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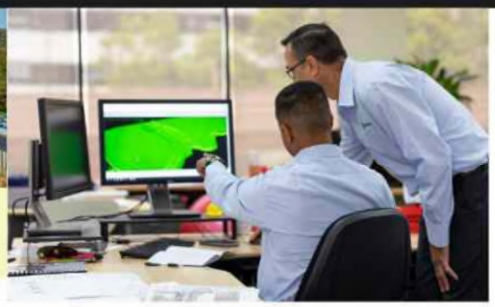

620-635 West Road, Patrick Estate

Traffic Impact Assessment

Client: Palmer Motorama Pty Ltd
Project No: BE230352
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May 2024

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RELIANCE, USES and LIMITATIONS

This study, report and analyses have been based on the information available to Burchills Engineering Solutions at the time of preparation. Burchills Engineering Solutions accepts responsibility for the report and its conclusions to the extent that the information was sufficient and accurate at the time of preparation. Burchills Engineering Solutions does not take responsibility for errors and omissions due to incorrect information or information not available to Burchills Engineering Solutions at the time of preparation of the study, report or analyses.

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1. Introduction

1.1 Overview

Burchills Engineering Solutions has been engaged by Palmer Motorama Pty Ltd to provide a Traffic Impact Assessment report (TIA) in relation to a proposed car museum, located on 620 and 636 West Road, Patrick Estate (formally described as Lot 5 and Lot 6 on SP109850). This report was previously prepared in response to the Somerset Regional Council Information Request (dated 14 September 2023, ref: DA23911) and the State Assessment and Referral Agency Information Request (dated 4th October 2023, ref: 2309-36665 SRA). The report was revised in response to the Somerset Regional Council Further Information Request (dated 14 April 2024). These documents have been attached for reference in Appendix G. Responses to the IR Items are included in Section 9.

The development plans are included in Appendix A.

The purpose of this report is to investigate the potential traffic impacts associated with the proposed development.

1.2 References

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

- Somerset Regional Council Planning Scheme, prepared by Somerset Regional Council;
- Department of Transport and Main Roads (TMR) Guide to Traffic Impact Assessments, December 2018;
- Roads and Maritime Services (RMS) Guide to Traffic Generating Developments, October 2002;
- Roads and Maritime Services (RMS) Technical Direction Guide to Traffic Generating Developments, August 2013;
- Queensland Streets, Design Guidelines for Subdivisional Street Works;
- Economic Development Queensland (EDQ) Street and Movement PDA Network Guidelines No.06, February 2019; and
- Other documents as specified.

1.3 Report Constraints

Burchills Engineering Solutions has carried out this traffic report that complies with standard traffic engineering practices and standards applicable during the assessment in May 2024. The report was based on the available project information and conditions at the time of the assessment. However, Burchills Engineering Solutions cannot be held responsible for any changes to the project planning or road conditions that occur after the report's completion, which may affect the accuracy of the assessment's findings.

2. Existing Conditions

2.1 Subject Site

The proposed development is situated on 620 and 636 West Road in Patrick Estate. The surrounding land uses are predominantly rural residential. The site is located within the rural zone of the Somerset Regional Council (SRC) local government area. The subject site and its surrounding environs are shown in Figure 2.1.

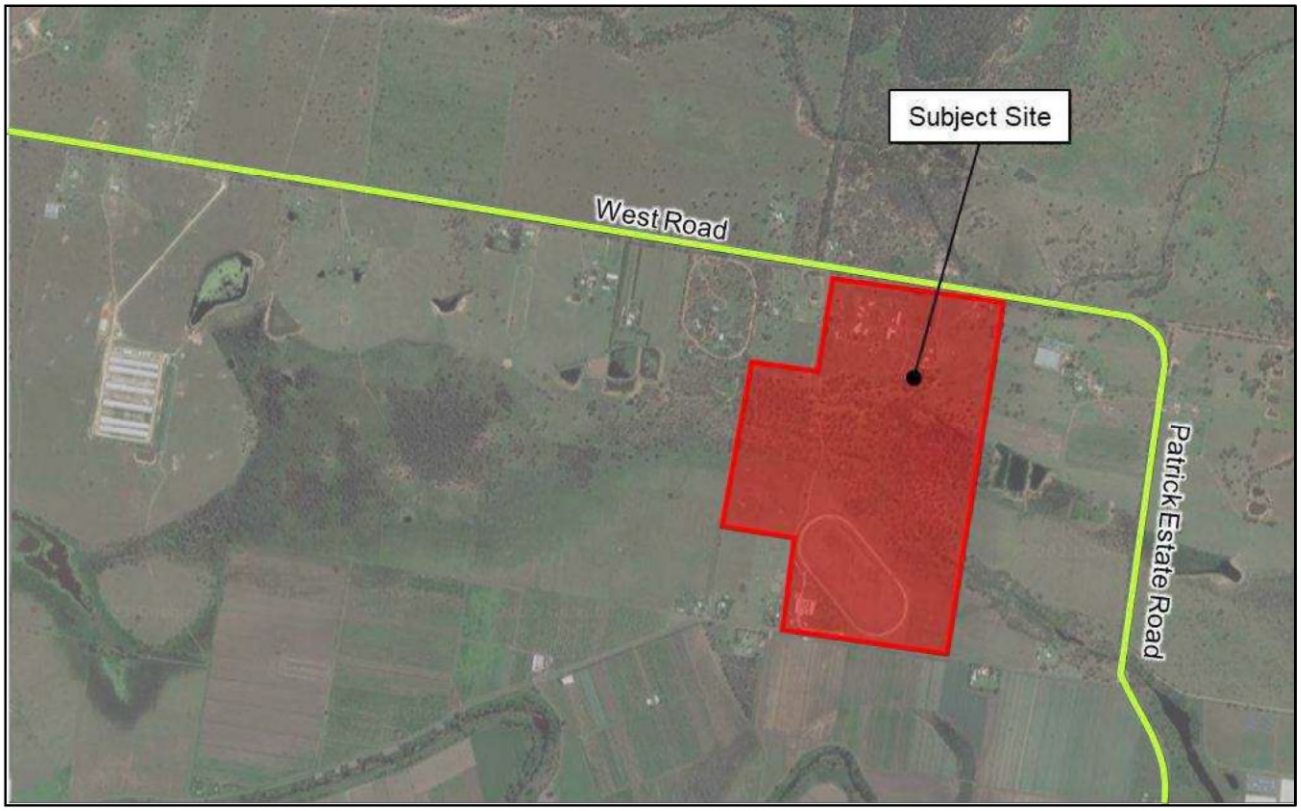


Figure 2.1 Subject Site

The site is currently occupied by residential dwellings. These will be demolished as part of the development.

2.2 Local Road Network

A summary of key roads in the vicinity of the site is provided below.

2.2.1 West Road

West Road is a rural road under the jurisdiction of Somerset Regional Council. It is configured as a two-way, two-lane sealed 6.4m wide carriageway (without shoulders) and has a 100km/h speed limit.

West Road is shown in Figure 2.2 below.

Figure 2.2 West Road Facing East (left) and West (right)

2.2.2 Patrick Estate Road

Patrick Estate Road is classified as a rural road under the jurisdiction of Somerset Regional Council. It is configured as a two-way, two-lane sealed 6.5m wide carriageway with unsealed shoulders, and it has a 100km/h speed limit.

Patrick Estate Road is shown in Figure 2.3 below.

Figure 2.3 Patrick Estate Road Facing South (left) and North (right) (Source: Google Maps)

2.2.3 Coominya Connection Road

Coominya Connection Road is a rural road under the jurisdiction of Somerset Regional Council. It is configured as a two-way, two-lane sealed 5.5m wide carriageway with unsealed shoulders, and it has a 100km/h speed limit.

Coominya Connection Road is shown in Figure 2.4 below.

Figure 2.4 Coominya Connection Road Facing North (left) and South (right)

2.2.4 Brisbane Valley Highway

Brisbane Valley Highway is a State-controlled arterial road under the jurisdiction of DTMR. It is configured as a two-way, two-lane sealed 17m wide road carriageway which includes 2.5-3m wide sealed shoulders on both sides, and it has a 100km/h speed limit.

Brisbane Valley Highway is shown in Figure 2.5 below.

Figure 2.5 Brisbane Valley Highway Facing East (left) and West (right) (Source: Google Maps)

2.3 Public Transport Facilities

There is a bus stop pair approximately 4.8km walking distance from the subject site at the intersection of West Road / Coominya Connection Road, as shown in Figure 2.6 below.

Figure 2.6 Public Transport in Proximity to the Subject Site

2.4 Active Transport Facilities

There are no formal active transport facilities in the vicinity of the subject site.

3. Proposed Development

3.1 Development Yield

The proposed development incorporates a car museum, short-term accommodation and caretaker's accommodation. The proposed land uses and yields are summarised in Table 3.1 below.

Table 3.1 Development Yields

Land Use	Yield
Car Museum	42,592m^2 (includes 900 car display bays and 350 motorcycle display bays)
Short term accommodation	10 units
Caretaker's accommodation	1 dwelling

It should be noted that the proposed development includes several ancillary land uses as summarised below:

- A food kiosk;
- Café;
- A gift shop; and
- A workshop.

The development layout is shown in Figure 3.1 below and the development plans are attached in Appendix A.

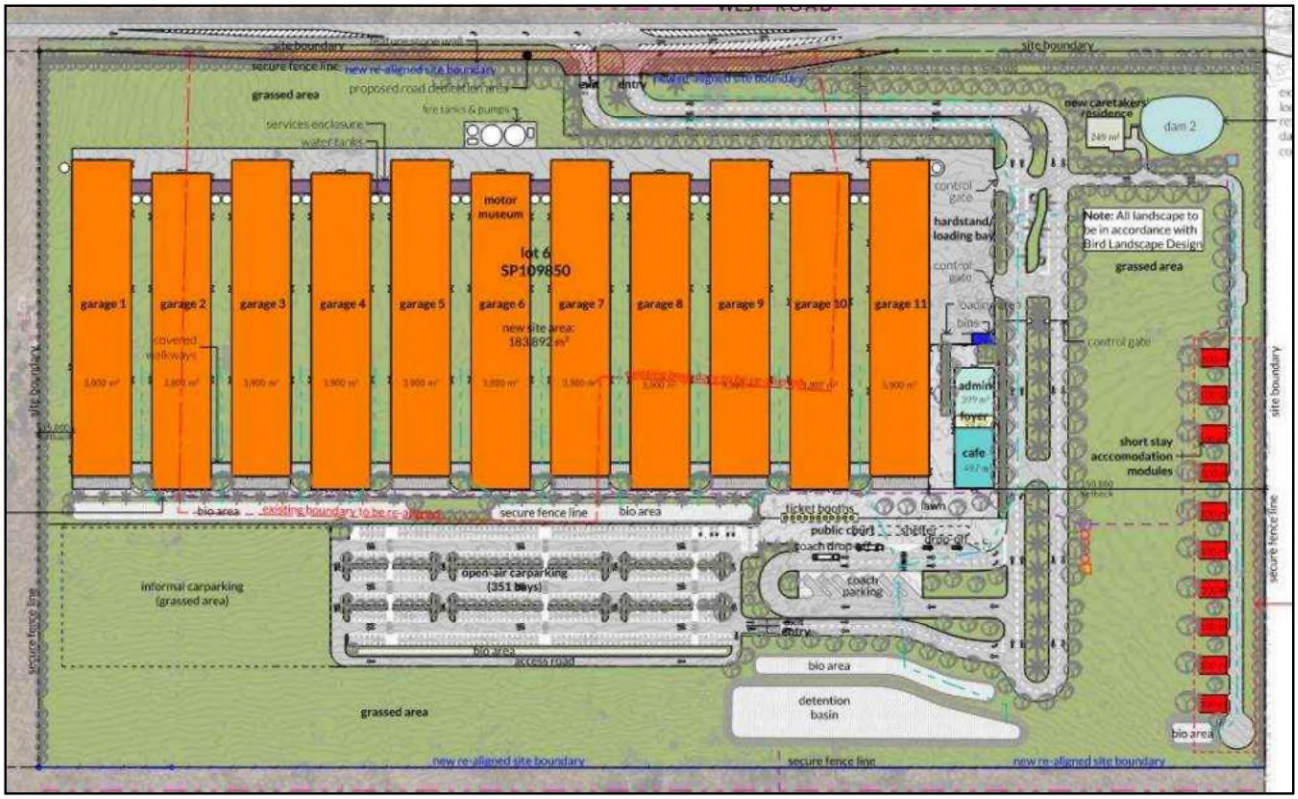


Figure 3.1 Development Layout

3.2 Site Operation

The following information has been provided by Palmer Motorama Pty Ltd regarding the operation of the car museum as summarised in Table 3.2 below:

Table 3.2 Site Operations

Description	Value
Annual visitors	100,000
Car museum weekday opening hours	Monday – Thursday: 8AM – 6PM
Car museum weekend opening hours	Friday – Sunday: 8AM – 6PM
Total daily museum staff	82 staff

3.3 Vehicle Access

Vehicle access to the development is proposed via a new priority-controlled intersection on West Road. The access is reviewed in detail in Section 8.2.

3.4 Car Parking Provision

A total of 362 car parking spaces are proposed on the site including:

- 351 car parking spaces adjacent to the car museum (including 5 PWD spaces);
- 1 space for the caretaker's accommodation; and
- 10 car parking spaces for the short-term accommodation units.

In addition, a pick up / drop off zone for taxis and coaches is provided on site.

The suitability of the car parking provision is discussed in further detail in Section 7 of this report.

3.5 Motorcycle Parking Provision

The site provides 18 motorcycle parking spaces.

3.6 Service Vehicles

A loading area has been provided adjacent to the car museum.

Seven (7) coach parking bays have also been provided.

4. Traffic Assumptions and Characteristics

4.1 Study Intersections

The traffic impacts likely to be generated by the development have been assessed in accordance with TMR's Guide to Traffic Impact Assessments (GTIA). The locations of the study intersections are shown in Figure 4.1 below.

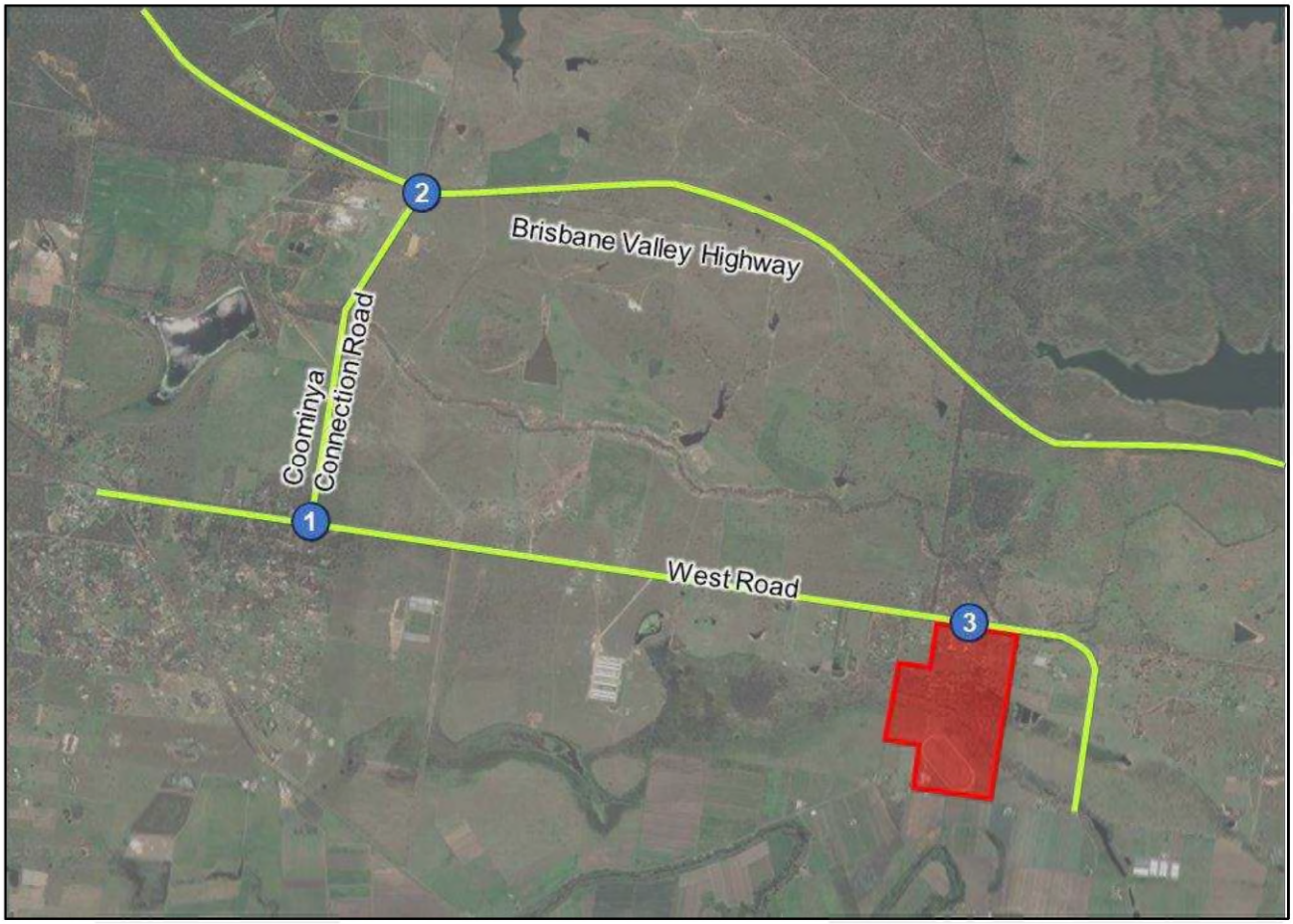


Figure 4.1 Study Intersections

4.2 Background Traffic Volumes

To understand the existing traffic conditions, traffic surveys were undertaken by Austraffic during the AM and PM peak periods and weekend peak periods on 25th and 28th October 2023 for the following intersections:

- Coominya Connector Road / West Road; and
- Brisbane Valley Highway / Coominya Connector Road

The surveyed and adopted peak periods have been summarised in Table 4.1 and a copy of the traffic survey data is enclosed in Appendix B. The adopted peak periods have been based on a network peak, i.e. the maximum total vehicles through all study intersections.

Table 4.1 Adopted Peak Periods

Intersection ID	Surveyed Peak Periods		
	AM	PM	Weekend
Coominya Connector Road / West Road	7:00AM – 8:00AM	4:00PM – 5:00PM	12:30PM – 1:30PM
Brisbane Valley Highway / Coominya Connector Road	7:45AM – 8:45AM	4:30PM – 5:30PM	10:00AM - 11:00AM
Adopted Hourly Peak Periods	7:45AM – 8:45AM	4:00PM – 5:00PM	10:00AM – 11:00AM

4.3 Traffic Growth

Burchills reviewed TMR's annual segment reports for the Brisbane Valley Highway State controlled road to provide an indication of traffic growth along the study network within the last 10 years. As such, the average growth rate has been calculated for the Brisbane Valley Highway by utilising count location (30102).

The segment reports indicate that the average growth rate over the past 10-year period equates to 2.03%. For a conservative approach (i.e. on the high side), this has been adopted on all assessed roads for the purposes of this assessment.

4.4 Site Peak

Based on the information provided, it is anticipated that the site peak operational period for the car museum will occur during the weekend midday period.

4.5 Traffic Generation – Car Museum

Based on a review of applicable traffic generation documents, no appropriate traffic generation rate could be sourced for a car museum of this size. Therefore, a first principles assessment will be required to determine the level of traffic likely to be generated by the development.

Reference is made to the traffic survey data in the Bitzios Consulting Traffic Impact Assessment Report for the Car Museum development proposed in Coolum (reference number: P5743.002R). It is noted that two sites were surveyed in 2013, including a temporary vintage car museum at the Palmer Coolum Resort, as well as the National Motor Museum in Birdwood, Adelaide Hills.

The following conclusions were made based on the survey data:

- Peak visitation occurs on Sundays (35% of the weekly visits), with the same amount of visitors assumed on Saturdays (i.e. 70% of weekly visitors arrive on the weekends);
- It was assumed that the remaining 30% of weekly visitors were spaced evenly across the weekdays (i.e. 6% of weekly visitors arriving each day Monday - Friday);
- Average time spent at the exhibits was 1.5 hours;
- The overall site peak occurred between 12PM and 1PM on Sunday with 36% of overall daily trips occurring during this peak;
- Approximately 60% of trips during the weekend peak were inbound and 40% were outbound;
- The majority of visitors arrived by private vehicles; and
- Average vehicle occupancy was 3.2 persons per vehicle.

Based on the above, the daily traffic generation was calculated for the peak day (i.e. Sunday), as summarised in Table 4.5 below.

Table 4.2 Traffic Generation Calculations

Description	Value
Annual Visitors	100,000
Peak Day	Sunday
Operations	52 weeks per year
Weekly Visitors	1,923 visitors per week
Vehicle Occupancy	3.2 persons per vehicle
Weekend Operations	
Weekend Daily Demand	35% of weekly visitors
Weekend Peak Hour Demand	36% of weekend daily visitors
Expected Weekend Peak Hour	12PM – 1PM
Weekend Daily Visitors	673 visitors per day
Weekend Peak Hour Visitors	242 visitors per hour
Weekend Peak Hour Trips (Two-way)	76 vph
Car Museum Staff Trips Expected During Peak Hour	0 vph
Weekday Operations	
Weekday Daily Demand	6% of weekly visitors
Weekday Peak Hour Demand	36% of daily visitors
Expected Weekday AM Peak Hour	8AM – 9AM
Expected PM Peak Hour	4PM – 5PM

Weekday Daily Visitors	115 visitors per day
Weekday Peak Hour Visitors	42 visitors per hour
Weekday Peak Hour Trips (Two-way)	15 vph
Car Museum Staff Trips Expected During Peaks	82 vph (1 veh / staff)

The inbound and outbound trips were calculated from the weekend and AM and PM weekday peak trips as shown in Table 4.3 and Table 4.4 below.

Table 4.3 Car Museum Directional Split of Peak Vehicle Trips

Peak Period	Inbound	Outbound
Weekend Peak	60%	40%
AM Weekday (visitors)	90%	10%
AM Weekday (staff)	100%	0%
PM Weekday	10%	90%
PM Weekday (staff)	0%	100%

The peak demands resulting from the directional splits above are summarised in Table 4.4 below.

Table 4.4 Car Museum Peak Hour Demands

Peak	Inbound	Outbound	Total
Weekend Peak	46 vph	30 vph	76 vph
AM Peak	95 vph	2 vph	97 vph
PM Peak	2 vph	95 vph	97 vph

As shown above, the car museum is expected to generate a total of 76 trips during the weekend peak and 97 trips during the weekday AM and PM peak.

4.6 Traffic Generation – Other Land Uses

In order to determine the traffic likely to be generated by the development, reference has been made to the RTA Guide to Traffic Generating Developments (GTGD) October 2002.

Table 4.5 summarises the trip generation rates, and trip generation adopted for the traffic assessment.

Table 4.5 Development Traffic Generation

Land Use	Yield	Trip Generation Rates			Trip Generation			Source
		AM Peak	PM Peak	Weekend Peak	AM Peak	PM Peak	Weekend Peak	
Short term accommodation	10 units	0.4 trips per unit	0.4 trips per unit	0.4 trips per unit	4 vph	4 vph	4 vph	GTGD
				TOTAL	**4 vph**	**4 vph**	**4 vph**	**-**

A 50% / 50% split was assumed for the weekend peak for the short-term accommodation units; however, a 30% / 70% IN / OUT split was assumed in the AM peak and the reverse in the PM peak for the short term accommodation units.

4.7 Total Traffic Generation

The total traffic generated by the site is summarised in Table 4.6 below.

Table 4.6 Total Development Traffic Generation

Land Use	Yield	Trip Generation Rates			Trip Generation			Source
		AM Peak	PM Peak	Weekend Peak	AM Peak	PM Peak	Weekend Peak	
Car Museum	42,592m^2	-	-	-	97 vph	97 vph	76 vph	First Principles
Short term accommodation	10 units	0.4 trips per unit	0.4 trips per unit	0.4 trips per unit	4 vph	4 vph	4 vph	GTGD
				TOTAL	**101 vph**	**101 vph**	**80 vph**	**-**

Overall, 101 vehicle trips are expected to be added to the surrounding road network during the weekday AM and PM peaks, and 80 vehicle trips are expected during the weekend peak hour. The weekday and weekend development traffic flow diagrams have been included in Appendix C.

4.8 Traffic Distribution

The surrounding road network and attractors have been analysed to determine the external distributions for the development traffic, as well as precedent from the traffic survey data obtained.

The distribution at the nearby intersections has been determined from the traffic survey data from October 25th and 28th, 2023. Further details regarding the adopted traffic distributions is provided at Appendix C.

5. Traffic Assessment Criteria

5.1 Assessment Scenarios

In accordance with TMR's GTIA, the impact assessment year for the development impacts on the external road network should be the year of opening, while site access intersections should be assessed at the year of opening and the 10-year design horizon.

A year of opening of 2027 has been assumed. Table 5.1 summarises the impact assessment scenarios.

Table 5.1 Impact Assessment Scenarios

Impact Assessment Scenario	Study Intersections
2027 BG	• Coominya Connector Road / West Road • Brisbane Valley Highway / Coominya Connector Road
2027 BG + DEV	• West Road / Site Access • Coominya Connector Road / West Road • Brisbane Valley Highway / Coominya Connector Road
2037 BG + DEV	• West Road / Site Access

5.2 Assessment Criteria

The performance of the study intersections has been analysed using SIDRA Intersection 9.1 (SIDRA). SIDRA is an industry recognised analysis tool that estimates the capacity and performance of intersections based on input parameters, including geometry and traffic volumes, and provides estimates of an intersection's Degree of Saturation (DOS), queues and delays.

5.2.1 Intersection Delay

The TMR GTIA recognises the intersection delay as a greater indicator of intersection performance in comparison to the previous TMR GARID's focus on the degree of saturation (DOS) criteria. The TMR GTIA appreciates that in urban networks, the DOS of an intersection may not be the most accurate representation of the intersection's operation as it is expected that existing intersections are approaching capacity with the growth of our cities.

Furthermore, for priority-controlled intersections and roundabouts, where the average peak hour delays for any movement exceeds 42 seconds, as outlined in the GTIA, the intersection should be upgraded for safety purposes. At an individual intersection-level, where this threshold has been exceeded, Burchills has made further comments.

5.2.2 Intersection Degree of Saturation

While the movement delay is considered to provide a better indication of intersection performance and safety for priority-controlled intersections and roundabouts, the DOS should still be considered when assessing the performance of the intersection.

Table 5.2 Adopted Intersection Performance Thresholds – Degree of Saturation

Intersection Treatment	DOS Threshold
Signalised Intersections	Less than or equal to 0.90
Roundabouts	Less than or equal to 0.85
Priority Controlled Intersections	Less than or equal to 0.80

Source: TMR Guidelines for Road Impacts Development

6. SIDRA Assessment

6.1 West Road / Site Access

The site access intersection is proposed as a three-way priority-controlled intersection. The concept layout and SIDRA assessed layout are illustrated in Figure 6.1 below.

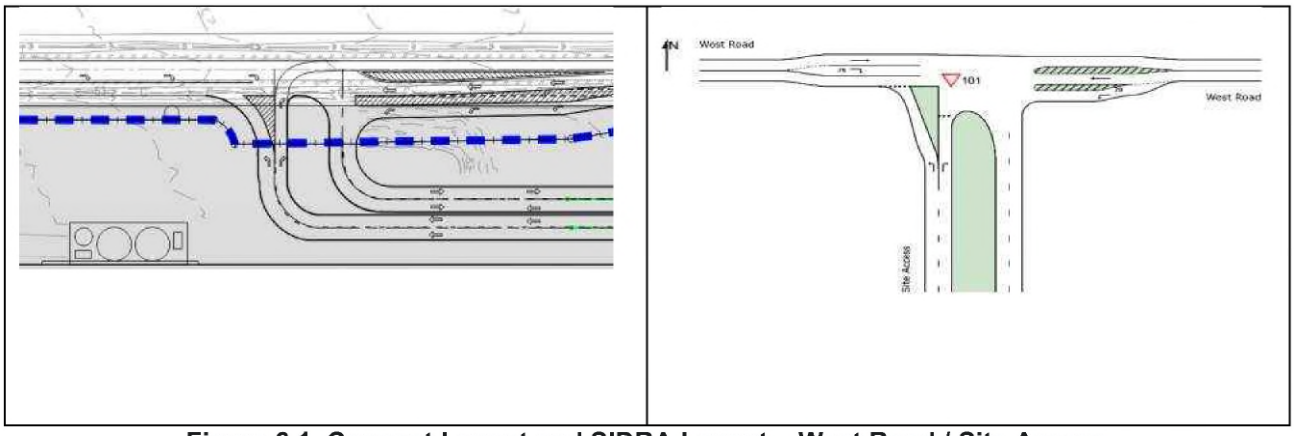


Figure 6.1 Concept Layout and SIDRA Layout – West Road / Site Access

The results of the SIDRA assessment are summarized in Table 6.1. The SIDRA layouts and detailed results are included in Appendix D.

Table 6.1 SIDRA Results – West Road / Site Access*

Scenarios	AM Peak			PM Peak			Weekend Peak		
	DOS	Delay (s)	95th %ile Queue	DOS	Delay (s)	95th %ile Queue	DOS	Delay (s)	95th %ile Queue
2027 BG + DEV	0.05	6	2	0.07	6	2	0.03	6	1
2037 BG + DEV	0.05	6	1	0.07	6	2	0.03	6	1

**Note: these results include site traffic generation from a previous plan set that included higher yields, i.e. the post-development traffic impacts reported above are conservative (on the high side).*

As shown in Table 6.1, the intersection of West Road / the site access performs well within acceptable limits (DOS <0.80, delay <42 seconds) at the year of opening and 10-year design horizon of the post-development scenario.

6.2 Coominya Connection Road / West Road

The Coominya Connection Road / West Road intersection is a three-way priority-controlled intersection. The aerial photo and SIDRA assessed layout are illustrated in Figure 6.2 below.

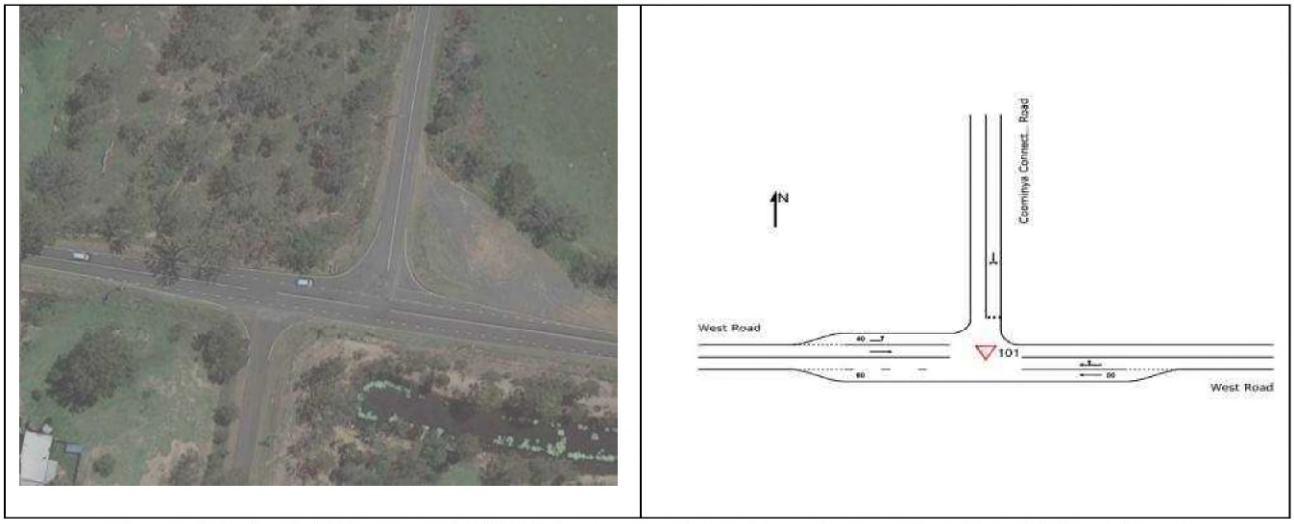


Figure 6.2 Aerial Photo and SIDRA Layout – Coominya Connection Road / West Road

The results of the SIDRA assessment are summarized in Table 6.2. The SIDRA layouts and detailed results are included in Appendix D.

Table 6.2 SIDRA Results – Coominya Connection Road / West Road*

Scenarios	AM Peak			PM Peak			Weekend Peak		
	DOS	Delay (s)	95th %ile Queue (m)	DOS	Delay (s)	95th %ile Queue (m)	DOS	Delay (s)	95th %ile Queue (m)
2027 BG	0.05	6	2	0.09	6	3	0.06	6	2
2027 BG + DEV	0.07	6	2	0.10	7	3	0.07	7	2

**Note: these results include site traffic generation from a previous plan set that included higher yields, i.e. the post-development traffic impacts reported above are conservative (on the high side).*

As shown in Table 6.2, the intersection of Coominya Connection Road / West Road performs well within acceptable limits (DOS <0.80, delay <42 seconds) in both pre and post development scenarios. Additionally, the addition of the development traffic results in negligible increases to delays and 95th percentile queue lengths.

6.3 Brisbane Valley Highway / Coominya Connection Road

The Brisbane Valley Highway / Coominya Connection Road intersection is a three-way priority-controlled intersection. The aerial photo and SIDRA assessed layout are illustrated in Figure 6.3 below.

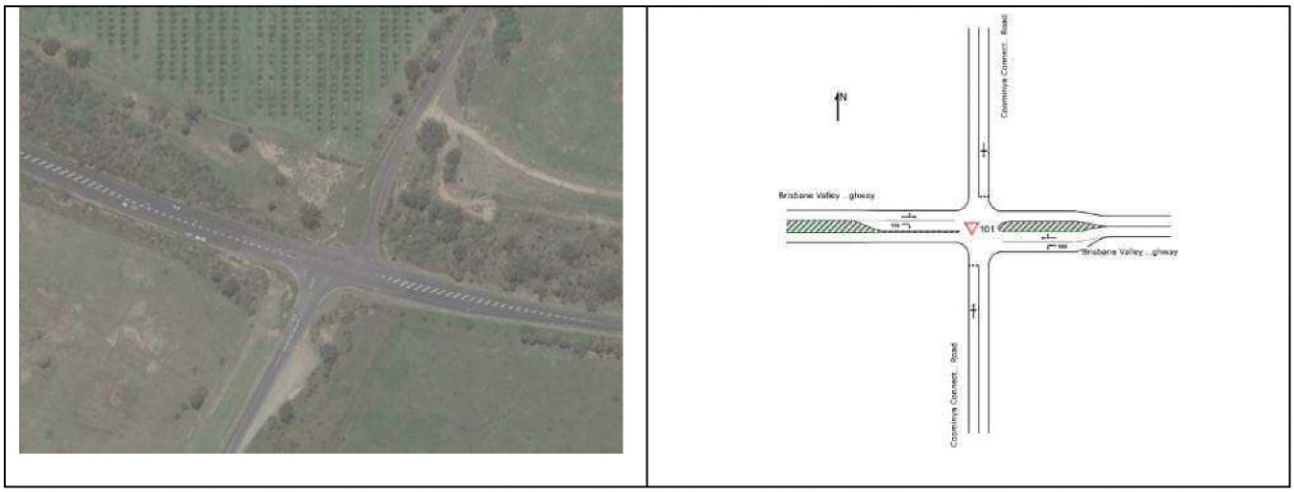


Figure 6.3 Concept Layout and SIDRA Layout – Brisbane Valley Highway / Coominya Connection Road

The results of the SIDRA assessment are summarized in Table 6.3. The SIDRA layouts and detailed results are included in Appendix D.

Table 6.3 SIDRA Results – Brisbane Valley Highway / Coominya Connection Road*

Scenarios	AM Peak			PM Peak			Weekend Peak		
	DOS	Delay (s)	95th %ile Queue (m)	DOS	Delay (s)	95th %ile Queue (m)	DOS	Delay (s)	95th %ile Queue (m)
2027 BG	0.12	8	3	0.08	7	2	0.13	8	4
2027 BG + DEV	0.12	8	4	0.11	7	3	0.14	8	4

**Note: these results include site traffic generation from a previous plan set that included higher yields, i.e. the post-development traffic impacts reported above are conservative (on the high side).*

As shown above in Table 6.3, the intersection of Brisbane Valley Highway / Coominya Connection Road performs well within acceptable limits (DOS <0.80, delay <42 seconds) in both pre and post development scenarios. Additionally, the addition of the development traffic results in negligible increases to delays and 95th percentile queue lengths.

6.4 Network Delay Impact

In accordance with the GTIA requirements for no net worsening to baseline road network operations, this assessment has investigated the delay impact of the development traffic on the network. The assessment has reviewed whether the increase in average delay at the Brisbane Valley Highway / Coominya Connection intersection exceeds 5%. The average delay has been calculated as per the guidance in the GTIA illustrated in Figure 6.4, taking the aggregate average delay across the intersections for both the baseline scenario (2025 BG) and the with development scenario (2025 BG + DEV).

$$\mathrm{ID} = \sum_{i=1}^{n} WD - \sum_{i=1}^{n} BC$$

where:

ID	is aggregate intersection-delay impact vehicle-minutes.
WD	is 'with development' intersection vehicle-minutes for design peak periods. This is calculated by multiplying the 'with development' average delay by movement to the base case volume on each movement, thus not counting the impact as delays to development traffic, only to pre-existing traffic that is affected by these additional delays.
BC	is base case intersection vehicle-minutes for design peak periods
n	is the number of intersections in the impact assessment area
i	is each intersection within the impact assessment area.

Source: TMR GTIA

Figure 6.4 Network Delay Impact

The results of the network impact assessment are summarized in Table 6.4.

Table 6.4 Intersection Delay Impact – Brisbane Valley Highway / Coominya Connection Road

Assessment Scenario	Aggregate Delay (veh-min)	
	AM Peak	PM Peak
BG Volumes	369	332
2025 BG	14.0	13.5
2025 BG + DEV	14.1	13.6
Difference (Development Impact)	0.1	0.1
Average Delay Impact (%)	0.54%	

As shown in Table 6.4, the network average delay impact is less than 1%, which does not exceed the 5% threshold. Therefore, no mitigation works are required at the Brisbane Valley Highway / Coominya Connection Road priority-controlled intersection.

7. Car Parking Assessment

7.1 Car Parking Requirements

The applicable car parking requirements from Somerset Regional Council's Transport, Access and Parking Code are summarized in Table 7.1 below.

Table 7.1 Car Parking Requirements – Somerset Regional Council Transport, Access and Parking Code

Land Use	Yield	Car Parking Rate	Car Parking Requirement
Car Museum	42,592m^2 GFA	No specific rate	N/A
Short term accommodation	10 units	1 space per unit for visitors 1 space per 3 units for employees	14 spaces
Caretaker's accommodation	1 dwelling	1 space	1 space
		Total	15 spaces

As shown above, there is no specific car parking requirement for the car museum, so a first principles assessment will be required. The other land uses on the site generate a requirement for 15 car parking spaces.

7.2 Car Parking Demand – Car Museum

7.2.1 Visitor Parking Demand

Using the traffic generation and assumptions from Section 4, as well as Google analytics data from the National Motor Museum in Birdwood, Adelaide, the parking accumulation on a weekend was modeled as shown in Table 7.2 below. For the purposes of this assessment, an IN / OUT split of 40% / 60% has been adopted after 2pm.

Table 7.2 Peak Visitor Parking Accumulation

Hour Ending	% of Peak Traffic*	Two-way Traffic	Traffic In	Traffic Out	Parking Accumulated	Total Visitor Parking Accumulation
9:00AM	25%	30 vph	27 vph	3 vph	24	24
10:00AM	30%	36 vph	32 vph	4 vph	29	53
11:00AM	50%	60 vph	54 vph	6 vph	48	101
12:00PM	75%	90 vph	81 vph	9 vph	72	173
1:00PM	100%	120 vph	108 vph	12 vph	96	269
2:00PM	105%	126 vph	38 vph	88 vph	-50	218
3:00PM	90%	108 vph	22 vph	86 vph	-65	154
4:00PM	60%	72 vph	7 vph	65 vph	-58	96

*Note: based on the Sunday profile in Google 'Popular Times' for the National Motor Museum, and assuming that peak traffic generation is between 12PM and 1PM.

As shown above, the peak visitor parking accumulation for the car museum on the weekends is estimated to be 269 parking spaces.

7.2.2 Staff Parking Demand

Based on the information provided by Palmer Motorama Pty Ltd in Section 4.4, a total of 82 staff are expected to be on site to operate the car museum. Assuming each staff member drives their own vehicle to the site, this generates a parking demand of 82 car parking spaces.

7.2.3 Total Parking Demand

The total visitor and staff parking accumulation over a weekend day is shown in Figure 7.1 below.

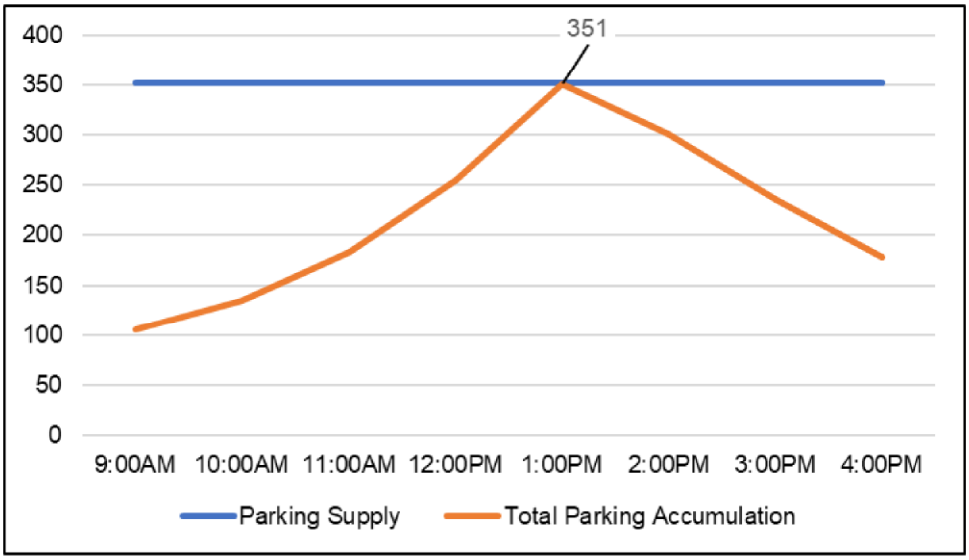


Figure 7.1 Peak Weekend Parking Accumulation

As shown above, the peak parking accumulation is 351 total parking spaces at around 1PM. This includes both visitor and staff parking accumulation.

7.3 Car Parking Provision

The proposal provides a total of 362 car parking spaces across the site. This includes 1 space for the caretaker's accommodation, 10 spaces for the short-term accommodation, and 351 spaces allocated for the car museum (including 5 PWD spaces).

7.4 Motorcycle Parking Provision

The site provides 18 motorcycle parking spaces.

7.5 Suitability of Car Parking

The expected car parking demand is compared against the car parking provision in Table 7.3 below.

Table 7.3 Car Parking Assessment

Land Use	Yield	Parking Type	Car Parking Demand	Car Parking Provision	Shortfall (-) / Surplus (+)
Car Museum	42,592m^2	Visitor	269 spaces	351 spaces	N/A
		Staff	82 spaces		
Short term accommodation	10 units	Visitor	10 spaces	10 spaces	N/A
		Staff	4 spaces	0 spaces	-4 spaces
Caretaker's accommodation	1 dwelling	Resident	1 space	1 space	N/A
		Total	366 spaces	362 spaces	-4 spaces

As shown above, the car parking supply is generally appropriate, with the exception of staff parking for the short-term accommodation. However, it is anticipated that the short-term accommodation will be maintained by existing car museum staff, i.e. the parking will be accommodated within the car museum parking supply. Therefore, the parking provision is considered to be appropriate to accommodate the car parking demands likely to be generated by the development.

8. Design Review

8.1 Overview

Burchills Engineering Solutions has undertaken a detailed review of the proposed site layout to ensure compliance with relevant standards and guidelines, including:

- The Somerset Regional Council Planning Scheme;
- Austroads Guide to Road Design Part 4a;
- Australian/New Zealand Standard AS2890.1:2004 Parking Facilities; and
- Australian/New Zealand Standard AS2890.2:2004 Commercial Parking Facilities

8.2 Access Review

8.2.1 Access Configuration

Access to the site is proposed via a new access intersection on West Road, as shown in Figure 8.1 below.

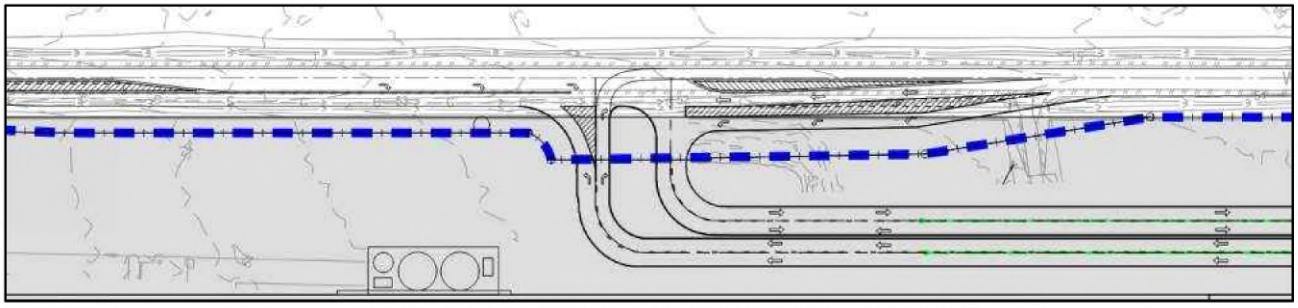


Figure 8.1 Access Intersection Concept Layout

Dual exit and entry lanes are proposed, with separate right and left turn lanes proposed at the exit.

Swept path analysis indicates that the intersection can be navigated by the largest applicable service vehicle (19m articulated vehicle, AV). Swept paths are attached in Appendix E.

8.2.2 Sight Distance

The safe intersection sight distance (SISD) at the proposed site access intersection onto West Road has been assessed against the requirements of *Austroads Guide to Road Design: Part 4A* (AGRD), as summarised in Table 8.1 below.

Table 8.1 Sight Distance Assessment for 110km/h Design Speed

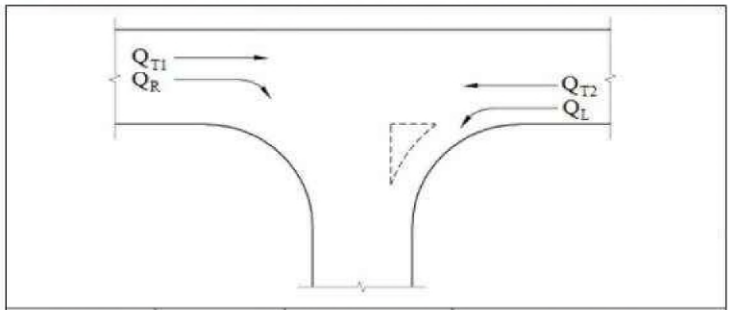
Direction	SISD (2s Reaction Time)	Available	Compliant
Facing east	285m	~300m	Yes
Facing west		~300m	Yes

As shown above, the sight distance at the site access is considered to accord with the AGRD, and is appropriate from a traffic engineering perspective.

8.2.3 Turn Warrants Assessment – Site Access Intersection

A turn warrants assessment was undertaken for the 10-year design horizon of the development at the proposed site access in accordance with DTMR RPDM Volume 3, Part 4A. The turn warrants have been developed around the relationship between traffic volumes, speed environments and accident statistics, employing a Benefit Cost Ratio (BCR) across an assumed design life. The formulas for the turn warrants calculations are shown in Figure 4A -2 Warrants – major road turn treatments – normal design domain from the Austroads Guide to Traffic Management Part 6, reproduced as Figure 8.2 below.

Figure 4A-2 - Calculation of the major road traffic volume parameter 'Q_M'



Road Type	Turn Type	Splitter Island	Q_M (veh/h)
2 Lane 2 Way	Right	No	= $Q_{T1} + Q_{T2} + Q_L$
		Yes	= $Q_{T1} + Q_{T2}$
	Left	Yes/No	= Q_{T2}
4 Lane 2 Way	Right	No	= 50% x $Q_{T1} + Q_{T2} + Q_L$
		Yes	= 50% x $Q_{T1} + Q_{T2}$
	Left	Yes/No	= 50% x Q_{T2}

Figure 8.2 Turn Warrants Q_M Traffic Flow Calculation

Table 8.2 shows the calculation of the major road traffic volume parameters 'Q_M' and turning warrants assessment based on Figure 4A -2 Warrants – major road turn treatments – normal design domain from the DTMR - RPDM.

Table 8.2 Turn Warrants Parameters for Site Access Intersection – 10-year Design Horizon

Traffic Volume	AM Peak	PM Peak	Weekend Peak
Q_L	49	3	24
Q_R	49	3	24
Q_{T1}	44	30	31
Q_{T2}	20	41	44
$Q_{ML} = Q_{T2}$	20	41	44
$Q_{MR} = Q_{T1} + Q_{T2} + Q_L$	113	74	99

Figure 8.3 extracted from the Austroads Guide to Traffic Management Part 6 below indicates the appropriate turn treatments based on the above traffic volumes for design speeds over 100km/h.

