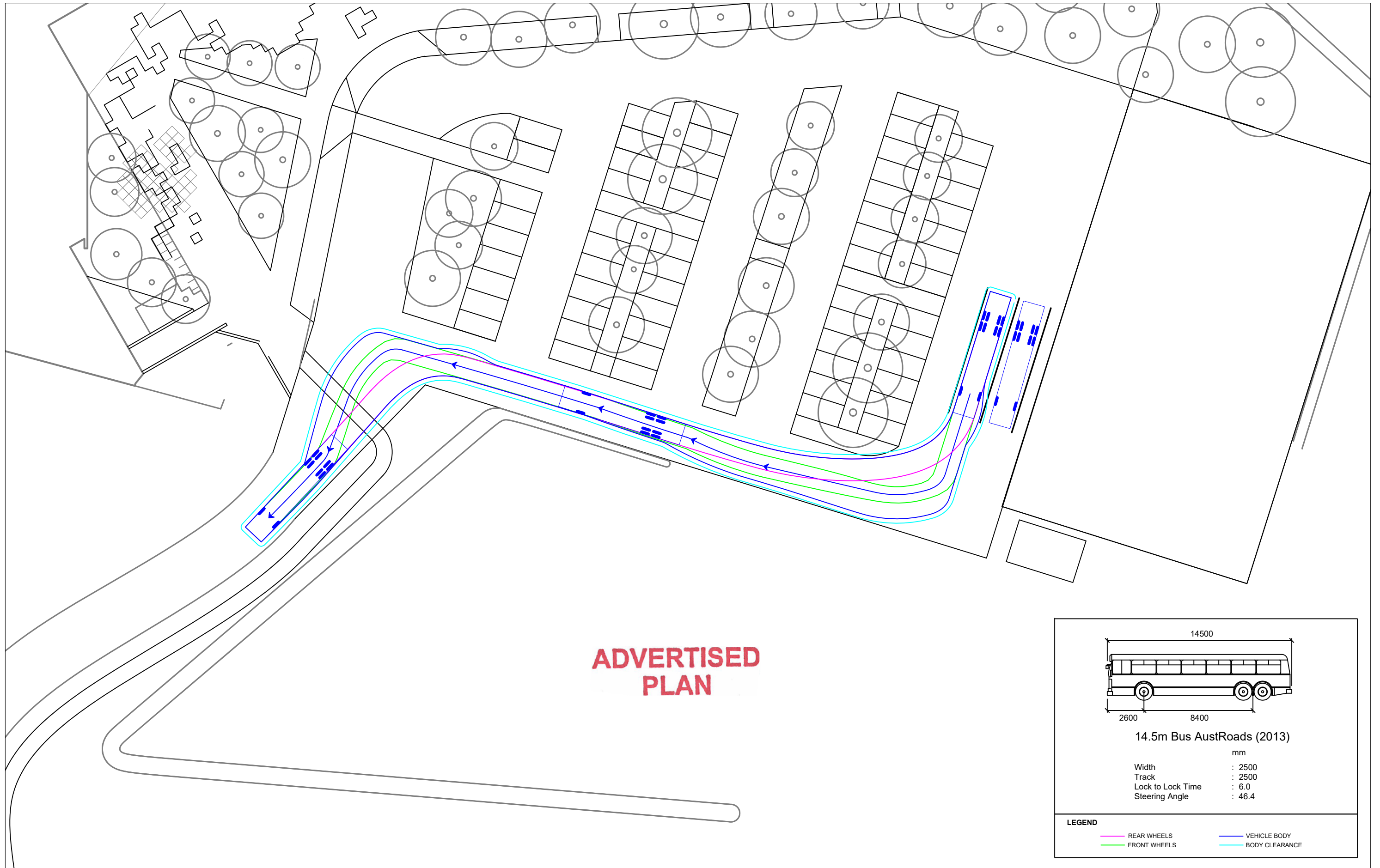
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SHEET NO.: 01