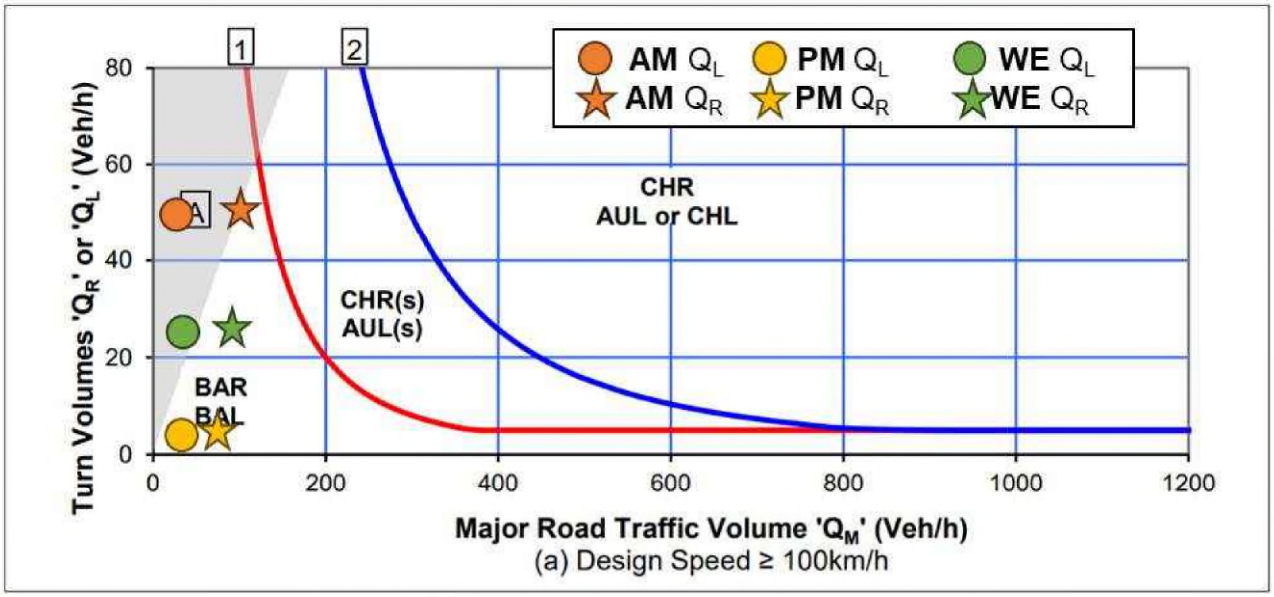


Figure 8.3 Left and Right Turn Warrant Assessment

As shown above, the traffic volumes expected by the 10-year design horizon of the development require at a minimum a Basic Right Turn and Basic Left Turn treatment.

The development proposes a channelized right turn (CHR) and auxiliary left (AUL) turn treatment at the site access intersection for additional safety of road users on West Road. The proposed access configuration therefore satisfies the minimum requirements of Austroads Guide to Traffic Management Part 6 and is appropriate from a traffic engineering perspective.

8.2.4 Turn Warrants Assessment – West Road / Coominya Connection Road Intersection

A turn warrants assessment was undertaken for the 10-year design horizon of the development at the existing West Road / Coominya Connection Road intersection in accordance with DTMR RPDM Volume 3, Part 4A. The turn warrants have been developed around the relationship between traffic volumes, speed environments and accident statistics, employing a Benefit Cost Ratio (BCR) across an assumed design life.

Table 8.3 shows the calculation of the major road traffic volume parameters 'Q_M' and turning warrants assessment based on Figure 4A -2 Warrants – major road turn treatments – normal design domain from the DTMR - RPDM.

Table 8.3 Turn Warrants Parameters for West Road / Coominya Connection Road – 10-year Design Horizon

Traffic Volume	AM Peak	PM Peak	Weekend Peak
Q_L	74	40	71
Q_R	15	33	23
Q_{T1}	8	56	38
Q_{T2}	69	23	46

Traffic Volume	AM Peak	PM Peak	Weekend Peak
$Q_{ML} = Q_{T2}$	69	23	46
$Q_{MR} = Q_{T1} + Q_{T2} + Q_L$	151	119	155

Figure 8.4 extracted from the Austroads Guide to Traffic Management Part 6 below indicates the appropriate turn treatments based on the above traffic volumes for design speeds over 100km/h.

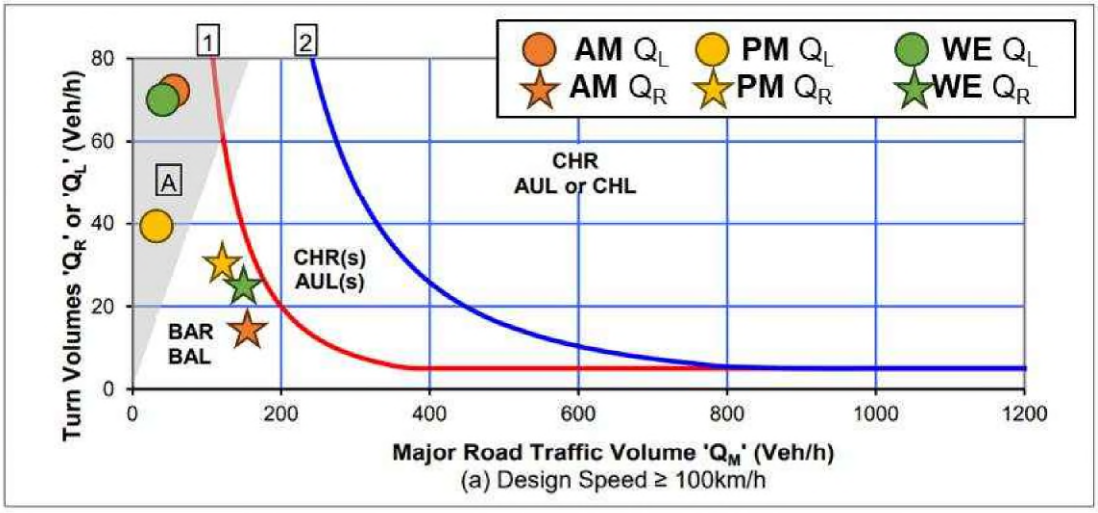


Figure 8.4 Left and Right Turn Warrant Assessment

As shown above, the traffic volumes expected by the 10-year design horizon of the development require at a minimum a Basic Right Turn and Basic Left Turn treatment at the existing intersection. This is equivalent to the requirements for the existing intersection. Therefore, the addition of development traffic to the network does not trigger a requirement for an upgraded intersection.

8.2.5 Crash Data

Crash data in proximity the study intersections and along West Road was sourced and reviewed for the past 5 years (2018-2022). The crash data is summarised in Table 8.4 below.

Table 8.4 2017-2022 Crash Data

Crash ID	Location	Date	Conditions	Severity	DCA Code	Description
151790	Brisbane Valley Highway / Coominya Connection Road	April 2020	Daylight, clear	Hospitalisation	408	Vehicles manoeuvring: leaving driveway
151742	Brisbane Valley Highway / Coominya Connection Road	November 2018	Daylight, clear	Minor injury	805	Off path curve: out of control on carriageway, hit object

Crash ID	Location	Date	Conditions	Severity	DCA Code	Description
151718	Coominya Connection Road / West Road intersection	March 2018	Daylight, clear	Medical treatment	201	Vehicles opposite direction: head on collision
366116	West Road (near Patrick Estate Road)	March 2021	Daylight, raining	Hospitalisation	804	Off path curve: off carriageway on a left bend, hit object

The crash data indicates that there has only been two hospitalisations in the vicinity of the site in the past 5 years. Both were single vehicle incidents.

8.3 Car Parking Layout

The car parking layout has been assessed against AS2890.1 as summarized in Table 8.5.

Table 8.5 Car Park Layout Design Review

Design Element	Proposed	AS2890 Requirement	Compliant
Class 1A Car Parking (Staff)	2.5m x 5.4m	2.4m x 5.4m	Yes
Class 1A Car Parking (short term accommodation – resident)	2.4m x 5.4m	2.4m x 5.4m	Yes
Class 2 Car Parking (Visitor)	2.5m x 5.4m	2.5m x 5.4m	Yes
Clearance to vertical obstructions	Minimum 0.3m	Minimum 0.3m	Yes
PWD Car Parking	2.5m x 5.4m with adjacent 2.5m x 5.4m shared zone	2.4m x 5.4m with adjacent 2.4m x 5.4m shared zone	Yes
Aisle Widths	Min. 6.0m	Minimum 5.8m	Yes
Parallel Parking (unobstructed end)	Minimum 3.0m wide Minimum 7.1m long	Minimum 2.1m wide Minimum 5.4m long	Yes
Parallel Parking	Minimum 3.0m wide Minimum 7.1m long	Minimum 2.1m wide Minimum 5.9m long	Yes
Blind aisle extension	Minimum 2.0m	Minimum 1.0m	Yes
Motorcycle bays	Minimum 1.2m x 2.5m	Minimum 1.2m x 2.5m	Yes

As shown above, the layout generally accords with AS2890.1.

8.4 Public Transport Provisions

8.4.1 Coach Provisions

Provision has been made on site for 14.5m long coaches to enter the site, drop off or pick up passengers, and exit the site in a forward gear. The coach pick up and drop off areas are shown in Figure 8.5 below.

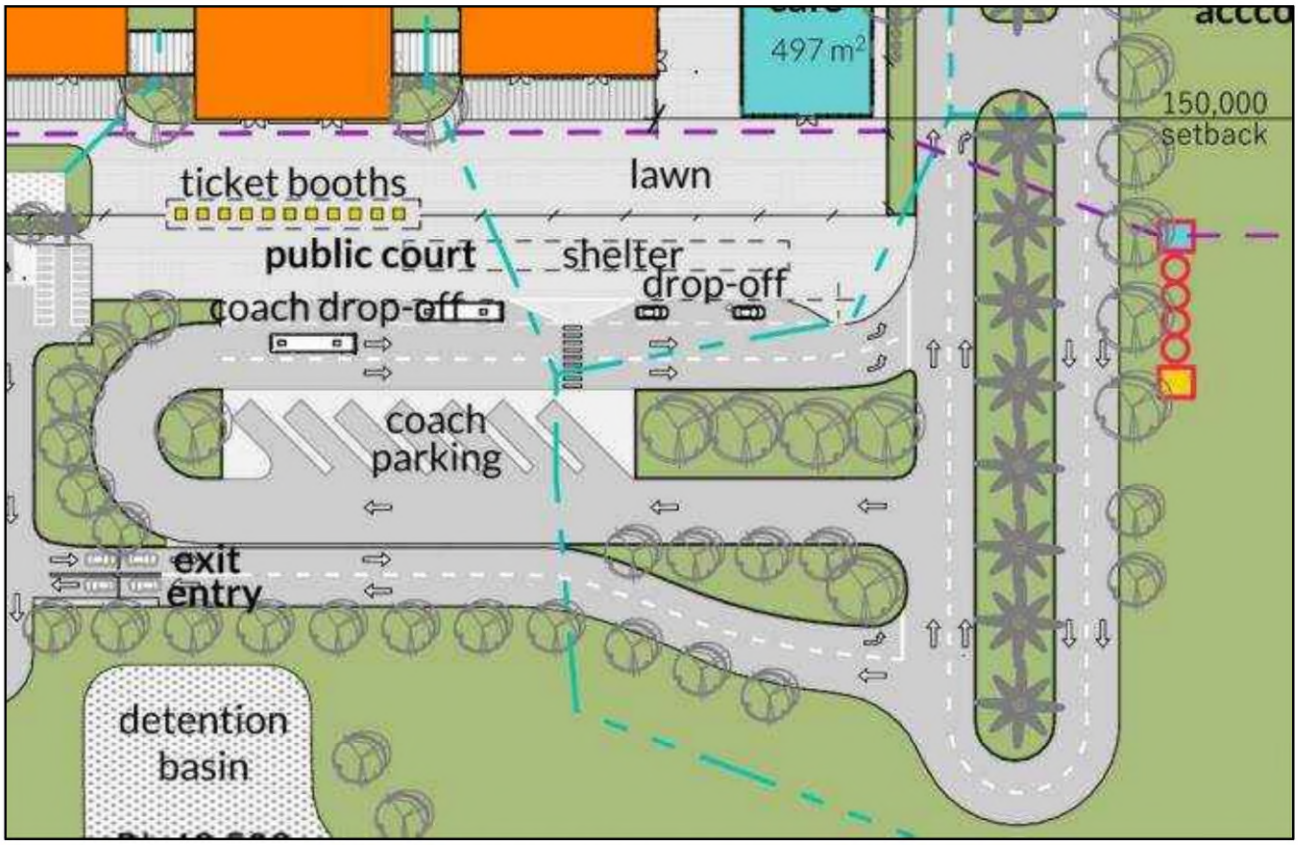


Figure 8.5 Coach Pick Up and Drop Off Zones

Swept path analysis demonstrates that the coaches can enter and exit the site in a forward gear whilst maintaining appropriate clearances to vertical obstructions. Swept paths are attached in Appendix E.

8.4.2 Taxi & Drop Off Provisions

Provision for taxi pick up / drop off has been made adjacent to the coach pickup and drop off area as shown in Figure 8.5 above. A total of three (3) short-term parking bays have been provided.

The short-term parking bays accord with AS2890 as tabulated in Table 8.5 under 'parallel parking'. Pedestrian connections have been provided from the pick up / drop off area to facilitate safe arrival / departure of visitors.

8.5 Active Transport Provisions

Based on the location and land uses proposed on the site, demand for bicycle parking facilities is not anticipated.

Pedestrian footpaths and crossings have been provided throughout the site to facilitate safe pedestrian movements between attractions within the site and to and from parking and set down areas. The proposed pedestrian crossings generally cater to the likely pedestrian desire lines and are separated from vehicle circulation areas and servicing areas.

As no active transport facilities are available external to the site, no pedestrian connection has been provided to the external network.

8.6 Servicing Arrangements

8.6.1 Requirements

The applicable service vehicle requirements from Somerset Regional Council's Transport, Access and Parking Code are summarised in Table 8.6 below.

Table 8.6 Service Vehicle Requirements – Somerset Regional Council Transport, Access and Parking Code

Land Use	Service Vehicle Requirement
Car Museum	Not specified by SRC Transport, Access and Parking Code – 19m articulated vehicle (AV) as required for delivery of display vehicles
Short term accommodation	Small rigid vehicle (SRV)

8.6.2 Provisions

Loading and unloading of service vehicles for the car museum will occur via the hardstand loading area, shown in Figure 8.6 below.

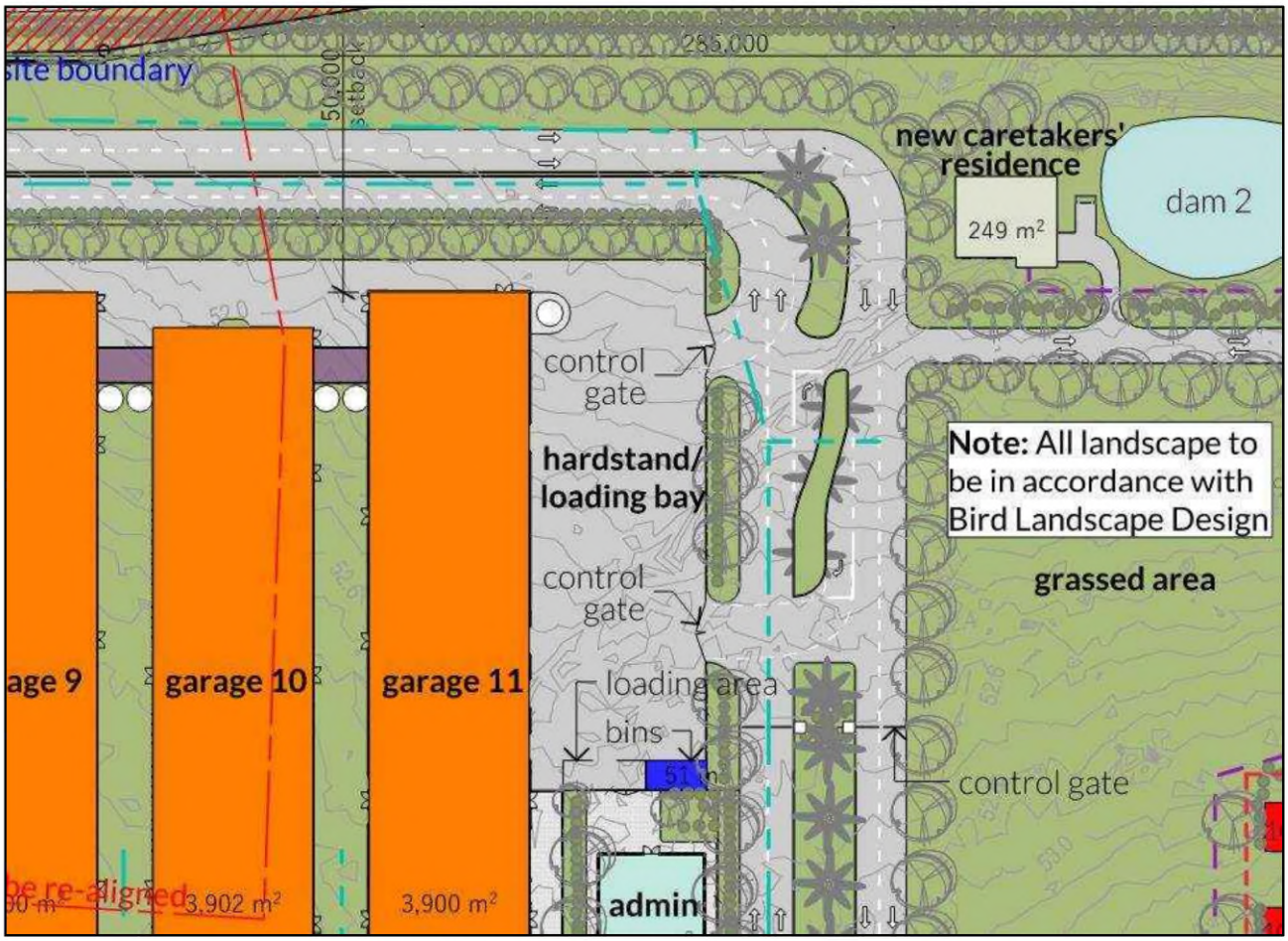


Figure 8.6 Car Museum Loading Area Location

Swept path analysis indicates that an AV can enter and exit the site in a forward gear whilst maintaining appropriate clearances to vertical obstructions. The swept paths are attached in Appendix E.

A small rigid vehicle (SRV) can also enter and exit the short term accommodation access road in a forward gear. The swept path is attached in Appendix E.

8.6.3 Waste Strategy

It is anticipated that bulk bins will be used to store waste generated by the car museum and will be collected by a front-loading waste collection vehicle (WCV) from the loading area. Swept path analysis indicates that a front-loading WCV can enter and exit the site in a forward gear. The swept paths are attached in Appendix E.

Waste from the short-term accommodation units will be transferred by the cleaners to the bulk bins in the loading zone of the car museum and emptied by a front lift WCV.

9. IR Responses

9.1 Somerset Regional Council Information Request (14 September 2023)

The relevant transport items from SRC's IR are tabulated in Table 9.1 below. It should be noted that the IR was a response to a superseded plan set.

Table 9.1 SRC Information Request (14 September 2023)

Item	Council Comments	Burchills Response
12	***Access matters*** The development includes a large ancillary car park comprising of two entries and exits to West Road. The driveway for the carpark is located immediately to the west of the driveway that serves the museum, accommodation and caretakers residences. The right turn slot from West Road is proposed to serve both access points. Vehicles entering the site from the east have a left turn slot that is designed to serve both accesses. Westbound vehicles using the left turn slot to enter the car park will be required to cross the driveway serving the museum, accommodation uses and caretakers residences. It is considered the driveway arrangements do not provide a logical solution in that turning vehicles are crossing driveways and there are numerous points of conflict associated with the two accesses to the site. Information requested: (a) Please provide a Traffic Impact Assessment (TIA) prepared by a qualified person, that addresses the proposed development, including traffic numbers to and from the site, and the need for any upgrades to existing roads. (b) Additional to standard requirements for a TIA please provide a detailed analysis of the proposed dual access arrangements for the site. (c) Please identify whether any road dedications will be required for the turning movements or realignment of the West Road carriageway. As an example, a left turn slot that extends into the property while being fully connected to the road pavement of West Road should be included within a widened road reserve. The widened	These comments relate to a previous plan set. Refer to Section 6 of this report for detailed analysis of nearby intersections. No mitigation works will be required at the adjacent intersections. The site access has also been analysed in SIDRA modelling in Section 6, and a detailed access design review has been undertaken in Section 8.2. Generally the proposed access design is appropriate from a traffic engineering perspective. A concept layout of the site access intersection including turn lanes has been prepared. Refer to Section 8.2.

	road reserve would also need to include any relocated swale drain that serves the road.	
13	The internal driveway that serves the ten short term accommodation units and the three caretakers residences does not include a pavement width but appears to be narrower than other internal roads and driveways on the site. *Information requested:* Please identify the width of the internal roads and provide confirmation that they are proposed to be sealed.	The internal access road for the 10 short term accommodation units is 6m wide, which is wide enough to accommodate two-way circulation and the required service vehicles. All internal roads are to be sealed. Refer to development drawings in Appendix A.

9.2 SARA Information Request (4 October 2023)

The relevant transport items from SRC's IR are tabulated in Table 9.2 below. It should be noted that the IR was a response to a superseded plan set.

Table 9.2 SARA Information Request (4 October 2023)

Item	SARA comments	Burchills Response
2	**Issue:** A Traffic Impact Assessment (TIA) has not been provided which demonstrated that the proposed development will not result in adverse safety or operational impacts on the state-controlled road network. **Action:** Submit a TIA certified by an RPEQ in accordance with the Department of Transport and Main Roads' Guide to Traffic Impact Assessment that demonstrates how the proposed development will achieve compliance with PO1- PO13 of State Code 6: *Protection of State Transport Networks* of the State Development Assessment Provisions (SDAP). The TIA should include the following: a) The hours of operation, proposed employment numbers, trip generation, trip distribution and when the peak traffic generation of the site (whole development) occurs during the AM and PM peak of Coominya Connection Road and Brisbane Valley Highway. b) Provide an analysis of Coominya Connection Road and Brisbane Valley Highway that includes, with and without development, for year of opening and the design year c) Provide a distribution diagram showing the distribution of AM and PM flows throughout the state-controlled road network d) Identify the mitigation measures necessary to address any potential safety hazard or worsening of operating conditions from the proposed development on the state-controlled road network. All mitigation measures are to be designed in accordance with the Department of Transport and Main Roads' Road Planning and Design Manual e) Provide an annotated concept plan detailing any necessary works and demonstrate that the works can	Refer to Appendix E for response to State Code 6. The hours of operation, proposed employment numbers, trip generation and peak traffic generation are detailed in Sections 3.2 and 4.7 of this report. Analysis of the Coominya Connection Road / Brisbane Valley Highway is included in Section 6.3. The intersection is expected to function well within its capacity at the year of opening. No analysis of the 10-year design horizon was undertaken as the intersection is not a site access intersection (in accordance with the GTIA). Traffic flow diagrams showing peak AM and PM traffic flows are attached in Appendix C. No mitigation measures are required based on the assessment of the State-controlled road network.

	be constructed by the applicant within the existing road reserve.	
3	**Issue:** An assessment against PO26 – PO31 contained within Table 6.3 of State Code 6 – *Protection of State Transport Networks* of the SDAP has not been undertaken. As such, the application has not demonstrated what the proposed development's public passenger transport demand in relation to private/chartered buses, coaches and mini-buses, which may be used for tour groups, functions, events and the like, will be. **Action:** Provide a TIA which provides an assessment of the proposal against the requirements of PO26 – PO31 contained within Table 6.3 of State Code 6 – *Protection of State Transport Networks* of the SDAP. Further information and guidance can be provided, if required.	Refer to Appendix E for response to State Code 6. The majority of visitors to the site will be arriving via private vehicle. Coach parking areas and taxi pick up / drop off areas have been provided.

10. Conclusions

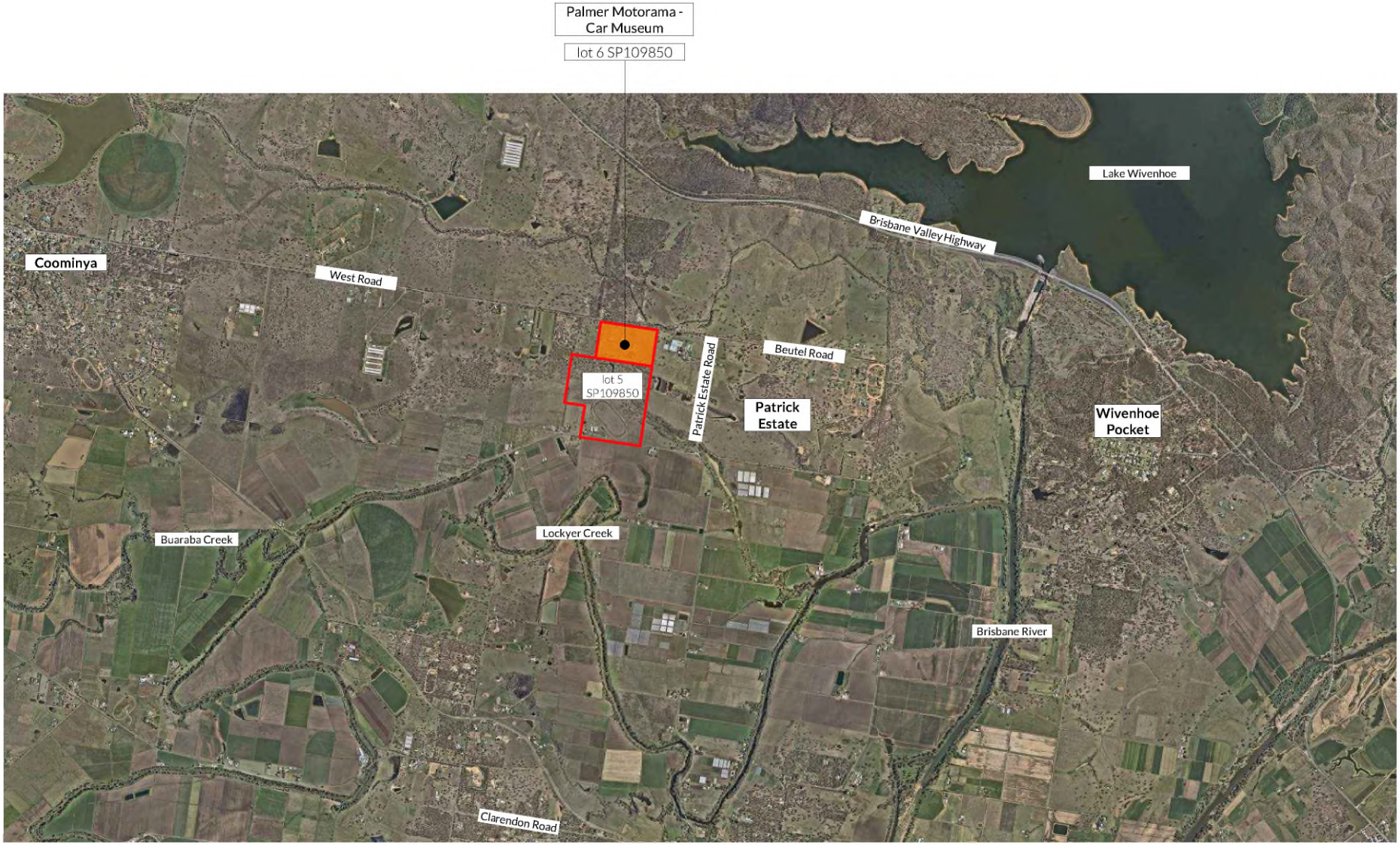
Burchills Engineering Solutions has been engaged by Palmer Motorama Pty Ltd to provide a Traffic Impact Assessment (TIA) for a mixed use development at 620-635 West Road, Patrick Estate.

The following key points summarise the findings from the traffic impact assessment undertaken herein:

- The proposed development is comprised of a car museum, short term accommodation, and caretaker's accommodation;
- Access is proposed via a new priority-controlled intersection on West Road;
- The car parking provision within the development is considered to be satisfactory to meet the expected parking demands of the development;
- Pick up and drop off facilities for 14.5m coaches and taxis / rideshare vehicles have been provided;
- The car park layouts are generally in accordance with applicable standards;
- The development is expected to generate in the order of 101 vehicles per hour during weekday AM and PM peaks and 80 vehicles per hour during the weekend peak;
- SIDRA modelling indicates that the traffic generated by the development does not impact the efficiency of the surrounding road network; therefore, no further mitigation measures will be required (including on the State-controlled road network);
- Loading areas have been provided which cater for the maximum service vehicle required for each land use (i.e. AVs for the car museum, SRV for the short term accommodation); and
- Swept paths indicate that a 10.2m long front lift WCV can navigate the development to collect waste from the car museum, entering and exiting in a forward gear.

On the basis of the above, the proposed development is considered to be satisfactory from a traffic engineering perspective.

Appendix A – Development Plans



locality plan
(not to scale)

site description

Address: 620 - 635 West Road, Patrick Estate, Lowood QLD 4311

rpd:

Lot 6 SP109850
Local Government - Somerset

Site Area: 183,892 sqm

BILLY DAWSON ARCHITECTS

BILLY DAWSON ARCHITECTS PTY LTD
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drawing title **site locality plan**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313

issue. P6

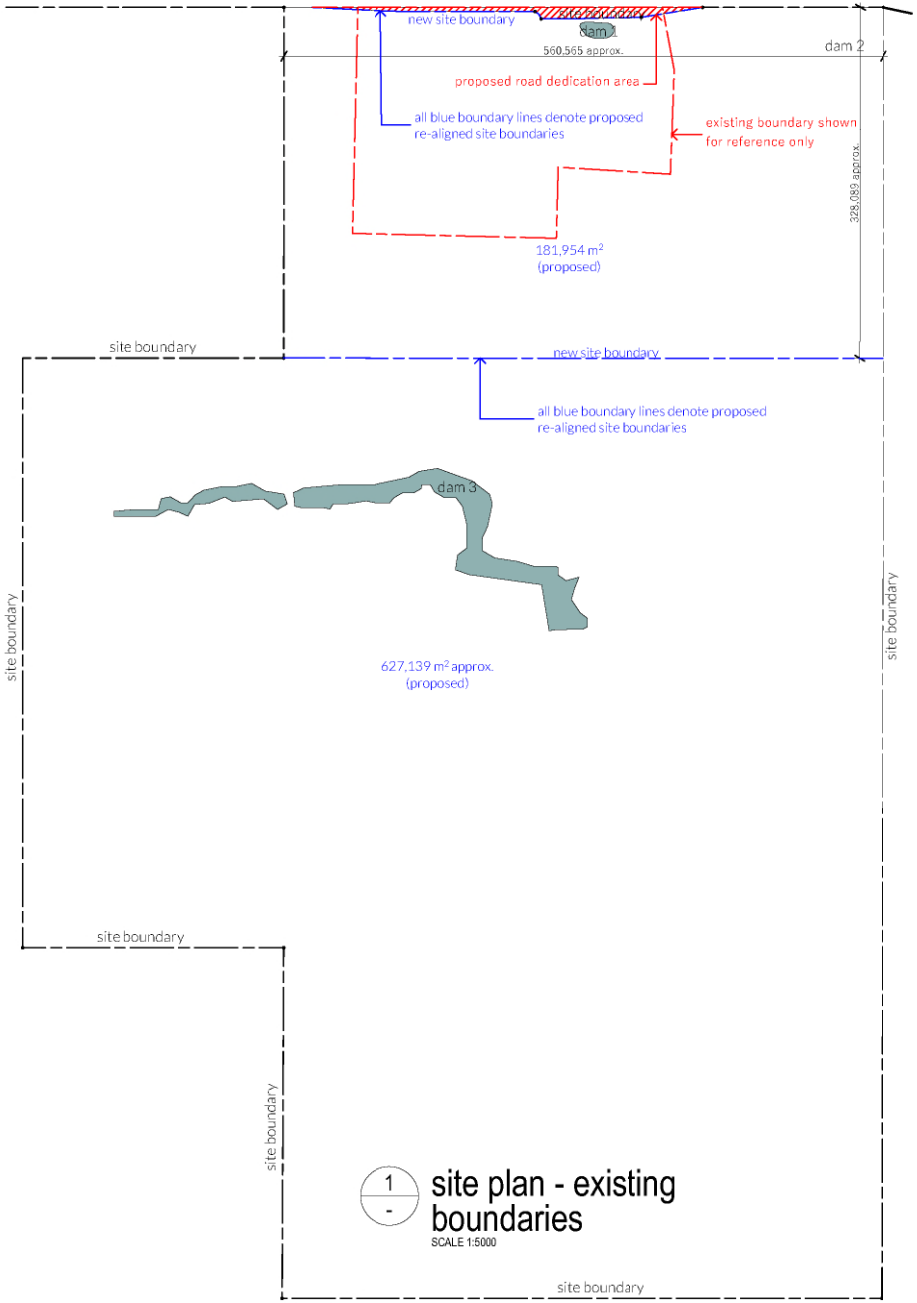
do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P6	17/05/24	council RFI issue
P5	01/05/24	issue to consultants
P4	09/04/24	issue to QS
P3	14/03/24	SARA response issue
P2	01/03/24	Revised Issue to consultants
P1	17/01/24	DA RFI Response Issue

drawing no. **DD.0002**

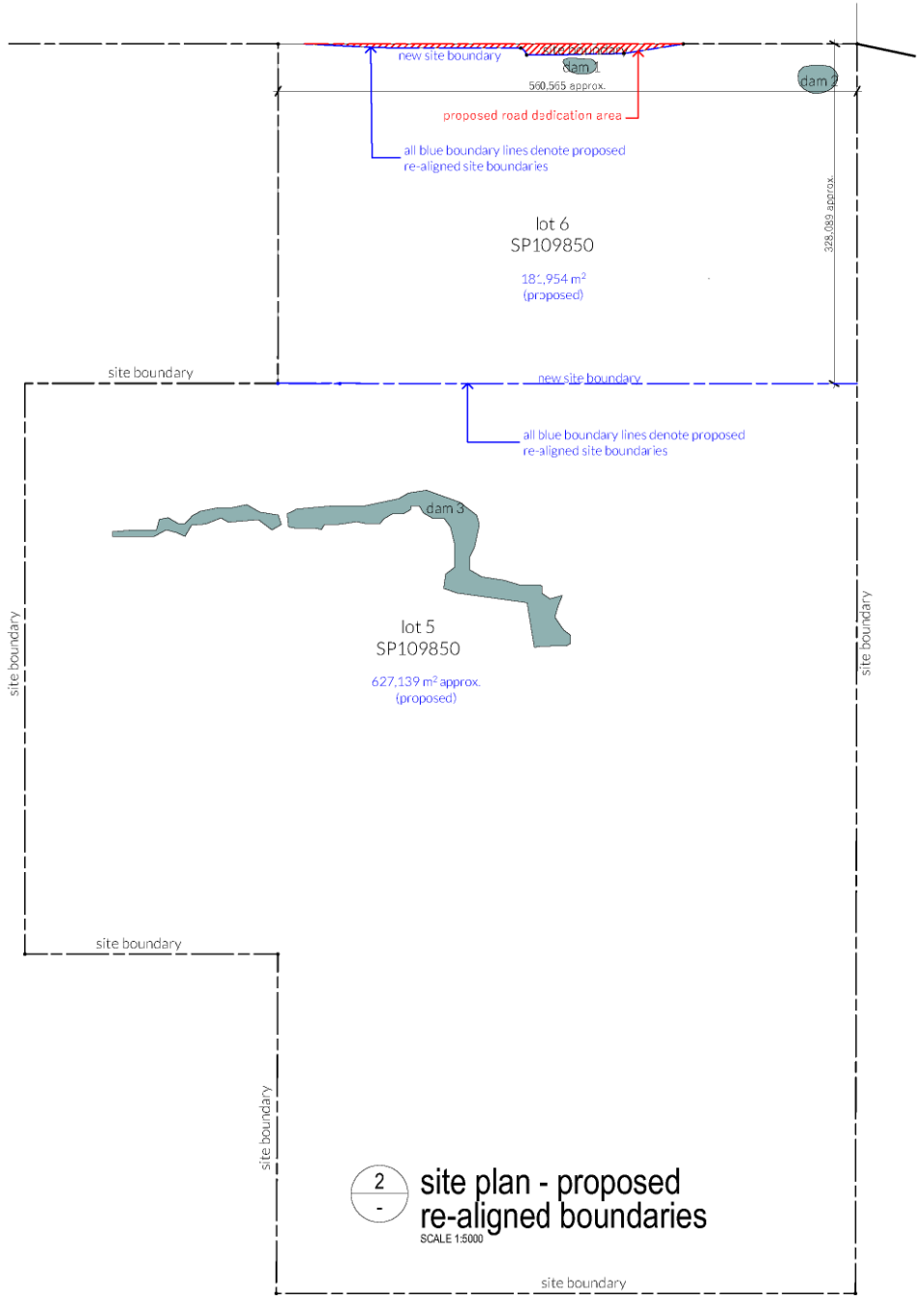
scale

drawn LMC



1 / - site plan - existing boundaries

SCALE 1:5000



2 / - site plan - proposed re-aligned boundaries

SCALE 1:5000

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drawing title **site plan - proposed boundary re-alignment plan**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313

issue. P24

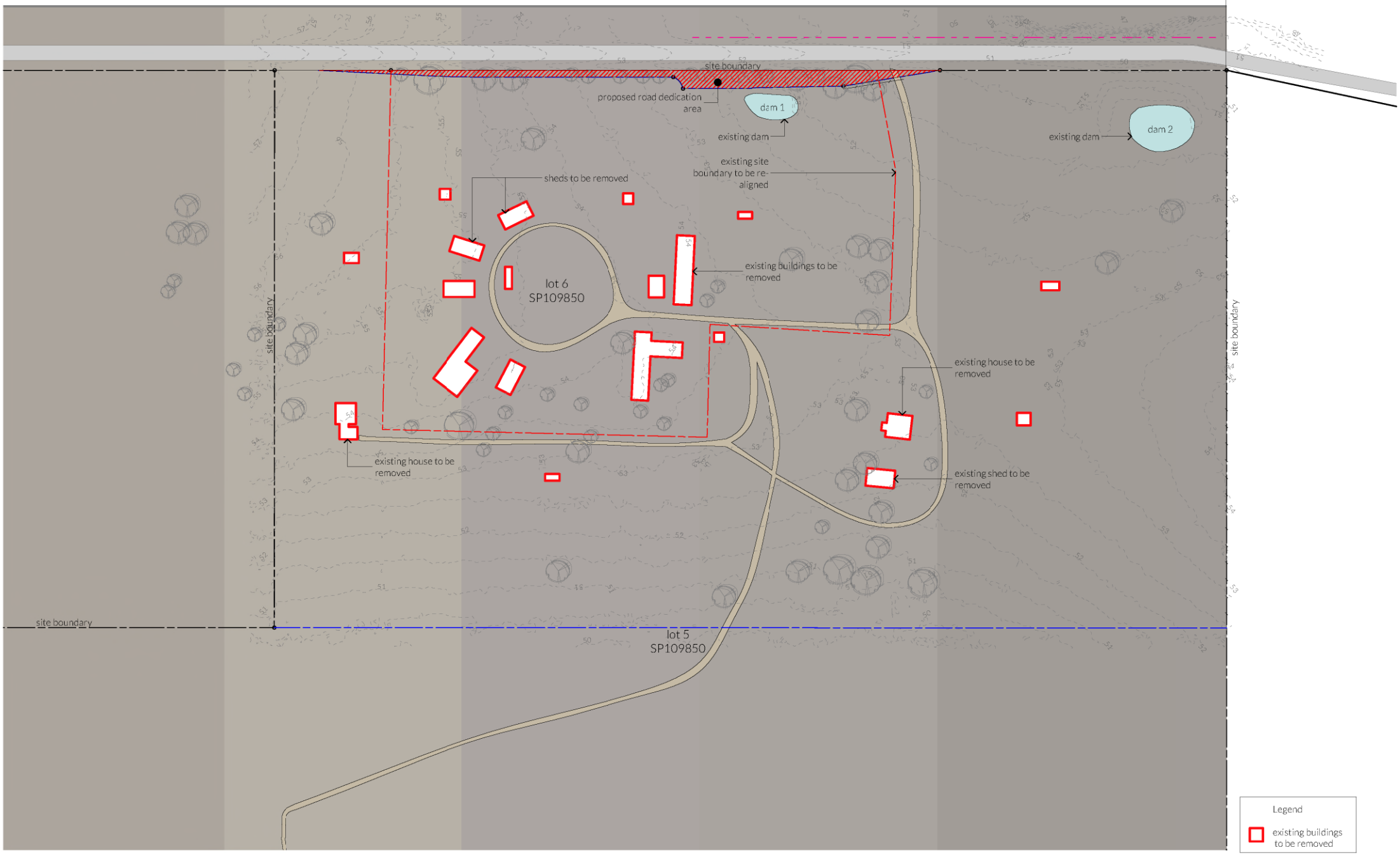
do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P24	17/05/24	council RFI issue
P23	01/05/24	issue to consultants
P22	23/04/24	issue to consultants
P21	09/04/24	issue to QS
P20	14/03/24	SARA response issue
P19	01/03/24	Revised Issue to consultants

drawing no. **DD.1001**

scale 1:5000 @ A3

drawn LAM



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drawing title **site plan - existing & demolition**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313

issue. P16

do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P16	17/05/24	council RFI issue
P15	01/05/24	issue to consultants
P14	23/04/24	issue to consultants
P13	09/04/24	issue to QS
P12	14/03/24	SARA response issue
P11	01/03/24	Revised Issue to consultants

drawing no. **DD.1002**

scale 1:2000 @ A3

drawn [illegible]

Somerset Regional Planning Scheme

site cover, of development, means the portion of the site, expressed as a percentage, that will be covered by a building or structure, measured to its outermost projection, after the development is carried out, other than a building or structure, or part of a building or structure, that is—
(a) in a landscaped or open space area, including, for example, a gazebo or shade structure; or

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

Display Capacity

car display bays	approx. 900
motorcycle display bays	approx. 350

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drawing title **site plan - proposed**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313

issue. P40

do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P40	17/05/24	Council RFI issue
P39	01/05/24	issue to consultants
P38	30/04/24	issue to client
P37	29/04/24	issue to client
P36	26/04/24	issue to client
P35	23/04/24	issue to consultants

drawing no. **DD.1003**

scale 1:2000 @ A3

drawn LANE

Somerset Regional Planning Scheme

gross floor area (GFA), for a building, means the total floor area of all storeys of the building measured from the outside of the external walls and the centre of any common walls of the building, other than areas used for—

(a) building services, plant or equipment; or
(b) access between levels; or
(c) a ground floor public lobby; or
(d) a mall; or
(e) parking, loading or manoeuvring vehicles; or
(f) unenclosed private balconies, whether roofed or not

Legend			
EX	emergency exit	HT	hydrant tank
RSD	roller shutter door	P	Pump
TT	car display turntable	ST	Sprinkler tank
RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)	
showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10	
Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11	
feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	*308m²*
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

BILLY DAWSON ARCHITECTS

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p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **floor plan - open-air carpark**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P33

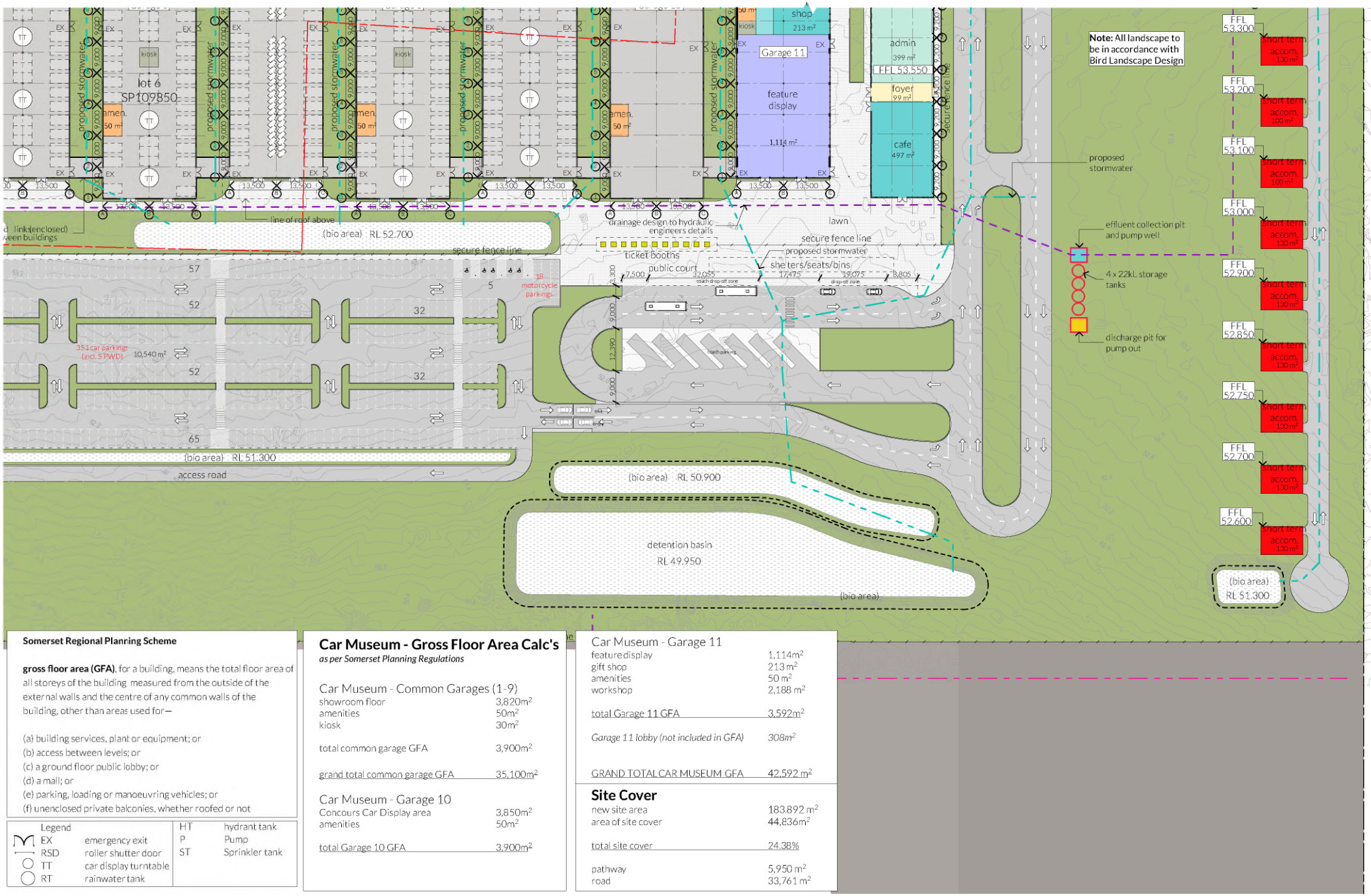
do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P33	17/05/24	Council RFI issue
P32	01/05/24	issue to consultants
P31	23/04/24	issue to consultants
P30	09/04/24	issue to QS
P29	14/03/24	SARA response issue
P29	14/03/24	SARA response issue

drawing no. **DD.2001**

scale **1:1000 @ A3**

drawn [redacted]



Somerset Regional Planning Scheme

gross floor area (GFA), for a building, means the total floor area of all storeys of the building measured from the outside of the external walls and the centre of any common walls of the building, other than areas used for—

(a) building services, plant or equipment; or
(b) access between levels; or
(c) a ground floor public lobby; or
(d) a mall; or
(e) parking, loading or manoeuvring vehicles; or
(f) unenclosed private balconies, whether roofed or not

Legend			
EX	emergency exit	HT	hydrant tank
RSD	roller shutter door	P	Pump
TT	car display turntable	ST	Sprinkler tank
RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)	
showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10	
Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11	
feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	*308m²*
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Site Cover

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area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
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BILLY DAWSON ARCHITECTS PTY LTD
ACN: 634 540 622
p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **floor plan - open-air carpark & drop off area**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P9