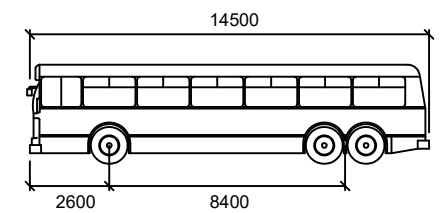
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T: (03) 9822 2888
www.trafficgroup.com.au



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14.5m Bus AustRoads (2013)

	mm
Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 46.4

LEGEND

- REAR WHEELS
- VEHICLE BODY
- FRONT WHEELS
- BODY CLEARANCE

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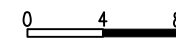
24 CHURCHILL ROAD, NEWHAVEN
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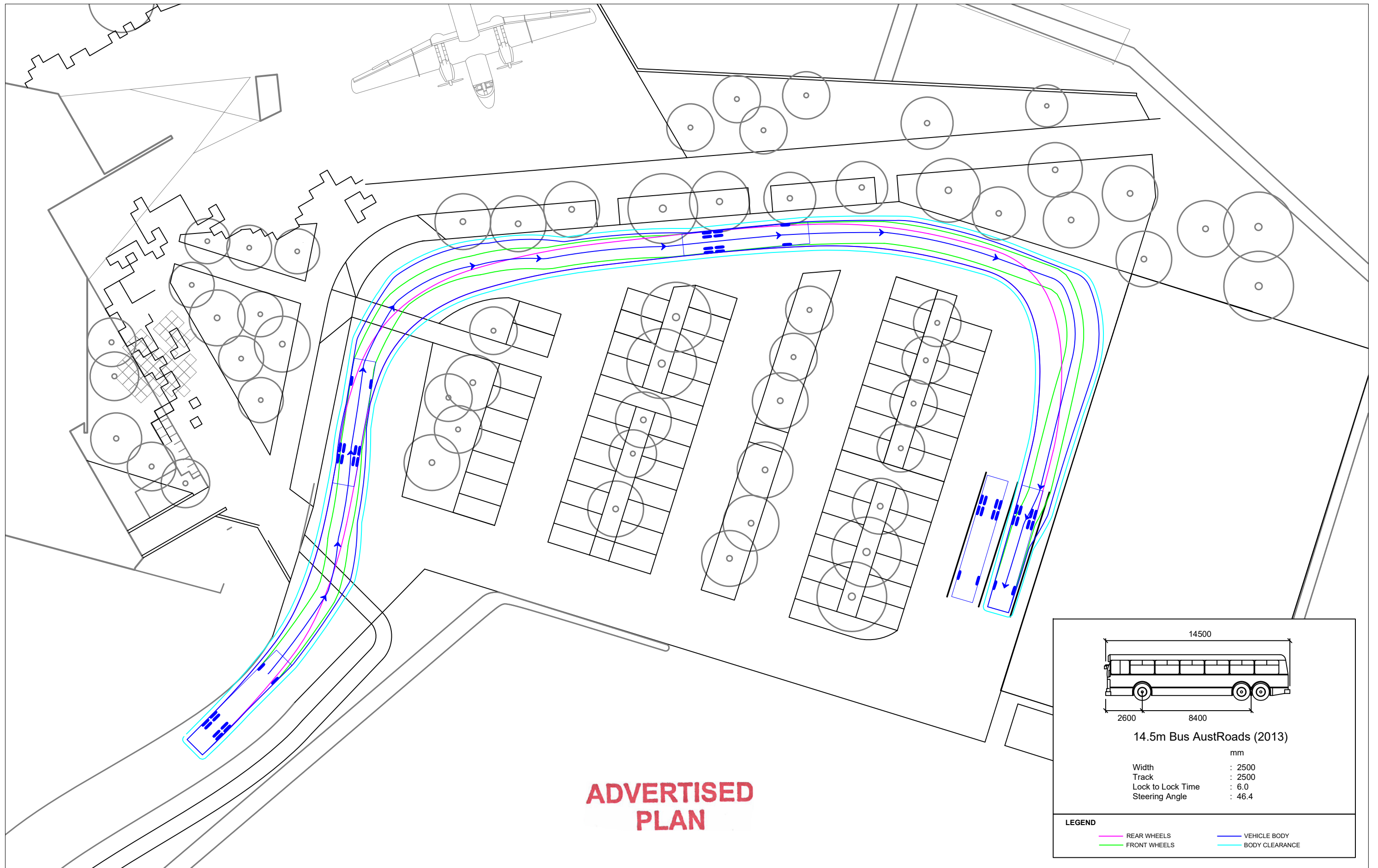
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14.5m Bus AustRoads (2013)	
mm	
Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 46.4