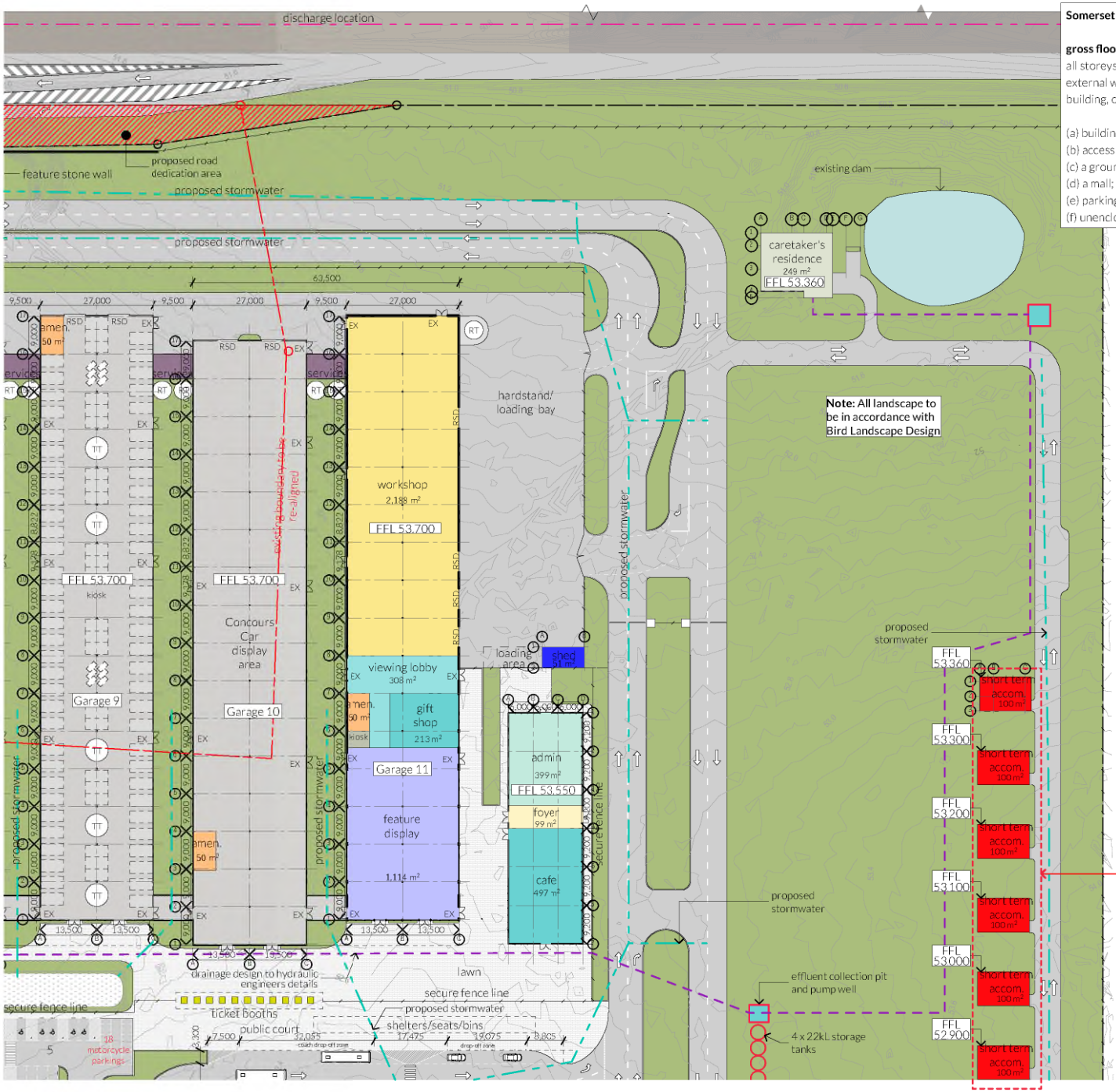
do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P9	17/05/24	Council RFI issue
P8	01/05/24	issue to consultants
P7	23/04/24	issue to consultants
P6	09/04/24	issue to QS
P5	14/03/24	SARA response issue
P4	12/03/24	Revised Issue to consultants

drawing no. **DD.2002**

scale

drawn LAM



Somerset Regional Planning Scheme

gross floor area (GFA), for a building, means the total floor area of all storeys of the building, measured from the outside of the external walls and the centre of any common walls of the building, other than areas used for—

(a) building services, plant or equipment; or
(b) access between levels; or
(c) a ground floor public lobby; or
(d) a mall; or
(e) parking, load ng or manoeuvring vehicles; or
(f) unenclosed private balconies, whether roofed or not

Legend

EX	emergency exit
RSD	roller shutter door
TT	car display turntable
RT	rainwater tank
HT	hydrant tank
P	Pump
ST	Sprinkler tank

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)

showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10

Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11

feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	*308m²*
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Admin & Cafe - Gross Floor Area Calc's

as per Somerset Planning Regulations

admin	399 m²
foyer	99 m²
cafe	497 m²
grand total restaurant GFA	995 m²
outdoor dining space (not included in GFA)	*84m²*
services/refuse sheds (not included in GFA)	*51m²*
loading area (not included in GFA)	*70m²*

Other Buildings - Gross Floor Area Calc's

caretakers residence	249 m²
short term accomodation (x10)	1000m²
grand total other buildings GFA	1,249m²

Grand Totals

car museum buildings - GFA	42,592m²
admin & cafe - GFA	995m²
other buildings - GFA	1,249m²

GRAND TOTAL SITE GFA 44,836m²

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

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e info@billydawsonarchitects.com

drawing title **floor plan - entrance road**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313

issue. P14

do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P14	17/05/24	Council RFI issue
P13	01/05/24	issue to consultants
P12	23/04/24	issue to consultants
P11	09/04/24	issue to QS
P10	14/03/24	SARA response issue
P9	12/03/24	Revised Issue to consultants

drawing no. **DD.2003**

scale **1:1000 @ A3**

drawn LM

Somerset Regional Planning Scheme

gross floor area (GFA), for a building, means the total floor area of all storeys of the building measured from the outside of the external walls and the centre of any common walls of the building, other than areas used for—

(a) building services, plant or equipment; or
(b) access between levels; or
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(e) parking, loading or manoeuvring vehicles; or
(f) unenclosed private balconies, whether roofed or not

Legend			
EX	emergency exit	HT	hydrant tank
RSD	roller shutter door	P	Pump
TT	car display turntable	ST	Sprinkler tank
RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)

showroom floor	3,820m²
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Car Museum - Garage 10

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feature display	1,114m²
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GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Site Cover

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BILLY DAWSON ARCHITECTS

BILLY DAWSON ARCHITECTS PTY LTD
ACN: 634 540 622

p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **floor plan - motor museum**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313

issue. P33

do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P33	17/05/24	Council RFI issue
P32	01/05/24	issue to consultants
P31	23/04/24	issue to consultants
P30	09/04/24	issue to QS
P29	14/03/24	SARA response issue
P28	12/03/24	Revised Issue to consultants

drawing no. **DD.2101**

scale **1:1000 @ A3**

drawn LA

Appendix B – Survey Data

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 1 **Weather:** Fine

Location: Brisbane Valley Highway/McLean Road/Coominya Connection Road

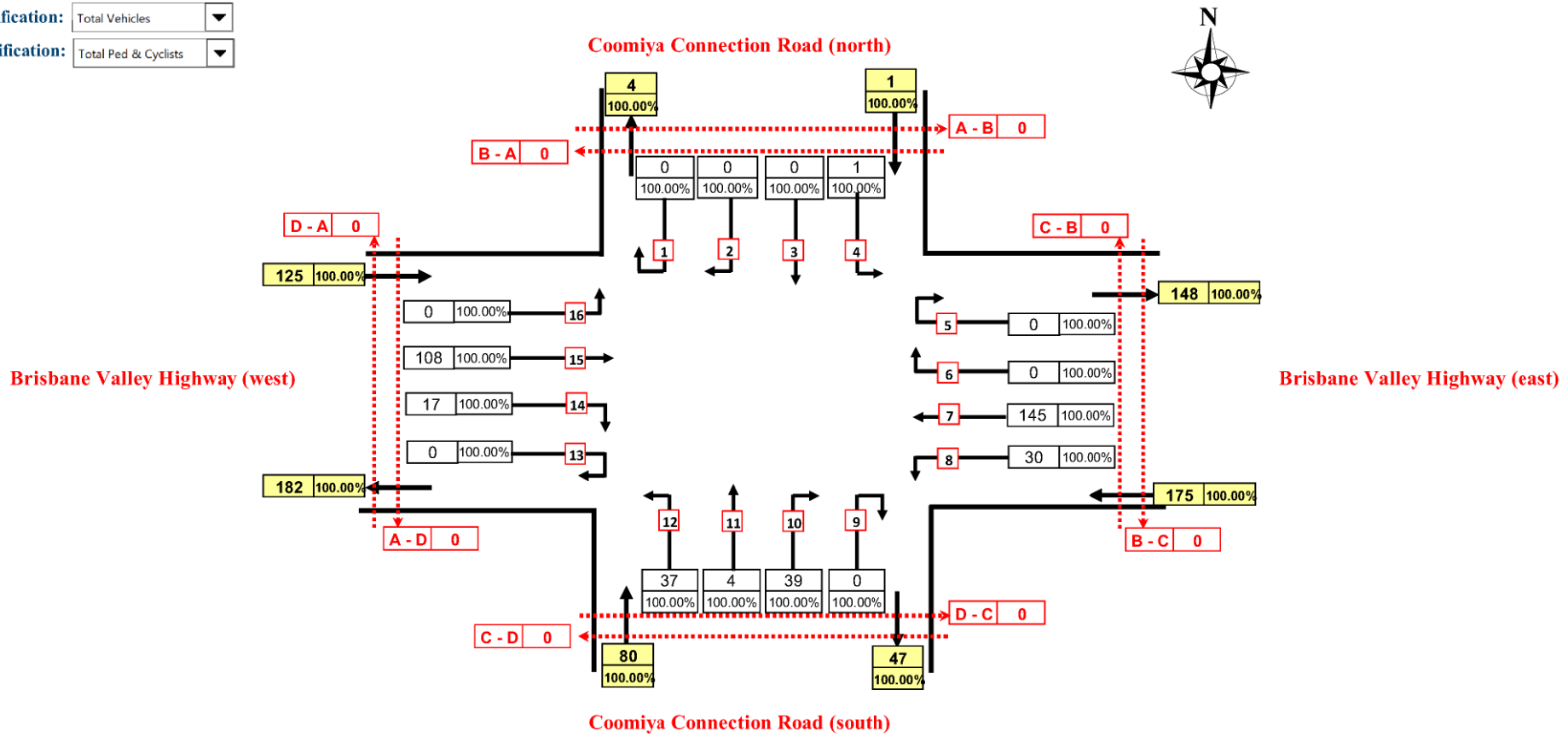
Day/Date: Saturday, 28 October 2023

Summary: Peak : *Hour ending - 11:00 AM*

Hour Ending: 11:00 AM

On-road classification: Total Vehicles

Off-road classification: Total Ped & Cyclists



Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 1 **Weather:** Fine

Location: Brisbane Valley Highway/McLean Road/Coominya Connection Road

Day/Date: Wednesday, 25 October 2023

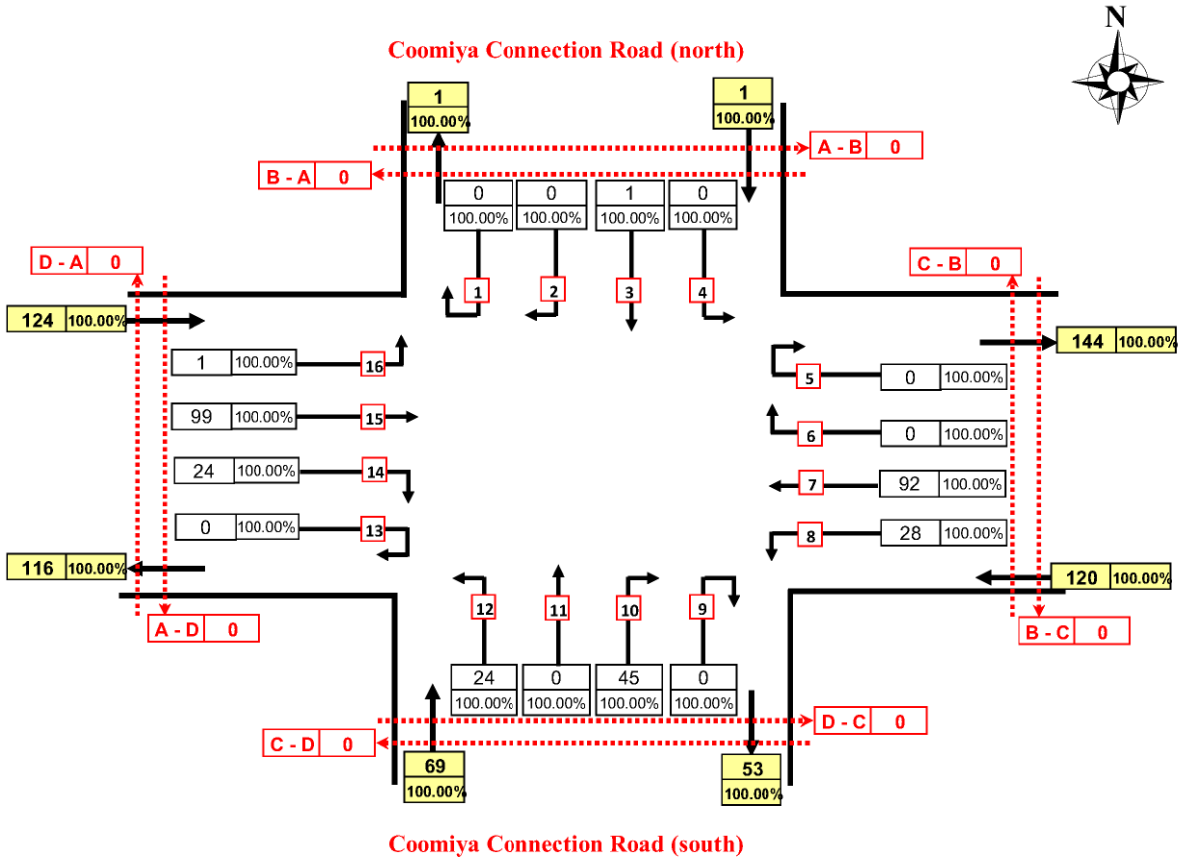
Summary: AM Peak : *Hour ending - 8:45 AM*

PM Peak : *Hour ending - 5:30 PM*

Hour Ending: 8:45 AM

On-road classification: Total Vehicles

Off-road classification: Total Ped & Cyclists



Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 1 **Weather:** Fine

Location: Brisbane Valley Highway/McLean Road/Coominya Connection Road

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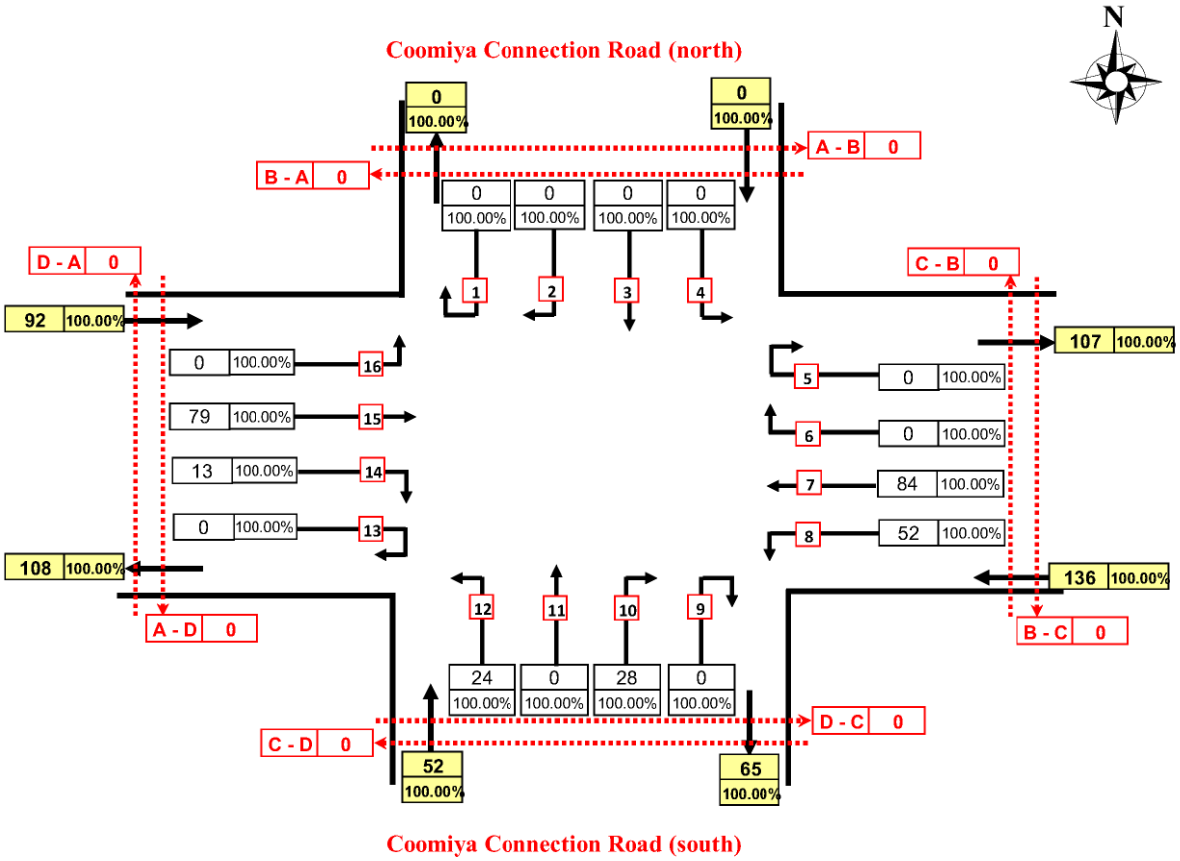
Hour Ending: 5:00 PM

On-road classification: Total Vehicles

Off-road classification: Total Ped & Cyclists



Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 2 **Weather:** Fine

Location: Coominya Connection Road/West Road/Guttridge Road

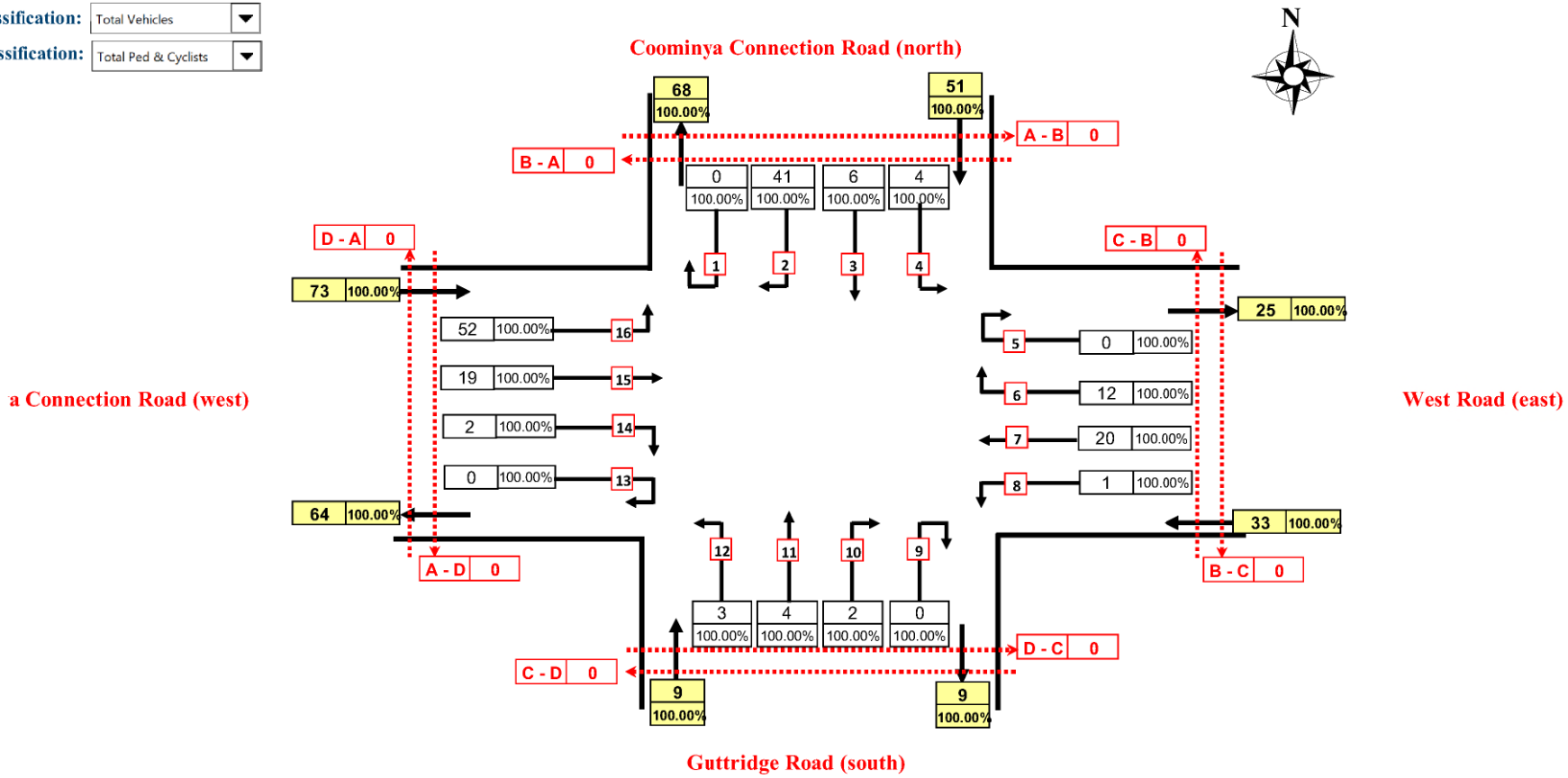
Day/Date: Saturday, 28 October 2023

Summary: Peak : *Hour ending - 1:30 PM*

Hour Ending: 11:00 AM

On-road classification: Total Vehicles

Off-road classification: Total Ped & Cyclists



Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 2 **Weather:** Fine

Location: Coominya Connection Road/West Road/Guttridge Road

Day/Date: Wednesday, 25 October 2023

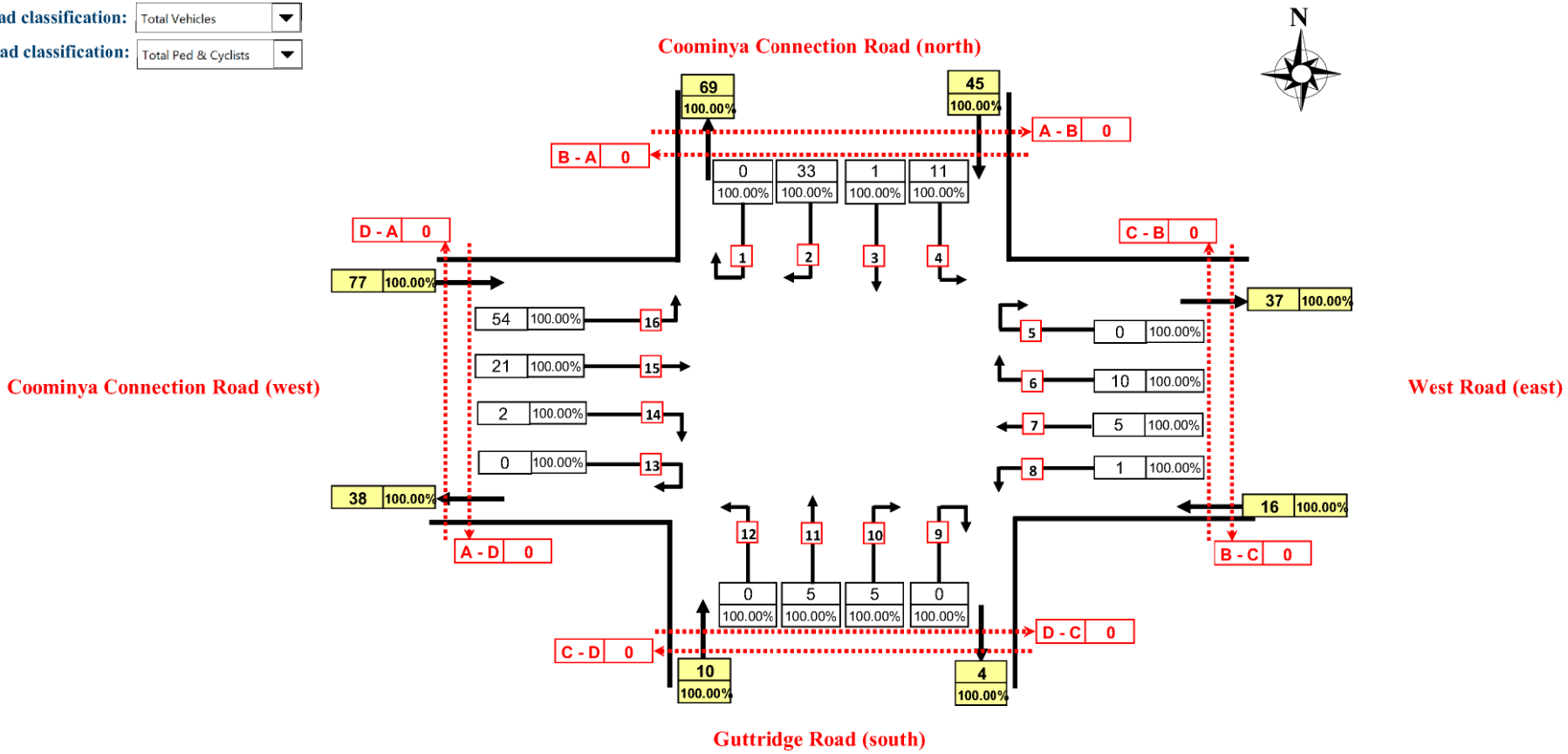
Summary: AM Peak : *Hour ending - 8:00 AM*

PM Peak : *Hour ending - 5:00 PM*

Hour Ending: 8:45 AM

On-road classification: Total Vehicles

Off-road classification: Total Ped & Cyclists



Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

AUSTRAFFIC VIDEO INTERSECTION COUNT

Site No.: 2 **Weather:** Fine

Location: Coominya Connection Road/West Road/Guttridge Road

Day/Date: Wednesday, 25 October 2023

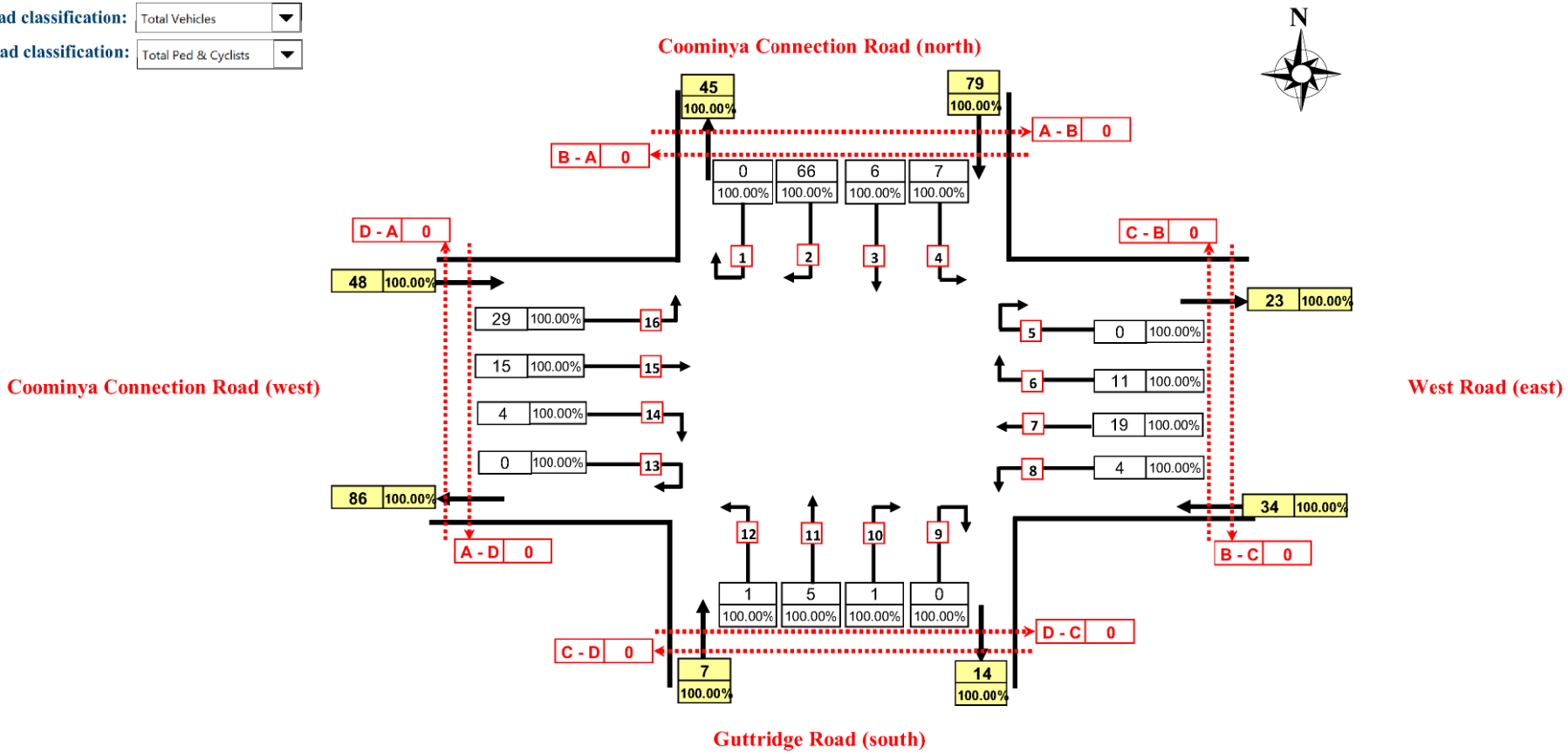
Summary: AM Peak : *Hour ending - 8:00 AM*

PM Peak : *Hour ending - 5:00 PM*

Hour Ending: 5:00 PM

On-road classification: Total Vehicles

Off-road classification: Total Ped & Cyclists

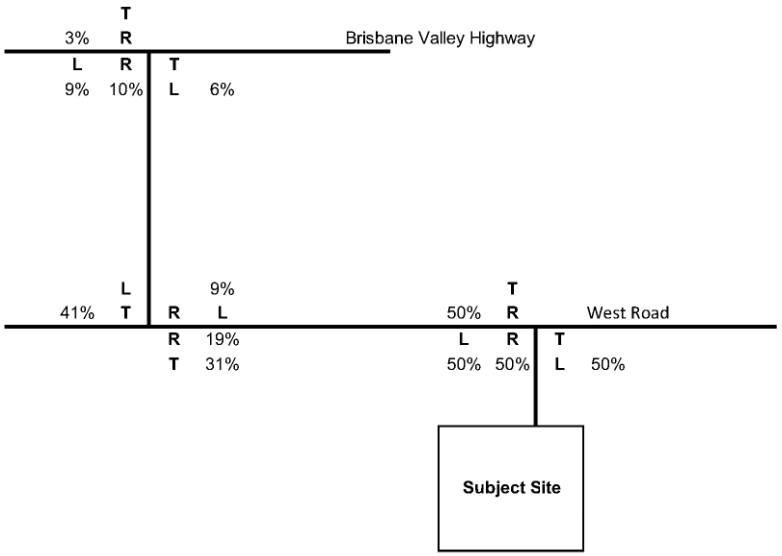


Note: 3.28% = proportion of selected vehicle classification as a percentage of total vehicles

Appendix C – Traffic Flow Diagrams

Note: Existing weekend peak splits at Coominya Connection Road / West Road and Brisbane Valley Highway used

Weekend Peak Split

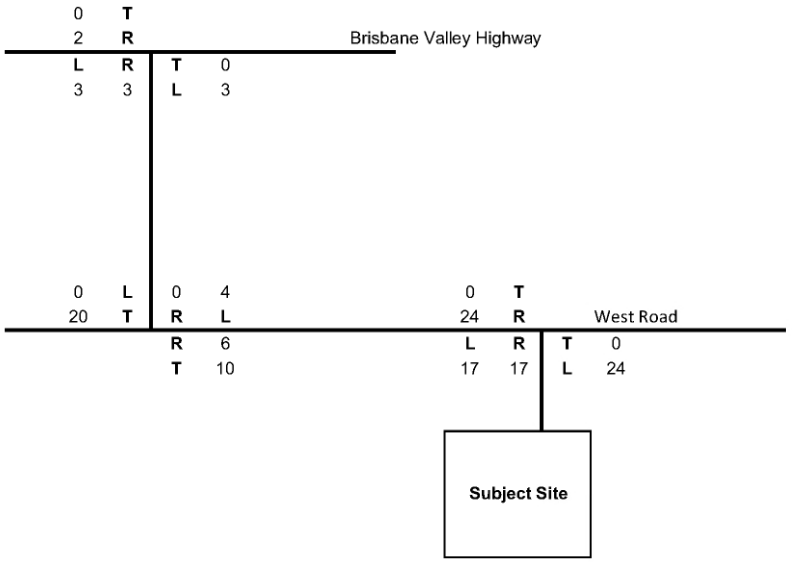


BE230352_620-635 West Road, Patrick Estate

Development Trip Distribution

BURCHILLS ENGINEERING SOLUTIONS

Weekend Peak

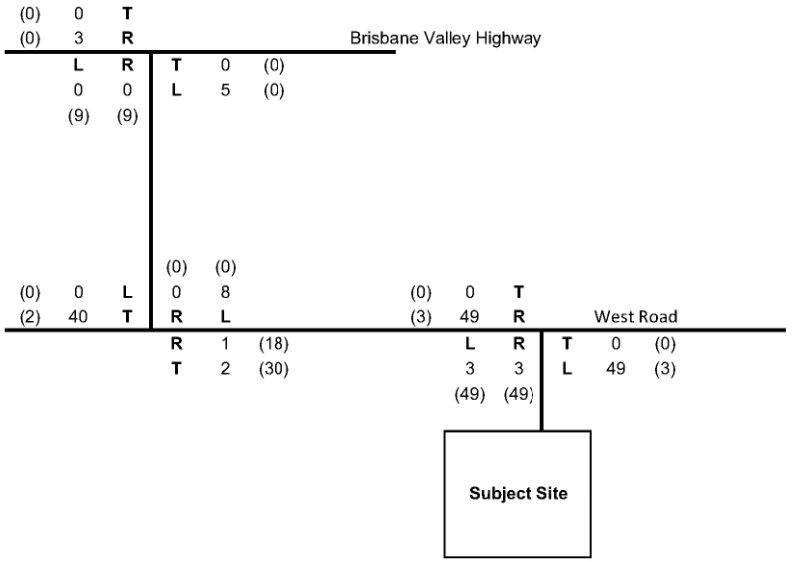


BE230352_620-635 West Road, Patrick Estate

Car Museum Weekend Development Trips

BURCHILLS ENGINEERING SOLUTIONS

AM Peak
(PM Peak)

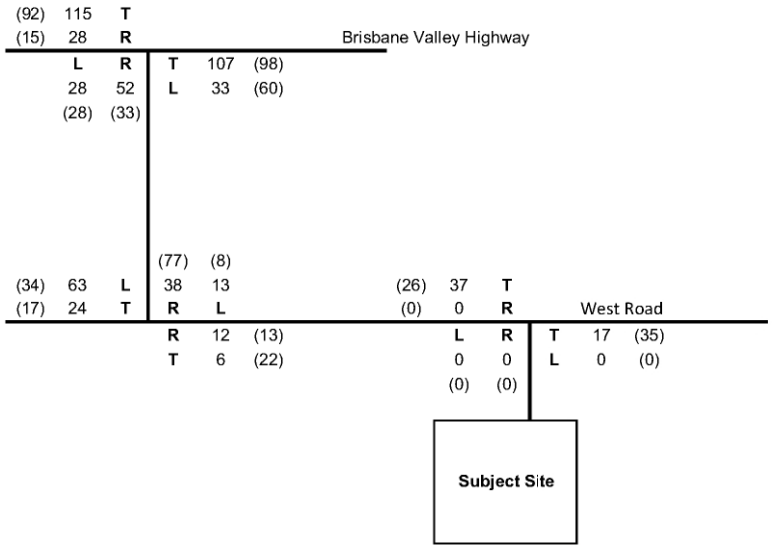


BE230352_620-635 West Road, Patrick Estate

Car Museum Weekday Development Trips

BURCHILLS
ENGINEERING SOLUTIONS

Growth rate: 2.03%
Assessment year: 2027
AM Peak
(PM Peak)

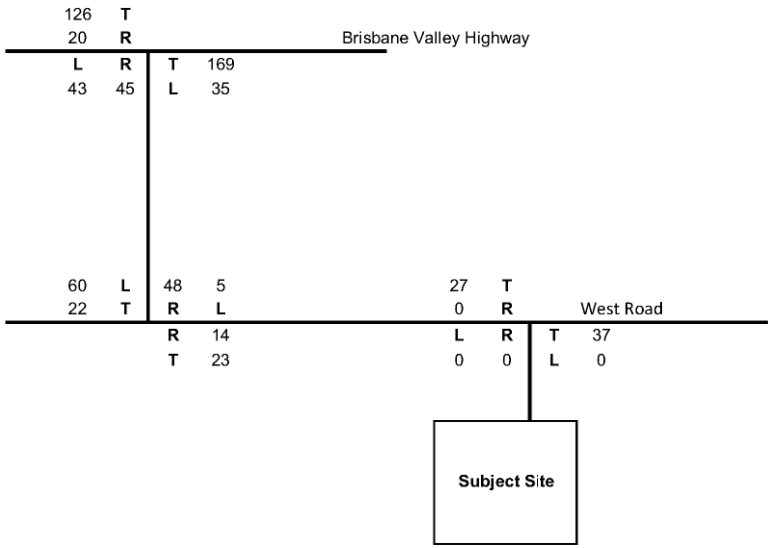


BE230352_620-635 West Road, Patrick Estate

2027 Weekday Background Traffic Volumes

BURCHILLS ENGINEERING SOLUTIONS

Growth rate: 2.03%
Assessment year: 2027
Weekend Peak

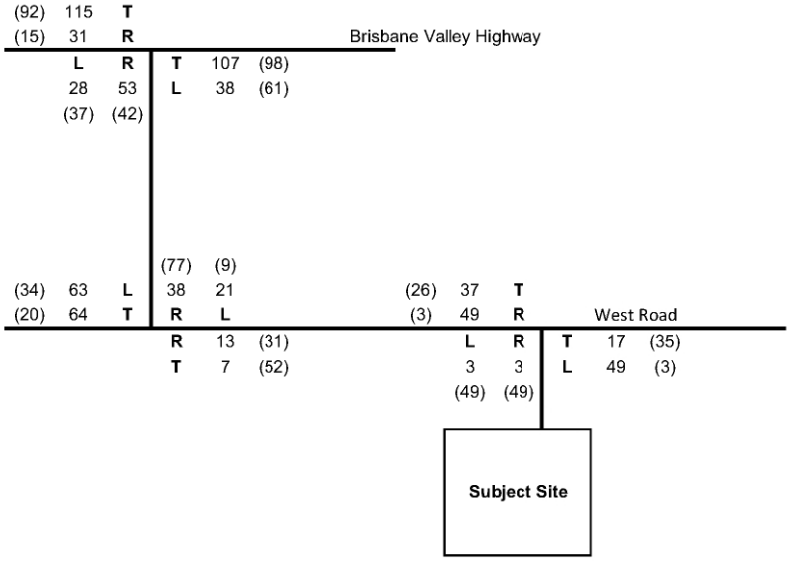


BE230352_620-635 West Road, Patrick Estate

2027 Weekend Background Traffic Volumes

BURCHILLS ENGINEERING SOLUTIONS

Growth rate: 2.03%
Assessment year: 2027
AM Peak
(PM Peak)

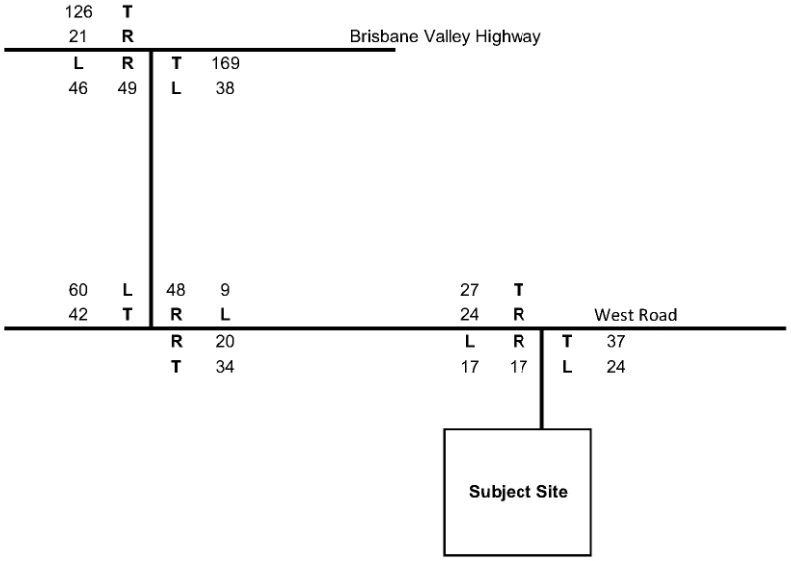


BE230352_620-635 West Road, Patrick Estate

2027 Background + Development Traffic

BURCHILLS ENGINEERING SOLUTIONS

Growth rate: 2.03%
Assessment year: 2027
Weekend Peak

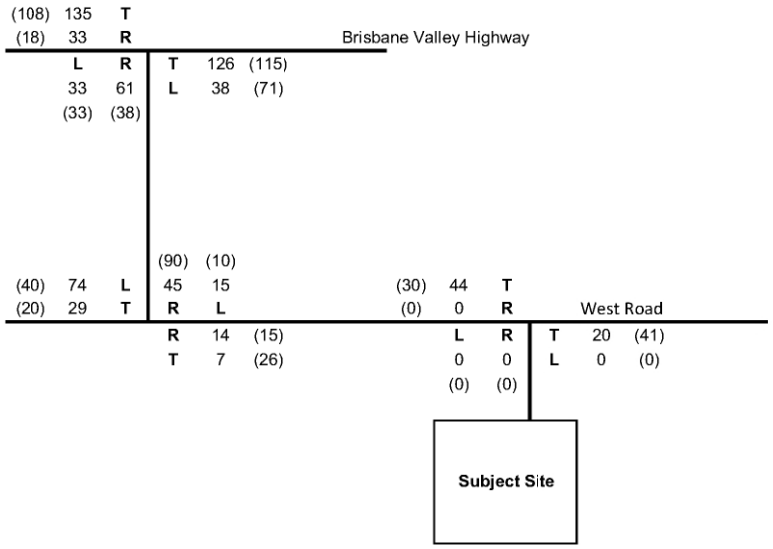


BE230352_620-635 West Road, Patrick Estate

2027 Background + Development Traffic

BURCHILLS ENGINEERING SOLUTIONS

Growth rate: 2.03%
Assessment year: 2037
AM Peak
(PM Peak)

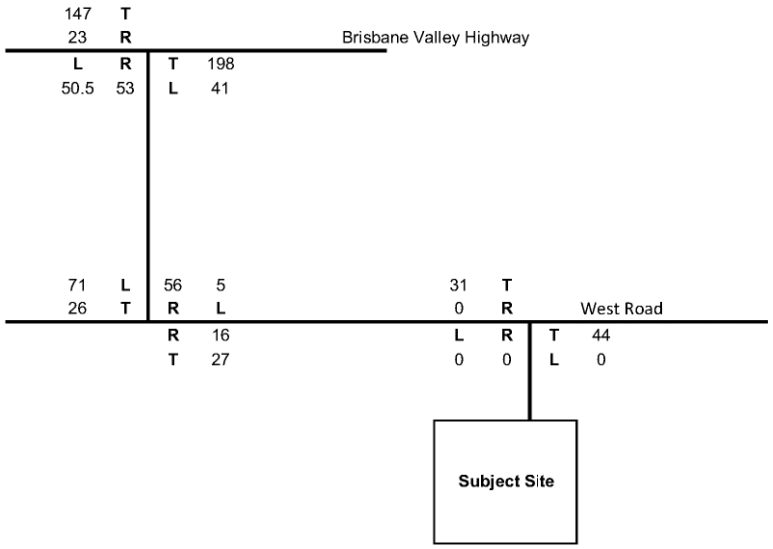


BE230352_620-635 West Road, Patrick Estate

2037 Weekday Background Traffic Volumes

BURCHILLS ENGINEERING SOLUTIONS

Growth rate: 2.03%
Assessment year: 2037
Weekend Peak

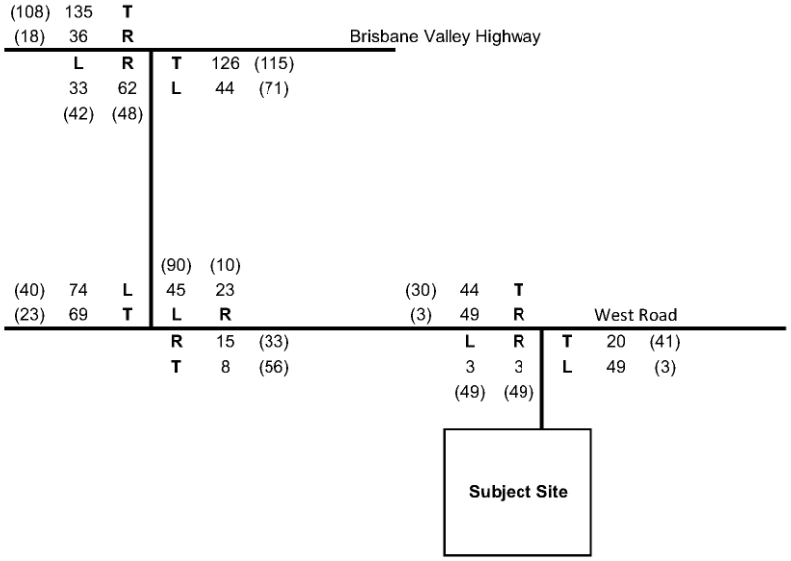


BE230352_620-635 West Road, Patrick Estate

2037 Weekend Background Traffic Volumes

BURCHILLS ENGINEERING SOLUTIONS

Growth rate: 2.03%
Assessment year: 2037
AM Peak
(PM Peak)

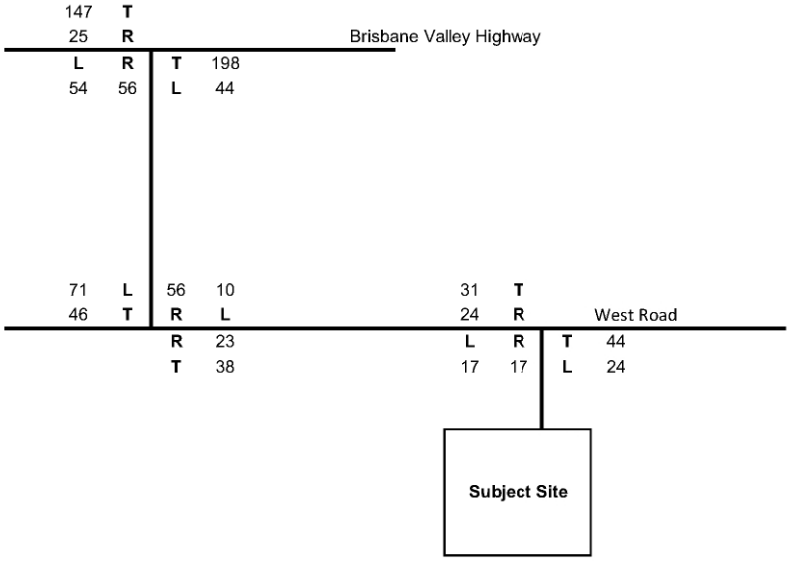


BE230352_620-635 West Road, Patrick Estate

2037 Background + Development Traffic

BURCHILLS ENGINEERING SOLUTIONS

Growth rate: 2.03%
Assessment year: 2037
Weekend Peak



BE230352_620-635 West Road, Patrick Estate

2037 Background + Development Traffic

BURCHILLS ENGINEERING SOLUTIONS

Appendix D – SIDRA Outputs

USER REPORT FOR SITE

Project: Intersection Models

Output produced by SIDRA INTERSECTION Version: 9.1.4.221 **Template: Movement Summary**

Site: 101 [BG2027_West Road / Coominya Connection Road - AM Peak (Site Folder: BG2027)]

West Road / Coominya Connection Road
BG2027
AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: West Road															
5	T1	All MCs	6	5.0	6	5.0	0.010	0.1	LOS A	0.0	0.3	0.00	0.00	0.00	60.0
6	R2	All MCs	13	5.0	13	5.0	0.010	5.8	LOS A	0.0	0.3	0.19	0.55	0.19	51.9
Approach			19	5.0	19	5.0	0.010	3.9	NA	0.0	0.3	0.13	0.37	0.13	54.4
North: Coominya Connection Road															
7	L2	All MCs	14	5.0	14	5.0	0.052	5.7	LOS A	0.2	1.5	0.16	0.55	0.16	52.2
9	R2	All MCs	40	5.0	40	5.0	0.052	6.1	LOS A	0.2	1.5	0.16	0.55	0.16	52.1
Approach			54	5.0	54	5.0	0.052	6.0	LOS A	0.2	1.5	0.16	0.55	0.16	52.1
West: West Road															
10	L2	All MCs	66	5.0	66	5.0	0.037	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
11	T1	All MCs	25	5.0	25	5.0	0.013	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			92	5.0	92	5.0	0.037	4.1	NA	0.0	0.0	0.00	0.42	0.00	54.5
All Vehicles			164	5.0	164	5.0	0.052	4.7	NA	0.2	1.5	0.07	0.45	0.07	53.7

Site: 101 [BG2027_West Road / Coominya Connection Road - PM Peak (Site Folder: BG2027)]

West Road / Coominya Connection Road
BG2027
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: West Road															
5	T1	All MCs	23	5.0	23	5.0	0.017	0.2	LOS A	0.1	0.5	0.07	0.17	0.07	58.3
6	R2	All MCs	14	5.0	14	5.0	0.017	5.7	LOS A	0.1	0.5	0.13	0.32	0.13	54.0
Approach			37	5.0	37	5.0	0.017	2.2	NA	0.1	0.5	0.09	0.22	0.09	56.6
North: Coominya Connection Road															
7	L2	All MCs	8	5.0	8	5.0	0.090	5.7	LOS A	0.4	2.6	0.18	0.55	0.18	52.2
9	R2	All MCs	81	5.0	81	5.0	0.090	6.1	LOS A	0.4	2.6	0.18	0.55	0.18	52.1
Approach			89	5.0	89	5.0	0.090	6.0	LOS A	0.4	2.6	0.18	0.55	0.18	52.1
West: West Road															
10	L2	All MCs	36	5.0	36	5.0	0.020	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
11	T1	All MCs	18	5.0	18	5.0	0.009	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			54	5.0	54	5.0	0.020	3.7	NA	0.0	0.0	0.00	0.38	0.00	54.9
All Vehicles			180	5.0	180	5.0	0.090	4.6	NA	0.4	2.6	0.11	0.43	0.11	53.8