LEGEND

- REAR WHEELS
- FRONT WHEELS
- VEHICLE BODY
- BODY CLEARANCE

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24 CHURCHILL ROAD, NEWHAVEN
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BASE INFORMATION FROM: "319-0168-00-L-08 Landscape_2023-12-05.dwg"
DRAWINGS BY: Tract, dated 15/12/2023

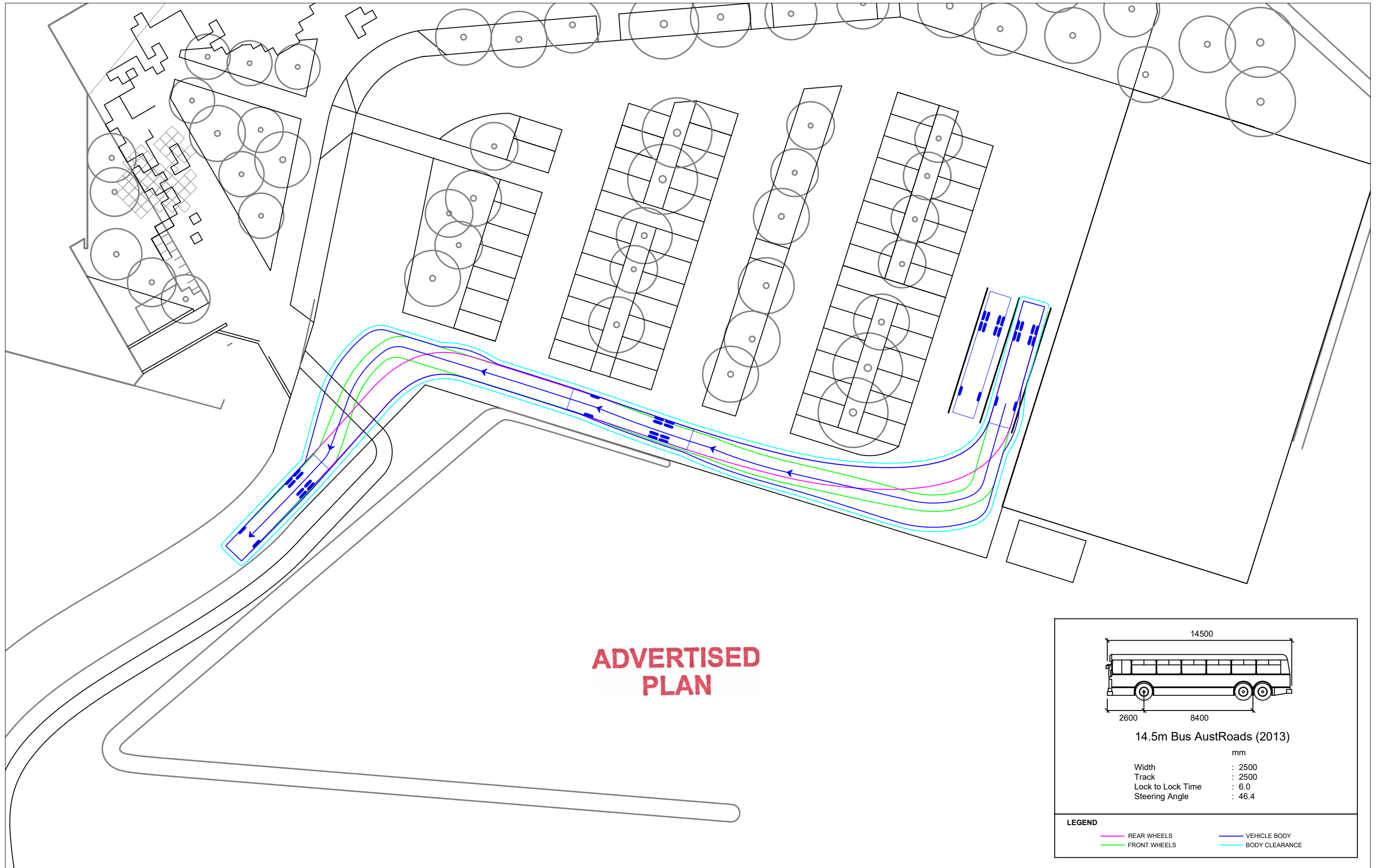
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SHEET NO.: 03