Site: 101 [BG2027_West Road / Coominya Connection Road - Weekend Peak (Site Folder: BG2027)]

West Road / Coominya Connection Road
BG2027
Weekend Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: West Road															
5	T1	All MCs	24	5.0	24	5.0	0.018	0.2	LOS A	0.1	0.5	0.09	0.17	0.09	58.2
6	R2	All MCs	15	5.0	15	5.0	0.018	5.8	LOS A	0.1	0.5	0.18	0.33	0.18	53.8
Approach			39	5.0	39	5.0	0.018	2.3	NA	0.1	0.5	0.12	0.23	0.12	56.5
North: Coominya Connection Road															
7	L2	All MCs	5	5.0	5	5.0	0.058	5.7	LOS A	0.2	1.6	0.20	0.55	0.20	52.1
9	R2	All MCs	51	5.0	51	5.0	0.058	6.2	LOS A	0.2	1.6	0.20	0.55	0.20	52.0
Approach			56	5.0	56	5.0	0.058	6.1	LOS A	0.2	1.6	0.20	0.55	0.20	52.0
West: West Road															
10	L2	All MCs	63	5.0	63	5.0	0.035	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
11	T1	All MCs	23	5.0	23	5.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			86	5.0	86	5.0	0.035	4.1	NA	0.0	0.0	0.00	0.42	0.00	54.5
All Vehicles			181	5.0	181	5.0	0.058	4.3	NA	0.2	1.6	0.09	0.42	0.09	54.1

Site: 101 [BG2027_Coominya Connection Road / Brisbane Valley Highway - AM Peak (Site Folder: BG2027)]

Coominya Connection Road / Brisbane Valley Highway
BG2027
AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Coominya Connection Road															
1	L2	All MCs	29	5.0	29	5.0	0.115	6.1	LOS A	0.4	3.3	0.37	0.61	0.37	51.1
2	T1	All MCs	1	5.0	1	5.0	0.115	7.2	LOS A	0.4	3.3	0.37	0.61	0.37	51.5
3	R2	All MCs	55	5.0	55	5.0	0.115	8.6	LOS A	0.4	3.3	0.37	0.61	0.37	51.2
Approach			85	5.0	85	5.0	0.115	7.7	LOS A	0.4	3.3	0.37	0.61	0.37	51.2
East: Brisbane Valley Highway															
4	L2	All MCs	35	5.0	35	5.0	0.019	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	113	5.0	113	5.0	0.060	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
6	R2	All MCs	1	5.0	1	5.0	0.060	5.6	LOS A	0.0	0.1	0.01	0.01	0.01	57.0
Approach			148	5.0	148	5.0	0.060	1.4	NA	0.0	0.1	0.00	0.14	0.00	58.0
North: Coominya Connection Road															
7	L2	All MCs	1	5.0	1	5.0	0.004	6.0	LOS A	0.0	0.1	0.36	0.53	0.36	51.6
8	T1	All MCs	1	5.0	1	5.0	0.004	7.0	LOS A	0.0	0.1	0.36	0.53	0.36	52.0
9	R2	All MCs	1	5.0	1	5.0	0.004	8.2	LOS A	0.0	0.1	0.36	0.53	0.36	51.5
Approach			3	5.0	3	5.0	0.004	7.1	LOS A	0.0	0.1	0.36	0.53	0.36	51.7
West: Brisbane Valley Highway															
10	L2	All MCs	1	5.0	1	5.0	0.065	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.2
11	T1	All MCs	121	5.0	121	5.0	0.065	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
12	R2	All MCs	29	5.0	29	5.0	0.024	6.1	LOS A	0.1	0.7	0.26	0.57	0.26	51.8
Approach			152	5.0	152	5.0	0.065	1.2	NA	0.1	0.7	0.05	0.11	0.05	58.1
All Vehicles			388	5.0	388	5.0	0.115	2.8	NA	0.4	3.3	0.11	0.23	0.11	56.3

Site: 101 [BG2027_Coominya Connection Road / Brisbane Valley Highway - PM Peak (Site Folder: BG2027)]

Coominya Connection Road / Brisbane Valley Highway
BG2027
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Coominya Connection Road															
1	L2	All MCs	29	5.0	29	5.0	0.079	6.0	LOS A	0.3	2.2	0.32	0.58	0.32	51.5
2	T1	All MCs	1	5.0	1	5.0	0.079	6.8	LOS A	0.3	2.2	0.32	0.58	0.32	52.0
3	R2	All MCs	35	5.0	35	5.0	0.079	8.1	LOS A	0.3	2.2	0.32	0.58	0.32	51.6
Approach			65	5.0	65	5.0	0.079	7.1	LOS A	0.3	2.2	0.32	0.58	0.32	51.6
East: Brisbane Valley Highway															
4	L2	All MCs	63	5.0	63	5.0	0.035	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	103	5.0	103	5.0	0.055	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
6	R2	All MCs	1	5.0	1	5.0	0.055	5.6	LOS A	0.0	0.1	0.01	0.01	0.01	57.0
Approach			167	5.0	167	5.0	0.055	2.2	NA	0.0	0.1	0.00	0.22	0.00	56.9
North: Coominya Connection Road															
7	L2	All MCs	1	5.0	1	5.0	0.004	5.9	LOS A	0.0	0.1	0.32	0.52	0.32	51.8
8	T1	All MCs	1	5.0	1	5.0	0.004	6.8	LOS A	0.0	0.1	0.32	0.52	0.32	52.2
9	R2	All MCs	1	5.0	1	5.0	0.004	7.7	LOS A	0.0	0.1	0.32	0.52	0.32	51.7
Approach			3	5.0	3	5.0	0.004	6.8	LOS A	0.0	0.1	0.32	0.52	0.32	51.9
West: Brisbane Valley Highway															
10	L2	All MCs	1	5.0	1	5.0	0.052	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.2
11	T1	All MCs	97	5.0	97	5.0	0.052	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
12	R2	All MCs	16	5.0	16	5.0	0.013	6.2	LOS A	0.1	0.4	0.27	0.56	0.27	51.7
Approach			114	5.0	114	5.0	0.052	0.9	NA	0.1	0.4	0.04	0.08	0.04	58.6
All Vehicles			349	5.0	349	5.0	0.079	2.7	NA	0.3	2.2	0.08	0.25	0.08	56.3

Site: 101 [BG2027_Coominya Connection Road / Brisbane Valley Highway - Weekend Peak (Site Folder: BG2027)]

Coominya Connection Road / Brisbane Valley Highway
BG2027
Weekend Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Coominya Connection Road															
1	L2	All MCs	45	5.0	45	5.0	0.129	6.4	LOS A	0.5	3.6	0.42	0.64	0.42	50.9
2	T1	All MCs	1	5.0	1	5.0	0.129	8.1	LOS A	0.5	3.6	0.42	0.64	0.42	51.3
3	R2	All MCs	47	5.0	47	5.0	0.129	9.7	LOS A	0.5	3.6	0.42	0.64	0.42	50.9
Approach			94	5.0	94	5.0	0.129	8.1	LOS A	0.5	3.6	0.42	0.64	0.42	50.9
East: Brisbane Valley Highway															
4	L2	All MCs	37	5.0	37	5.0	0.021	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	178	5.0	178	5.0	0.095	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	60.0
6	R2	All MCs	1	5.0	1	5.0	0.095	5.6	LOS A	0.0	0.1	0.00	0.00	0.00	57.1
Approach			216	5.0	216	5.0	0.095	1.0	NA	0.0	0.1	0.00	0.10	0.00	58.6
North: Coominya Connection Road															
7	L2	All MCs	1	5.0	1	5.0	0.005	6.1	LOS A	0.0	0.1	0.40	0.54	0.40	51.1
8	T1	All MCs	1	5.0	1	5.0	0.005	7.8	LOS A	0.0	0.1	0.40	0.54	0.40	51.5
9	R2	All MCs	1	5.0	1	5.0	0.005	9.3	LOS A	0.0	0.1	0.40	0.54	0.40	51.0
Approach			3	5.0	3	5.0	0.005	7.7	LOS A	0.0	0.1	0.40	0.54	0.40	51.2
West: Brisbane Valley Highway															
10	L2	All MCs	1	5.0	1	5.0	0.071	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.2
11	T1	All MCs	133	5.0	133	5.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	All MCs	21	5.0	21	5.0	0.019	6.4	LOS A	0.1	0.5	0.32	0.58	0.32	51.6
Approach			155	5.0	155	5.0	0.071	0.9	NA	0.1	0.5	0.04	0.08	0.04	58.6
All Vehicles			467	5.0	467	5.0	0.129	2.4	NA	0.5	3.6	0.10	0.21	0.10	56.8

USER REPORT FOR SITE

Project: Intersection Models

Output produced by SIDRA INTERSECTION Version: 9.1.4.221 **Template: Movement Summary**

Site: 101 [DEV2027_West Road / Site Access - AM Peak (Site Folder: DEV2027)]

West Road / Site Access
DEV2027
AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	16	5.0	16	5.0	0.012	5.7	LOS A	0.0	0.3	0.07	0.52	0.07	52.8
3	R2	All MCs	16	5.0	16	5.0	0.018	6.7	LOS A	0.1	0.5	0.29	0.53	0.29	52.1
Approach			32	5.0	32	5.0	0.018	6.2	LOS A	0.1	0.5	0.18	0.52	0.18	52.4
East: West Road															
4	L2	All MCs	64	5.0	64	5.0	0.036	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	18	5.0	18	5.0	0.009	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			82	5.0	82	5.0	0.036	4.4	NA	0.0	0.0	0.00	0.45	0.00	54.1
West: West Road															
11	T1	All MCs	39	5.0	39	5.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	All MCs	64	5.0	64	5.0	0.050	6.0	LOS A	0.2	1.5	0.19	0.52	0.19	52.4
Approach			103	5.0	103	5.0	0.050	3.7	NA	0.2	1.5	0.12	0.32	0.12	55.0
All Vehicles			217	5.0	217	5.0	0.050	4.3	NA	0.2	1.5	0.08	0.40	0.08	54.3

Site: 101 [DEV2027_West Road / Site Access - PM Peak (Site Folder: DEV2027)]

West Road / Site Access
DEV2027
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	64	0.0	64	0.0	0.050	5.7	LOS A	0.2	1.3	0.11	0.52	0.11	52.8
3	R2	All MCs	64	0.0	64	0.0	0.065	6.2	LOS A	0.3	1.8	0.22	0.52	0.22	52.6
Approach			128	0.0	128	0.0	0.065	5.9	LOS A	0.3	1.8	0.16	0.52	0.16	52.7
East: West Road															
4	L2	All MCs	16	0.0	16	0.0	0.009	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.9
5	T1	All MCs	37	0.0	37	0.0	0.019	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			53	0.0	53	0.0	0.019	1.7	NA	0.0	0.0	0.00	0.17	0.00	57.7
West: West Road															
11	T1	All MCs	27	0.0	27	0.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	All MCs	16	0.0	16	0.0	0.012	5.8	LOS A	0.0	0.3	0.13	0.51	0.13	52.7
Approach			43	0.0	43	0.0	0.014	2.1	NA	0.0	0.3	0.05	0.19	0.05	57.1
All Vehicles			224	0.0	224	0.0	0.065	4.2	NA	0.3	1.8	0.10	0.38	0.10	54.6

Site: 101 [DEV2027_West Road / Site Access - Weekend Peak (Site Folder: DEV2027)]

West Road / Site Access
DEV2027
Weekend Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	31	0.0	31	0.0	0.024	5.7	LOS A	0.1	0.6	0.11	0.52	0.11	52.8
3	R2	All MCs	31	0.0	31	0.0	0.032	6.4	LOS A	0.1	0.9	0.25	0.52	0.25	52.4
Approach			61	0.0	61	0.0	0.032	6.0	LOS A	0.1	0.9	0.18	0.52	0.18	52.6
East: West Road															
4	L2	All MCs	38	0.0	38	0.0	0.020	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.9
5	T1	All MCs	39	0.0	39	0.0	0.020	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			77	0.0	77	0.0	0.020	2.7	NA	0.0	0.0	0.00	0.28	0.00	56.3
West: West Road															
11	T1	All MCs	28	0.0	28	0.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	All MCs	38	0.0	38	0.0	0.028	5.9	LOS A	0.1	0.8	0.17	0.51	0.17	52.6
Approach			66	0.0	66	0.0	0.028	3.4	NA	0.1	0.8	0.10	0.29	0.10	55.6
All Vehicles			204	0.0	204	0.0	0.032	3.9	NA	0.1	0.9	0.09	0.36	0.09	54.9

Site: 101 [DEV2027_West Road / Coominya Connection Road - AM Peak (Site Folder: DEV2027)]

West Road / Coominya Connection Road
DEV2027
AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: West Road															
5	T1	All MCs	16	5.0	16	5.0	0.017	0.2	LOS A	0.1	0.5	0.08	0.14	0.08	58.5
6	R2	All MCs	18	5.0	18	5.0	0.017	6.1	LOS A	0.1	0.5	0.25	0.47	0.25	52.6
Approach			34	5.0	34	5.0	0.017	3.3	NA	0.1	0.5	0.17	0.32	0.17	55.2
North: Coominya Connection Road															
7	L2	All MCs	24	5.0	24	5.0	0.065	5.9	LOS A	0.3	1.8	0.24	0.56	0.24	52.0
9	R2	All MCs	40	5.0	40	5.0	0.065	6.6	LOS A	0.3	1.8	0.24	0.56	0.24	51.9
Approach			64	5.0	64	5.0	0.065	6.3	LOS A	0.3	1.8	0.24	0.56	0.24	51.9
West: West Road															
10	L2	All MCs	66	5.0	66	5.0	0.037	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
11	T1	All MCs	78	5.0	78	5.0	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			144	5.0	144	5.0	0.041	2.6	NA	0.0	0.0	0.00	0.26	0.00	56.4
All Vehicles			242	5.0	242	5.0	0.065	3.7	NA	0.3	1.8	0.09	0.35	0.09	55.0

Site: 101 [DEV2027_West Road / Coominya Connection Road - PM Peak (Site Folder: DEV2027)]

West Road / Coominya Connection Road
BG2027
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: West Road															
5	T1	All MCs	63	5.0	63	5.0	0.046	0.2	LOS A	0.2	1.4	0.08	0.17	0.08	58.2
6	R2	All MCs	37	5.0	37	5.0	0.046	5.8	LOS A	0.2	1.4	0.15	0.32	0.15	54.0
Approach			100	5.0	100	5.0	0.046	2.2	NA	0.2	1.4	0.11	0.23	0.11	56.6
North: Coominya Connection Road															
7	L2	All MCs	12	5.0	12	5.0	0.101	5.7	LOS A	0.4	3.0	0.25	0.56	0.25	52.0
9	R2	All MCs	81	5.0	81	5.0	0.101	6.7	LOS A	0.4	3.0	0.25	0.56	0.25	51.8
Approach			93	5.0	93	5.0	0.101	6.5	LOS A	0.4	3.0	0.25	0.56	0.25	51.9
West: West Road															
10	L2	All MCs	36	5.0	36	5.0	0.020	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
11	T1	All MCs	31	5.0	31	5.0	0.016	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			66	5.0	66	5.0	0.020	3.0	NA	0.0	0.0	0.00	0.31	0.00	55.8
All Vehicles			259	5.0	259	5.0	0.101	4.0	NA	0.4	3.0	0.13	0.37	0.13	54.6

Site: 101 [DEV2027_West Road / Coominya Connection Road - Weekend Peak (Site Folder: DEV2027)]

West Road / Coominya Connection Road
BG2027
Weekend Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: West Road															
5	T1	All MCs	43	5.0	43	5.0	0.033	0.2	LOS A	0.1	1.0	0.11	0.18	0.11	58.1
6	R2	All MCs	26	5.0	26	5.0	0.033	6.0	LOS A	0.1	1.0	0.22	0.35	0.22	53.7
Approach			69	5.0	69	5.0	0.033	2.4	NA	0.1	1.0	0.15	0.24	0.15	56.4
North: Coominya Connection Road															
7	L2	All MCs	12	5.0	12	5.0	0.067	5.8	LOS A	0.3	1.9	0.26	0.57	0.26	51.9
9	R2	All MCs	51	5.0	51	5.0	0.067	6.7	LOS A	0.3	1.9	0.26	0.57	0.26	51.8
Approach			62	5.0	62	5.0	0.067	6.5	LOS A	0.3	1.9	0.26	0.57	0.26	51.8
West: West Road															
10	L2	All MCs	63	5.0	63	5.0	0.035	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
11	T1	All MCs	55	5.0	55	5.0	0.029	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			118	5.0	118	5.0	0.035	3.0	NA	0.0	0.0	0.00	0.31	0.00	55.8
All Vehicles			249	5.0	249	5.0	0.067	3.7	NA	0.3	1.9	0.11	0.35	0.11	54.9

Site: 101 [DEV2027_Coominya Connection Road / Brisbane Valley Highway - AM Peak (Site Folder: DEV2027)]

Coominya Connection Road / Brisbane Valley Highway
DEV2027
AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Coominya Connection Road															
1	L2	All MCs	33	5.0	33	5.0	0.123	6.1	LOS A	0.5	3.5	0.38	0.61	0.38	51.1
2	T1	All MCs	1	5.0	1	5.0	0.123	7.3	LOS A	0.5	3.5	0.38	0.61	0.38	51.5
3	R2	All MCs	58	5.0	58	5.0	0.123	8.7	LOS A	0.5	3.5	0.38	0.61	0.38	51.1
Approach			92	5.0	92	5.0	0.123	7.8	LOS A	0.5	3.5	0.38	0.61	0.38	51.1
East: Brisbane Valley Highway															
4	L2	All MCs	41	5.0	41	5.0	0.023	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	113	5.0	113	5.0	0.060	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
6	R2	All MCs	1	5.0	1	5.0	0.060	5.6	LOS A	0.0	0.1	0.01	0.01	0.01	57.0
Approach			155	5.0	155	5.0	0.060	1.5	NA	0.0	0.1	0.00	0.16	0.00	57.8
North: Coominya Connection Road															
7	L2	All MCs	1	5.0	1	5.0	0.004	6.0	LOS A	0.0	0.1	0.36	0.53	0.36	51.5
8	T1	All MCs	1	5.0	1	5.0	0.004	7.1	LOS A	0.0	0.1	0.36	0.53	0.36	52.0
9	R2	All MCs	1	5.0	1	5.0	0.004	8.3	LOS A	0.0	0.1	0.36	0.53	0.36	51.4
Approach			3	5.0	3	5.0	0.004	7.2	LOS A	0.0	0.1	0.36	0.53	0.36	51.6
West: Brisbane Valley Highway															
10	L2	All MCs	1	5.0	1	5.0	0.065	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.2
11	T1	All MCs	121	5.0	121	5.0	0.065	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
12	R2	All MCs	34	5.0	34	5.0	0.028	6.1	LOS A	0.1	0.8	0.26	0.57	0.26	51.7
Approach			156	5.0	156	5.0	0.065	1.4	NA	0.1	0.8	0.06	0.13	0.06	57.9
All Vehicles			405	5.0	405	5.0	0.123	2.9	NA	0.5	3.5	0.11	0.25	0.11	56.1

Site: 101 [DEV2027_Coominya Connection Road / Brisbane Valley Highway - PM Peak (Site Folder: DEV2027)]

Coominya Connection Road / Brisbane Valley Highway
DEV2027
AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Coominya Connection Road															
1	L2	All MCs	41	5.0	41	5.0	0.107	6.0	LOS A	0.4	3.0	0.32	0.58	0.32	51.5
2	T1	All MCs	1	5.0	1	5.0	0.107	6.9	LOS A	0.4	3.0	0.32	0.58	0.32	51.9
3	R2	All MCs	46	5.0	46	5.0	0.107	8.2	LOS A	0.4	3.0	0.32	0.58	0.32	51.5
Approach			88	5.0	88	5.0	0.107	7.2	LOS A	0.4	3.0	0.32	0.58	0.32	51.5
East: Brisbane Valley Highway															
4	L2	All MCs	65	5.0	65	5.0	0.036	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	103	5.0	103	5.0	0.055	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
6	R2	All MCs	1	5.0	1	5.0	0.055	5.6	LOS A	0.0	0.1	0.01	0.01	0.01	57.0
Approach			169	5.0	169	5.0	0.055	2.2	NA	0.0	0.1	0.00	0.23	0.00	56.9
North: Coominya Connection Road															
7	L2	All MCs	1	5.0	1	5.0	0.004	5.9	LOS A	0.0	0.1	0.33	0.52	0.33	51.7
8	T1	All MCs	1	5.0	1	5.0	0.004	6.8	LOS A	0.0	0.1	0.33	0.52	0.33	52.2
9	R2	All MCs	1	5.0	1	5.0	0.004	7.8	LOS A	0.0	0.1	0.33	0.52	0.33	51.6
Approach			3	5.0	3	5.0	0.004	6.9	LOS A	0.0	0.1	0.33	0.52	0.33	51.8
West: Brisbane Valley Highway															
10	L2	All MCs	1	5.0	1	5.0	0.052	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.2
11	T1	All MCs	97	5.0	97	5.0	0.052	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
12	R2	All MCs	17	5.0	17	5.0	0.014	6.2	LOS A	0.1	0.4	0.27	0.56	0.27	51.7
Approach			115	5.0	115	5.0	0.052	1.0	NA	0.1	0.4	0.04	0.09	0.04	58.5
All Vehicles			376	5.0	376	5.0	0.107	3.0	NA	0.4	3.0	0.09	0.27	0.09	55.9

Site: 101 [DEV2027_Coominya Connection Road / Brisbane Valley Highway - Weekend Peak (Site Folder: DEV2027)]

Coominya Connection Road / Brisbane Valley Highway
DEV2027
Weekend Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Coominya Connection Road															
1	L2	All MCs	51	5.0	51	5.0	0.146	6.4	LOS A	0.6	4.2	0.43	0.64	0.43	50.8
2	T1	All MCs	1	5.0	1	5.0	0.146	8.2	LOS A	0.6	4.2	0.43	0.64	0.43	51.2
3	R2	All MCs	54	5.0	54	5.0	0.146	9.8	LOS A	0.6	4.2	0.43	0.64	0.43	50.8
Approach			105	5.0	105	5.0	0.146	8.2	LOS A	0.6	4.2	0.43	0.64	0.43	50.8
East: Brisbane Valley Highway															
4	L2	All MCs	41	5.0	41	5.0	0.023	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	178	5.0	178	5.0	0.095	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	60.0
6	R2	All MCs	1	5.0	1	5.0	0.095	5.6	LOS A	0.0	0.1	0.00	0.00	0.00	57.1
Approach			220	5.0	220	5.0	0.095	1.1	NA	0.0	0.1	0.00	0.11	0.00	58.4
North: Coominya Connection Road															
7	L2	All MCs	1	5.0	1	5.0	0.005	6.1	LOS A	0.0	0.1	0.41	0.54	0.41	51.1
8	T1	All MCs	1	5.0	1	5.0	0.005	7.8	LOS A	0.0	0.1	0.41	0.54	0.41	51.5
9	R2	All MCs	1	5.0	1	5.0	0.005	9.4	LOS A	0.0	0.1	0.41	0.54	0.41	51.0
Approach			3	5.0	3	5.0	0.005	7.8	LOS A	0.0	0.1	0.41	0.54	0.41	51.2
West: Brisbane Valley Highway															
10	L2	All MCs	1	5.0	1	5.0	0.071	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.2
11	T1	All MCs	133	5.0	133	5.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	All MCs	23	5.0	23	5.0	0.021	6.4	LOS A	0.1	0.6	0.32	0.58	0.32	51.6
Approach			157	5.0	157	5.0	0.071	1.0	NA	0.1	0.6	0.05	0.09	0.05	58.5
All Vehicles			485	5.0	485	5.0	0.146	2.6	NA	0.6	4.2	0.11	0.22	0.11	56.6

USER REPORT FOR SITE

Project: Intersection Models

Output produced by SIDRA INTERSECTION Version: 9.1.4.221 **Template: Movement Summary**

Site: 101 [DEV2037_West Road / Site Access - AM Peak (Site Folder: DEV 2037)]

West Road / Site Access
DEV2037
AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	16	0.0	16	0.0	0.012	5.7	LOS A	0.0	0.3	0.07	0.52	0.07	52.9
3	R2	All MCs	16	0.0	16	0.0	0.018	6.6	LOS A	0.1	0.5	0.29	0.53	0.29	52.3
Approach			32	0.0	32	0.0	0.018	6.1	LOS A	0.1	0.5	0.18	0.53	0.18	52.6
East: West Road															
4	L2	All MCs	64	0.0	64	0.0	0.035	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.9
5	T1	All MCs	21	0.0	21	0.0	0.011	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			85	0.0	85	0.0	0.035	4.2	NA	0.0	0.0	0.00	0.43	0.00	54.5
West: West Road															
11	T1	All MCs	46	0.0	46	0.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	All MCs	64	0.0	64	0.0	0.048	5.9	LOS A	0.2	1.4	0.18	0.52	0.18	52.6
Approach			111	0.0	111	0.0	0.048	3.4	NA	0.2	1.4	0.11	0.30	0.11	55.4
All Vehicles			227	0.0	227	0.0	0.048	4.1	NA	0.2	1.4	0.08	0.38	0.08	54.7

Site: 101 [DEV2037_West Road / Site Access - PM Peak (Site Folder: DEV 2037)]

West Road / Site Access
DEV2037
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	64	0.0	64	0.0	0.050	5.8	LOS A	0.2	1.3	0.12	0.52	0.12	52.8
3	R2	All MCs	64	0.0	64	0.0	0.066	6.2	LOS A	0.3	1.8	0.23	0.52	0.23	52.5
Approach			128	0.0	128	0.0	0.066	6.0	LOS A	0.3	1.8	0.17	0.52	0.17	52.6
East: West Road															
4	L2	All MCs	16	0.0	16	0.0	0.009	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.9
5	T1	All MCs	43	0.0	43	0.0	0.022	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			59	0.0	59	0.0	0.022	1.5	NA	0.0	0.0	0.00	0.15	0.00	57.9
West: West Road															
11	T1	All MCs	32	0.0	32	0.0	0.016	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	All MCs	16	0.0	16	0.0	0.012	5.8	LOS A	0.0	0.3	0.14	0.51	0.14	52.7
Approach			47	0.0	47	0.0	0.016	1.9	NA	0.0	0.3	0.05	0.17	0.05	57.4
All Vehicles			235	0.0	235	0.0	0.066	4.0	NA	0.3	1.8	0.10	0.36	0.10	54.8

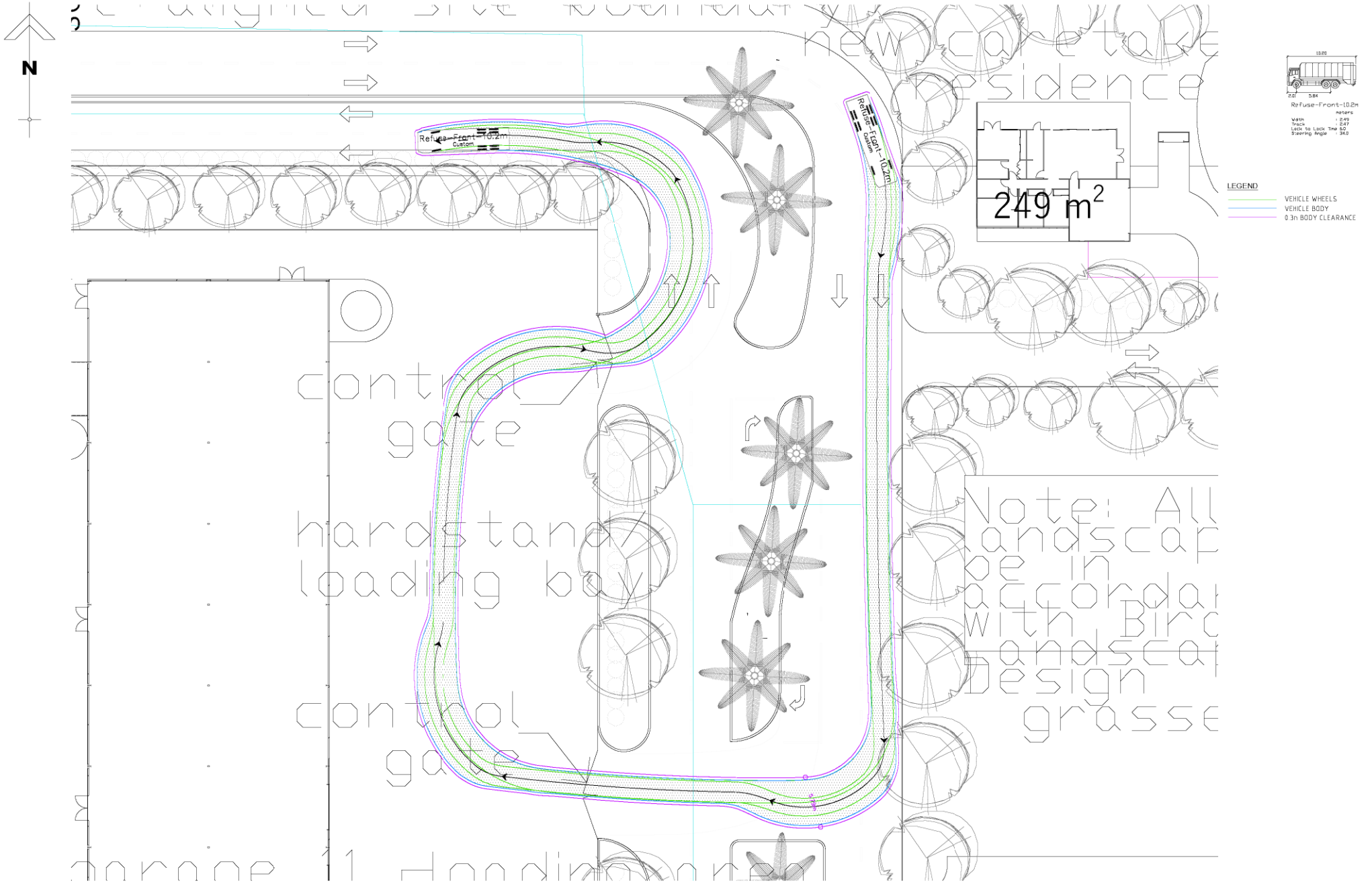
Site: 101 [DEV2037_West Road / Site Access - Weekend Peak (Site Folder: DEV 2037)]

West Road / Site Access
DEV 2037
Weekend Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	31	0.0	31	0.0	0.024	5.8	LOS A	0.1	0.6	0.12	0.52	0.12	52.8
3	R2	All MCs	31	0.0	31	0.0	0.033	6.4	LOS A	0.1	0.9	0.27	0.53	0.27	52.4
Approach			61	0.0	61	0.0	0.033	6.1	LOS A	0.1	0.9	0.19	0.52	0.19	52.6
East: West Road															
4	L2	All MCs	38	0.0	38	0.0	0.020	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.9
5	T1	All MCs	46	0.0	46	0.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			84	0.0	84	0.0	0.024	2.5	NA	0.0	0.0	0.00	0.26	0.00	56.6
West: West Road															
11	T1	All MCs	33	0.0	33	0.0	0.017	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	All MCs	38	0.0	38	0.0	0.028	5.9	LOS A	0.1	0.8	0.18	0.52	0.18	52.6
Approach			71	0.0	71	0.0	0.028	3.2	NA	0.1	0.8	0.10	0.28	0.10	55.8
All Vehicles			216	0.0	216	0.0	0.033	3.7	NA	0.1	0.9	0.09	0.34	0.09	55.1

Appendix E – Swept Paths



Prepared for : PALMER MOTORAMA PTY LTD

WCV Swept Path

620-635 West Road, Patrick Estate, Lowood

SCALE 5 0 5 10 (metres)

1 : 250 (FULL SIZE)

BE230352-SK01

Designer : ADELE PACKER

Checked : ANGELA WOOD

Date : 17-05-2024

BURCHILLS ENGINEERING SOLUTIONS

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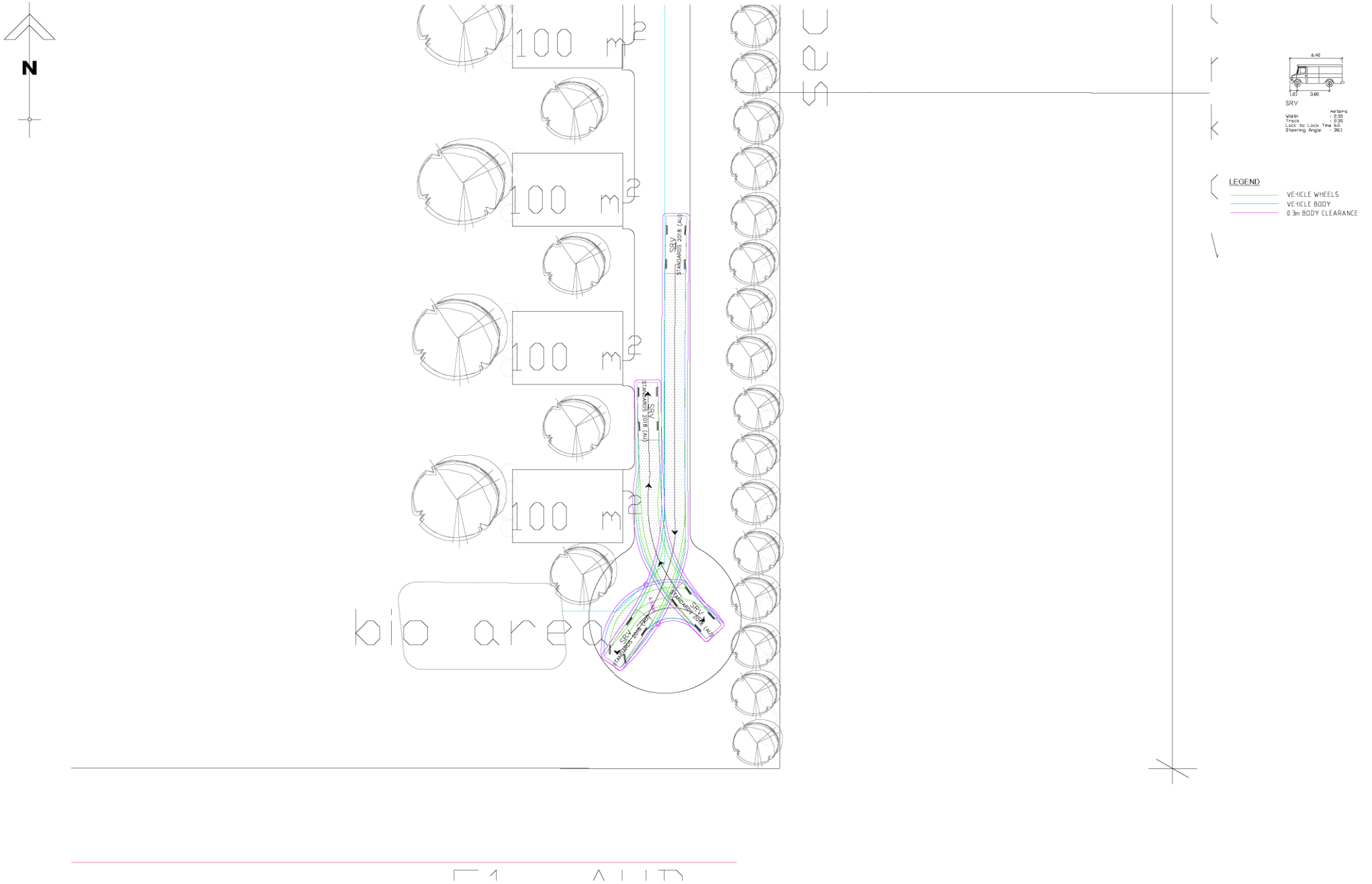
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365



Prepared for : PALMER MOTORAMA PTY LTD

Designer : ADELE PACKER
Checked : ANGELA WOOD
Date : 17-05-2024

SRV Swept Path
620-635 West Road, Patrick Estate, Lowood
SCALE 5 0 5 10 (metres)
1 : 250 (FULL SIZE)
BE230352-SK02

BURCHILLS ENGINEERING SOLUTIONS
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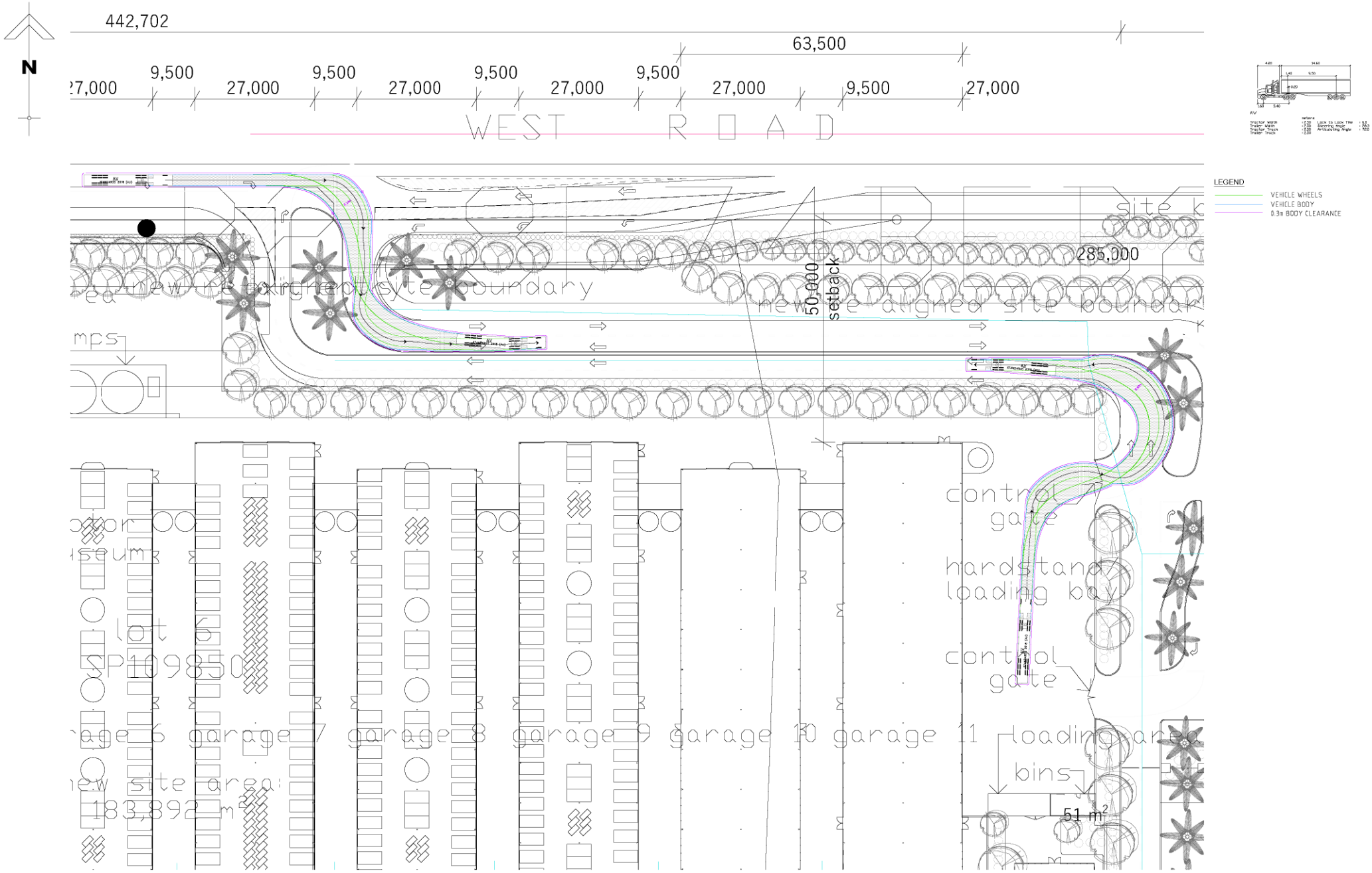
ABN 76 166 942 365



Prepared for : PALMER MOTORAMA PTY LTD

AV Swept Path

620-635 West Road, Patrick Estate, Lowood

SCALE 5 0 5 10 15 20 25 (metres)

1 : 500 (FULL SIZE)

BE230352-SK04

Designer : ADELE PACKER
Checked : ANGELA WOOD
Date : 17-05-2024

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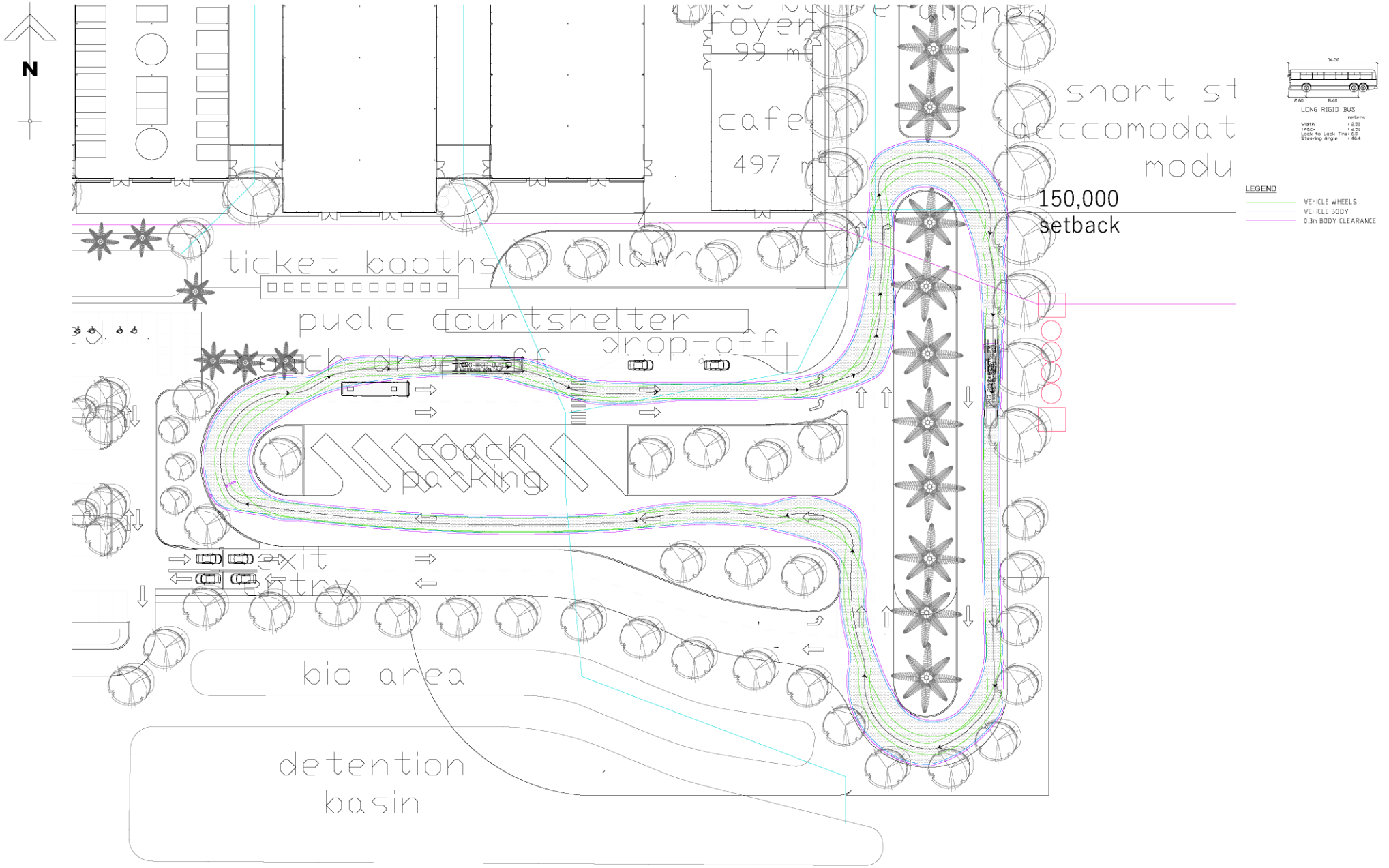
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365



Prepared for : PALMER MOTORAMA PTY LTD

Designer : ADELE PACKER
Checked : ANGELA WOOD
Date : 17-05-2024

14.5m Bus Swept Path
620-635 West Road, Patrick Estate, Lowood
SCALE 4 0 4 8 12 16 20 (metres)
1 : 400 (FULL SIZE)
BE230352-SK06

BURCHILLS ENGINEERING SOLUTIONS
Gold Coast I Brisbane I Toowoomba
Ipswich I Moreton Bay
Phone: +61 7 5509 6400
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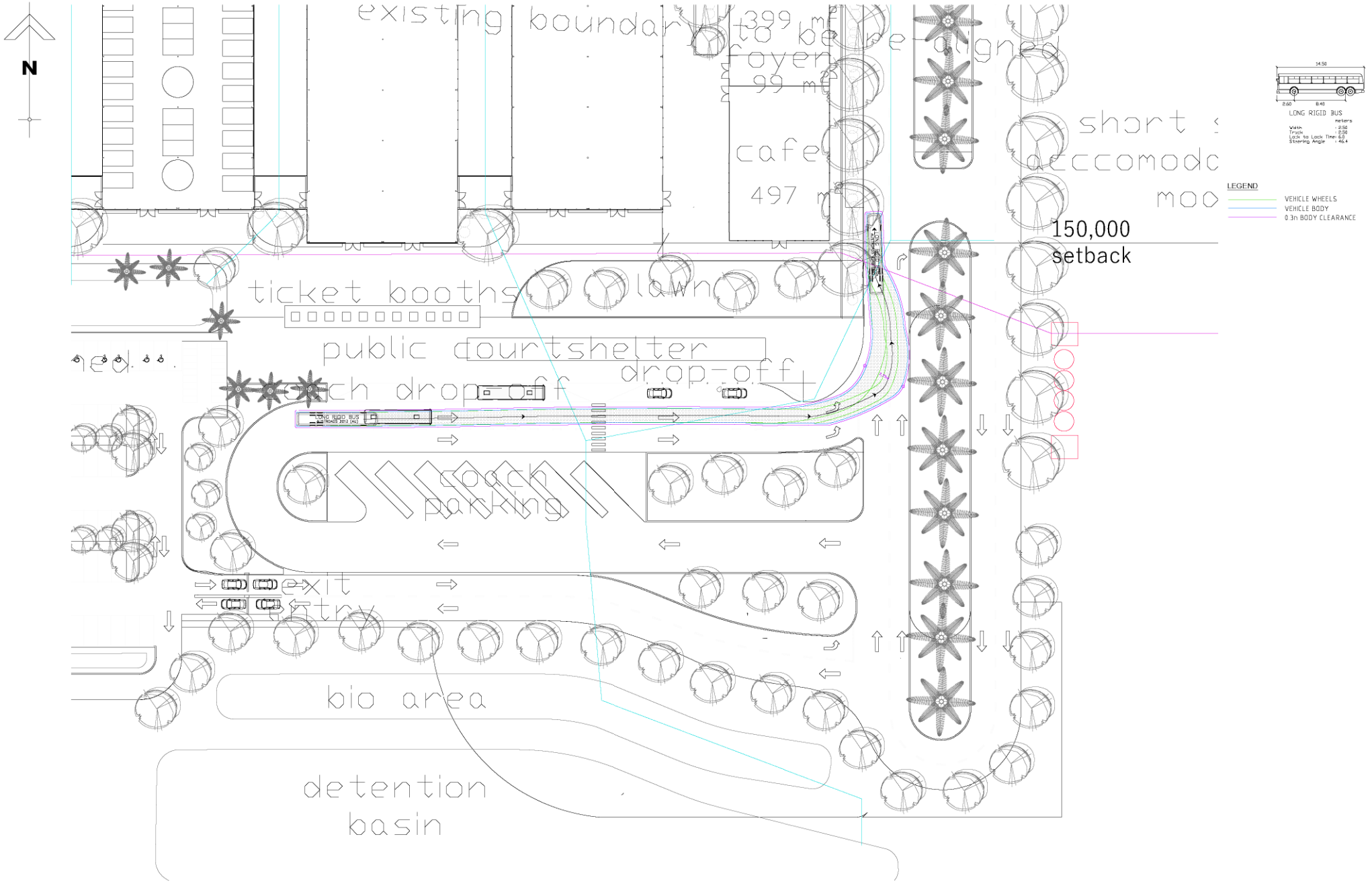
Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365



Prepared for : PALMER MOTORAMA PTY LTD

Designer : ADELE PACKER
Checked : ANGELA WOOD
Date : 17-05-2024

14.5m Bus Swept Path
620-635 West Road, Patrick Estate, Lowood
SCALE 4 0 4 8 12 16 20 (metres)
1 : 400 (FULL SIZE)
BE230352-SK07

BURCHILLS ENGINEERING SOLUTIONS
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Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

Appendix F – State Code 6 Response

State code 6: Protection of state transport networks

Table 6.2 Development in general

Performance outcomes	Acceptable outcomes	Response
Network impacts		
PO1 Development does not compromise the safety of users of the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies.** Please refer to the Traffic Impact Assessment (BE230352-RP-TIA-01) prepared by Burchills Engineering Solutions
PO2 Development does not adversely impact the structural integrity or physical condition of a **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	**Complies**. Please refer to the Traffic Impact Assessment (BE230352-RP-TIA-01) prepared by Burchills Engineering Solutions
PO3 Development ensures **no net worsening** of the operating performance the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies.** Please refer to the Traffic Impact Assessment (BE230352-RP-TIA-01) prepared by Burchills Engineering Solutions
PO4 Traffic movements are not directed onto a **state-controlled road** where they can be accommodated on the **local road** network.	No acceptable outcome is prescribed.	**Complies.** Access to the development is proposed via the local road network.
PO5 Development involving haulage exceeding 10,000 tonnes per year does not damage the pavement of a **state-controlled road**.	No acceptable outcome is prescribed.	**N/A.**
PO6 Development does not require a new **railway** level crossing.	No acceptable outcome is prescribed.	**Complies.** No new railway level crossing required.
PO7 Development does not adversely impact the operating performance of an existing **railway crossing**.	No acceptable outcome is prescribed.	**Complies.** The development is not anticipated to impact the existing railway crossing.
PO8 Development does not adversely impact on the safety of an existing **railway crossing**.	No acceptable outcome is prescribed.	**N/A.**
PO9 Development is designed and constructed to allow for on-site circulation to ensure vehicles do not queue in a **railway crossing**.	No acceptable outcome is prescribed.	**N/A.**
PO10 Development does not create a safety hazard within the **railway corridor**.	No acceptable outcome is prescribed.	**N/A.**
PO11 Development does not adversely impact the operating performance of the **railway corridor**.	No acceptable outcome is prescribed.	**N/A.**

Performance outcomes	Acceptable outcomes	Response
PO12 Development does not interfere with or obstruct the **railway transport infrastructure** or **other rail infrastructure**.	No acceptable outcome is prescribed.	**N/A.**
PO13 Development does not adversely impact the structural integrity or physical condition of a **railway corridor** or **rail transport infrastructure**.	No acceptable outcome is prescribed.	**N/A.**
Stormwater and overland flow		
PO14 Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of a **state transport corridor** or **state transport infrastructure**.	No acceptable outcome is prescribed.	Addressed by others.
PO15 Stormwater run-off or overland flow from the development site does not result in a material worsening of operating performance of a **state transport corridor** or **state transport infrastructure**.	No acceptable outcome is prescribed.	Addressed by others.
PO16 Stormwater run-off or overland flow from the development site does not interfere with the structural integrity or physical condition of the **state transport corridor** or **state transport infrastructure**.	No acceptable outcome is prescribed.	Addressed by others.
PO17 Development associated with a **state-controlled road** or **road transport infrastructure** ensures that stormwater is lawfully discharged.	**AO17.1** Development does not create any new points of discharge to a **state transport corridor** or **state transport infrastructure**. AND **AO17.2** Development does not concentrate flows to a **state transport corridor**. AND **AO17.3** Stormwater run-off is discharged to a **lawful point of discharge**. AND	Addressed by others.

Performance outcomes	Acceptable outcomes	Response
	AO17.4 Development does not worsen the condition of an existing **lawful point of discharge** to a **state transport corridor** or **state transport infrastructure**.	
Flooding		
PO18 Development does not result in a material worsening of flooding impacts within a **state transport corridor** or **state transport infrastructure**	*For a **state-controlled road** or **road transport infrastructure**, all of the following apply:* **AO18.1** For all flood events up to 1% **annual exceedance probability**, development ensures there are negligible impacts (within +/- 10mm) to existing flood levels within a **state transport corridor**. AND **AO18.2** For all flood events up to 1% **annual exceedance probability**, development ensures there are negligible impacts (up to a 10% increase) to existing peak velocities within a **state transport corridor**. AND **AO18.3** For all flood events up to 1% annual exceedance probability, development ensures there are negligible impacts (up to a 10% increase) to existing time of submergence of a **state transport corridor**. *No acceptable outcome is prescribed for a **railway corridor** or **rail transport infrastructure**.*	Addressed by others.
Drainage infrastructure		
PO19 Drainage infrastructure does not create a safety hazard in a **state transport corridor**.	*For a **state-controlled road** environment, both of the following apply:* **AO19.1** Drainage infrastructure associated with, or in a **state-controlled road** is wholly contained	Addressed by others.

Performance outcomes	Acceptable outcomes	Response
	within the development site, except at the **lawful point of discharge**. AND **AO19.2** Drainage infrastructure can be maintained without requiring access to a **state transport corridor**. *For a **railway** environment both of the following apply:* **AO19.3** Drainage infrastructure associated with a **railway corridor** or **rail transport infrastructure** is wholly contained within the development site. AND **AO19.4** Drainage infrastructure can be maintained without requiring access to a **state transport corridor**.	
PO20 Drainage infrastructure associated with, or in a **state-controlled road** or **road transport infrastructure** is constructed and designed to ensure the structural integrity and physical condition of existing drainage infrastructure and the surrounding drainage network is maintained.	No acceptable outcome is prescribed.	Addressed by others.
Planned upgrades		
PO21 Development does not impede delivery of **planned upgrades** of **state transport infrastructure**.	No acceptable outcome is prescribed.	**Complies.** No impact is anticipated on known planned upgrades

Table 6.3 Public passenger transport infrastructure and active transport

Performance outcomes	Acceptable outcomes	Response
PO22 Development does not damage or interfere with **public passenger transport infrastructure**, **active transport infrastructure** or **public passenger services**.	No acceptable outcome is prescribed.	**Complies.** No impacts are anticipated.
PO23 Development does not compromise the safety of **public passenger transport infrastructure**, **public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies.** No impacts are anticipated.
PO24 Development does not adversely impact the operating performance of **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies.** No impacts are anticipated.
PO25 Development does not adversely impact the structural integrity or physical condition of **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies.** No impacts are anticipated.
PO26 Upgraded or new **public passenger transport infrastructure** and **active transport infrastructure** is provided to accommodate the demand for **public passenger transport** and **active transport** generated by the development.	No acceptable outcome is prescribed.	**Complies.** The proposed development is not anticipated to generate a significant impact on active or public transport.
PO27 Development is designed to ensure the location of **public passenger transport infrastructure** prioritises and enables efficient **public passenger services**.	No acceptable outcome is prescribed.	N/A
PO28 Development enables the provision or extension of **public passenger services**, **public passenger transport infrastructure** and **active transport infrastructure** to the development and avoids creating indirect or inefficient routes for **public passenger services**.	No acceptable outcome is prescribed.	N/A
PO29 New or modified road networks are designed to enable development to be serviced by **public passenger services**.	**AO29.1** Roads catering for buses are arterial or **sub-arterial roads**, collector or their equivalent. AND **AO29.2** Roads intended to accommodate buses are designed and constructed in accordance with:	**N/A.** No existing public passenger services in the vicinity of the subject site.

Performance outcomes	Acceptable outcomes	Response
	1. Road Planning and Design Manual, 2nd Edition, Volume 3 – Guide to Road Design; Department of Transport and Main Roads; 2. Supplement to Austroads Guide to Road Design (Parts 3, 4-4C and 6), Department of Transport and Main Roads; 3. Austroads Guide to Road Design (Parts 3, 4-4C and 6); 4. Austroads Design Vehicles and Turning Path Templates; 5. Queensland Manual of Uniform Traffic Control Devices, Part 13: Local Area Traffic Management and AS 1742.13-2009 Manual of Uniform Traffic Control Devices – Local Area Traffic Management; AND **AO29.3** Traffic calming devices are not installed on roads used for buses in accordance with section 2.3.2 Bus Route Infrastructure, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	
PO30 Development provides safe, direct and convenient access to existing and future **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**N/A.** No existing public passenger services in the vicinity of the subject site.
PO31 On-site vehicular circulation ensures the safety of both **public passenger transport services** and pedestrians.	No acceptable outcome is prescribed.	**Complies**. Pedestrian access to the site is provided. No provision is required for public passenger transport.
PO32 Taxi facilities are provided to accommodate the demand generated by the development.	No acceptable outcome is prescribed.	**Complies.** Taxi pick up / drop off areas have been provided within the development.
PO33 Facilities are provided to accommodate the demand generated by the development for community transport services, courtesy transport services, and **booked hire services** other than taxis.	No acceptable outcome is prescribed.	N/A

Performance outcomes	Acceptable outcomes	Response
PO34 Taxi facilities are located and designed to provide convenient, safe and equitable access for passengers.	**AO34.1** A **taxi facility** is provided parallel to the kerb and adjacent to the main entrance. AND **AO34.2 Taxi facilities** are designed in accordance with: 1. AS2890.5–1993 Parking facilities – on-street parking and AS1428.1–2009 Design for access and mobility – general requirements for access – new building work; 2. AS1742.11–1999 Parking controls – manual of uniform traffic control devices 3. AS/NZS 2890.6–2009 Parking facilities –off street parking for people with disabilities; 4. Disability standards for accessible public 5. transport 2002 made under section 31(1) of the Disability Discrimination Act 1992; 6. AS/NZS 1158.3.1 – Lighting for roads and public spaces, Part 3.1: Pedestrian area (category P) lighting – Performance and design requirements; 7. Chapter 7 Taxi Facilities, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	A drop off/pickup area is proposed on-site. The design of the area accords with AS2890.1 requirements. Additional requirements such as lighting, will be addresses as part of the detailed design stage.
PO35 Educational establishments are designed to ensure the safe and efficient operation of **public passenger services**, pedestrian and cyclist access and **active transport infrastructure**.	**AO35.1** Educational establishments are designed in accordance with the provisions of the Planning for Safe Transport Infrastructure at Schools, Department of Transport and Main Roads, 2011.	**N/A**

Appendix G – Council IR & SARA IR

Queensland Government

SARA reference: 2309-36665 SRA
Council reference: 2022-500

4 October 2023

Drewmaster Pty Ltd
PO Box 3038
TOOWOOMBA QLD 4350
scott@precinctplan.com.au

Attention: Scott Clarke

Dear Scott

SARA information request – 620 - 636 West Road, Patrick Estate

(Given under section 12 of the Development Assessment Rules)

This notice has been issued because the State Assessment and Referral Agency (SARA) has identified that information necessary to assess your application against the relevant provisions of the State Development Assessment Provisions has not been provided.

South East Queensland Regional Plan 2017 (*ShapingSEQ*)	
1.	**Issue:** The proposed development represents significant development outside the Urban Footprint, as identified by the *South East Queensland Regional Plan 2017* (*ShapingSEQ*). The proposed GFA of the development significantly exceeds 5,000m², being approximately 35,000m², and involves an ancillary commercial component that exceeds 250m². **Action:** The proposed development requires an assessment against Schedule 10, part 16, division 2, subdivision 3, table 1, item 4, column 2—for an urban activity in the Regional Landscape and Rural Production Area (RLRPA) of the *Planning Regulation 2017* (Planning Regulation). An assessment against the requirements of the Planning Regulation is required to: a) demonstrate there is a community and economic need for the use b) demonstrate that the transport infrastructure surrounding the site is adequate to service the use c) provide evidence to indicate that there is a workforce suitable for the carrying out of the use from the surrounding area

DA Advisory Team (DAAT)
Level 13, 1 William Street, Brisbane
PO Box 15009 CITY EAST QLD 4002

	d) demonstrate that the use can be adequately serviced by necessary forms of infrastructure e) demonstrate that the use is compatible with other uses in the surrounding area. Of particular concern is the scale of development f) provide evidence and justification that the proposed development is consistent with the Regional Plan, in particular the goals, elements and strategies stated in the plan.
Traffic Impact Assessment	
2.	**Issue:** A Traffic Impact Assessment (TIA) has not been provided which demonstrates that the proposed development will not result in adverse safety or operational impacts on the state-controlled road network. **Action:** Submit a TIA certified by an RPEQ in accordance with the Department of Transport and Main Roads' *Guide to Traffic Impact Assessment* that demonstrates how the proposed development will achieve compliance with PO1 – PO13 of State Code 6: *Protection of state transport networks* of the State Development Assessment Provisions (SDAP). The TIA should include the following: a) the hours of operation, proposed employment numbers, trip generation, trip distribution and when the peak traffic generation of the site (whole development) occurs during the AM and PM peak of Coominya Connection Road and Brisbane Valley Highway b) provide an analysis of Coominya Connection Road and Brisbane Valley Highway that includes, with and without development, for year of opening and the design year c) provide a distribution diagram showing the distribution of AM and PM flows throughout the state-controlled road network d) identify the mitigation measures necessary to address any potential safety hazard or worsening of operating conditions from the proposed development on the state-controlled road network. All mitigation measures are to be designed in accordance with the Department of Transport and Main Roads' *Road Planning and Design Manual* e) provide an annotated concept plans detailing any necessary works and demonstrate that the works can be constructed by the applicant within the existing road reserve.
Public Passenger Transport	
3.	**Issue:** An assessment against PO26 – PO31 contained within Table 6.3 of State Code 6 – *Protection of State Transport Networks* of the SDAP has not been undertaken. As such, the application has not demonstrated what the proposed development's public passenger transport demand in relation to private/charted buses, coaches and mini-buses, which may be used for tour groups, functions, events and the like, will be. **Action:** Provide a TIA which provides an assessment of the proposal against the requirements of

	PO26 – PO31 contained within Table 6.3 of State Code 6 – *Protection of State Transport Networks* of the SDAP. Further information and guidance can be required, if required.

How to respond

You have three months to respond to this request and the due date to SARA is 4 January 2024.
You may respond by providing either: (a) all of the information requested; (b) part of the information requested; or (c) a notice that none of the information will be provided. Further guidance on responding to an information request is provided in section 13 of the Development Assessment Rules (DA Rules).

It is recommended that you provide all the information requested above. If you decide not to provide all the information requested, your application will be assessed and decided based on the information provided to date.

You are requested to upload your response and complete the relevant tasks in MyDAS2.

As SARA is a referral agency for this application, a copy of this information request will be provided to the assessment manager in accordance with section 12.4 of the DA Rules.

If you require further information or have any questions about the above, please contact Mica Cook, Principal Planner, on 07 3452 1234 or via email DAAT@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely

Phil Joyce
Director Development Assessment

cc Somerset Regional Council, mail@somerset.qld.gov.au

Development details		
Description:	Development permit	Material change of use for a Tourist Attraction, Caretaker's Accommodation and Short-Term Accommodation Reconfiguring a lot for a Boundary Realignment (2 into 2 lots)
SARA role:	Referral agency	
SARA trigger:	Planning Regulation 2017: • Schedule 10, Part 16, Division 2, Subdivision 3, Table 1, Item 1 -Material change of use for a tourist activity or sport and recreation activity in the SEQ regional landscape and rural production area • Schedule 10, Part 9, Division 4, Subdivision 1, Table 1, Item 1 - Development impacting state transport infrastructure	
SARA reference:	2309-36665 SRA	
Assessment criteria:	• South East Queensland Regional Plan (ShapingSEQ) • State Code 6: Protection of state transport networks of SDAP	

Officer: Mark Westaway, Senior Planner
Phone: (07) 5424 4000
Application reference number: DA23911
Applicant reference: 2022-500

16 April 2024

Drewmaster Pty Ltd
C/- Precinct Urban Planning
PO Box 2251
NORTH IPSWICH QLD 4305

Email: scott@precinctplan.com.au

Attention: Scott Clarke

Dear Sir,

Further Information Request
Given under section 12 of the Development Assessment Rules

1 Application details

Application number:	DA23911
Street address:	620-636 West Road, Patrick Estate
Real property description:	Lot 5 SP109850, Lot 6 SP109850
Local government area:	Somerset Regional Council
Planning scheme:	Somerset Region Planning Scheme (Version Four)
Approval sought:	Development Permit
Nature of development proposed:	Material Change of Use Reconfiguring a Lot
Description of the development proposed:	Tourist Attraction (motor museum), Function Facility, Short-term Accommodation (10 units) and Caretaker's Accommodation (one unit) Boundary Realignment (two lots into two lots)

2 Information request details

Revised plans have been submitted as a result of the applicant's response to the State Assessment and Referral Agency, including removal of the restaurant component of the application. Clarification is sought on a number of matters.

Please provide details on the following matters:

Planning Issues

Material change of use

1. Please provide amended associated technical reports and plans which have been updated to reflect the revised layout that removes the restaurant etc.

2. The development proposes a 144m long building, setback 10m from the western boundary of the site.

   Performance outcome PO2 of the Rural zone code states:

   Building setbacks:
   (a) contribute to the maintenance of the rural character of the zone; and
   (b) manage potential amenity impacts on sensitive land uses on adjoining premises.

   Acceptable outcome AO2 of the Rural zone code states:
   Buildings and structures are setback a minimum 15 metres from all boundaries of the site.

   Information requested:
   Council officers maintain concerns about the separation of the buildings from the boundaries, particularly the side boundary.

   Please address the rationale for the proposed 10 metre setback to the western boundary of the site.

   It is noted the individual garages have a 10 metre separation between one another. As an example, an alternate solution that reduces the separations between the buildings from 10 metres to 9 metres could enable up to a 10m increase in setback from the side boundary and provide an improved landscaping and earthwork treatment along the western boundary.

   It is also noted that no water tank is shown on the western side of Garage 1, (nor on the eastern side of Garage 11).

Access matters

3. The development shows an upgraded access treatment from West Road. This includes the creation of a right turn lane for eastbound traffic and a deceleration lane for westbound traffic.

   West Road currently has a verge between the site and the road pavement. This will be impacted by the proposed deceleration lane.

   A left turn slot that extends into the property while being fully connected to the road pavement of West Road should be included within a widened road

reserve. The widened road reserve would also need to include any relocated swale drain that serves the road.

It will be necessary to provide a road dedication over part of the site frontage to accommodate the realigned verge and swale.

Information requested:

(a) Please provide amended plans that
   a. provide a road dedication within the property to accommodate the widening of West Road adjacent to the deceleration lane;
   b. provide a landscaped stormwater swale within the verge;
   c. provide a minimum verge width of 6m between the road pavement and the property boundary.

(b) It is recommended that the architect liaise with the traffic engineer to provide a practical solution that is compliant with best engineering practice for this road treatment.

Engineering Issues

4. The Engineering services report provides minimal practical detail with respect to how the site would be serviced.

(a) *Water supply*

The main buildings will require potable water supply for amenities, and the workshop. The broader development will also require water supply for the ten short term accommodation units and the three caretakers' residences.

Typically, water supply for accommodation units or the caretaker's residences can be achieved through the provision of suitably sized water tanks. No details of any water supply for any of the development, apart from small tanks at the northern ends of the garages have been proposed on the plans.

Birchills provided the following response with respect to Council's initial information request with further advice regarding how the water demand would be calculated.

> *"No existing water infrastructure is available adjacent to the site for potable water supply. As such, an on-site water supply system via the use of appropriately sized water tanks for storage and pump system to meet potable and fire fighting demands will be required. Further details to be confirmed by a hydraulic engineering as part of the detailed design."*

The proposed garage buildings have roofed dimensions of 144.40m x 27.00m (3,900m^2). Each roof pitch has an area of 1,950m^2. The development proposes two 5,000 litre water tanks on each of the garage buildings. Based on calculations, the water tanks have capacity to accommodate 2.56mm of rain (if all the rain was captured in the tank). The rest of the roofwater would surcharge from the tanks and flow toward the bio retention basins.

Information requested:

(a) Please provide a detailed response regarding how the site is to be served with water for drinking purposes. This should include

calculations based on number of employees and anticipated numbers of visitors.

(b) Please address stormwater capacity matters for this development, including:
   i. collection of roof water; and
   ii. confirmation whether a component of the roof water is proposed to be used as potable water for the development; and
   iii. confirmation whether a component of the roof water is proposed to be used as fire fighting supply.

The development does not show any water supply or tanks for fire fighting purposes and the site is not served by reticulated water. A development of this size, such as a shopping centre or similar typically has very large fire fighting tanks and separate fire services.

Information requested:
Please provide an engineering report addressing provision of potable water and fire-fighting supply to the site, detailing how water quality and quantity will be addressed.

(b) *Effluent disposal*
The plans show a 4 x 22kl storage tanks, an effluent collection pit and pump well, and a discharge pit for pump out.

Information requested:
(a) Please provide a detailed response confirming the capacity of the proposed effluent disposal process, recognising the development is proposed to be served by a pump out arrangement and off-site disposal of effluent.
(b) Please provide calculations based on number of employees, the anticipated numbers of day visitors, the caretaker's residence and the 10 short term accommodation units to establish the likely frequency of effluent collection.
(c) Please provide details of the approved location for waste disposal.

5. The revised plans show a gravel overflow parking area at the western end of the parking area.

Information requested:
(a) Please provide details regarding dust mitigation with respect to the gravelled area.
(b) Please provide details of alternate solutions in terms of likely frequency of use of gravelled area, e.g. if overflow parking is only required once every three months, it may be preferable for this area to be grassed rather than gravelled.

3 Applicant responds to further Information Request

As Council's assessment of your application will be based on the information provided, it is recommended that you provide all of the information requested.

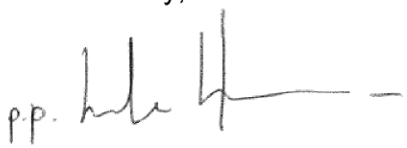
However, should you not provide a response before the above due date or contact Council for a further agreed period, prior to the information response period ending, it

will be taken as if you have decided not to respond to the information request and Council will continue with the assessment of your application without the information requested in accordance with section 14.2 of the *Development Assessment Rules*.

4 Others

Should you have any further queries in relation to the above, please contact Council's Senior Planner, Mark Westaway on (07) 5424 4000.

Yours faithfully,



Andrew Johnson
Chief Executive Officer

Officer: Mark Westaway, Senior Planner
Phone: (07) 5424 4000
Application reference number: DA23911
Applicant reference: 2022-500

14 September 2023

Drewmaster Pty Ltd
C/- Precinct Urban Planning
PO Box 2251
NORTH IPSWICH QLD 4305

Email: scott@precinctplan.com.au

Attention: Scott Clarke

Dear Sir,

Information Request

Given under section 12 of the Development Assessment Rules

1 Application details

Application number:	DA23911
Properly made:	31 August 2023
Street address:	620-636 West Road, Patrick Estate
Real property description:	Lot 5 SP109850, Lot 6 SP109850
Local government area:	Somerset Regional Council
Planning scheme:	Somerset Region Planning Scheme (Version Four)
Approval sought:	Development Permit
Nature of development proposed:	Material Change of Use Reconfiguring a Lot
Description of the development proposed:	Tourist Attraction (motor museum), Food and Drink Outlet (restaurant), Function Facility, Short-term Accommodation (10 units) and Caretaker's Accommodation (three units) Boundary Realignment (two lots into two lots)

Information Request period ends:	The period for the applicant to respond to an information request is three months from the date the information request was made (s. 13.1 of the *Development Assessment Rules*). In this instance, the Information Request period will end on **15 December 2023.**

2 Information request details

There is insufficient supporting information regarding the proposal and clarification is sought on a number of matters.

A number of the points in the information request are general in nature as relevant technical reports were not lodged with the application. There is the potential that Council will need to seek additional information on the technical reports once they have been received and reviewed.

The following reports will be required as a part of the Information request:

- Economic impact assessment;
- Engineering services report;
- Stormwater management report, including Flood impact report;
- Acoustic report;
- Traffic impact assessment;
- Detailed bulk earthworks plan;
- Landscape plan;
- Ecological Assessment;
- Bushfire Management Plan; and
- Waste Management Plan.

Please provide details on the following matters:

Planning Issues

Boundary realignment

1. The proposed boundary realignment proposes to create a lot for the proposed Tourist attraction and other uses, and a separate lot for other unrelated purposes. In the absence of any reports that demonstrate the northern lot is large enough to accommodate the uses (in terms of stormwater management etc.), Council reserves its right to seek additional information regarding the boundary realignment based upon the outcomes and recommendations associated with the reports to be received in the future.

   Information requested:
   For advice purposes only. No action required at this time.

2. The existing approved development on the site includes a number of buildings within a fenced compound. The compound is surrounded by a security fence. The applicant has indicated the development on proposed Lot 6 will involve items with a significant value.

Information requested:

(a) Please advise whether the proposed property boundary corresponds to the alignment of part of the existing security fence.

(b) Please advise whether any fencing above a rural standard is proposed for the proposed development.

3. Proposed Lot 5 is almost entirely subject to Extreme flood hazard. Please note that future development in the Extreme flood hazard would be subject to constraints.

Note

(a). The technical reports that have been referenced in other parts of the report that are required to address sensitive uses should factor in the potential for a sensitive land use to be located within the "handle" of the northern section of proposed Lot 5.

(b) Provision of a security fence or similar along the rear of proposed Lots 5 and 6 may be impacted during flood events.

Information requested:

For advice purposes only. No action required at this time.

Material change of use

Restaurant and Education and Events Hall

4. The application makes reference to Tourist attraction, Short term accommodation and Caretakers residences, however the planning report includes comments that a Restaurant and the Education and Events Hall can operate separate to the museum.

While the plans also reference a Gift shop, it is considered the gift shop would be directly related to the operation of the motor museum as this use would typically operate within the same range of hours as the museum.

The planning report references the following hours of operation:

"The general hours of operation are intended to be between 9:00am until 5:00pm, 7 days per week (primarily for the museum component). For the other, ancillary components, the following is intended:

- *Restaurant - 9:00am until 5:00pm, 7 days per week. From Friday to Sunday, the closing time for the restaurant will be 11:00pm.*
- *Events hall - 9:00am until 5:00pm, 7 days per week. If there is a special event, the closing time will be 12 midnight. There may also be the potential for breakfast type events (i.e. starting earlier than 9:00am)."*

Information requested:

Please confirm that the proposal includes both a Food and drink outlet and Function facility and if required, please provide an amended Form 1.

5. Performance Outcome PO17 of the Rural zone code states:

Development for *shop or food and drink outlet* is:

(a) ancillary to a tourism development;

(b) low key in scale, nature and employment;

(c) of a size that only serves the needs of the associated tourism development;
(d) does not generate traffic on roads in the Rural zone that is additional to traffic otherwise generated by the associated tourism development; and
(e) does not create impacts on centres or townships through clustering of small-scale *business activities.*

Acceptable outcome AO17 of the Rural zone code states:
Development for *shop or food and drink outlet* is:
(a) ancillary to a tourism development such as a *function facility, nature-based tourism, short-term accommodation, tourist park or winery use* and
(b) has a *gross floor area* that is equal to or less than 250 square metres

The applicant has responded *"The proposed development does not involve a shop or food and drink outlet."*

The proposed gift shop has an area of 375m^2, the restaurant has an area of 972m^2, and the Education and Events Hall has an area of 1,873m^2; all in excess of the 250m^2 gross floor area.

Information requested:
(a) Please provide additional discussion regarding the proposed uses. This may potentially be incorporated into the Need Assessment.

(b) Please provide an indication of maximum numbers of people within the individual components of the development.

(c) Please provide further details or examples of what a special event may comprise, e.g. weddings, functions etc.

<u>*Plans of development*</u>

6. The application references Tourist attraction, Short term accommodation and Caretakers residences. No plans have been provided for the proposed Short-term accommodation, the existing or proposed Caretakers residences, or the tiered seating for the display track.

Information requested:
(a) Please provide floor plans and elevations, drawn to an appropriate scale, for all proposed buildings and structures.

7. The museum building appears to have minimal articulation, being a generally rectangular building 268m in length and 122m wide. While the building is effectively functional in elevation, minimal detail has been provided for the eastern end of the building, comprising the gift shop, lobby, restaurant and the Education and Events Hall and Workshop.

The development proposes a mixture of metal wall cladding over parts of the building and aluminium framed glazing. Given the value of the proposed vehicles within the building, the building appears to have minimal architectural merit by comparison, being closer in form to an industrial shed.

Information requested:
(a) Please provide more detailed floor plans and a detailed elevation for the eastern section of the building that incorporates the gift shop, lobby, restaurant, Education and Events Hall, and Workshop.

(b) Please provide details of the proposed materials used for the development, including whether the development comprises tilt up concrete panels.

(c) Please provide details of any plant e.g. commercial air conditioning units etc proposed to be located on the roof. Mechanical equipment must be visually integrated into the design and finish of the building, or otherwise fully enclosed or screened such that they are not visible from frontages or the roof.

Economic Impact Assessment

8. The proposed development is relatively remote from other sites, townships and tourist destinations. The site is approximately 9 kilometres from Lowood and 7 kilometres from Coominya, and approximately 8 kilometres from the nearest intersection with the Brisbane Valley Highway.

It is anticipated the proposed development will function more as a discrete destination rather than one of a number of tourist attractions in the Somerset region.

Information requested:
Please provide an Economic Impact Assessment that addresses the following parameters:
(a) Introduction;
(b) Catchment overview for the area;
(c) Supply assessment – detailing existing and proposed car and transport museums. It is understood this proposed development is approximately three times the size of the next largest car and transport museum in Australia.
(d) Overview of museums within the catchment area and within proximity of the site;
(e) Historic museum visitation;
(f) Alternative site assessment, i.e. why this site is more suitable than other sites.
(g) Economic contribution assessment; and
(h) Need assessment.

9. Bushfire hazard overlay
While the site is only proximate to Medium potential bushfire hazard, based on the potential value of the development it is considered reasonable to prepare a bushfire management plan for the proposed development.

Information requested:
(a) Please provide a Bushfire management plan prepared by a suitably qualified professional which addresses the bushfire risk to the property and how it will be appropriately managed by the development.

Engineering Issues

10. The development has provided minimal detail with respect to how the site would be serviced.

Information requested:
Please provide an Engineering services report that addresses the provision of electrical supply, telecommunications, water supply and effluent disposal for the development.

Filling and excavation, stormwater and hydrology

11. (a) The building pad and surrounding manoeuvring areas appear to have a change in level of approximately 5-6 metres across the development area. If it is proposed to bench the site in a manner that involves no additional fill or cut this would result in a cut batter approximately 2.5 to 3.0 metres in height at the west end of the main building area, and a similar fill batter at the east end of the main building area.

If a 1 in 4 batter was proposed at the edge of the development pad, the batter would be between 10 and 12 metres in length.

No plans have been provided with respect to earthworks required for stormwater management.

(b) The property is affected by the flood hazard overlay. The proposed development proposes to include the storage and display of approximately $200 million of rare cars.

The development comprises buildings, car parking areas, vehicle manoeuvring areas, the display track and associated facilities, the development proposes an estimated 6.5 – 7.0 hectares of impervious surfaces; a significant increase above the existing buildings and structures on the site, however no stormwater detail has been provided.

Proposed Lot 6 contains two small dams located toward the West Road frontage of the site. It is anticipated these dams will not able to be used in their current form as part of the stormwater treatment package without augmentation.

To provide context, the proposed building has a setback of approximately 51.5m to the southern boundary of proposed Lot 6. As part of creating a flat pad and surrounding manoeuvring area, it appears that the development pad will extend approximately 10m further to the south of the building.

There appears to be approximately 5m of fall between the proposed southern boundary of Lot 6 and the northern extent of the building, and approximately 3.5m fall across the building from north to south. If the building has a flat pad that results in a floor level that is generally average to the mean of the development pad, there will be approximately 2m of fill at the southern end of the development pad. If it is proposed to provide earth batters, these are generally accepted at a maximum gradient of 1 in 4 which would result in approximately 33-35m of undisturbed land at the southern end of the building, prior to construction of a stormwater detention basin. If it was proposed to place a detention basin in this area and the floor level is approximately the average level of the pad, there would be a relatively narrow strip of land between the building and the southern boundary of the site to create a detention basin.

Similarly, the carpark proposes an area of approximately 1 hectare of sealed surface.

It is likely a number of stormwater detention/retention basins would be required to address flows from the site.

Information requested:

(a) Please provide a stormwater management plan prepared by a suitably qualified RPEQ addressing stormwater quantity;

(i) Please address mechanisms for directing overland flow water away from the main building.

(ii) Please identify location and size of proposed stormwater basins; and

(iii) Please confirm the extent of impervious surfaces including building roof areas, car park areas, and manoeuvring areas.

(a) Please submit a Flood impact assessment as a component of the Stormwater management plan.

(i) Please provide details of the proposed floor level of the proposed building. While the development is required to be above the 1% AEP level, it is suggested an additional freeboard be applied to maximise protection of the vehicles.

(ii) Please either address the flood levels of the site as part of the stormwater management plan or as a separate flood report.

Access matters

12. The development includes a large ancillary car park comprising two entries and exits to West Road.

The driveway for the carpark is located immediately to the west of the driveway that serves the museum, accommodation and caretakers residences. The right turn slot from West Road is proposed to serve both access points.

Vehicles entering the site from the east have a left turn slot that is designed to serve both accesses. Westbound vehicles using the left turn slot to enter the car park will be required to cross the driveway serving the museum, accommodation uses and caretakers residences.

It is considered the driveway arrangements do not provide a logical solution in that turning vehicles are crossing driveways and there are numerous points of conflict associated with the two accesses to the site.

Information requested:

(a) Please provide a Traffic Impact Assessment (TIA) prepared by a qualified person, that addresses the proposed development, including traffic numbers to and from the site, and the need for any upgrades to existing roads.

(b) Additional to standard requirements for a TIA please provide a detailed analysis of the proposed dual access arrangement for the site.

(c) Please identify whether any road dedications will be required for the turning movements or realignment of the West Road carriageway. As an example, a left turn slot that extends into the property while being fully connected to the road pavement of West Road should be included within a widened road reserve. The widened road reserve would also need to include any relocated swale drain that serves the road.

13. The internal driveway that serves the ten short term accommodation units and the three caretakers residences does not include a pavement width but appears to be narrower than the other internal roads and driveways on the site.

Information requested:
Please identify the width of the internal road widths and provide confirmation that they are proposed to be sealed.

Environmental Issues

14. The site has little vegetation between the carriageway of West Road, the proposed car park and the proposed buildings, apart from a strip of vegetation within the West Road, road reserve. Part of the roadside vegetation is proposed to be removed by the slip lane for the left turn movement. The proposed plans however show a significantly vegetated site.

Information requested:

(a) Please provide a detailed landscape plan, prepared by a suitably qualified landscape architect that addresses the Landscaping Code and Council's Planning Scheme Policy SC6.5.6 Landscaping Environmental Design Standards. The plan is to provide detail of proposed trees, shrubs and groundcovers.

(b) Please include the location of proposed stormwater basins on the plans.

(c) Carparks are typically augmented with landscaping at a rate of one shade tree for every six car parks.

Water supply

15. The main building will require potable water supply for amenities, the restaurant and the workshop. The broader development will also require water supply for the ten short term accommodation units and the three caretakers' residences.

Typically, water supply for accommodation units or caretaker's residences can be achieved through the provision of suitably sized water tanks. No details of any water supply for any of the development, including tanks or other storage devices have been proposed on the plans.

It is also expected that the development will require fire services. Given the site is not connected to reticulated water, it will be necessary to demonstrate how a fire fighting supply will be provided to the development.

Information requested:
Please provide an engineering report addressing provision of potable water and fire-fighting supply to the site, detailing how water quality and quantity will be addressed.

Effluent disposal

16. The site is remote from reticulated sewer. The planning report references a pump out arrangement for effluent disposal. Based on the size of the proposed buildings and an ancillary car park of 435 vehicles, it is anticipated the development will generate a significant amount of effluent.

    If it is proposed to dispose of a proportion of the effluent on site, there is potential the capacity of the system may still exceed 20 equivalent persons and would trigger assessment referral through the State Assessment and Referral Agency.

    Depending upon how it is proposed to address effluent disposal on-site, Council may need to reissue a confirmation notice to address the additional concurrence agency.

    Information requested:

    (a) Please provide a detailed effluent disposal waste report that addresses likely capacity of this system based on provision of 13 residential dwellings (based on 10 short term accommodation units and three caretakers' residences), and ablution facilities for the museum, restaurant and events area (function facility).

    (b) Please identify whether any of the proposed uses will have individual effluent disposal systems on site and their proposed locations of those systems.

    (c) Please provide details of proposed waste collection vehicles, including capacity, frequency of collection, and where it is proposed to dispose of waste.

    (d) If it is proposed to take effluent off site for disposal, please provide information:
        a. from the effluent disposal agency that would be accepting the effluent that they have sufficient capacity to take the waste; and
        b. addressing safety measures for transport of waste from site to disposal point.

Environmental Health Issues

Noise matters

17. The development proposes a large building that is likely to require heating and cooling. No details have been provided regarding proposed plant for heating or cooling the building.

    The nearest sensitive receptor to the west is approximately 43m to the west of the current boundary and approximately 115m from the proposed car park and building.

    The plans show a display track. No detail is provided regarding the potential noise impacts from the track. Based on the length of the track it is anticipated the display track would not allow for excessively fast vehicles, however vehicles could potentially be operated in low gears at high engine revolutions, e.g. drifting. It would be relevant to clarify whether the track would be open to third parties, e.g. driver training, drifting etc.

Information requested:
Please address noise impacts of the development through an acoustic report prepared by a suitably qualified consultant. The report is to include impacts on the nearby sensitive receptors, including potential development on proposed Lot 5 to the west.

The report should consider all elements of the development, including the workshop, and the Education and Events Hall and/or Food and drink outlet if they are proposed to include amplified music that could be heard from outside the building.

The report is also to include consideration of activities associated with the later hours proposed for the restaurant and function facility.

Waste disposal

18. Based on the scale of the development and the potential numbers of visitors, The development is likely to generate significant amounts of waste. Domestic waste streams will be generated by the caretaker's residences and short term accommodation. Commercial waste streams will be generated by the museum. Industrial waste streams will be generated by the workshop.

    It is anticipated a designated commercial collection will be required additional to the use of bins around the site.

    Information requested:
    Please provide a waste management plan that addresses:
    (a) waste collection with respect to collection of solid waste and recyclables;

    (b) location of bin storage areas, including screening of the storage areas.

    (c) calculation of numbers of waste bins, including whether it is proposed to use wheely bins or bulk bins.

19. Vehicle refuelling and servicing is proposed to occur on site.

    Information requested:
    (a) Please provide details of the proposed bunded fuel dispenser, including location and capacity of the fuel dispenser;

    (b) Please confirm detail of oils and chemical storage for vehicle servicing; and

    (c) Please confirm detail of post-service oil and chemical waste storage.

Building and Plumbing issues

20. The proposed building has roofed dimensions of 268.8m x 122.76m (32,752m^2) with a 2.4 metre high parapet. If it is proposed to construct a low-pitched roof with a central apex to not extend above the parapet, each half of the building will be required to drain approximately 1.6376ha of impervious roof, across a roof pitch of approximately 3-4%, with a run of approximately 60m from the apex to the parapet (and then sideways to any down pipe).

Information requested:

(a) Please confirm roof design, i.e. whether the roof is proposed as a pitched roof, a single pitch etc.

(b) Please address stormwater capacity matters for this development, including:
   a. sizing of down pipes;
   b. collection of roof water; and
   c. confirmation whether a component of the roof water is proposed to be used as potable water for the development.
   d. Confirmation whether a component of the roof water is proposed to be used as fire fighting supply.

3 Applicant responds to Information Request

Pursuant to section 13.2 of the *Development Assessment Rules*, the applicant may respond by giving Council –

(a) All of the information requested; or
(b) Part of the information requested; or
(c) A notice that none of the information will be provided.

As Council's assessment of your application will be based on the information provided, it is recommended that you provide all of the information requested.

However, should you not provide a response before the above due date or contact Council for a further agreed period, prior to the information response period ending, it will be taken as if you have decided not to respond to the information request and Council will continue with the assessment of your application without the information requested in accordance with section 14.2 of the *Development Assessment Rules*.

4 Others

Should you have any further queries in relation to the above, please contact Council's Senior Planner, Mark Westaway on (07) 5424 4000.

Yours faithfully,

p.p.

Andrew Johnson
Chief Executive Officer

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620-635 West Road, Patrick Estate, Lowood

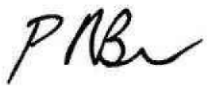
Onsite Wastewater Management Plan

Client: Palmer Motorama Pty Ltd
Project No: BE230352
Document No: BE230352-RP-OWMP-03

May 2024

Document Control Record

Prepared by:	Nathan McDonald
Position:	Environmental Planner
Signed:	
Date:	20.05.2024

Approved by:	Philip Bell
Position:	Principal Engineer – Civil, Water & Environment RPEQ 1802
Signed:	
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01	DA Issue	30.01.2024	NM	PB
02	DRAFT RFI Response	14.05.2024	NM	PB
03	RFI Response	20.05.2024	NM	PB

Recipients are responsible for eliminating all superseded documents in their possession

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Appendices

1. Introduction

Burchills Engineering Solutions were engaged by the Palmer Motorama Pty Ltd to prepare an Onsite Wastewater Management Plan (OWMP) for the proposed development at 620-635 West Road, Patrick Estate, Lowood which is properly described as Lots 5 & 6 on SP109850 within the Somerset Regional Council area.

This report has been prepared to address matters raised by Somerset Regional Council in an Information Request dated 14 September 2023. In particular, this report seeks to address item 16 of the RFI. Item 16 reads as follows:

16. Effluent Disposal

The site is remote from reticulated sewer. The planning report references a pump out arrangement for effluent disposal. Based on the size of the proposed buildings and an ancillary car park of 435 vehicles, it is anticipated the development will generate a significant amount of effluent.

If it is proposed to dispose of a proportion of the effluent on site, there is potential the capacity of the system may still exceed 20 equivalent persons and would trigger assessment referral through the State Assessment and Referral Agency.

Depending upon how it is proposed to address effluent disposal on-site, Council may need to reissue a confirmation notice to address the additional concurrence agency.

Information requested:

a) *Please provide a detailed effluent disposal waste report that addresses likely capacity of this system based on provision of 13 residential dwellings (based on 10 short term accommodation units and three caretakers' residences), and ablution facilities for the museum, restaurant and events area (function facility).*
b) *Please identify whether any of the proposed uses will have individual effluent disposal systems on site and their proposed locations of those systems.*
c) *Please provide details of proposed waste collection vehicles, including capacity, frequency of collection, and where it is proposed to dispose of waste.*
d) *If it is proposed to take effluent off site for disposal, please provide information:*
    a. *From the effluent disposal agency that would be accepting the effluent that they have sufficient capacity to take the waste; and*
    b. *Addressing safety measures for transport of waste from site to disposal point.*

1.1 Scope

This Onsite Wastewater Management Plan outlines the pump-out operations required to service the proposed development. The storage and pump out of wastewater onsite is required as no trunk sewer infrastructure within the surrounding area is available. This report accounts for wastewater generated by the proposed development only and does not account for volumes generated by potential future land uses.

If an additional land use is developed onsite which requires the provision of additional storage facilities, then a new onsite wastewater storage management plan is to be prepared and come into effect.

Wastewater storage and pump out operations are to only be terminated in the instance that trunk gravity sewer infrastructure is provided in the vicinity of the site.

This report details the following:

- Pump-Out Location and Access;
- Sewage Flow Calculations;
- Available Storage;
- Storage Tank Size;
- Spill Management;
- Reporting and Monitoring Requirements;
- Tankering Decommissioning Program; and
- Conclusions and Recommendations.

1.2 Site Description

The subject site is located at 620-635 West Road, Patrick Estate, Lowood which is properly described as Lots 5 & 6 on SP109850. The property has an area of 811,190m^2 (81.11ha) and is identified by the Somerset Regional Council Planning Scheme as being situated within a Rural zone.

The two lots which make up the development site operate as a consolidated site which is used for the stabling and training of horses. The facility contains a number of residential dwellings and ancillary stable and shed structures and a training track. The site is split in two by a watercourse which traverses the site from the west to the east.

The site has two road frontages (West Road and Mahons Road), both of which provide access to the site. Access to Lot 6 SP109850 is provided via a reciprocal access easement from West Road. The subject site is situated in the centre of a rural zone which is used predominately for agricultural purposes.

Figure 1.1 below provides a locality plan depicting the location of the subject site while Figure 1.2 provides an aerial photograph of the site in its current state.

Figure 1.1 Site Locality Plan (Courtesy: DAMS)

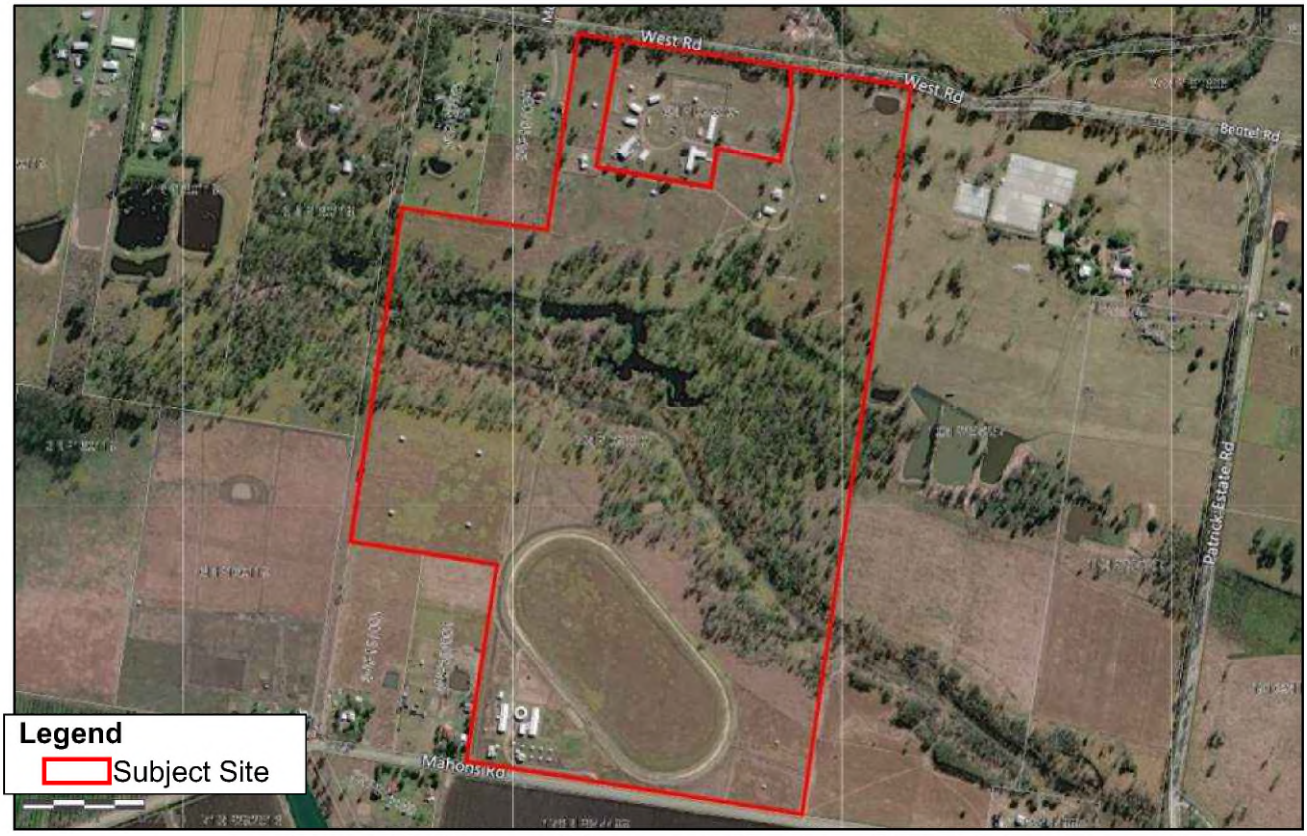

Figure 1.2 Site Aerial Photograph (Courtesy: QLD Globe)

1.3 Proposed Development

The development application proposes the establishment of an automotive museum over the subject site which will include a boundary realignment. The proposed development includes the establishment of:

- The reconfiguration of the existing lot layout to create a northern lot with an area of 183,892m^2 and a southern lot with an area of 648,301m^2
- 11 garages with a Gross Floor Area (GFA) of 42,592m^2.
- Administration block with a GFA of 399m^2.
- Amenities and shop with a GFA of 213m^2.
- A café with a GFA of 497m^2.
- A caretaker's residence.
- 10 (ten) short stay units.
- 351 carparking spaces including 5 disabled parking spaces.
- 18 motorcycle parking spaces; and
- 7 coach parking bays and coach drop off facility.

Figure 2.3 below provides an extract of the Site Plan prepared by Billy Dawson Architects. For further details, please refer to the architectural design package contained in Appendix A of this report.

Figure 1.3 Development Site Plan (Courtesy: Billy Dawson Architects)

2. Wastewater System Solution

2.1 Wastewater Generation

As previously stipulated, this Onsite Wastewater Management Pla details the onsite storage and pump out facilities required to cater for wastewater generated by land uses proposed as part of the commercial development at 620-635 West Road, Patrick Estate, Lowood.

The sewer criteria and design parameters are based on the following references:

- Department of Energy and Water Supply – Planning Guidelines for Water Supply and Sewerage.
- SEQ Water Supply and Sewerage Design & Construction Code (SEQ WS&S D&C Code); and
- EPA Code of Practice – Onsite Wastewater Management

The sewer flow generation parameters detailed in Table 4.1 have been derived from Table A of the *Department of Energy and Water Supply – Planning Guidelines for Water Supply and Sewerage* prescribe a flow rate based upon Gross Floor Area (GFA). Given the scale of the proposed development, it is anticipated that the application of these rates would provide an overly conservative estimation of daily flow generated by the proposed development, resulting in the oversizing of required infrastructure.

To ensure the delivery of infrastructure of a suitable scale daily flows generated by the proposed development have been estimated using the expected site population, with daily flow rates applied to subsets within the site population (day visitors, staff, accommodation guests). It should be noted that daily flow rates applied as part of this development account for sewage generated by all end users of the facility and all applicable land uses.

All assumptions made in relation to the daily flow calculations are detailed in Table 2.1 below.