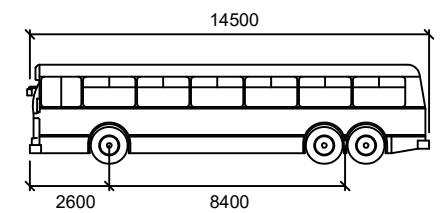
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Traffic Group
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T: (03) 9822 2888
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ADVERTISED PLAN



14.5m Bus AustRoads (2013)

	mm
Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 46.4

LEGEND

- REAR WHEELS
- VEHICLE BODY
- FRONT WHEELS
- BODY CLEARANCE

REV	DATE	NOTES	DESIGNED BY	CHECKED BY
A	21/12/2023	TOWN PLANNING	K. EWE	M. WOOLLARD

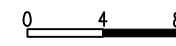
24 CHURCHILL ROAD, NEWHAVEN
PROPOSED MUSEUM

GENERAL NOTES:
BASE INFORMATION FROM: "319-0168-00-L-08
Landscape_2023-12-05.dwg"
DRAWINGS BY: Tract, dated 15/12/2023

FILE NAME: G28339-03
SHEET NO.: 04



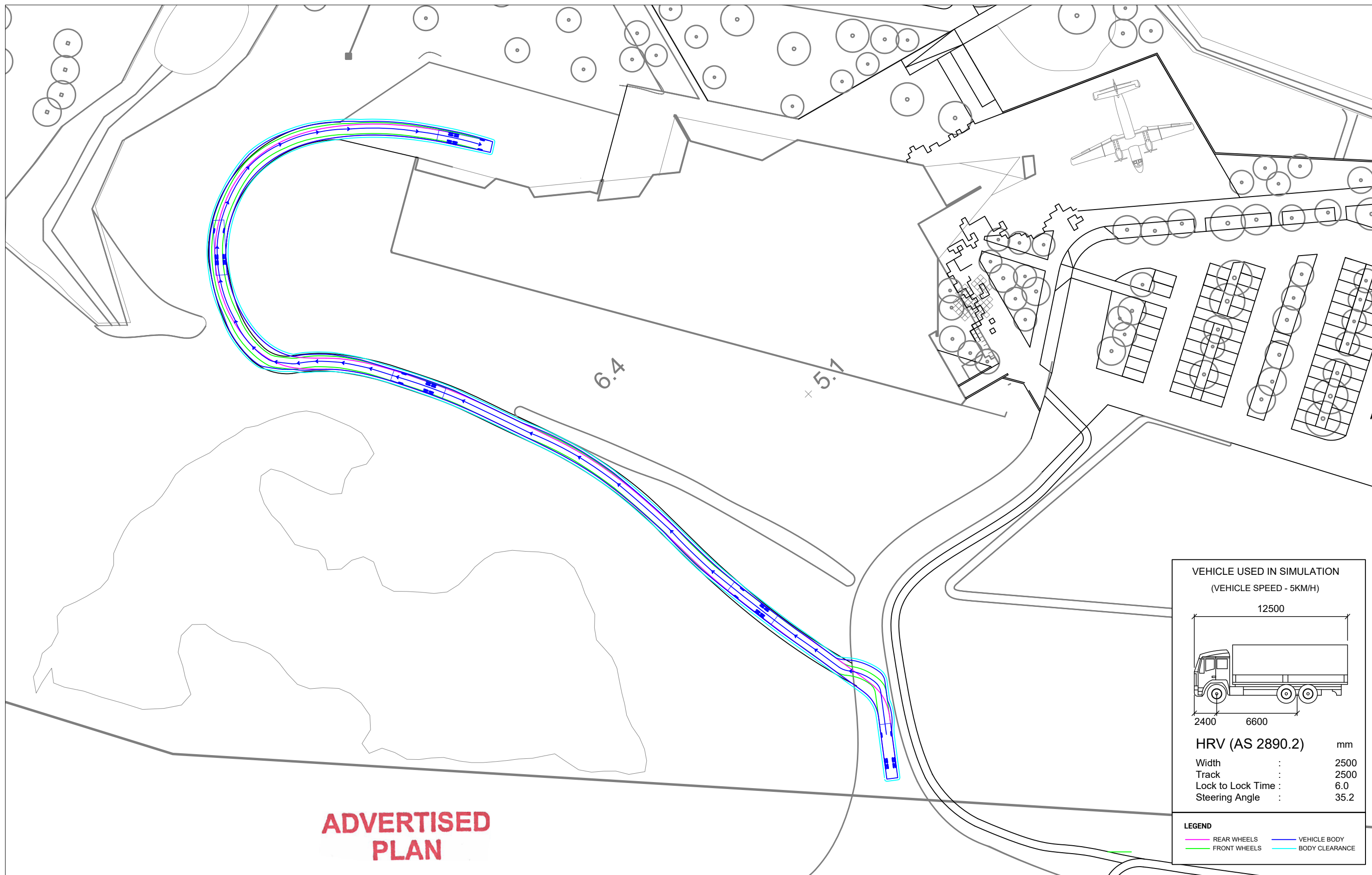
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ADVERTISED PLAN

VEHICLE USED IN SIMULATION
(VEHICLE SPEED - 5KM/H)

12500

2400 6600

HRV (AS 2890.2) mm

Width	:	2500
Track	:	2500
Lock to Lock Time	:	6.0
Steering Angle	:	35.2

LEGEND

— REAR WHEELS	— VEHICLE BODY
— FRONT WHEELS	— BODY CLEARANCE

REV	DATE	NOTES	DESIGNED BY	CHECKED BY
A	21/12/2023	TOWN PLANNING	K. EWE	M. WOOLLARD

24 CHURCHILL ROAD, NEWHAVEN
PROPOSED MUSEUM

GENERAL NOTES:
BASE INFORMATION FROM: "319-0168-00-L-08
Landscape_2023-12-05.dwg"
DRAWINGS BY: Tract, dated 15/12/2023

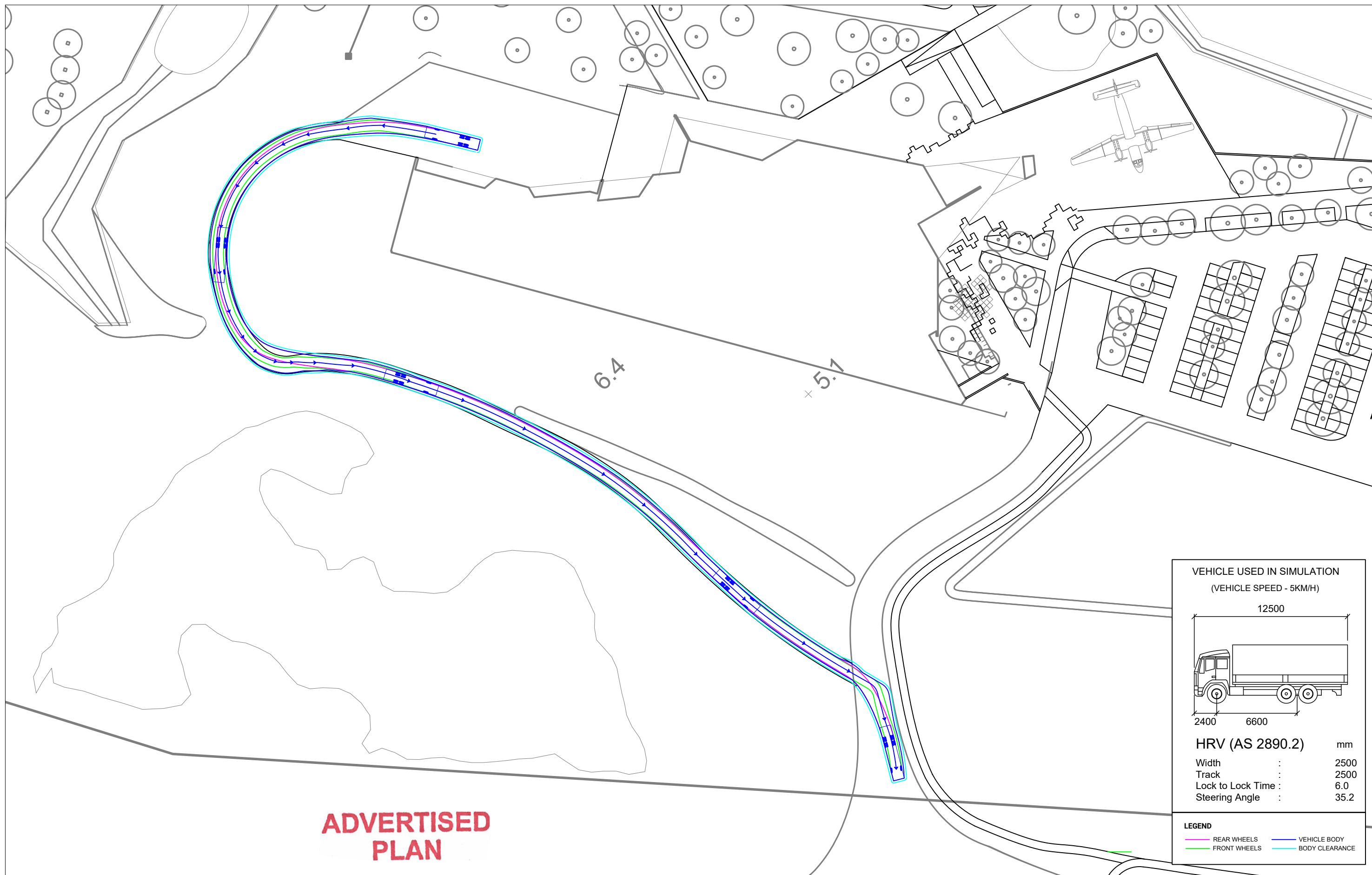
FILE NAME: G28339-03
SHEET NO.: 05



SCALE: 1:800 (A3)

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ADVERTISED PLAN

VEHICLE USED IN SIMULATION
(VEHICLE SPEED - 5KM/H)

12500
2400 6600

HRV (AS 2890.2) mm

Width	:	2500
Track	:	2500
Lock to Lock Time	:	6.0
Steering Angle	:	35.2

LEGEND

— REAR WHEELS	— VEHICLE BODY
— FRONT WHEELS	— BODY CLEARANCE