Table 2.1 Stage 1 Sewage Flow Calculations

Day Visitors				
No. Carparks	**No. People / Car**	**Population**	**Flow / person / day (L)**	**Daily Total**
269	2	538	30L	16,140L
Motorcycles				
No. Carparks	**No. People / Motorcycle**	**Population**	**Flow / person / day (L)**	**Daily Total**
18	1	18	30L	540L
Tour Groups (Buses)				
No. Carparks	**No. People / Bus**	**Population**	**Flow / person / day (L)**	**Daily Total**
7	30	210	30L	6,300L
Staff				
Staff No.	**No. People /**	**Staff**	**Flow / person /**	**Daily Total**

Carparks	Car	Population	day (L)	
82	NA	82	50L	4,100L
Caretakers Accommodation				
Bedrooms	**No. People**	**Population**	**Flow / person (L)**	**Daily Total**
3	4	4	150L	600L
Accommodation Units				
No. Units	**No. People / Unit**	**Population**	**Flow / person (L)**	**Daily Total**
10	2	20	180L	3,600L
Period				***Total***
Peak Daily Total (100% Capacity)				***31,280L***
Weekday Total (10% Peak Daily Flow)				***3,128L***
Weekend Total (80% Peak Daily Flow)				***25,024L***
Average Weekly Flow Total				***65,688L***
Average Daily Flow Total				***9,384L***
Equivalent EP*				***44.68 EP***

**Equivalent EP = 210L/person/day*

It should be noted that the calculations contained in Table 3.2 (above) are an approximation only. The development may progress over a period of time so that the initial demand will be very modest and may increase over time to reach the peak demand. Records shall be maintained in the operational phase to confirm wastewater volumes.

3. Onsite Storage Facilities

Sewage generated by the proposed development is to be stored in 4 x 22,000L onsite sewerage holding tanks. Figure 4.1 below depicts the proposed location of underground sewerage storage tanks. Monitoring and reporting requirements detailed in later sections of this Onsite Wastewater Management Plan are to be utilised to prevent any emergency overflows. Any minor spillages occurring onsite during servicing will be contained within the subject site.

It is recommended that a septic holding/pump out tank is sized to service a design flow of 6.57kL per week with a cam lock connection point provided in a collection manhole provided adjacent to the storage tanks. The size of the storage tanks can be confirmed at the detailed design stage once a servicing agreement has been entered into and the frequency of servicing confirmed. An experienced sewage collection and disposal contractor licenced by Urban Utilities shall be contracted to dispose of wastewater (refer Section 6.1).

Please note that final design of the sewerage system may need to account for trade wastes generated by the facility which will need to be collected and disposed of in accordance with Urban Utilities requirements for trade waste.

4. Pump-Out Location and Access

The concept design drawings prepared for the proposed development detail the sewer strategy to be implemented onsite. Concept design drawings detailing the proposed on-site sewerage infrastructure included within Appendix B.

The development proposes the installation of 4 x 22,000L storage tanks which are to be located adjacent to the internal access road. All components of the proposed development will connect to the storage tanks including the restaurant, accommodation units, amenities, administration buildings and garages. Due to size of the site, pump stations will need to be provided to ensure that of sewage in provided sewer mains flows to the provided storage facilities. House drainage system shall discharge to a wastewater collection pit and pump well, where sewage will be pumped into the provided storage tanks. Pump out facilities are to be provided directly from the onsite sewage storage tanks.

The proposed pump-out location allows for easy access and positioning of wastewater collection vehicles. It should be noted that the servicing of the tank by a licenced liquid waste contractor will be undertaken outside of the stipulated hours of operation (6am and 8:30am). This will mitigate any potential conflicts which may arise between the licenced contractor and staff / customers of the facility. Figure 2.1 below shows the proposed pump-out location, including temporary parking for the servicing vehicle.

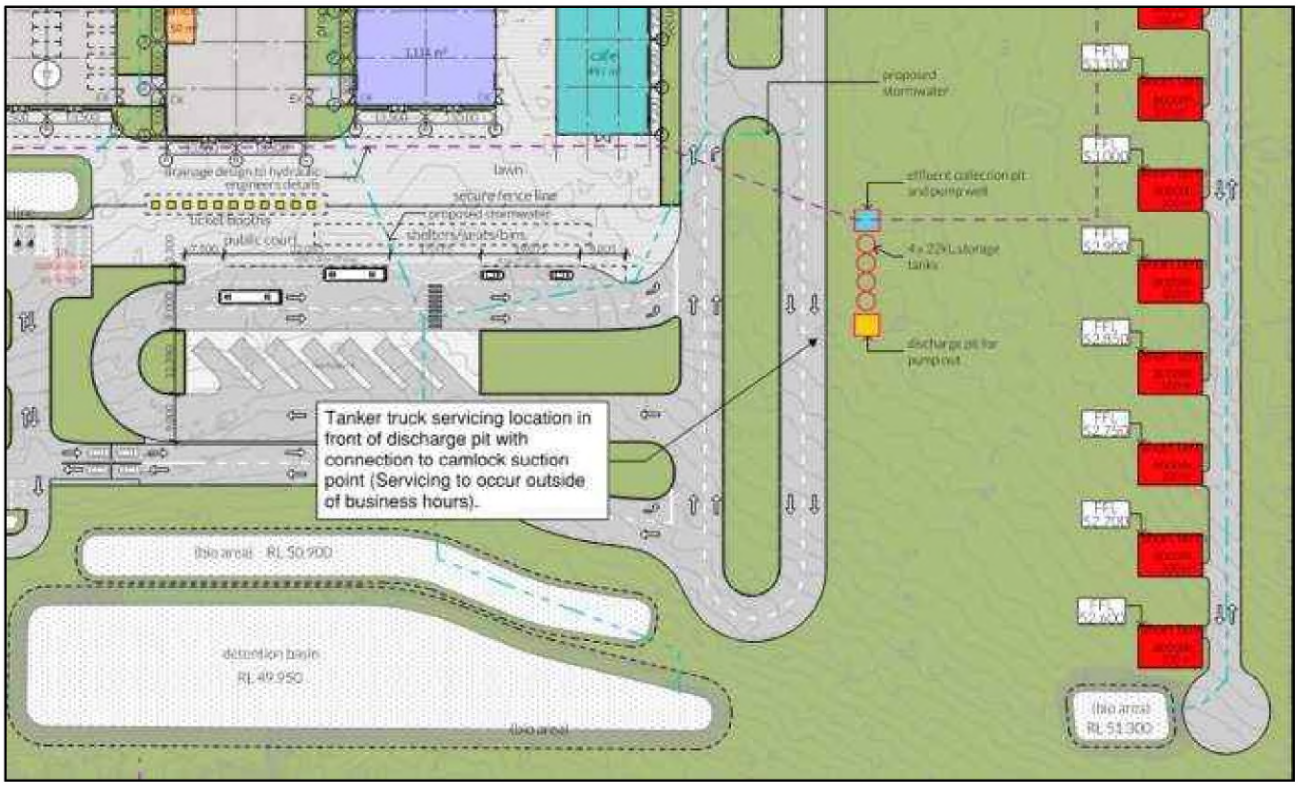

Figure 4.1 Wastewater Storage & Servicing Schematic

5. Pump-Out Frequency and Tank Sizing Arrangements

For the purpose of sizing the possible sewerage storage tank, a pump-out frequency was assessed to be required to service the average sewerage design flow of 87,906L per week (12,558L L/day). The design flows specified in Table 2.1 above can be utilised to calculate the size of the proposed onsite sewage storage tank based upon the tankering frequency.

It has been assumed for the purposes of this assessment that the site will be twice per week, requiring the provision of a 4 x 22,000L tanks. An appropriately licenced liquid waste contractor shall be utilised for this work. As detailed in the Monitoring and Reporting section of this management plan, emergency alarms are to be installed on the proposed tank to monitor and alert the relevant authorities/personnel in the instance that rainwater infiltration and/or emergency tank levels are reached.

The servicing (pump out) of the tanks will require the waste vehicle to park adjacent to the storage tank and connect to the cam lock connection provided within the service manhole (refer Figure 4.1). Once all liquid waste has been extracted from the storage tank, the servicing waste contractor will dispose the sewage at a Queensland Urban Utilities wastewater treatment plant for processing.

Please note that all monitoring and management actions relating to the servicing of the site by licenced waste contractors are outlined in the Monitoring and Reporting Requirements section (Section 7) of this report.

The waste contractor engaged by the facility is to service the site is to occur outside of normal business hours (6:00am – 8:30am Monday - Friday). Servicing undertaken during this time will reduce the potential for conflict between the servicing waste contractor and staff / patrons attempting to enter / exit the site.

6. Transportation and Disposal

6.1 Transportation by Licenced Waste Contractor

The proposed development will be required to be serviced by a suitably licenced waste contractor. Following the completion of collection activities, wastewater will be transported off site. Once leaving the property, it will be the responsibility of the contractor to ensure that all wastes collected are transported in accordance with the provisions of the *Environmental Protection Regulation 2019* and any operational conditions imposed by applicable licences.

In this instance, the proposed development will be serviced by Lee's Environmental.

6.2 Disposal

All wastewater generated by the proposed development is to be disposed of by the engaged waste contractor at a licenced waste management facility. As detailed in Section 6.1, wastewater generated by the proposed development will be collected by Lee's Environmental. The collected wastewater will be disposed of by the contractor at the Bundamba Wastewater Treatment Plan (operated by Queensland Urban Utilities (QUU) under an existing arrangement.

For further details regarding the collection and disposal of septic waste by Lees Environmental, please refer to correspondence dated 10 May 2024 contained in Appendix C of this report.

7. Incidents and Complaints

Should an environmental incident occur during the operation, Palmer Motorama Pty Ltd shall take prompt action to minimise any impact and, where necessary, seek the advice of Somerset Regional Council, QUU or relevant authorities.

All complaints will be treated with respect. The Complex Manager shall maintain a Complaints Register (refer Appendix C) and shall direct an appropriate course of action relating to the complaint. The Complaints Register will be included in any audit reports during maintenance and shall record the date, time and nature of any complaint, the name and contact details of the complainant, action taken, person responsible for action, and resolution of complaint. The Site Manager shall certify each entry on the record.

7.1 Roles and Responsibilities

The below details define the roles and responsibilities of the various parties to be involved throughout the proposed tinkering operations:

- Complex Manager (Palmer Resort Coolum) – The Complex Manager will be responsible for all costs associated with the collection and disposal of wastewater generated by the proposed development and shall manage all relevant stakeholders. Additionally, the Complex Manager will be responsible for the installation and maintenance of tanks and pumps, managing and enforcing schedules, managing the waste contractor, conducting inspections, site inductions, safety, monitoring and reporting.

7.2 Environmental Notifications

In the event of an emergency or non-conformance that may cause or causes environmental harm the Complex Manager (or nominated responsible person) will (as soon as practicable) after being made aware of an emergency or incident that causes or may cause material harm to the environment, notify of:

- The person carrying on the activity;
- An employee or agent carrying on the activity;
- An employer carrying on the activity; and
- The occupier of the premises where the incident has occurred.

Notification must be given as soon practicable after the person becomes aware of the incident.

The Complex Manager shall furnish the following details:

- The time, date, nature, duration and location of the incident;
- The location of the place where pollution is occurring or is likely to occur;
- The nature, the estimated quantity or volume and the concentration of any pollutants involved;
- The circumstances in which the incident occurred (including the cause of the incident, if known);

- The action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution; and
- Other information prescribed by the regulations

7.3 Emergency Contacts

Table 6.1 presents the parties that are to be advised immediately of a non-conformance event.

Table 6.1 Emergency Contacts

Party	Contact
Emergency Tanker (TBC)	TBC
Back-Up Emergency Tanker (TBC)	TBC
Queensland Urban Utilities (Emergencies)	13 23 64
Facility Manager	TBC
Somerset Regional Council (Emergencies)	(07) 5424 4000
DEHP – Emergencies Hotline	1300 130 372
QLD Fire Brigade	000
For other incidents involving personal health and safety requiring police, ambulance or fire services	000

8. Monitoring and Reporting Requirements

The Complex Manager is responsible of the ongoing monitoring and reporting of the tankering operations on site as required by QUU. Any complaints from the public are to be dealt with in a serious manner, and the complaints register updated as required. It is the responsibility of the site manager to ensure that the storage tank monitoring system is functionally operational, and that access is provided to the contactor when servicing the site.

The Complex Manager shall be responsible for monitoring the daily demand and change the frequency of pump outs if necessary to match the demand.

Water level alarm monitors are to be installed in the storage tank. The alarm trigger levels are to be set at 80% of storage capacity, and at the overflow level. The water level alarm monitors are to be set to automatically contact the waste contractor and relevant emergency contacts when the emergency water level is triggered. This will allow ample time for the waste contractor to act in the case of an emergency. Should the servicing contractors not be able to attend the site for an extended period of time, it may be necessary for management to temporarily close the complex to avoid risk of overflow. Alternately, an emergency storage of a minimum 100% of the average daily flow can be incorporated into the design of the onsite storage facilities.

The Complex Manager will also be responsible for the monitoring of any odour issues that arise during the time this Onsite Wastewater Management Plan is in place. This includes any odour issues caused by emittance from fixtures, storage tanks, and from contractor's waste service vehicles during operations on site. All storage tank lids are to be pressure-tight, so to reduce any odour being emitted while sewage is stored between services. In the case that odour problems arise, or complaints are made, the Complex Manager is to consider additional odour reducing devices/methodologies such as air-tight pump and line systems etc.

9. Alternate Site Effluent Solution

In the event that the proposed pump-out solution is not supported by the Somerset Regional Council or Urban Utilities, it will be necessary to treat wastewater generated by the proposed land uses and dispose of effluent onsite.

A preliminary assessment has been undertaken to determine the viability of onsite effluent treatment should it be required.

The assessment determined that there is sufficient space onsite to accommodate an onsite wastewater treatment plant and the required land application area. It should be noted however, that the installation of a wastewater treatment plant onsite which caters for the need of 59 equivalent persons will require the attainment of a licence from the Department of Environment and Science for an Environmentally Relevant Activity (ERA) 63: Onsite Wastewater Treatment as per the *Environmental Protection Regulation 2019.*

10. Conclusions and Recommendations

It was determined that the proposed development will require the provision of wastewater storage tank and pump-out facilities. The need to provide onsite storage infrastructure is required due to no sewer infrastructure being situated in the vicinity of the proposed development.

The daily volume of wastewater generated by the proposed land use was determined using average daily flow rates which were applied to subsets of the total site population. Calculations determined that the proposed development would generate approximately 9.384kL / day (65.688kL / week). The development will therefore be required to be provided with four (4) 22,000L storage tanks storage with a minimum capacity of 88,000kL (88kL). An additional 22,000L of emergency storage will also be provided as a contingency.

Should an environmental incident occur during the operation, Palmer Resort Coolum shall take prompt action to minimise any impact and, where necessary, seek the advice of QUU, SRC or relevant authorities.

All complaints will be treated with respect. The Complex Manager shall maintain a Complaints Register and shall direct an appropriate course of action relating to the complaint should a complaint be received. The Complaints Register will be included in any audit reports prepared during maintenance and shall record the date, time and nature of any complaint, the name and contact details of the complainant, rectification actions taken, person responsible for action, and resolution of complaint. The Complex Manager shall certify each entry on the record.

11. References

The information presented herein has been prepared with reference to the following:

- AS/NZS 1546:2008 On-site domestic wastewater treatment units - Part 3: Aerated wastewater treatment systems.
- AS/NZS 1547:2012 On-site domestic-wastewater management.
- Department of Natural Resources and Mines, 2002, Onsite Sewerage Facilities Guidelines for Vertical and Horizontal Separation Distance.
- Department of Environment and Resource Management, 2014, Planning Guidelines for Water Supply and Sewerage (April, 2010).
- Department of Housing and Public Works, 2013, Queensland Plumbing and Wastewater Code 2019.
- Department of Housing and Public Works, 2021, Approved facilities for on-site advanced secondary sewage treatment. Accessed on 10 March 2021 from the following website: https://www.business.qld.gov.au/industries/building-property-development/building-construction/plumbing-drainage/on-site-sewerage#AdvancedSecondary
- Queensland Government, 2020. Planning Act 2016.

Appendix A – Architectural Design Drawings

Somerset Regional Planning Scheme

site cover, of development, means the portion of the site, expressed as a percentage, that will be covered by a building or structure, measured to its outermost projection, after the development is carried out, other than a building or structure, or part of a building or structure, that is—
(a) in a landscaped or open space area, including, for example, a gazebo or shade structure; or

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

Display Capacity

car display bays	approx. 900
motorcycle display bays	approx. 350

lot 5
SP109850
new site area: 648,301 m²

BILLY DAWSON ARCHITECTS

BILLY DAWSON ARCHITECTS PTY LTD
ACN: 634 540 622
p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **site plan - proposed**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311
client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313
issue. P40

do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P40	17/05/24	Council RFI issue
P39	01/05/24	issue to consultants
P38	30/04/24	issue to client
P37	29/04/24	issue to client
P36	26/04/24	issue to client
P35	23/04/24	issue to consultants

drawing no. **DD.1003**
scale 1:2000 @ A3
drawn LMC

Somerset Regional Planning Scheme

gross floor area (GFA), for a building, means the total floor area of all storeys of the building measured from the outside of the external walls and the centre of any common walls of the building, other than areas used for—

(a) building services, plant or equipment; or
(b) access between levels; or
(c) a ground floor public lobby; or
(d) a mall; or
(e) parking, loading or manoeuvring vehicles; or
(f) unenclosed private balconies, whether roofed or not

Legend			
EX	emergency exit	HT	hydrant tank
RSD	roller shutter door	P	Pump
TT	car display turntable	ST	Sprinkler tank
RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)	
showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10	
Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11	
feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	*308m²*
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

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ACN: 634 540 622
p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **floor plan - open-air carpark**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P33

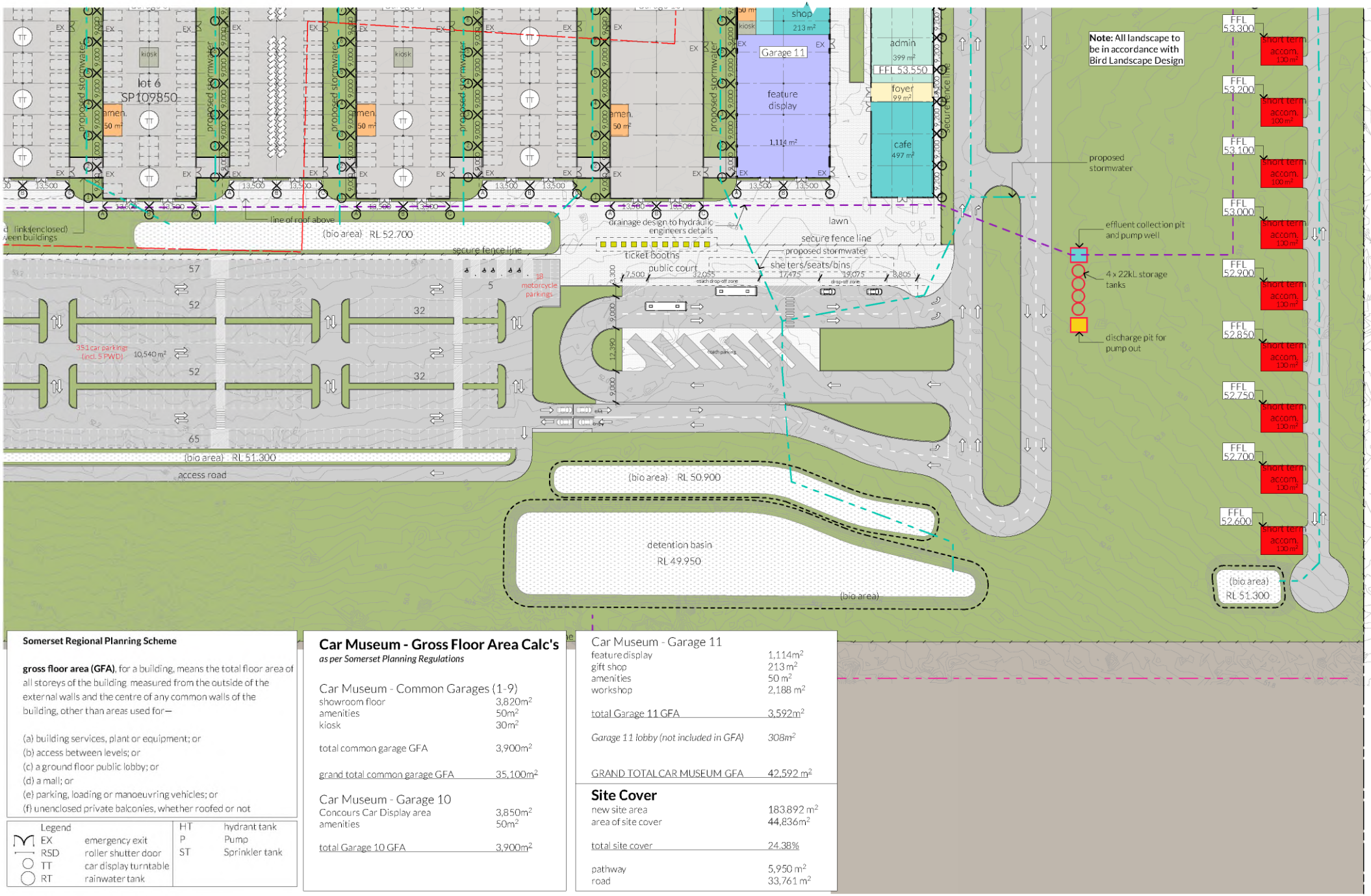
do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P33	17/05/24	Council RFI issue
P32	01/05/24	issue to consultants
P31	23/04/24	issue to consultants
P30	09/04/24	issue to QS
P29	14/03/24	SARA response issue
P29	14/03/24	SARA response issue

drawing no. **DD.2001**

scale **1:1000 @ A3**

drawn LAM



Somerset Regional Planning Scheme

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Legend			
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RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)

showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10

Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11

feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	*308m²*
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

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p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **floor plan - open-air carpark & drop off area**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313

issue. P9

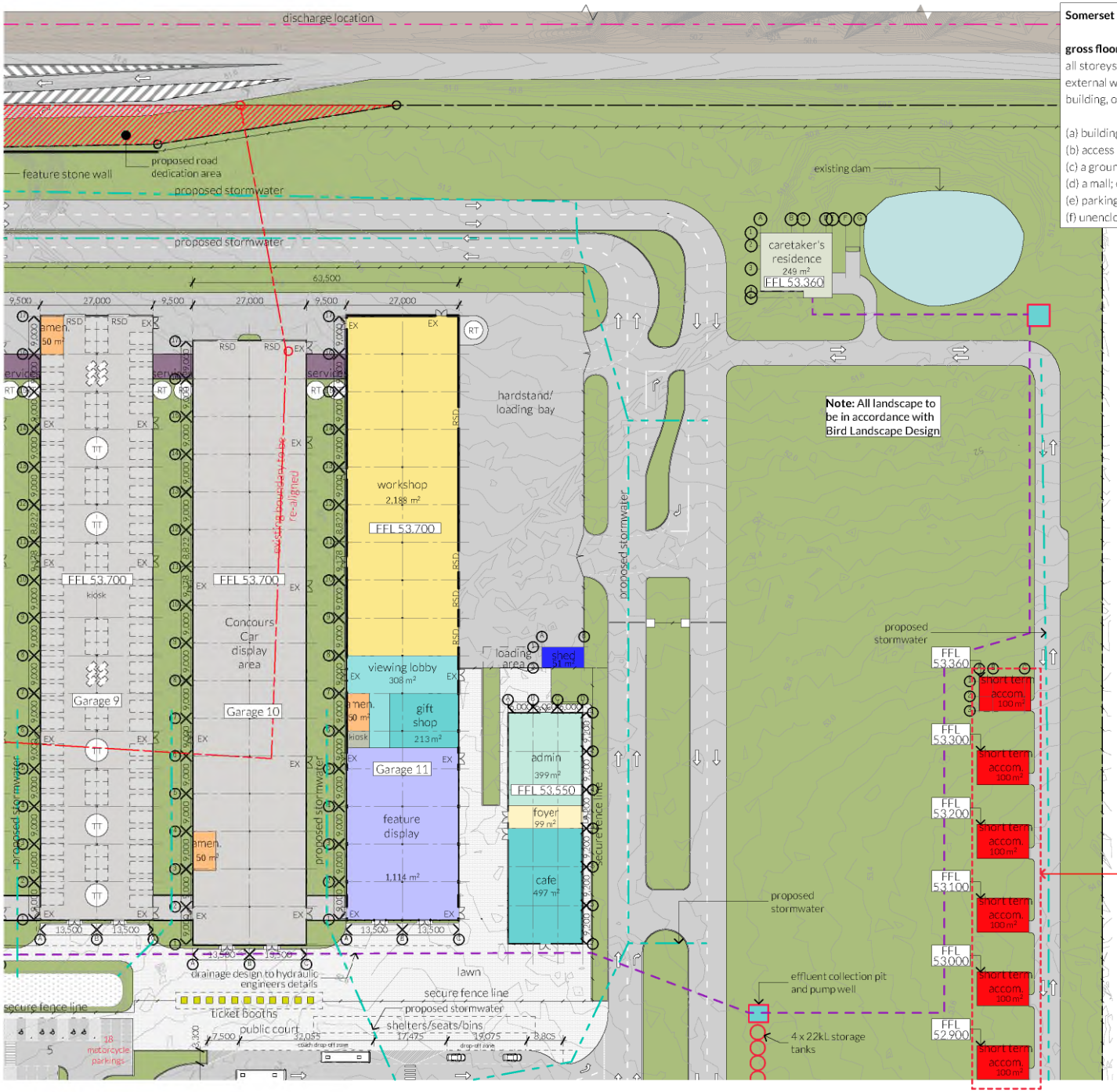
do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P9	17/05/24	Council RFI issue
P8	01/05/24	issue to consultants
P7	23/04/24	issue to consultants
P6	09/04/24	issue to QS
P5	14/03/24	SARA response issue
P4	12/03/24	Revised Issue to consultants

drawing no. **DD.2002**

scale

drawn LMT



Somerset Regional Planning Scheme

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Legend

EX	emergency exit
RSD	roller shutter door
TT	car display turntable
RT	rainwater tank
HT	hydrant tank
P	Pump
ST	Sprinkler tank

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)

showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10

Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11

feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	*308m²*
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Admin & Cafe - Gross Floor Area Calc's

as per Somerset Planning Regulations

admin	399 m²
foyer	99 m²
cafe	497 m²
grand total restaurant GFA	995 m²
outdoor dining space (not included in GFA)	*84m²*
services/refuse sheds (not included in GFA)	*51m²*
loading area (not included in GFA)	*70m²*

Other Buildings - Gross Floor Area Calc's

caretakers residence	249 m²
short term accomodation (x10)	1000m²
grand total other buildings GFA	1,249m²

Grand Totals

car museum buildings - GFA	42,592m²
admin & cafe - GFA	995m²
other buildings - GFA	1,249m²

GRAND TOTAL SITE GFA 44,836m²

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

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e info@billydawsonarchitects.com

drawing title **floor plan - entrance road**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313

issue. P14

do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P14	17/05/24	Council RFI issue
P13	01/05/24	issue to consultants
P12	23/04/24	issue to consultants
P11	09/04/24	issue to QS
P10	14/03/24	SARA response issue
P9	12/03/24	Revised Issue to consultants

drawing no. **DD.2003**

scale **1:1000 @ A3**

drawn

Somerset Regional Planning Scheme

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(c) a ground floor public lobby; or
(d) a mall; or
(e) parking, loading or manoeuvring vehicles; or
(f) unenclosed private balconies, whether roofed or not

Legend			
EX	emergency exit	HT	hydrant tank
RSD	roller shutter door	P	Pump
TT	car display turntable	ST	Sprinkler tank
RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)

showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10

Concours Car Display area	3,850m²
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total Garage 11 GFA	3,592m²
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Site Cover

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e info@billydawsonarchitects.com

drawing title **floor plan - motor museum**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313

issue. P33

do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

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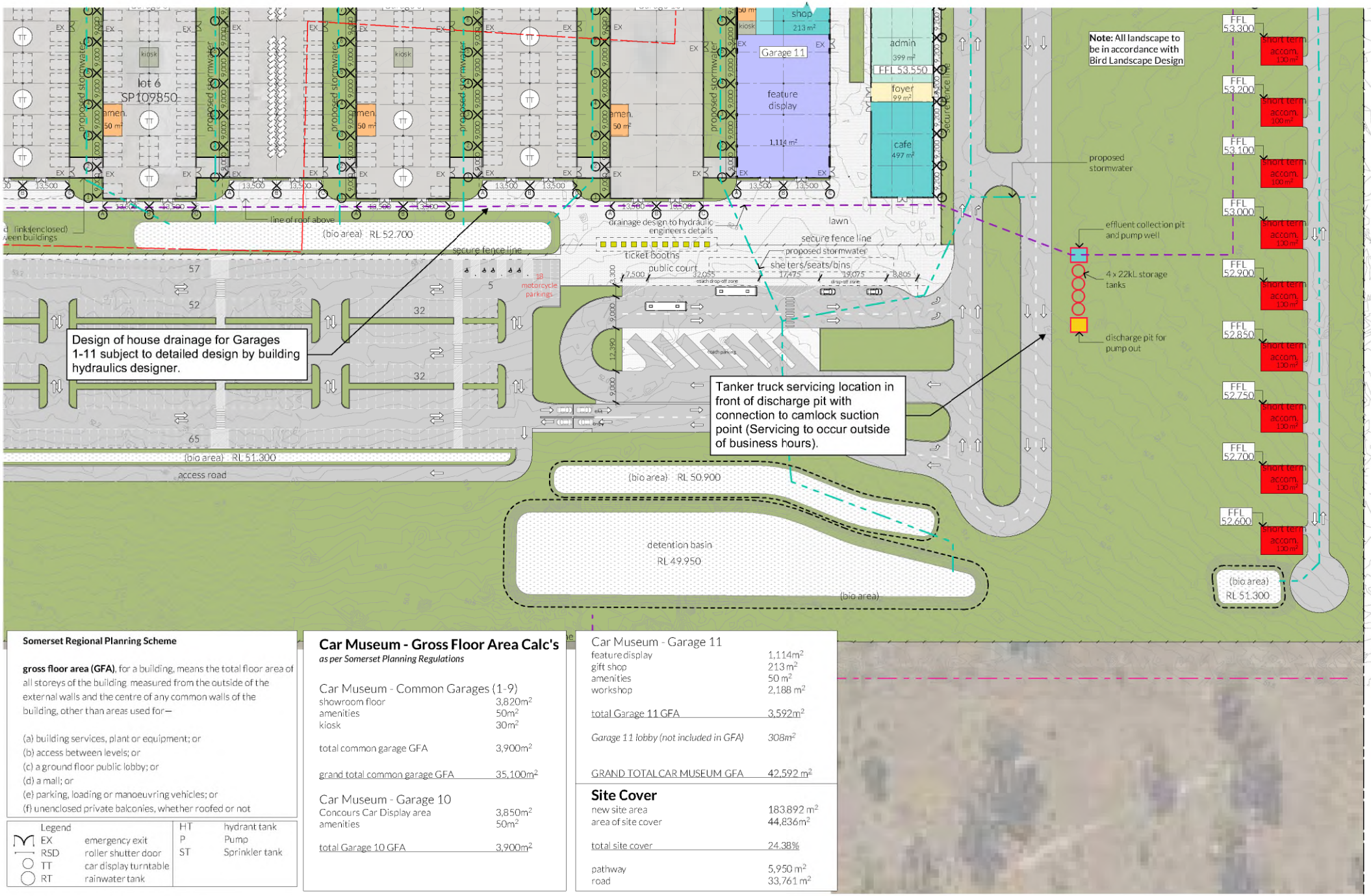
P33	17/05/24	Council RFI issue
P32	01/05/24	issue to consultants
P31	23/04/24	issue to consultants
P30	09/04/24	issue to QS
P29	14/03/24	SARA response issue
P28	12/03/24	Revised Issue to consultants

drawing no. **DD.2101**

scale **1:1000 @ A3**

drawn LMH

Appendix B – Wastewater Storage Design Schematic



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Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)

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Site Cover

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BILLY DAWSON ARCHITECTS

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ACN: 634 540 622
p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **floor plan - open-air carpark & drop off area**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P9

do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P9	17/05/24	Council RFI issue
P8	01/05/24	issue to consultants
P7	23/04/24	issue to consultants
P6	09/04/24	issue to QS
P5	14/03/24	SARA response issue
P4	12/03/24	Revised Issue to consultants

drawing no. **DD.2002**

scale

drawn LM

Appendix C – Lee's Environmental Correspondence

LEES Environmental

P (07) 3206 4844
E james@leesenvironmental.com.au
215 Burnside Road, Stapylton, QLD 4207

Cleanway T/A Lee's Environmental. DES: EPSX00625913 / ABN: 54 645 125 766

10 May 2024

Good afternoon Antonio,

I'm writing to confirm supply of vacuum loading trucks for transport and disposal of septic waste from Patrick Estate, 620-635 West Road, Lowood. Based on the estimated volume of up to 13,000 Litres per day of septic waste product, Lees Environmental can dispose of this under our existing agreements at Bundamba Waste Water Treatment Plant (QUU)

If you have any questions or enquiries, please feel free to contact myself on 0416 737 842 or via email at james@leesenvironmental.com.au

Kind Regards,

James Wallace,

Business Development Manager
Lee's Environmental
0416 737 842

LEE'S Environmental
Australian Family Owned Since 1980

The experience **you deserve**

Coote Burchills Engineering Pty Ltd
T/A Burchills Engineering Solutions
ABN: 76 166 942 365

GOLD COAST OFFICE
P 07 5509 6400
admin@burchills.com.au www.burchills.com.au
Level 2, 26 Marine Parade, Southport Qld 4215
PO Box 3766, Australia Fair, Southport Qld 4215

BRISBANE OFFICE
P 07 3607 6332
admin@burchills.com.au www.burchills.com.au
Level 14, 167 Eagle Street, Brisbane Qld 4000
PO Box 83, Brisbane Qld 4000

PROPOSED AUTO MUSEUM

Lot 6 SP109850, 620 West Road, Patrick Estate, Queensland

Landscape Concept Plan

16 May 2024

Sheet Index

Concepts Key

1. Project Entry - West Road
2. Project stone clad entry wall with fronting low gardens and gardens with trees behind for scale and amenity
3. Feature palm trees and garden in median
4. Feature trees for cognitive recognition, microclimate control, and pulchritude
5. Caretaker's residence with buffering gardens
6. Existing dam to remain for amenity
7. Boundary buffer gardens with fire retardant and drought tolerant trees, shrubs and groundcovers
8. Existing vegetation to be protected, retained and incorporated as buffering where practical and applicable
9. Short stay accommodation modules with amenity landscaping for character and setting
10. Turfed open space to be mown and maintained for amenity
11. Feature deciduous trees for fall colour, spring flowers, amenity, shade and cognitive recognition
12. Theme trees in median gardens for shade, microclimate control and amenity
13. Existing vegetation to remain for character, amenity and habitat
14. Gardens with trees, shrubs and groundcovers for scale, buffering, shade and amenity
15. Detention basin

See plans by others for more information.

Legend

- Existing Vegetation to be protected and remain
- Palm Tree
- Feature Flowering Deciduous Tree
- Feature / Accent Tree
- Theme Trees
- Shrubs / Hedging
- Groundcovers
- Turfed Area
- Bio - Area

LANDSCAPE OBJECTIVES

This plan has been developed to comply with the current Somerset Regional Council Planning Scheme Landscaping Code

LANDSCAPE DESIGN PHILOSOPHY

The proposed plant palette will provide character, setting, and amenity and is drought and frost tolerant with fire retardant species. New gardens will be mulched organically to limit evaporation and weeds.

SAFETY

CPTED principles of landscape design shall be incorporated throughout the landscape development.

MICROCLIMATE DESIGN FEATURES

Shade tree plantings shall decrease temperatures while creating cooler microclimates. New vegetation will also buffer, screen the site, and will reduce glare and heat gain to structures and adjacent vehicles.

SUSTAINABILITY

Site topsoils will be stripped, stockpiled, tested and ameliorated as required for site landscape uses. Plant selections will be a mix of native and some ornamental species that are drought tolerant, horticulturally and climatically suitable, fire retardant, low maintenance and have low fertilisation requirements.

ENVIRONMENT

No environmentally declared weeds will be planted and any existing will be removed and disposed of appropriately.

See Sheets LCP2-4 for Sections and Elevation,
LCP5 for Plant Schedule

DATE	ISSUE	DESCRIPTION	DRAWN	CKD
16.05.24	E	Information Request Response - Site Layout Changes	BB	BB
15.05.24	D	Information Request Response - Site Layout Changes	BB	BB
12.03.24	C	SARA Amencments - Site Layout Changes	BB	BB
06.03.24	B	SARA Amencments - Increased Buffering to West Road	BB	BB
18.12.23	A	Draft For Review	BB	BB

Scale:
1:1000 @ A1
1:2000 @ A3

North

Landscape Concept Plan Package
Job No: 2390

LCP1 Landscape Concept Plan
Sheet Title

Sheet 1 of 5

Project:
Proposed Auto Museum
Lot 6 SP109850, 620 West Road, Patrick Estate, QLD

Client: Drewmaster Pty Ltd

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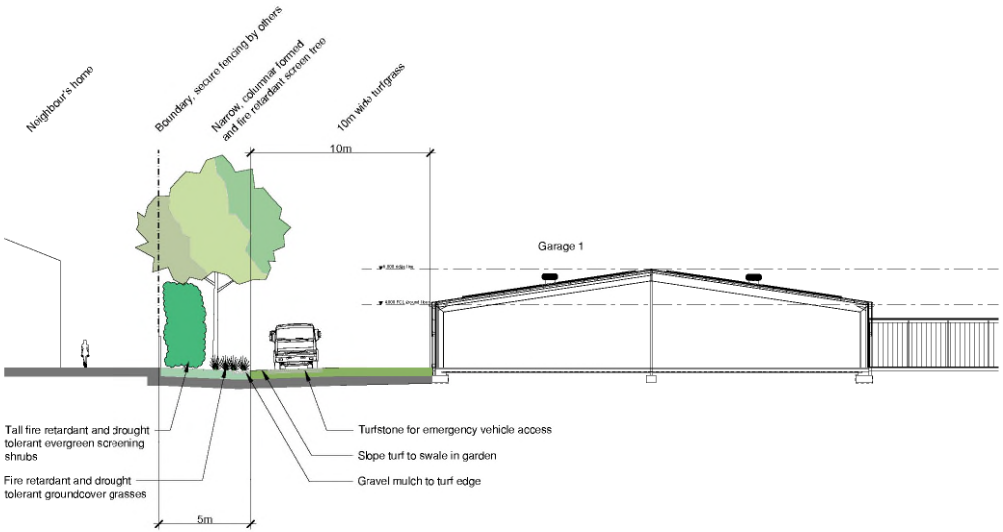
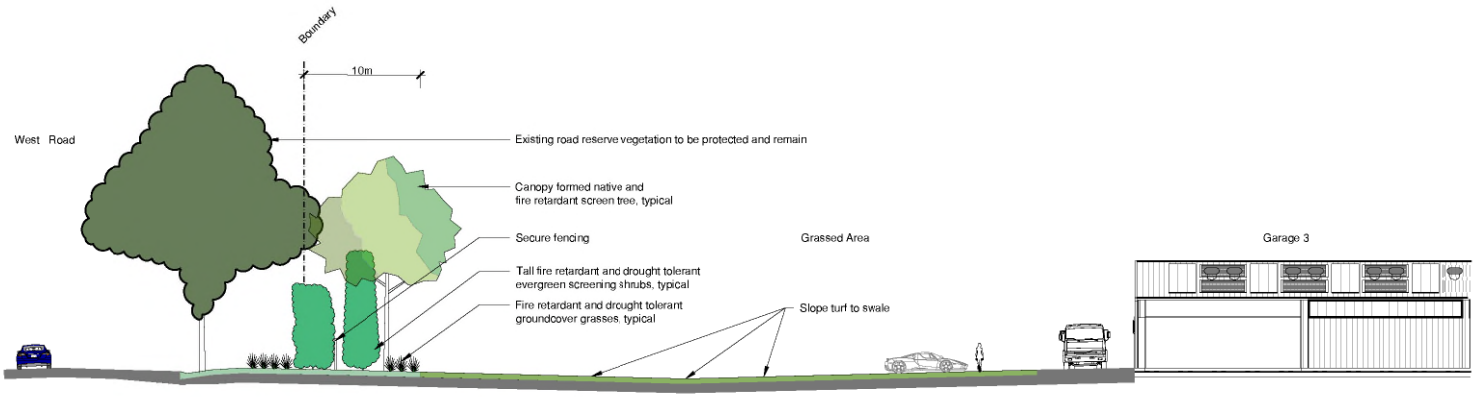


Section A-A



Section B-B

Scale in metres

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DATE	ISSUE	DESCRIPTION	DRAWN	CKD
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15.05.24	D	Information Request Response - Site Layout Changes	BB	BB
12.03.24	C	SARA Amendments - Site Layout Changes	BB	BB
06.03.24	B	SARA Amendments - Increased Buffering to West Road	BB	BB
18.12.23	A	Draft For Review	BB	BB

Scale:
1:150 @ A1
1:300 @ A3

Landscape Concept Plan Package
Job No: 2390

LCP2 Sections
Sheet Title

Sheet 2 of 5

Project:
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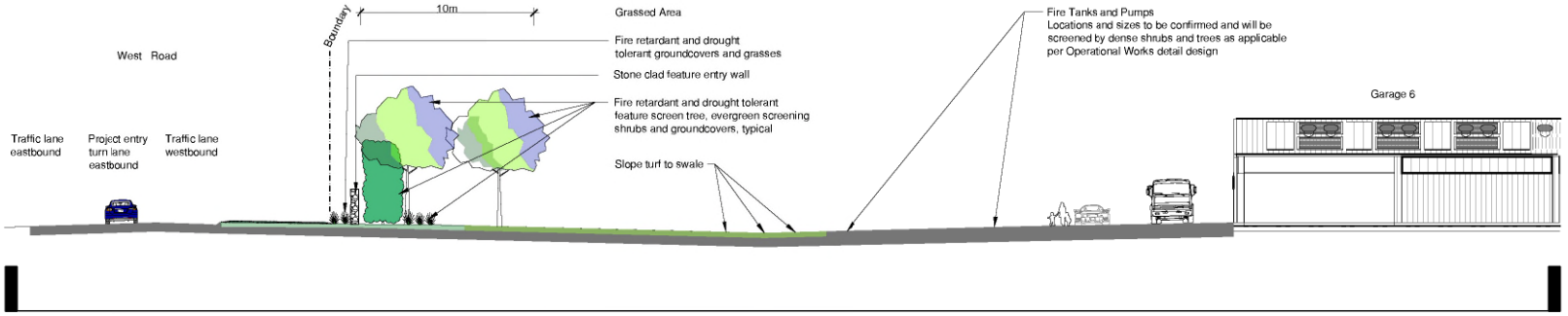

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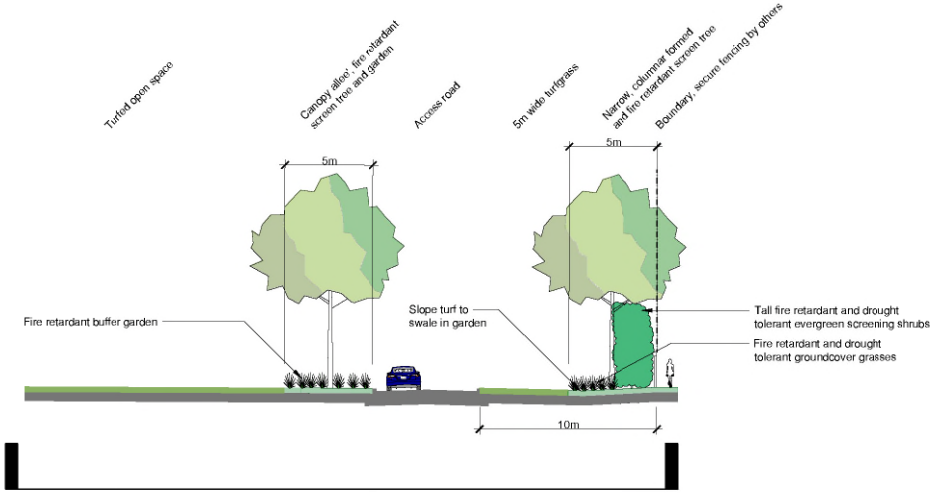

Section D-D

Scale in metres

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Landscape Concept Plan Package
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LCP2 Sections
Sheet Title

Sheet 3 of 5

Project:
Proposed Auto Museum
Lot 6 SP109850, 620 West Road, Patrick Estate, QLD

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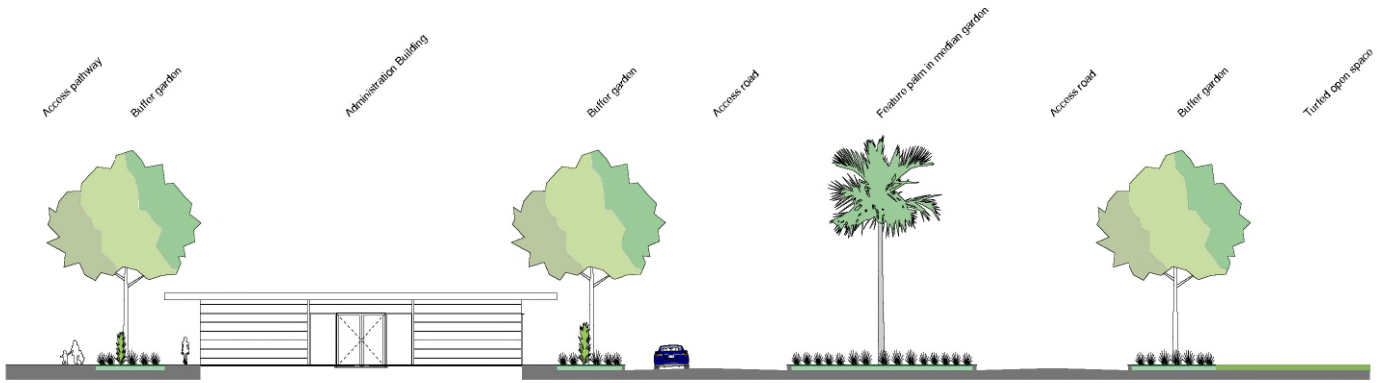

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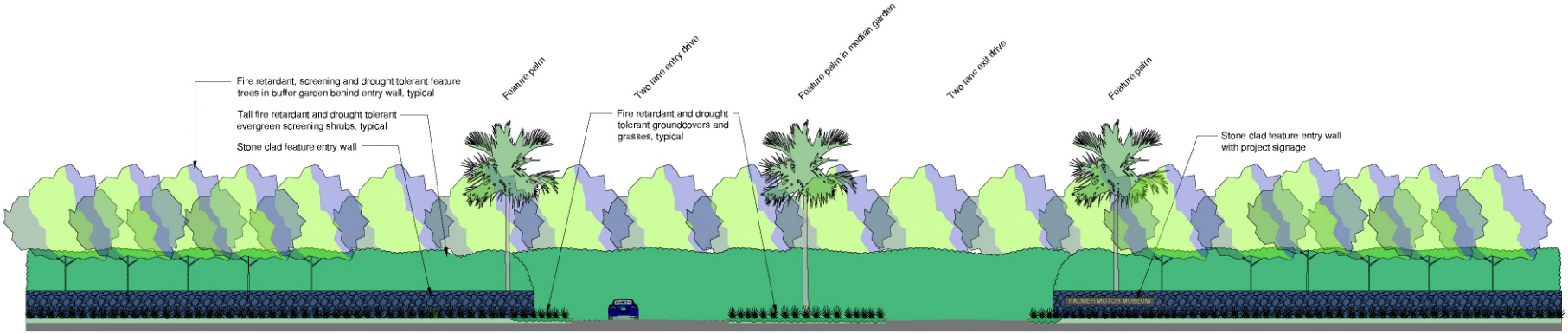

West Road - Entry Elevation

Scale in metres

0 1 2 5 10

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Scale:
1:150 @ A1
1:300 @ A3

Landscape Concept Plan Package
Job No: 2390

LCP4 Section, Elevation
Sheet Title

Sheet 4 of 5

Project:
Proposed Auto Museum
Lot 6 SP109850, 620 West Road, Patrick Estate, QLD

Client: Drewmaster Pty Ltd

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Proposed Planting Indicative Imagery


Flindersia australis - Crows Ash


Phoenix dactylifera - Date Palm


Elaeocarpus reticulatus - Accent Tree


Phoenix canariensis - Canary Island Date Palm


Chamaerops humilis - Mediterranean Fan Palm


Lagerstromia indica - Crape Myrtle


Pyrus calleryana - Bradford Pear


Podocarpus elatus - Brown Pine


Xanthostemon verticellatus 'Little Penda'


Philodendron 'Xanadu'


Syzygium 'Cascade'


Callistemon 'Great Balls of Fire'


GREVILLEA 'Cooroora Cascade'


ANIGOZANTHOS species - Kangaroo Paw

Proposed Planting Schedule

GENUS species - Common Name	Notes
Trees	
CHAMAEROPS humilis - Mediterranean Fan Palm	Feature courtyard tree
ELAEOCARPUS obovatus - Hard Quandong	* Buffering, carpark
ELAEOCARPUS reticulatus - Blueberry Ash (White)	* Buffering
FICUS coronata - Creek Sandpaper Fig	**
FLINDERSIA australis - Crows Ash	* Buffering
LAGERSTROEMIA indica - Crapy Myrtle species	Deciduous flowering accent tree
PHOENIX dactylifera - Date Palm	Feature tree
PHOENIX canariensis - Canary Island Date Palm	Feature tree
PODOCARPUS elatus - Brown Pine	*
PISTACHE chilensis - Pistache	Autumn foliage accent, carparks
PYRUS calleryana - Bradford Pear	White flowering deciduous tree, carparks
STENOCARPUS sinuatus - Wheel of Fire Tree	*
WATERHOUSEA floribunda - Weeping Lilly Pilly	* Buffering
XANTHOSTEMON chrysanthus - Golden Penda	Feature flowering tree
Shrubs	
CALLISTEMON 'Great Balls of Fire'	
MELASTOMA affine - Blue Tongue	*
MOLINERIA capitulata - Palm Grass	Shady locations
PHILODENDRON 'Xanadu'	
SYZYGIUM 'Cascade'	*
SYZYGIUM australe 'Hinterland Gold'	*
SYZYGIUM australe 'Resilience'	* Buffer
XANTHOSTEMON verticellatus 'Little Penda'	
Groundcovers	
ANIGOZANTHOS species - Kangaroo Paw	
FICINIA nodosa - Knobby Club Rush	** Bio-retention basins
GAHNIA sieberiana - Red Fruited Sawsedge	* Bio-retention, buffers
GREVILLEA 'Cooroora Cascade'	
JUNCUS usitatus - Common Rush	* Bio-retention
LOMANDRA confertifolia - Mat Rush	* Bio-retention
LOMANDRA hystrix - Mat Rush	* Bio-retention
LOMANDRA multi-flora - Many Flowered Mat Rush	** Bio-retention
LOMANDRA 'Verday'	
TURF - ZOYSIA 'Empire'	

*Site's Pre-clear Remnant Ecosystem 12.3.3, 12.3.7, 12.9-10.7
* Fire retardant plant

Proposed Finishes Schedule

Item	Product / Description
Hardscape	
Garden Edge	Galvanised Garden Edging
Softscape	
Topsoil	Ameliorated site topsoil as per soil testing results or import AS 4419 topsoil for garden bed and new turf areas.
Gravel Mulch	Gravel mulch with pavers and around pits
Organic Mulch	Mulched Gardens - Hoop Pine
Turf	Turf - Zoysia 'Empire'

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Landscape Concept Plan Package
Job No: 2390

LCP5 Proposed Schedules, Indicative Imagery
Sheet Title Sheet 5 of 5

Project:
Proposed Auto Museum
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Client: Drewmaster Pty Ltd

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CRGACOUSTICS

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CRG Acoustics Pty Ltd
ACN 151 847 255 ABN 11 708 556 182

Proposed Tourist Attraction, Short Term Accommodation, Caretaker's Accommodation and Boundary Realignment
620 to 636 West Road, Patrick Estate
(Lots 5 and 6 on SP109850)

ENVIRONMENTAL NOISE IMPACT REPORT

Prepared for

Drewmaster Pty Ltd

16 May 2024
crgref: 23094 report rev.3

1.0 INTRODUCTION

This report is in response to a request from Drewmaster Pty Ltd for an environmental noise impact assessment of a proposed Tourist Attraction, Short Term Accommodation, Caretaker's Accommodation and Boundary Realignment along West Road in Patrick Estate.

This report is a revision to a previous assessment (CRGref: 23094 report dated January 2024) and is required due to changes to development plans associated with the Further Information Request from Somerset Regional Council dated 16th April 2024. It is noted that there were no Items relating to the previous acoustic assessment.

In undertaking the noise assessment, noise modelling was created, and predictions of onsite activity noise emissions were produced. Based upon the predicted noise impact levels, recommendations regarding acoustic treatment to the development have been provided.

2.0 DESCRIPTION OF THE DEVELOPMENT

The site is described as 620 to 636 West Road, Patrick Estate (Lots 5 and 6 on SP109850) and is in a *"Rural"* zone. The site is bounded West Road to the north, and residential properties to the east, south and west. For site location refer to Appendix A.

The proposal is to construct a car museum comprising the following:

- Eleven garage sheds each 3,900m^2 in floor area yielding approximately 900 car display bays and 350 motorcycle display bays, kiosk, and toilet amenities. Garage shed 11 will comprise a vehicle workshop, gift shop, and feature vehicle feature display area, with Garage shed 10 comprising a concours car display area.
- Ten short stay accommodation modules.
- Administration and café building with indoor and outdoor seating.
- Ticket booth.
- Caretaker's residence.
- 351 space open-air carparking with additional informal grassed parking, 18 motorcycle parking spaces, seven coach parking spaces, and ten short term accommodation carparking spaces.

Most of the vintage cars and motorcycles will be used for static displays with only a limited amount of dynamic running of the vehicles. The vehicle maintenance facility set-up will be similar to the existing facility in concept that currently operates at the Coolum resort where activities such as mechanical works, repairs, spray booth and motor engineering will be undertaken. Car motor services will be carried out here and cars and motorcycles will be made ready for displays and will also support other trades such as upholstery and chroming, it will be mainly restoration works and polishing in preparation for display. The paint booth will be a purpose-built enclosed booth provided with filters and extraction vents. Most of the vintage cars and motorcycles will be in good condition when they arrive; therefore, the workshop will be sparingly used, and the paint booth even less. It is noted that the Coolum Museum spray booth has in 9 months had a total of 10 hours of painting.

Once the vehicles are set up there would be minimal movements per day however periodically different vintages will be on the main displays - allow average of four per day. The use is expected to get approximately 100,000 visitors per year.

For the development plan refer to Appendix B.

Hours of operation are proposed as follows:

Museum, Kiosk / Gift Shop, and Administration / Café: Seven days 8am to 6pm (vary as per demand).

Workshop: Monday to Friday 6am to 5pm.

Proposed onsite activities have been assessed to ensure acceptable acoustical amenity can be achieved at the nearest potentially affected offsite noise sensitive receivers. The nearest noise sensitive receivers include:

R1: Dwellings to the northwest across West Road at 583 and 593 West Road.
R2: Dwellings to immediate west at 582 and 594 West Road.
R3: Dwelling to east at 535 Patrick Estate Road.
R4: Dwellings to southeast at 841 Mahons Road.
R5: Dwellings to south at 727, 740A and 743 Mahons Road (and 636 Mahons Road onsite dwellings).
R6: Patrick Estate State School along Mahons Road.
R7: Onsite Caretaker's dwelling.
R8: Onsite Short Stay Accommodation.

For offsite receiver locations refer to Figure 2 in Appendix A.

3.0 AMBIENT NOISE SURVEY

3.1 Instrumentation

The following equipment was used to record ambient noise levels in the locale.

- Rion NC 73 Calibrator; and
- Larson Davis 721 Environmental Noise Logger.

All instrumentation used in this assessment hold current calibration certificate from a certified NATA calibration laboratory.

3.2 Background Measurement Methodology

A logger was located along the northern site boundary. The logger position was chosen to represent the nearest offsite dwellings to the immediate west. The microphone was in a free-field location, approximately 1.2m above ground. Refer to Figure 2 in Appendix A for the logger location.

The logger was set to record noise statistics in 15-minute blocks continually between Thursday 5/10/2023 and Thursday 12/10/2023.

All measurements were conducted generally in accordance with Australian Standard AS 1055 *"Acoustics-Description and measurement of environmental noise"*. The operation of the sound level logging equipment was field calibrated before and after the measurement session with no significant drift from the reference signal recorded.

Daily weather observations were obtained from the Bureau of Meteorology's website at the Amberly weather station. Weather conditions during the noise monitoring period were generally fine, except 16mm of rain on Wednesday 6/10, a temperature range between 3 to 32°C, and a relative humidity between 16 and 78%.

3.3 Background Measurement Results

Table 1 below presents the Rating Background noise levels (RBLs) calculated from the logger. The RBL for each period was calculated in accordance with the methodology detailed in the QLD EPA guideline "*Planning for noise control*". Data collected on Wednesday 6/10 has been excluded from the results presented in Table 1 due to the occurrence of rain. Graphical presentation of the measured noise levels is presented in the Appendix C.

Background Noise Descriptor	Time Period	Measured L_{90} Level dB(A)
RBL Daytime	7am to 6pm	30
RBL Evening	6pm to 10pm	31
RBL Night-time	10pm to 7am	22

Table 1: Rating Background noise levels calculated from measured background noise levels.

In relation to the night-time RBL, the Queensland Government's Ecoaccess Guideline *Noise – Planning for Noise Control* cites that *"it may not be possible to maintain background levels in very rural areas below 25dBA as developments occur. In such cases a threshold background level of 25dBA is to be used"*.

4.0 NOISE ASSESSMENT CRITERION

PO13 of the *"Rural Zone Code"* of Somerset Regional Council's Planning Scheme states the following in relation to onsite activity noise emissions.

Amenity	
PO13 The design, location and operation of development does not result in any undue adverse impact on the amenity of the locality, having regard to: (a) hours of operation; (b) lighting; (c) noise; (d) dust, odour and other airborne emissions; (e) public health and safety; (f) traffic generation; (g) the use of *advertising devices*; (h) visual amenity; and (i) overlooking and privacy.	**AO13** No acceptable outcome provided.

As there is no defined criteria, we have applied the criteria defined in the Environmental Protection (Noise) Policy 2019.

Section 6 of the Environmental Protection (Noise) Policy 2019 provides the following framework for environmental values to be enhanced or protected:

6 Environmental values

The environmental values to be enhanced or protected under this policy are—

(a) the qualities of the acoustic environment that are conducive to protecting the health and biodiversity of ecosystems; and

(b) the qualities of the acoustic environment that are conducive to human health and wellbeing, including by ensuring a suitable acoustic environment for individuals to do any of the following—

(i) sleep;

(ii) study or learn;

(iii) be involved in recreation, including relaxation and conversation; and

(c) the qualities of the acoustic environment that are conducive to protecting the amenity of the community.

Section 9 of the Environmental Protection (Noise) Policy 2019 provides the following framework for management intent for noise:

> **9 Management intent for noise**
>
> (1) This section states the management intent for an activity involving noise that affects, or may affect, an environmental value to be enhanced or protected under this policy.
>
> *Note—*
>
> See section 35 of the *Environmental Protection Regulation 2019*.
>
> (2) To the extent it is reasonable to do so, noise must be dealt with in a way that ensures—
>
> (a) the noise does not have any adverse effect, or potential adverse effect, on an environmental value under this policy; and
>
> (b) background creep in an area or place is prevented or minimised.
>
> (3) Despite subsection (2)(b), if the acoustic quality objectives for an area or place are not being achieved or maintained, the noise experienced in the area or place must, to the extent it is reasonable to do so, be dealt with in a way that progressively improves the acoustic environment of the area or place.
>
> (4) In this section—
>
> ***background creep***, for noise in an area or place, means a gradual increase in the total amount of background noise in the area or place as measured under the document called the 'Noise measurement manual' published on the department's website.

Schedule 1 of the Environmental Protection (Noise) Policy 2019 provides the following specific *"Acoustic Quality Objectives"* to ensure that the above is achieved:

Column 1	**Column 2**	**Column 3**			**Column 4**
Sensitive receptor	**Time of day**	**Acoustic quality objectives (measured at the receptor) *dB(A)***			**Environmental value**
		$L_{Aeq,adj,1hr}$	$L_{A10,adj,1hr}$	$L_{A1,adj,1hr}$	
residence (for outdoors)	daytime and evening	50	55	65	health and wellbeing
residence (for indoors)	daytime and evening	35	40	45	health and wellbeing
	night-time	30	35	40	health and wellbeing, in relation to the ability to sleep
library and educational institution (including a school, college and university) (for indoors)	when open for business or when classes are being offered	35			health and wellbeing
school or playground (for outdoors)	when the children usually play outside	55			health and wellbeing, and community amenity

Table 2: Criterion from Schedule 1 of the Environmental Protection (Noise) Policy 2019.

It is noted that the EPP Noise 2019 provides no numeric criteria for control of background creep. For this reason, we have applied the previous criteria applied under the EPP Noise 2008, as follows.

Based upon the measured rating background levels (RBLs), the *"Background Creep"* criterion (as previously defined under the Environmental Protection (Noise) Policy 2008) equates to the following levels at the nearest offsite receivers:

Time Varying Noise Source	**Noise Limit, SPL dB(A) L_{eq}**
Daytime 7am to 6pm	35 (RBL L_{90} level 30 + 5 dB)
Evening 6pm to 10pm	36 (RBL L_{90} level 31 + 5 dB)
Night-time 10pm to 7am	30 (Eco-access L_{90} level 25 + 5 dB)
Continuous Noise Source	**Noise Limit, SPL dB(A) L_{90}**
Daytime 7am to 6pm	30 (RBL L_{90} level 30 + 0 dB)
Evening 6pm to 10pm	31 (RBL L_{90} level 31 + 0 dB)
Night-time 10pm to 7am	25 (Eco-access L_{90} level 25 + 0 dB)

Table 3: Noise limit criterion for *"Background Creep"*.

5.0 PREDICTED ONSITE ACTIVITY NOISE IMPACTS

All noise source levels used in the assessment have been collected from similar assessments. All noise levels assessed under the *"Acoustic Quality Objectives"* criterion have been corrected for impulsiveness or tonality as per Australian Standard AS 1055 *"Acoustics-Description and measurement of environmental noise*".

The following noise source levels would typically occur as part of the proposed development and have been assessed within this report.

Activity / Noise Source	Total Number of Events per Hour	Single Event Duration (secs.)	Event Noise Level, SPL dB(A) @ 1m		
			$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$
Car door closures [POINT SOURCE]	300	1.5	80*	82*	85*
Car movements [MOVING POINT SOURCE]	142	30	68	70	73
Group of people talking outside [POINT SOURCE]	46	3600	62	70	73
Cafe Dining Outside 50 patrons [POINT SOURCE]	1	3600	81	84	86
Cafe Dining Indoors 200 patrons [POINT SOURCE]	1	3600	89	92	95
Bus engine start-ups [POINT SOURCE]	4	3	78	81	83
Bus movements [MOVING POINT SOURCE]	4	60	86	87	88
Truck engine start-ups [POINT SOURCE]	1	3	78	81	83
Truck movements [MOVING POINT SOURCE]	2	60	87	89	89
Truck with refrigeration unit at restaurant [POINT SOURCE]	1	600	79	82	83
Deliveries at restaurant loading bay [POINT SOURCE]	1	600	80*	85*	87*
Workshop: nut runner [POINT SOURCE]	20	2	100*	101*	103*
Workshop: hammering metal [POINT SOURCE]	120	1	105*	107*	112*
Workshop: air release [POINT SOURCE]	1	2	79*	80*	90*
Workshop: hoist lifting car [POINT SOURCE]	1	20	70	72	74
Waste collection at restaurant loading bay [POINT SOURCE]	1	180	97*	102*	107*

* Denotes + 5 dB correction for impulsiveness in accordance with AS1055. ** Denotes + 5 dB correction for tonality in accordance with AS1055.

Table 4: Typical noise source levels associated with the proposed development.

The following noise descriptor definitions are provided to assist in the understanding of the modelled noise sources and predicted impacts:

"t": the time period that noise is measured / assessed, typically 15 minutes or one hour.

"adj": Adjustments have been made to the noise level to account for tonality or impulsive characteristics of the noise, in accordance with Australian Standard AS1055.

L_{eq}: average noise level over the measurement / assessment time period "t" (example $L_{eq\ 15min}$ being the average noise level over a 15 minute period).

L_{90}: noise exceeded for ninety percent of the measurement / assessment time period "t" (example $L_{90\ 1hr}$ being the noise exceeded for 90% of the one hour period).

L_{10}: noise exceeded for ten percent of the measurement / assessment time period "t" (example $L_{10\ 1hr}$ being the noise exceeded for 10% of the one hour period).

L_{01}: noise exceeded for one percent of the measurement / assessment time period "t" (example $L_{01\ 1hr}$ being the noise exceeded for 1% of the one hour period).

L_{max}: maximum instantaneous noise level during the measurement / assessment time period.

With regards to the $L_{A10\ 1hr}$ and $L_{A01\ 1hr}$ levels, in many cases, particularly during the night-time period, noise events such as car door closures may not register as L_{A10} or L_{A01} levels if the events do not occur for 10% or 1% of the time period respectively. For example, a 1 second event would have to occur 360 times during a one hour period to register as an L_{A10}, and 36 times during a one hour period to register as an L_{A01} as these noise descriptors are statistically defined. If the events do not occur for the minimum number of iterations (or time period) we have presented the results as "N/A" in Table 5.

For the L_{Aeq} levels we have presented both the adjusted 15 minute duration and also the adjusted one hour duration. For assessment of the *"Background +"* criterion we have adopted the $L_{Aeq\ 15\ minute}$ duration levels.

Patron noise source levels are based on the Rindel methodology presented in the AAAC *"Licensed Premises and Patron Noise Assessment Technical Guideline"* Version 3 and provided below.

Statistical Method

a) Rindel's equation for the level of ambient noise due to people speaking is:

$$L_{NA} = 93 + 20\log(N_s/A) \qquad \text{(eq 1)}$$

where L_{NA} is the A-weighted L_{Aeq} noise level in the patron area, A is average absorption area ($S.alpha$) in the space and N_s is the number of people speaking.

Replacing A with the Room Constant (R) provides a better match to measured levels in smaller or less reverberant areas. R is computed from the average reverberation time in the 250 Hz to 2 kHz range, based on the Eyring equation.

b) The level of individual talkers at 1 m is computed as:

$$L_{SA\ 1m} = 55 + C(L_{NA} - 45) \qquad \text{(eq 2)}$$

where C is the Lombard ratio of 0.5 and $L_{SA\ 1m}$ is the A--weighted talker level at 1m

The overall predicted sound pressure levels (at 1m) for the café (indoor and outdoor dining) assume the following:

- A speaking group size of three (i.e. one in three people is talking simultaneously in the group).
- An average absorption area of 20% of the floor area of each space, considered worst case with the inclusion of patrons within the area.
- To determine L_{01} patron source levels a correction of 5.6 dB in typically added to the predicted L_{eq} level, and 3 dB to determine the L_{10} source level from the L_{eq}.

Burchills Traffic Engineers provided the traffic generation rates for the car museum uses, which have been applied for modelling of onsite car movements:

Land Use	Yield	Trip Generation Rates			Trip Generation			Source
		AM Peak	PM Peak	Weekend Peak	AM Peak	PM Peak	Weekend Peak	
Car Museum	42,900m²	-	-	-	97 vph	97 vph	76 vph	First Principles
Restaurant	1,922m² GFA	5 trips per 100m² GFA	5 trips per 100m² GFA	5 trips per 100m² GFA	96 vph	96 vph	96 vph	GTGD
Short term accommodation	10 units	0.4 trips per unit	0.4 trips per unit	0.4 trips per unit	4 vph	4 vph	4 vph	GTGD
Less linked trips discount					-48 vph	-48 vph	-48 vph	-
TOTAL					**149 vph**	**149 vph**	**128 vph**	**-**

Based upon the proposed onsite activities in relation to the nearest noise sensitive receivers (building façades, inside rooms with windows open and outside at the school play space areas), we predict the following noise impact levels in Table 5.

The predicted levels assume that the recommended treatments detailed in Section 6 are incorporated into the development. For L_{eq} and L_{01} point calculation results refer to Appendix C.

Ground levels were obtained from ELVIS website (Elevation and Depth – Foundation Spatial Data) as a LiDAR file and converted to a 3D dxf file with contours at 0.1m intervals.

A 3D noise model was prepared for the site using PEN3D. The PEN3D General Prediction Model (GPM) is based on the method contained in the book *"Engineering Noise Control - Theory and Practice"* by David Bies & Colin H Hansen of the Department of Mechanical Engineering, University Of Adelaide, Publisher Unwin Hyman 1988. Chapter 5.9 Pages 117 to 127 describes the model.

The PEN3D software was originally developed in 1993 and has been in constant development and review.

The basic equation adopted by the GPM is:

$$Lp = Lw - 20\log10(r) - 10\log10(4\pi) + AE$$

Where

Lp is the sound pressure level at an observer
Lw is the sound power level of the source
20 log10r - 10log10(4PI) is the Distance attenuation
AE is the excess attenuation factors and is determined as the sum of the contributions

The excess attenuation factors AE comprise

$$AE = Aa + Ag + Am + Ab + Af$$

Where

Aa = Excess attenuation due to air absorption
Ag = Excess attenuation due to ground reflection
Am = Excess attenuation due to meteorological effects
Ab = Excess attenuation due to barriers; and
Af = Excess attenuation due to forests

The following sections describe the excess attenuation factors and the implementation within PEN3D.

Air Absorption Excess Attenuation

Aa, the attenuation due to air absorption is dependent upon temperature and relative humidity. The values used in the PEN noise model are based on Sutherlan, LC JF Piercy, H.E. Bass & L.B. Evans 1974. Method for calculating the absorption of sound by the atmosphere. Journal of the Acoustical Society of America 56, Supplement 1 (abstract).

$$Aa = m\,r$$

where

m is the absorption per m; and
r is the actual distance from source to receiver

Ground Reflection Excess Attenuation

Ag, The excess attenuation due to ground reflection is obtained by combining the direct wave and the reflected wave incoherently, that is the energy from the ground wave is added to the direct wave.

$$R = \frac{Z \sin(\beta) - \rho c}{Z \sin(\beta) + \rho c}$$

where

β is the angle the reflected wave makes with the ground
Z is the complex ground impedance (a function of the flow resistivity);
ρ is the density of air; and
c the speed of sound.

The reflection loss AR is given by -20*log10(R)

$$Ag = -10\log10(1 + 10\text{-}AR/10)$$

Meteorological Excess Attenuation

Am, the excess attenuation due to meteorology is obtained by firstly calculating the vertical sonic gradient due to wind and temperature effects. The theoretical approach to application of meteorological effects implies that PEN3D is likely to provide more significant corrections than other models. Thus, at night or during downwind predictions, the PEN3D calculations are likely to result in conservatively high results, i.e. the modelled noise levels are likely to be higher than the measured levels. Given the majority of onsite activities are proposed during the daytime and evening periods, meteorological effects / adverse weather conditions have not been assessed.

Barrier Excess Attenuation

Ab, the excess attenuation due to barriers is obtained by firstly calculating the curved noise path due to wind and temperature effects. It is calculated by reference to the method outlined in "A Method to To Incorporate Meteorological Effects into A Road Traffic Model" by MA Simpson, Proceedings of Acoustics 2004.

If a barrier exists the effective location of the source and receiver is modified according to the method outlined in Tonin, R, "Estimating Noise Levels from Petrochemical Plants, Mines and Industrial Complexes", Acoustics Australia, 13(2):59-67, 1985.

Forest Excess Attenuation

Af, the excess attenuation due to forest is obtained by the following:

$$Af = 0.01\ r\ f\ (1/3)$$

where

r = distance through the forest in (m), and
f = frequency in (Hz)

For truck and car movements, the PEN3D Model is an implementation of the environmental noise model. The model calculates the L_{eq} and L_{max} from rail object and is applicable to modelling vehicles in car parks, trucks moving on haul roads and numerous other similar sources. Simply set the length of the "line" to be equal to the dimensions of the moving source.

The contribution Leq(1 hour) from each segment is determined by:

$$Leq = Lw - 10\ log10(4p\ d2 + 2\ p\ d\ L) + AE + 10\ log\ (T\ /3600)$$

where:
Leq = the Leq sound pressure level at an observer
Lw = the sound power level of the source
10 log10(4p d2 + 2 p d L) is the Distance attenuation A
E is the excess attenuation factors and is determined as the sum of the contributions
T = Time to traverse the segment (s)
L = length of vehicle in (m)
d = distance in (m)

The Lmax from each segment is determined by:

$$Lmax = Lw - 10\ log10(4p\ d2 + 2\ p\ d\ L) + AE$$

Fluctuating Noise Source	Predicted Noise Impact, SPL dB(A)						
	Nearest Façade / Outdoor Private Space				Inside Windows Open		
	$L_{eq\ 15\ min}$	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$
R1: Dwellings to the northwest across West Road at 583 and 593 West Road							
Car door closures	< 15	< 15	24	27	< 15	16	19
Car movements main site	26	26	25	28	18	17	20
Group of people talking	28	28	29	32	20	22	25
Dining outdoors at cafe	< 15	< 15	< 15	15	< 15	< 15	< 15
Dining indoors at cafe	< 15	< 15	16	19	< 15	< 15	< 15
Bus engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Bus movements	28	28	N/A	42	20	N/A	35
Truck engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Truck movements	17	17	N/A	43	< 15	N/A	35
Trucks with refrigeration unit	< 15	< 15	18	19	< 15	< 15	< 15
Deliveries	< 15	< 15	20	22	< 15	< 15	< 15
Workshop nut runner inside Shed 11	< 15	< 15	N/A	37	< 15	N/A	29
Workshop hammering metal inside Shed 11	23	23	N/A	46	15	N/A	39
Workshop air release inside Shed 11	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Workshop car hoist inside Shed 11	< 15	< 15	N/A	< 15	< 15	N/A	< 15
Waste collection	22	22	N/A	30	< 15	N/A	22
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**34**	**34**	**29**	**46**	**26**	**22**	**39**
R2: Dwellings to immediate west at 582 and 594 West Road							
Car door closures	16	16	31	34	< 15	23	26
Car movements main site	23	23	32	35	16	24	27
Group of people talking	23	23	21	24	16	< 15	17
Dining outdoors at cafe	< 15	< 15	16	19	< 15	< 15	< 15
Dining indoors at cafe	< 15	< 15	17	20	< 15	< 15	< 15
Bus engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Bus movements	19	19	N/A	33	< 15	N/A	26
Truck engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Truck movements	< 15	< 15	N/A	34	< 15	N/A	26
Trucks with refrigeration unit	< 15	< 15	18	19	< 15	< 15	< 15
Deliveries	< 15	< 15	20	22	< 15	< 15	15
Workshop nut runner inside Shed 11	< 15	< 15	N/A	37	< 15	N/A	30
Workshop hammering metal inside Shed 11	23	23	N/A	47	16	N/A	39
Workshop air release inside Shed 11	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Workshop car hoist inside Shed 11	< 15	< 15	N/A	< 15	< 15	N/A	< 15
Waste collection	23	23	N/A	30	< 15	N/A	23
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**32**	**32**	**32**	**47**	**24**	**24**	**39**
Applicable Criterion	**Back. +**	**Acoustic Quality Objectives**					
Daytime / Evening Criterion	**35 / 36**	**50**	**55**	**65**	**35**	**40**	**45**
Morning 6am to 7am Criterion	**30**				**30**	**35**	**40**

Table 5: Predicted short duration noise impact levels at the nearest offsite receivers.

Fluctuating Noise Source	Predicted Noise Impact, SPL dB(A)						
	Nearest Façade / Outdoor Private Space				Inside Windows Open		
	$L_{eq\ 15\ min}$	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$
R3: Dwelling to east at 535 Patrick Estate Road							
Car door closures	17	17	32	35	< 15	24	27
Car movements main site	28	28	21	24	21	< 15	17
Group of people talking	25	25	23	26	17	15	18
Dining outdoors at cafe	23	23	28	30	16	20	23
Dining indoors at cafe	28	28	31	34	21	24	26
Bus engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Bus movements	26	26	N/A	39	18	N/A	31
Truck engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Truck movements	19	19	N/A	41	< 15	N/A	33
Trucks with refrigeration unit	21	21	31	32	< 15	24	25
Deliveries	17	17	30	32	< 15	22	24
Workshop nut runner inside Shed 11	< 15	< 15	N/A	34	< 15	N/A	27
Workshop hammering metal inside Shed 11	20	20	N/A	44	< 15	N/A	36
Workshop air release inside Shed 11	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Workshop car hoist inside Shed 11	< 15	< 15	N/A	< 15	< 15	N/A	< 15
Waste collection	34	34	N/A	41	26	N/A	33
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**34**	**34**	**32**	**44**	**27**	**24**	**36**
R4: Dwellings to southeast at 841 Mahons Road							
Car door closures	< 15	< 15	22	25	< 15	< 15	17
Car movements main site	19	19	< 15	< 15	< 15	< 15	< 15
Group of people talking	17	17	< 15	< 15	< 15	< 15	< 15
Dining outdoors at cafe	15	15	18	20	< 15	< 15	< 15
Dining indoors at cafe	18	18	21	24	< 15	< 15	16
Bus engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Bus movements	16	16	N/A	29	< 15	N/A	21
Truck engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Truck movements	< 15	< 15	N/A	24	< 15	N/A	16
Trucks with refrigeration unit	< 15	< 15	< 15	< 15	< 15	< 15	< 15
Deliveries	< 15	< 15	< 15	< 15	< 15	< 15	< 15
Workshop nut runner inside Shed 11	< 15	< 15	N/A	26	< 15	N/A	19
Workshop hammering metal inside Shed 11	< 15	< 15	N/A	36	< 15	N/A	28
Workshop air release inside Shed 11	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Workshop car hoist inside Shed 11	< 15	< 15	N/A	< 15	< 15	N/A	< 15
Waste collection	23	23	N/A	30	15	N/A	23
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**25**	**25**	**22**	**36**	**17**	< 15	**28**
Applicable Criterion	**Back. +**	**Acoustic Quality Objectives**					
Daytime / Evening Criterion	**35 / 36**	**50**	**55**	**65**	**35**	**40**	**45**
Morning 6am to 7am Criterion	**30**				**30**	**35**	**40**

Table 5 (Con't): Predicted short duration noise impact levels at the nearest offsite receivers.

Fluctuating Noise Source	Predicted Noise Impact, SPL dB(A)						
	Nearest Façade / Outdoor Private Space				Inside Windows Open		
	$L_{eq\ 15\ min}$	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$
R5: Dwellings to south at 727, 740A and 743 Mahons Road (and 636 Mahons Road onsite dwellings)							
Car door closures	< 15	< 15	24	27	< 15	16	19
Car movements main site	19	19	< 15	15	< 15	< 15	< 15
Group of people talking	19	19	< 15	15	< 15	< 15	< 15
Dining outdoors at cafe	15	15	18	20	< 15	< 15	< 15
Dining indoors at cafe	18	18	21	24	< 15	< 15	16
Bus engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Bus movements	16	16	N/A	29	< 15	N/A	21
Truck engine starts	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Truck movements	< 15	< 15	N/A	27	< 15	N/A	20
Trucks with refrigeration unit	< 15	< 15	< 15	< 15	< 15	< 15	< 15
Deliveries	< 15	< 15	< 15	< 15	< 15	< 15	< 15
Workshop nut runner inside Shed 11	< 15	< 15	N/A	28	< 15	N/A	20
Workshop hammering metal inside Shed 11	< 15	< 15	N/A	37	< 15	N/A	30
Workshop air release inside Shed 11	< 15	< 15	N/A	N/A	< 15	N/A	N/A
Workshop car hoist inside Shed 11	< 15	< 15	N/A	< 15	< 15	N/A	< 15
Waste collection	16	16	N/A	23	< 15	N/A	16
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**26**	**26**	**24**	**37**	**18**	**16**	**30**
Applicable Criterion	**Back. +**	**Acoustic Quality Objectives**					
Daytime / Evening Criterion	**35 / 36**	**50**	**55**	**65**	**35**	**40**	**45**
Morning 6am to 7am Criterion	**30**				**30**	**35**	**40**

Fluctuating Noise Source	Predicted Noise Impact, SPL dB(A)					
	Nearest Façade / Outdoor Private Space			Inside Windows Open [R_w Windows Closed]		
	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$
R7: Onsite Caretaker's Accommodation						
Car door closures	< 15	41	44	< 15	33	36
Car movements main site	45	50	53	38	42	45
Group of people talking	35	36	39	28	28	31
Dining outdoors at cafe	32	38	41	25	30	33
Dining indoors at cafe	26	29	31	18	21	24
Bus engine starts	< 15	N/A	N/A	< 15	N/A	N/A
Bus movements	46	N/A	67	39	N/A	59
Truck engine starts	17	N/A	N/A	< 15	N/A	N/A
Truck movements	40	N/A	68	32	N/A	60
Trucks with refrigeration unit	35	46	47	27	38	39
Deliveries	36	49	51	29	42	44
Workshop nut runner inside Shed 11	26	N/A	51	19	N/A	43
Workshop hammering metal inside Shed 11	36	N/A	60	29	N/A	52
Workshop air release inside Shed 11	< 15	N/A	N/A	< 15	N/A	N/A
Workshop car hoist inside Shed 11	< 15	N/A	22	< 15	N/A	< 15
Waste collection	48	N/A	55	41	N/A	48
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**50**	**50**	**67**	**43 [R_w 19]**	**42 [R_w 13]**	**59 [R_w 35]**
Applicable Criterion	**Acoustic Quality Objectives**					
Daytime / Evening Criterion	**50**	**55**	**65**	**35**	**40**	**45**

Table 5 (Con't): Predicted short duration noise impact levels at the nearest offsite receivers.

Fluctuating Noise Source	Predicted Noise Impact, SPL dB(A)					
	Nearest Façade / Outdoor Private Space			Inside Windows Open [R_w Windows Closed]		
	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$	$L_{eq\ 1hr}$	$L_{10\ 1hr}$	$L_{01\ 1hr}$
R8: Onsite Short Stay Accommodation: 5 northern dwellings						
Car door closures	26	45	48	19	38	41
Car movements main site	42	38	41	34	31	34
Group of people talking	36	35	38	29	27	30
Dining outdoors at cafe	39	42	45	31	35	37
Dining indoors at cafe	43	46	48	35	38	41
Bus engine starts	19	N/A	N/A	< 15	N/A	N/A
Bus movements	41	N/A	55	33	N/A	48
Truck engine starts	16	N/A	N/A	< 15	N/A	N/A
Truck movements	34	N/A	62	26	N/A	54
Trucks with refrigeration unit	34	45	46	27	38	39
Deliveries	36	49	51	28	41	43
Workshop nut runner inside Shed 11	22	N/A	47	15	N/A	39
Workshop hammering metal inside Shed 11	32	N/A	56	25	N/A	49
Workshop air release inside Shed 11	< 15	N/A	N/A	< 15	N/A	N/A
Workshop car hoist inside Shed 11	< 15	N/A	18	< 15	N/A	< 15
Waste collection	48	N/A	55	41	N/A	48
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**48**	**46**	**56**	**40 [R_w 16]**	**38**	**49 [R_w 25]**
R8: Onsite Short Stay Accommodation: 5 southern dwellings						
Car door closures	27	46	49	19	38	41
Car movements main site	40	38	41	32	31	34
Group of people talking	36	34	37	29	26	29
Dining outdoors at cafe	39	42	45	31	35	37
Dining indoors at cafe	43	45	48	35	38	40
Bus engine starts	20	N/A	N/A	< 15	N/A	N/A
Bus movements	40	N/A	55	33	N/A	48
Truck engine starts	< 15	N/A	N/A	< 15	N/A	N/A
Truck movements	30	N/A	45	23	N/A	38
Trucks with refrigeration unit	21	32	33	< 15	24	25
Deliveries	34	46	48	26	39	41
Workshop nut runner inside Shed 11	21	N/A	45	< 15	N/A	38
Workshop hammering metal inside Shed 11	31	N/A	55	23	N/A	47
Workshop air release inside Shed 11	< 15	N/A	N/A	< 15	N/A	N/A
Workshop car hoist inside Shed 11	< 15	N/A	16	< 15	N/A	< 15
Waste collection	45	N/A	53	38	N/A	45
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**47**	**46**	**55**	**40 [R_w 16]**	**38**	**47 [R_w 23]**
Applicable Criterion	**Acoustic Quality Objectives**					
Daytime / Evening Criterion	**50**	**55**	**65**	**35**	**40**	**45**

Table 5 (Con't): Predicted short duration noise impact levels at the nearest offsite receivers.

For impacts at onsite accommodation dwellings and the caretaker's dwelling we have provided internal impacts with windows open and R_w ratings required to achieve the indoor criterion. Given that waste collection and deliveries are likely to be infrequent occurrences and of short duration, we have not based our building R_w requirements on these impact levels. We note that 4mm glass in standard operable window and sliding door frames typically achieve a minimum R_w rating of approximately 25; with standard light-weight external walls and standard pitched roofs over a ceiling of 10mm plasterboard achieve R_w ratings of 33 - 35.

Fluctuating Noise Source	Predicted Noise Impact, SPL dB(A)		
	Nearest Façade		Inside Windows Open
	$L_{eq\ 15\ min}$	$L_{eq\ 1hr}$	$L_{eq\ 1hr}$
R6: Patrick Estate State School along Mahons Road – Nearest Classrooms			
Car door closures	< 15	< 15	< 15
Car movements main site	19	19	< 15
Group of people talking	17	17	< 15
Dining outdoors at cafe	15	15	< 15
Dining indoors at cafe	18	18	< 15
Bus engine starts	< 15	< 15	< 15
Bus movements	16	16	< 15
Truck engine starts	< 15	< 15	< 15
Truck movements	< 15	< 15	< 15
Trucks with refrigeration unit	< 15	< 15	< 15
Deliveries	< 15	< 15	< 15
Workshop nut runner inside Shed 11	< 15	< 15	< 15
Workshop hammering metal inside Shed 11	< 15	< 15	< 15
Workshop air release inside Shed 11	< 15	< 15	< 15
Workshop car hoist inside Shed 11	< 15	< 15	< 15
Waste collection	23	23	15
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**25**	**25**	**18**
Applicable Criterion	**Back. +**	**Acoustic Quality Objectives**	
Daytime / Evening Criterion	**35**	**N/A**	**35**

Fluctuating Noise Source	Predicted Noise Impact, SPL dB(A)	
	Outdoor Play Area	
	$L_{eq\ 15\ min}$	$L_{eq\ 1hr}$
R6: Patrick Estate State School along Mahons Road – Nearest Outdoor Play Area		
Car door closures	< 15	< 15
Car movements main site	18	18
Group of people talking	16	16
Dining outdoors at cafe	< 15	< 15
Dining indoors at cafe	17	17
Bus engine starts	< 15	< 15
Bus movements	15	15
Truck engine starts	< 15	< 15
Truck movements	< 15	< 15
Trucks with refrigeration unit	< 15	< 15
Deliveries	< 15	< 15
Workshop nut runner inside Shed 11	< 15	< 15
Workshop hammering metal inside Shed 11	< 15	< 15
Workshop air release inside Shed 11	< 15	< 15
Workshop car hoist inside Shed 11	< 15	< 15
Waste collection	22	22
Combined L_{eq} / Maximum L_{10} and L_{01} Excludes deliveries and waste collection Includes mechanical plant impacts	**25**	**25**
Applicable Criterion	**Back. +**	**Acoustic Quality Objectives**
Daytime / Evening Criterion	**35**	**55**

Table 5 (Con't): Predicted short duration noise impact levels at the nearest offsite receivers.

Continuous activity noise source levels have been compiled from similar previous investigations. All noise levels have been corrected for impulsiveness or tonality as per Australian Standard AS 1055 *"Acoustics-Description and measurement of environmental noise"*.

It should be stressed that mechanical plant selections have yet to be undertaken, for this reason; we have applied noise levels from other similar commercial sites as follows:

- Air conditioner units each generating 60 dB(A) at 3m.
- Kitchen exhaust fan unit each generating 65 dB(A) at 3m.
- Kitchen refrigeration fan unit each generating 68 dB(A) at 3m.
- Garage shed rooftop air ventilation pods each generating 35 dB(A) at 3m.
- Air compressor inside workshop each generating 76 dB(A) at 3m.

Based upon the assumed locations of the onsite mechanical plant in relation to the surrounding noise sensitive receivers (building façades, inside rooms with windows open and outside at the school play space areas), we predict the following noise impact levels as presented in Table 6.

As a worst case scenario we have assumed that all mechanical plant will be running at the same time. The predicted levels assume that the recommended treatments detailed in Section 6 are incorporated into the development. For point source calculations refer to Appendix C.

Continuous Noise Source	**Predicted Noise Impact, SPL L_{90} dB(A)**	
	Nearest Façade / Outdoor Private Space	**Inside Windows Open**
R1: Dwellings to the northwest across West Road at 583 and 593 West Road		
Combined mech. plant with acoustical treatments	27	19
R2: Dwellings to immediate west at 582 and 594 West Road		
Combined mech. plant with acoustical treatments	29	21
R3: Dwelling to east at 535 Patrick Estate Road		
Combined mech. plant with acoustical treatments	23	15
R4: Dwellings to southeast at 841 Mahons Road		
Combined mech. plant with acoustical treatments	< 15	< 15
R5: Dwellings to south at 727, 740A and 743 Mahons Road (and 636 Mahons Road onsite dwellings)		
Combined mech. plant with acoustical treatments	16	< 15
R7: Onsite Caretaker's Accommodation		
Combined mech. plant with acoustical treatments	25	28
R8: Onsite Short Stay Accommodation: 5 northern dwellings		
Combined mech. plant with acoustical treatments	36	29
R8: Onsite Short Stay Accommodation: 5 southern dwellings		
Combined mech. plant with acoustical treatments	35	28
Daytime / Evening Criterion	**30 / 31**	**35**

Continuous Noise Source	**Predicted Noise Impact, SPL L_{90} dB(A)**	
	Nearest Façade	**Inside Windows Open**
R6: Patrick Estate State School along Mahons Road – Nearest Classrooms		
Combined mech. plant with acoustical treatments	15	< 15
School Criterion	**N/A**	**35**

Continuous Noise Source	**Predicted Noise Impact, SPL L_{90} dB(A)**
	Nearest Façade
R6: Patrick Estate State School along Mahons Road – Nearest Outdoor Play Area	
Combined mech. plant with acoustical treatments	< 15
School Criterion	**55**

Table 6: Predicted continuous noise impact levels at noise sensitive receivers.

6.0 RECOMMENDED ACOUSTIC TREATMENTS

6.1 Acoustical Treatments to Mitigate Onsite Activity Noise to Offsite Receivers

We recommend that the following acoustic treatments and management controls be incorporated into the development to mitigate onsite activity noise impacts to offsite noise sensitive receivers:

- Hours of operation be limited as follows:

Museum, Kiosk / Gift Shop, and Administration / Café:	Seven days 8am to 6pm.
Workshop:	Monday to Friday 6am to 5pm. Roller doors of the workshop be kept closed prior to 7am.
Deliveries:	Seven days 7am to 10pm.
Waste Collection:	Monday to Friday 7am to 6pm.

- All mechanical repairs and noisy equipment / activity be limited to inside the workshop.
- When noisy equipment / activity is occurring or scheduled (i.e. hammering metal, guiding metal) either the workshop rollers doors are closed, or the noisy equipment / activities be acoustical screened (i.e. internal movable acoustical screens) from the open workshop roller doors.
- Driveway and car parking areas be finished with surface coatings which prevent tyre squeal (an uncoated unpolished concrete or bitumen surface is acceptable).
- Drainage grating over trafficable areas be well secured to prevent rattling.
- Mechanical plant (i.e. air-conditioners, exhaust fans, refrigeration compressors) be designed and installed to comply with the noise criterion presented in Section 4. **As final plant selection and plant locations has not been completed, additional acoustic assessment/s should be undertaken once plant selections and locations are finalised.** Such assessments should be undertaken prior to Building Approval; and be conditioned within the Development Approval.
    - The rooftop air ventilation pods of the garage sheds should each be limited to a maximum source level of 35 dB(A) at 3m. However, for Shed 1 (westernmost shed), acoustical screens should be installed to provide an additional 10 dB reduction or achieve a source level of 25 dB(A) at 3m given the proximity of the western offsite dwelling. The ventilation pods should also be restricted to the daytime and evening hours between 7am to 10pm. **This is an indication of potential treatments only and should be reviewed at detailed design stage.**
    - Kitchen / spray booth exhaust fans may require silencers. Refrigeration compressors and air-conditioning condenser units may require acoustical screening / enclosures. **This is an indication of potential treatments only and should be reviewed at detailed design stage.**

6.2 Acoustical Treatments to Mitigate Onsite Activity Noise to Onsite Receivers

We recommend that the following acoustic treatments be incorporated into the onsite accommodation facilities (i.e. short stay and caretaker's dwelling) to mitigate onsite activity noise impacts:

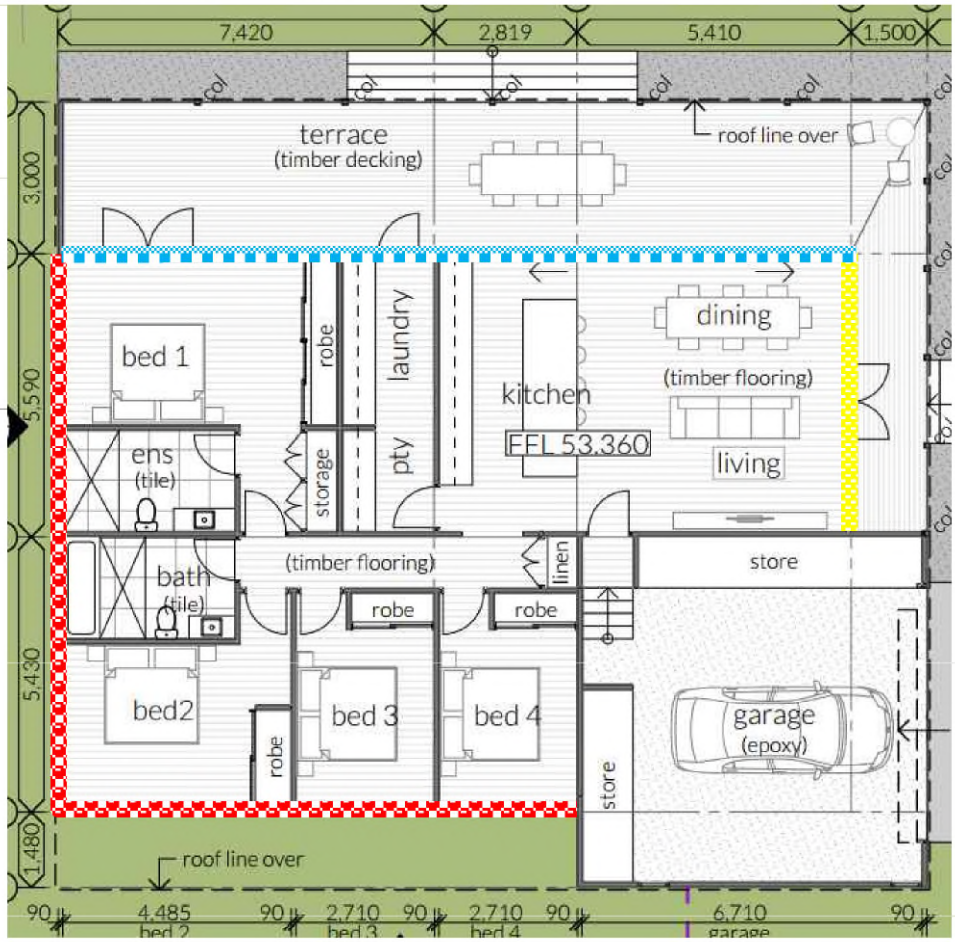
Habitable room façades detailed over page are to achieve a minimum R_w rating of 35 (i.e. 6.38mm laminate glass with acoustic grade frames and acoustic Q-lon seals).

Habitable room façades detailed over page are to achieve a minimum R_w rating of 30 (i.e. 6.38mm laminate glass with acoustic grade frames and acoustic Q-lon seals).

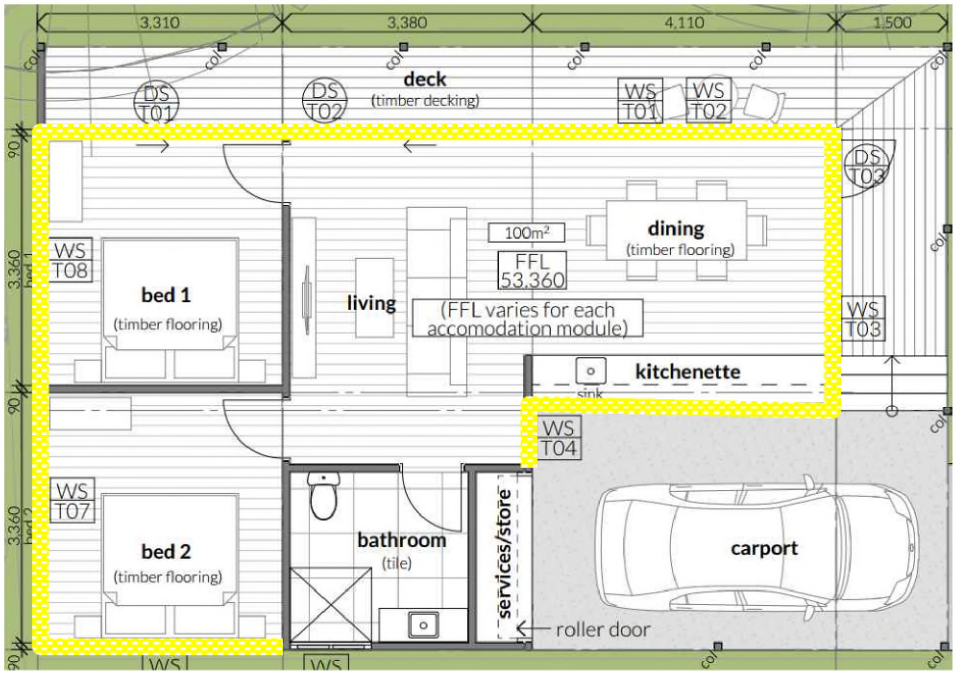
Habitable room façades detailed over page are to achieve a minimum R_w rating of 25 (i.e. standard 4mm glass with standard grade frames and standard seals).

All affected rooms are to have provision for air conditioning or sealed mechanical ventilation to allow occupants to close windows and doors to exclude onsite activity noise. The installed plant should not reduce the acoustic performance of the building shell.

Caretaker's Accommodation:



All Ten Short Stay Accommodation Units:



7.0 DISCUSSION and CONCLUSIONS

This report is in response to a request from Drewmaster Pty Ltd for an environmental noise impact assessment of a proposed Tourist Attraction, Short Term Accommodation, Caretaker's Accommodation and Boundary Realignment along West Road in Patrick Estate.

This report is a revision to a previous assessment (CRGref: 23094 report dated January 2024) and is required due to changes to development plans associated with the Further Information Request from Somerset Regional Council dated 16th April 2024. It is noted that there were no Items relating to the previous acoustic assessment.

Based upon the assumed onsite operations and recommended acoustic treatments and management controls, onsite activity noise emissions are predicted to impact the façades of the nearest offsite noise sensitive receivers within the relevant *"Background +"* and *"Acoustic Quality Objective"* criterion except for waste collection.

It is noted that given waste collection is generally of short duration and infrequent occurrence (i.e. once or twice per week) such activity is unlikely to cause annoyance. Further, waste collection activities are normal events within both residential and commercial areas, therefore, the proposed development waste collection is not introducing a new or unknown noise activities / events. To minimise the potential for noise annoyance we have recommended that waste collection be limited to the daytime hours between 7amd to 6pm.

We have provided an indication of potential noise impact levels of likely onsite mechanical plant; although the levels are merely a guide as no plant selections have yet been completed. For this reason, additional more detailed assessment/s should be conducted upon determination of plant. Based upon the assumed mechanical plant and source levels, outside condenser units and refrigeration compressors are likely to require acoustic screens / enclosures and exhaust fans likely to require acoustic silencers / attenuators.

Overall, based upon the proposed layout of the development, onsite activities can be designed and constructed to achieve acceptable levels of the adopted criterion subject to acoustic treatments and management controls detailed in Section 6 of this report incorporated into the development.

It is also noted that the noise modelling assumes the worst-case scenario of maximum capacity patrons (i.e. at the cafe) and peak hour traffic generation rates, therefore, the outcomes of the assessment and recommendations are deemed conservative.

Report Reviewed By:

JAY CARTER BSc
Director

Report Compiled by:

Matthew Lopez BEng
Consultant

APPENDIX A

Subject Site, Measurement Location, and Surrounding Noise Sensitive Receivers

Figure No. 1: Subject Site Location (Google Maps).

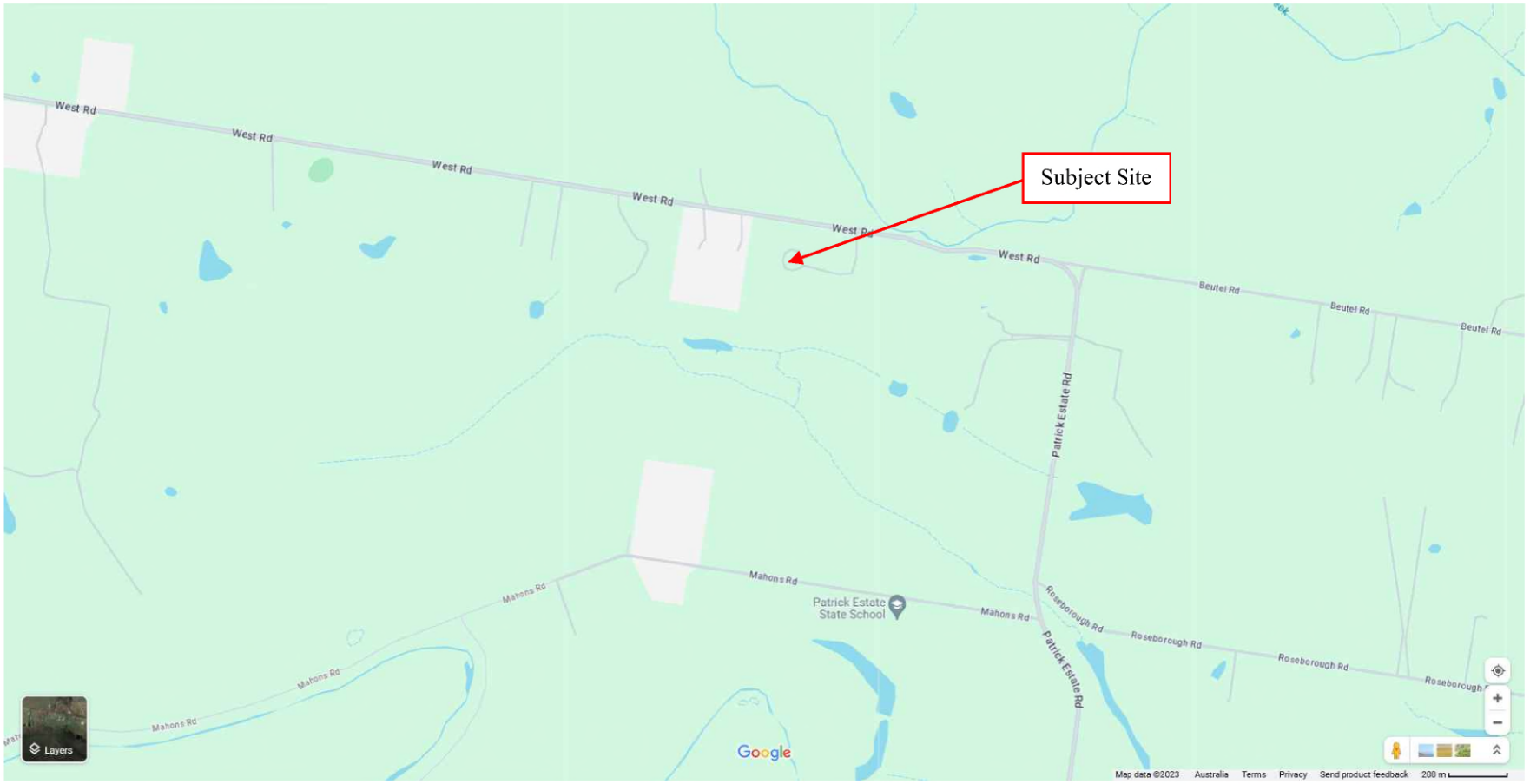


Figure No. 2: Subject Site, Logger Location, and Surrounding Noise Sensitive Receivers (QLD Globe).

APPENDIX B

Development Plans

locality plan
(not to scale)

site description

Address: 620 - 635 West Road, Patrick Estate, Lowood QLD 4311

rpd:

Lot 6 SP109850
Local Government - Somerset

Site Area: 183,892 sqm

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drawing title **site locality plan**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P5

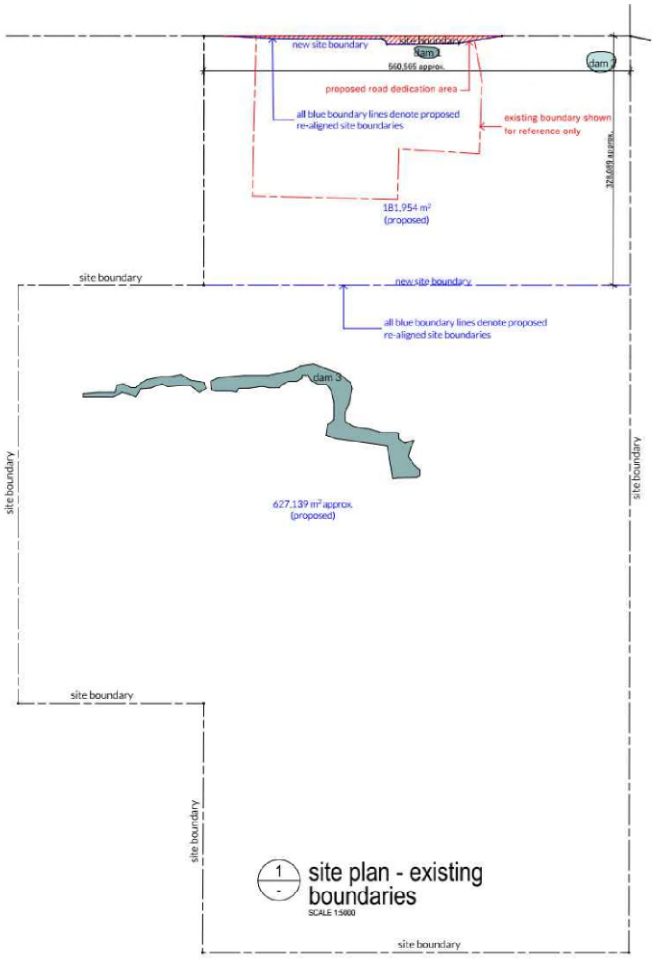
do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P5	01/05/24	issue to consultants
P4	09/04/24	issue to QS
P3	14/03/24	SARA response issue
P2	01/03/24	Revised Issue to consultants
P1	17/01/24	DA RFI Response Issue

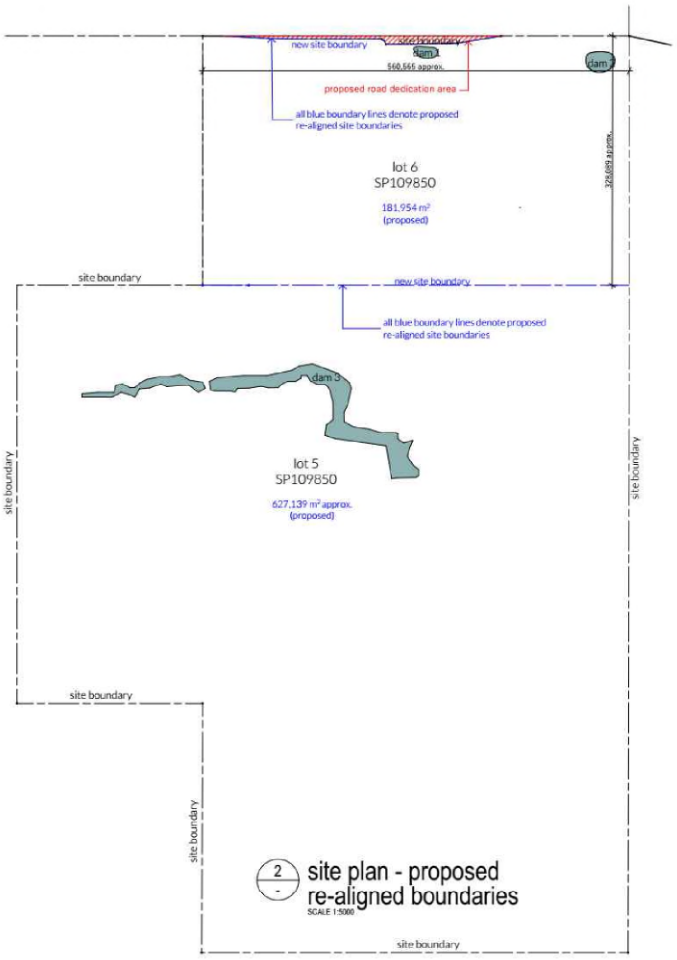
drawing no. **DD.0002**

scale

drawn LNR



1 - site plan - existing boundaries
SCALE 1:5000



2 - site plan - proposed re-aligned boundaries
SCALE 1:5000

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drawing title **site plan - proposed boundary re-alignment plan**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P23

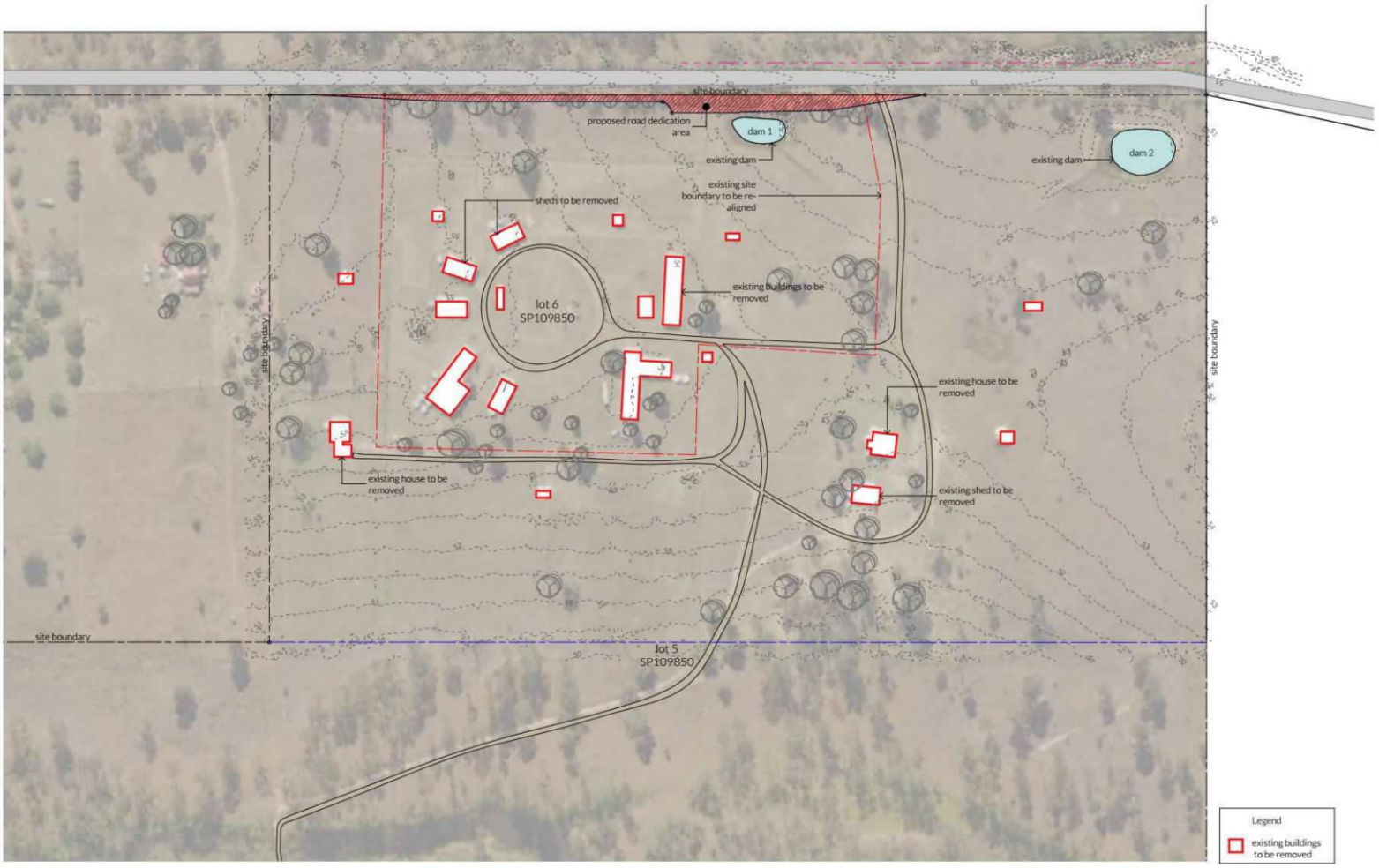
do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P23	01/05/24	issue to consultants
P22	23/04/24	issue to consultants
P21	09/04/24	issue to QS
P20	14/03/24	SARA response issue
P19	01/03/24	Revised Issue to consultants
P18	17/01/24	DA RFI Response Issue

drawing no. **DD.1001**

scale 1:5000 @ A3

drawn LNR



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drawing title **site plan - existing & demolition**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P15

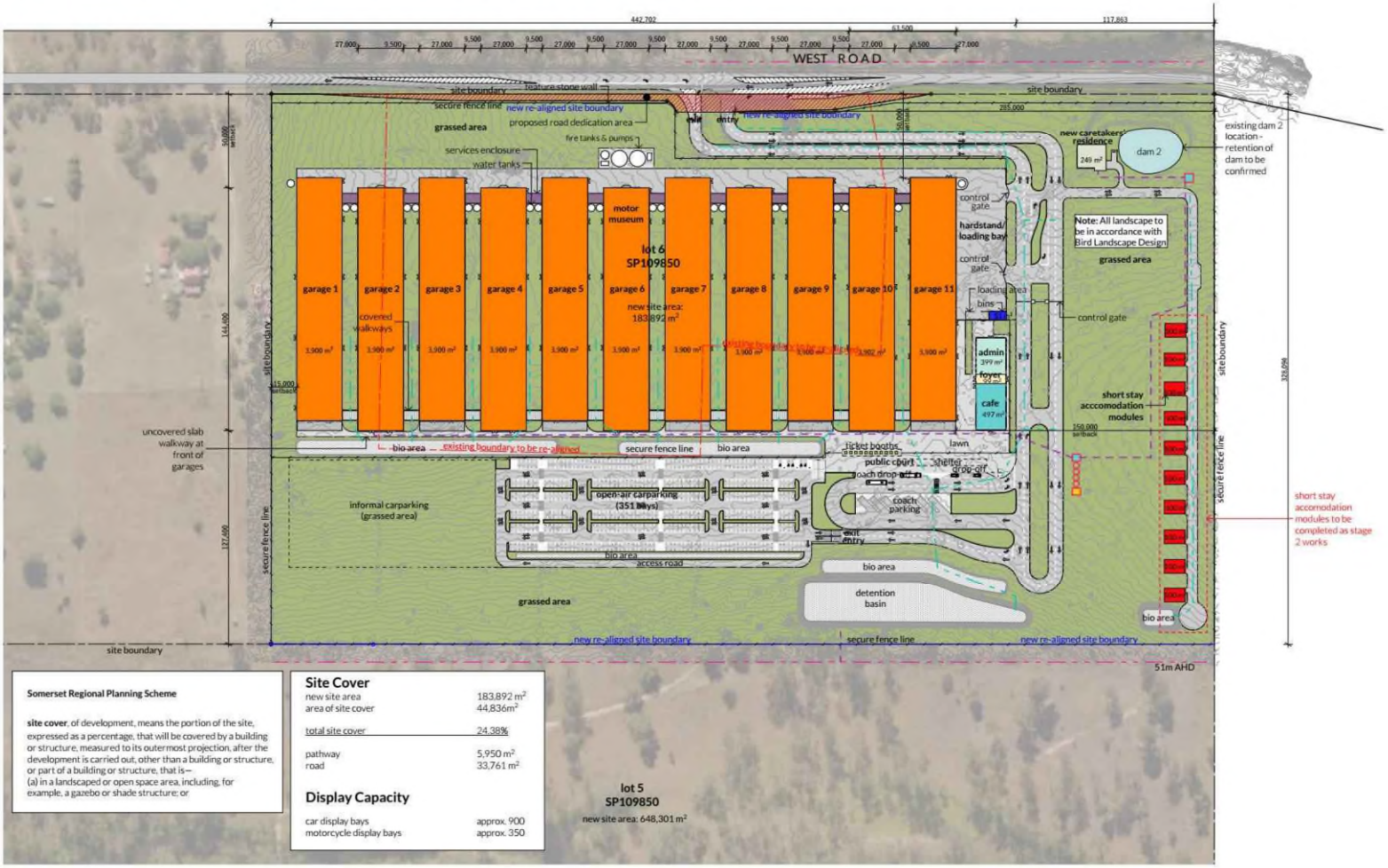
do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P15	01/05/24	issue to consultants
P14	23/04/24	issue to consultants
P13	09/04/24	issue to QS
P12	14/03/24	SARA response issue
P11	01/03/24	Revised Issue to consultants
P10	17/01/24	DARFI Response Issue

drawing no. **DD.1002**

scale 1:2000 @ A3

drawn LNR



Somerset Regional Planning Scheme

site cover, of development, means the portion of the site, expressed as a percentage, that will be covered by a building or structure, measured to its outermost projection, after the development is carried out, other than a building or structure, or part of a building or structure, that is—
(a) in a landscaped or open space area, including, for example, a gazebo or shade structure; or

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

Display Capacity

car display bays	approx. 900
motorcycle display bays	approx. 350

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drawing title **site plan - proposed**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P40

do not scale drawing, should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P40	15/05/24	issue to consultants
P39	01/05/24	issue to consultants
P38	30/04/24	issue to client
P37	29/04/24	issue to client
P36	26/04/24	issue to client
P35	23/04/24	issue to consultants

drawing no. **DD.1003**

scale 1:2000 @ A3

drawn LNR

Somerset Regional Planning Scheme

gross floor area (GFA), for a building, means the total floor area of all storeys of the building, measured from the outside of the external walls and the centre of any common walls of the building, other than areas used for—

(a) building services, plant or equipment; or
(b) access between levels; or
(c) a ground floor public lobby; or
(d) a mall; or
(e) parking, loading or manoeuvring vehicles; or
(f) unenclosed private balconies, whether roofed or not

Legend			
EX	emergency exit	HT	hydrant tank
RSD	roller shutter door	P	Pump
TT	car display turntable	ST	Sprinkler tank
RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)	
showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10	
Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11	
feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	308m²
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Site Cover	
new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

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drawing title **floor plan - open-air carpark**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311
client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P33

do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P33	15/05/24	issue to consultants
P32	01/05/24	issue to consultants
P31	23/04/24	issue to consultants
P30	09/04/24	issue to QS
P29	14/03/24	SARA response issue
P28	12/03/24	Revised Issue to consultants

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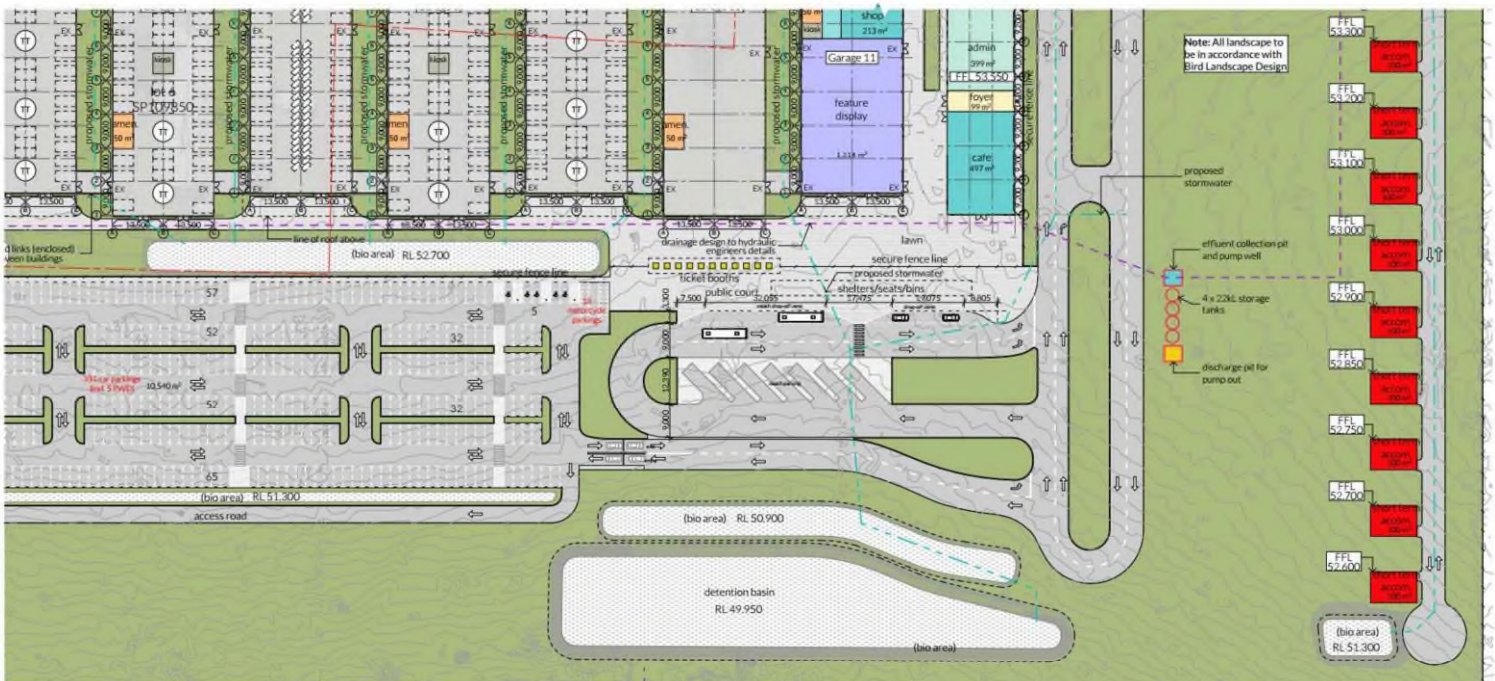
drawn LNR



Somerset Regional Planning Scheme

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(c) a ground floor public lobby; or
(d) a mall; or
(e) parking, loading or manoeuvring vehicles; or
(f) unenclosed private balconies, whether roofed or not

Legend			
EX	emergency exit	HT	hydrant tank
RSD	roller shutter door	P	Pump
TT	car display turntable	ST	Sprinkler tank
RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)	
showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10	
Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11	
feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	308m²
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Site Cover	
new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

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drawing title **floor plan - open-air carpark & drop off area**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311
client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P9

do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P9	15/05/24	issue to consultants
P8	01/05/24	issue to consultants
P7	23/04/24	issue to consultants
P6	09/04/24	issue to QS
P5	14/03/24	SARA response issue
P4	12/03/24	Revised Issue to consultants

drawing no. **DD.2002**
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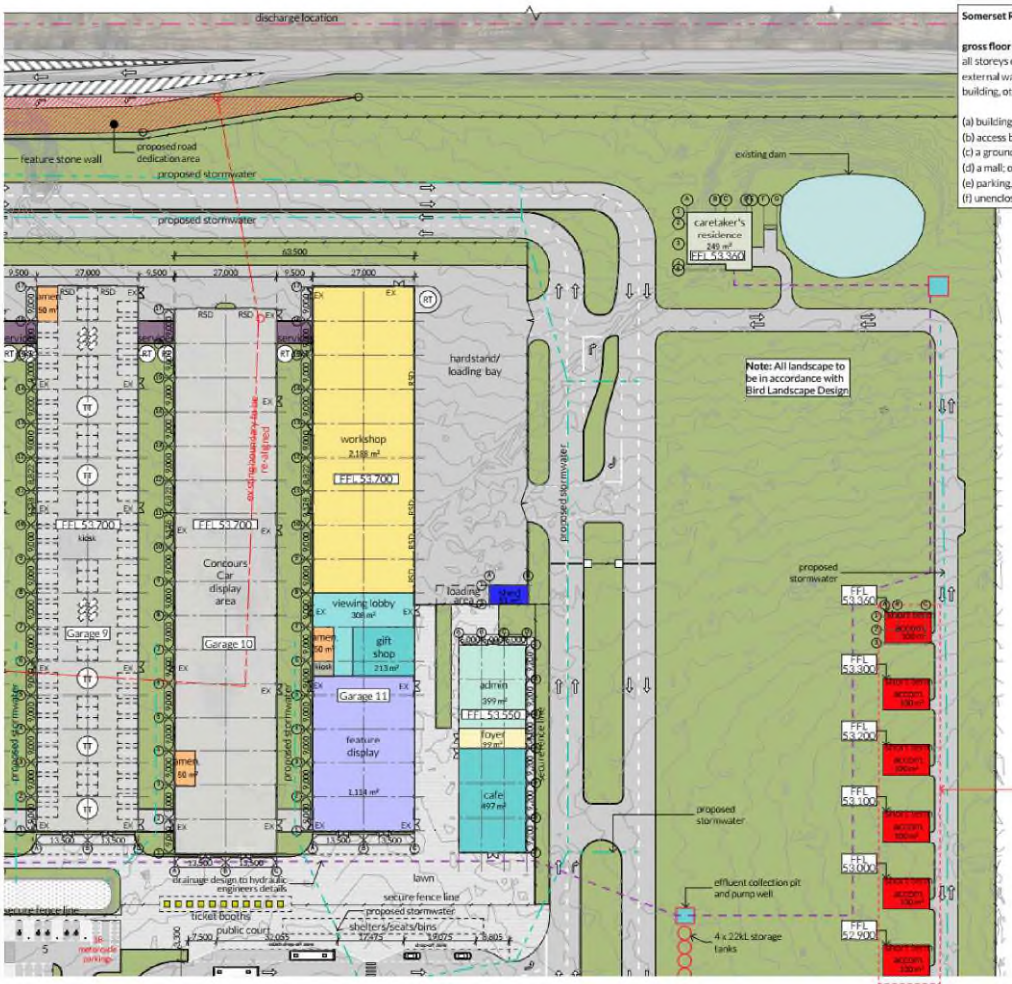

Somerset Regional Planning Scheme

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(d) a mall; or
(e) parking, loading or manoeuvring vehicles; or
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Legend

EX	emergency exit	HT	hydrant tank
RSD	roller shutter door	P	Pump
TT	car display turntable	ST	Sprinkler tank
RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)

showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10

Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11

feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	308m²
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Admin & Cafe - Gross Floor Area Calc's

as per Somerset Planning Regulations

admin	399 m²
foyer	99 m²
cafe	497 m²
grand total restaurant GFA	995 m²
outdoor dining space (not included in GFA)	84m²
services/refuse sheds (not included in GFA)	51m²
loading area (not included in GFA)	70m²

Other Buildings - Gross Floor Area Calc's

caretakers residence	249 m²
short term accomodation (x10)	1000m²
grand total other buildings GFA	1,249m²

Grand Totals

car museum buildings - GFA	42,592m²
admin & cafe - GFA	995m²
other buildings - GFA	1,249m²

GRAND TOTAL SITE GFA 44,836m²

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

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drawing title **floor plan - entrance road**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P14

do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P14	15/05/24	issue to consultants
P13	01/05/24	issue to consultants
P12	23/04/24	issue to consultants
P11	09/04/24	issue to QS
P10	14/03/24	SARA response issue
P9	12/03/24	Revised issue to consultants

drawing no. **DD.2003**

scale **1:1000 @ A3**

drawn LNR

Somerset Regional Planning Scheme

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(b) access between levels; or
(c) a ground floor public lobby; or
(d) a mall; or
(e) parking, loading or manoeuvring vehicles; or
(f) unenclosed private balconies, whether roofed or not

Legend

EX	emergency exit	HT	hydrant tank
RSD	roller shutter door	P	Pump
TT	car display turntable	ST	Sprinkler tank
RT	rainwater tank		

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)

showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10

Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11

feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	308m²
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Site Cover

new site area	183,892 m²
area of site cover	44,836m²
total site cover	24.38%
pathway	5,950 m²
road	33,761 m²

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drawing title **floor plan - motor museum**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P33

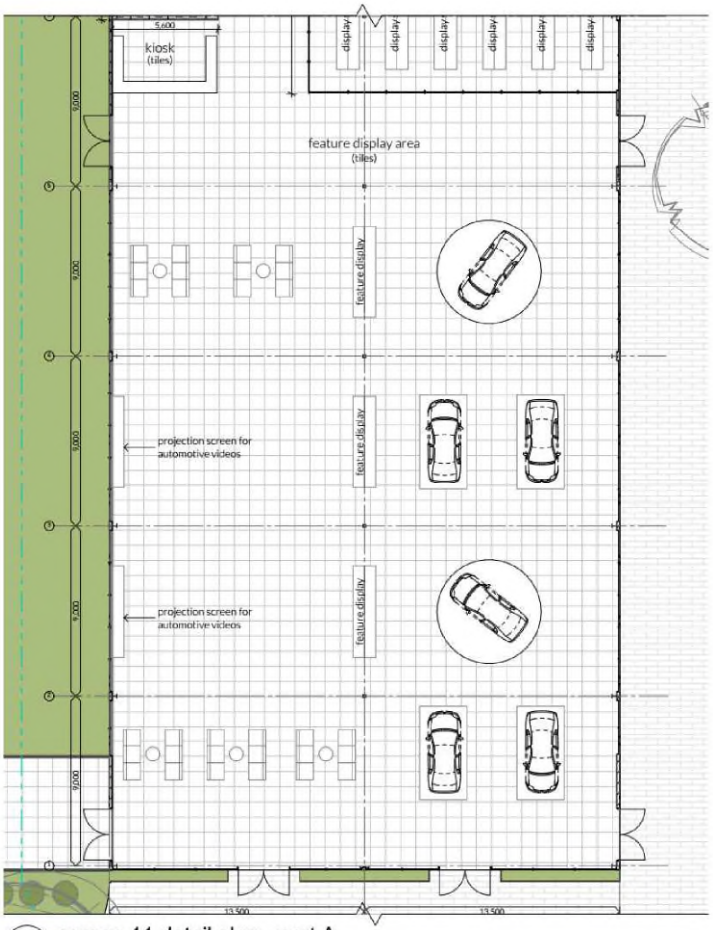
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P33	15/05/24	issue to consultants
P32	01/05/24	issue to consultants
P31	23/04/24	issue to consultants
P30	09/04/24	issue to QS
P29	14/03/24	SARA response issue
P28	12/03/24	Revised issue to consultants

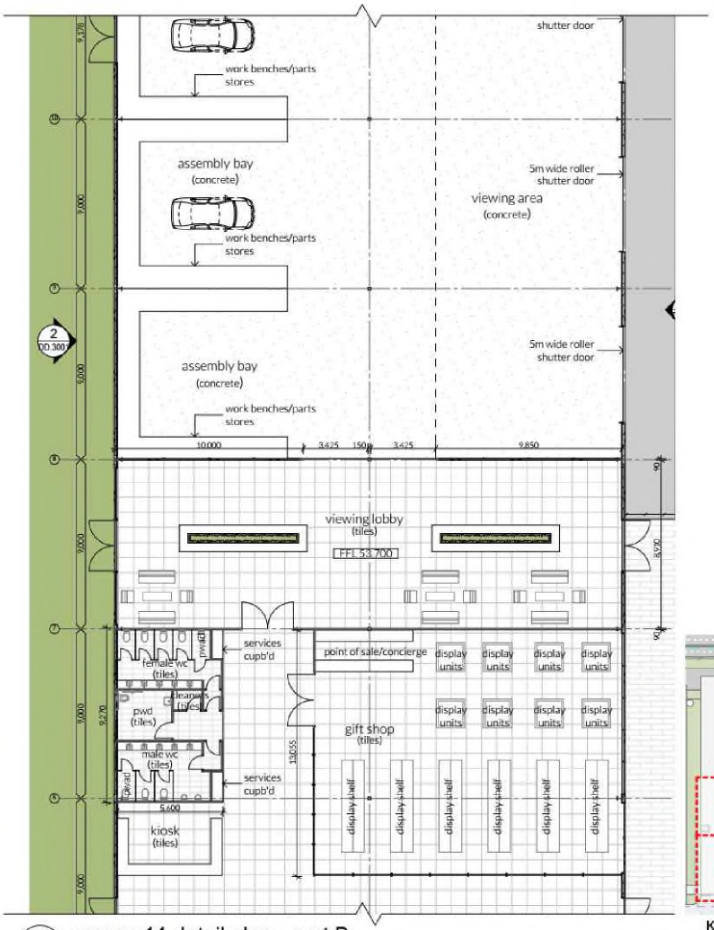
drawing no. **DD.2101**

scale **1:1000 @ A3**

drawn LNR



1 garage 11 detail plan - part A
SCALE 1:200



2 garage 11 detail plan - part B
SCALE 1:200

KEY PLAN

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BILLY DAWSON ARCHITECTS PTY LTD
ACN: 634 540 622
p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **floor plan - garage 11 detail plans - page 1**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue P8

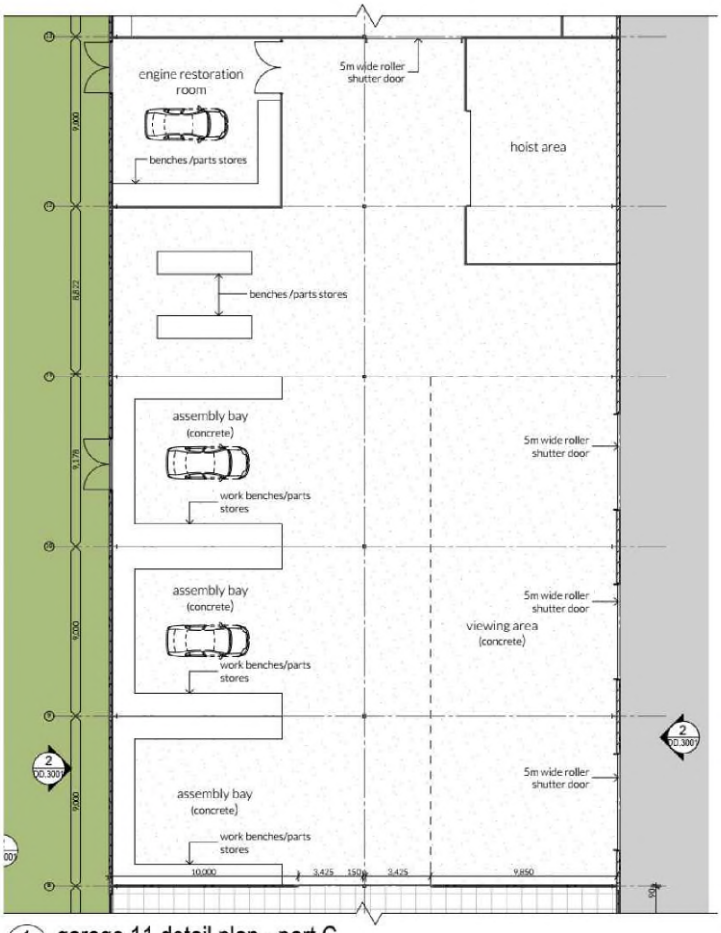
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P8	01/05/24	issue to consultants
P7	12/04/24	issue to consultants
P6	09/04/24	issue to QS
P5	14/03/24	SARA response issue
P4	12/03/24	Revised issue to consultants
P3	08/03/24	Revised issue to consultants

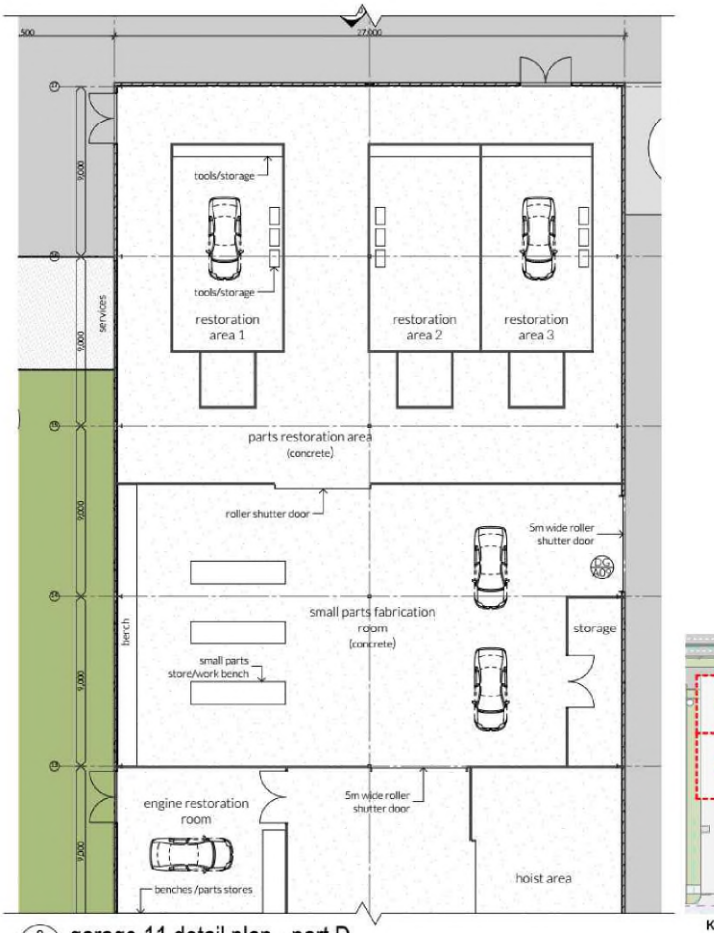
drawing no. **DD.2102**

scale 1:200 @ A3

drawn LNR



1 garage 11 detail plan - part C
SCALE 1:200



2 garage 11 detail plan - part D
SCALE 1:200

KEY PLAN

BILLY DAWSON ARCHITECTS
BILLY DAWSON ARCHITECTS PTY LTD
ACN: 634 540 622
p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **floor plan - garage 11 detail plans - page 2**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue P7

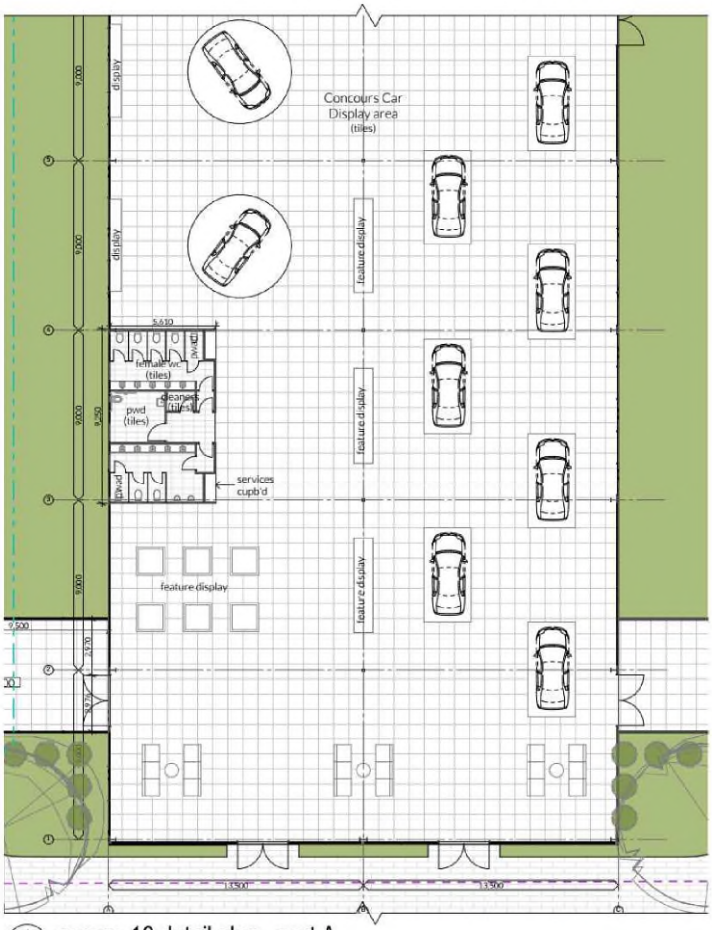
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P7	01/05/24	issue to consultants
P6	09/04/24	issue to QS
P5	14/03/24	SARA response issue
P4	12/03/24	Revised issue to consultants
P3	08/03/24	Revised issue to consultants
P2	06/03/24	Revised issue to consultants

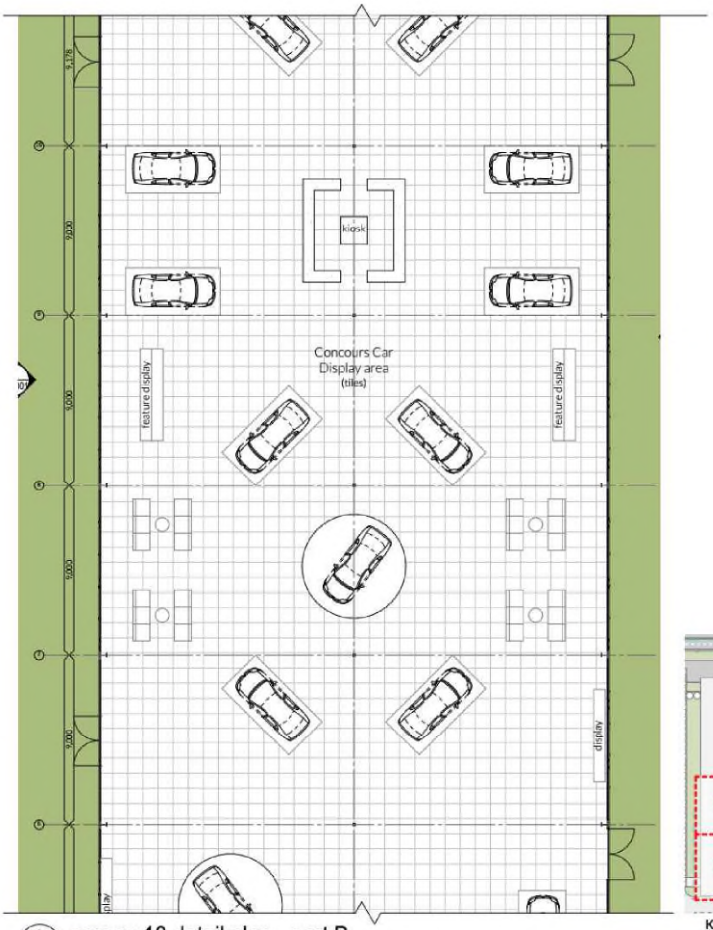
drawing no. **DD.2103**

scale 1:200 @ A3

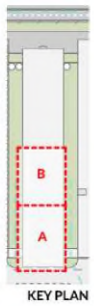
drawn LNR



1 garage 10 detail plan - part A
SCALE 1:200



2 garage 10 detail plan - part B
SCALE 1:200



KEY PLAN

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drawing title **floor plan - garage 10 detail plans - page 1**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P6

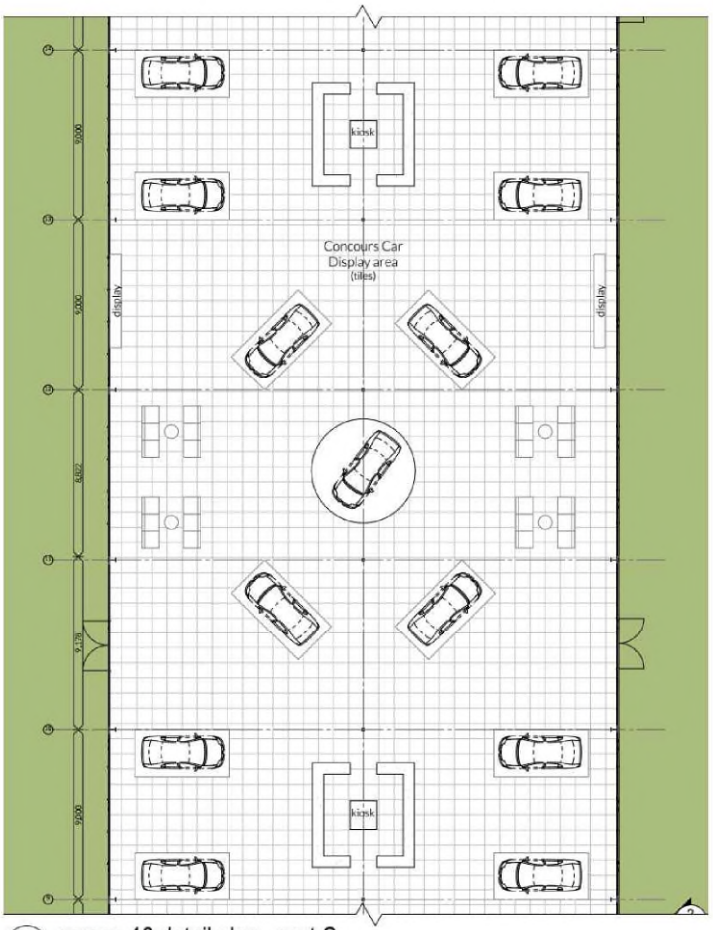
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P6	01/05/24	issue to consultants
P5	09/04/24	issue to QS
P4	14/03/24	SARA response issue
P3	12/03/24	Revised issue to consultants
P2	08/03/24	Revised issue to consultants
P1	08/03/24	Revised issue to consultants

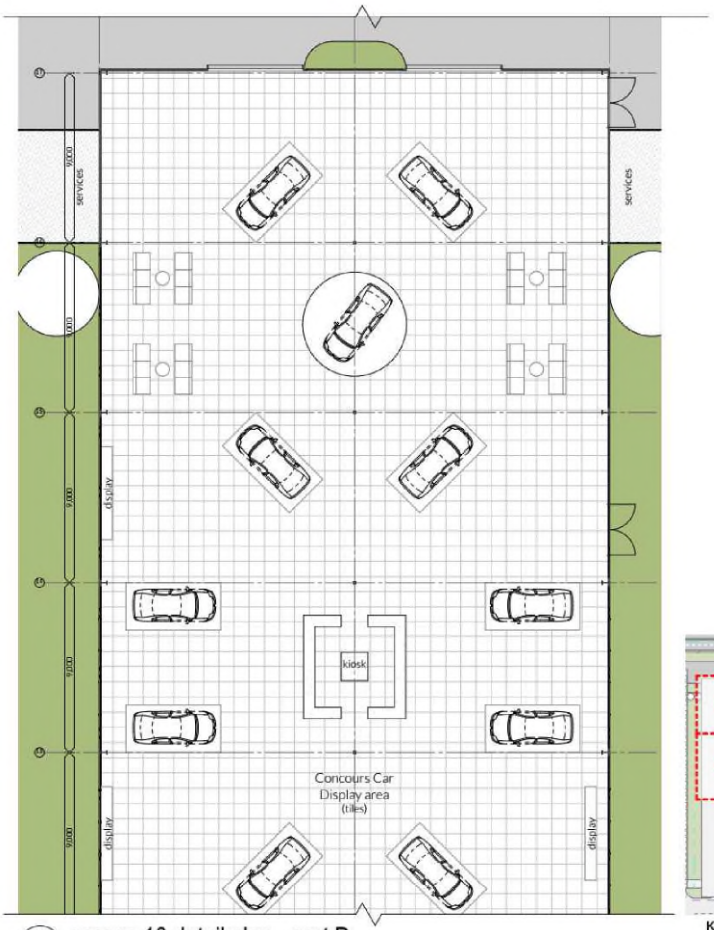
drawing no. **DD.2104**

scale 1:200@A3

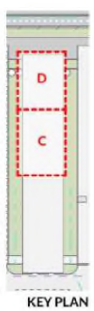
drawn LNR



1 garage 10 detail plan - part C
SCALE 1:200



2 garage 10 detail plan - part D
SCALE 1:200



KEY PLAN

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drawing title **floor plan - garage 10 detail plans - page 2**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P6

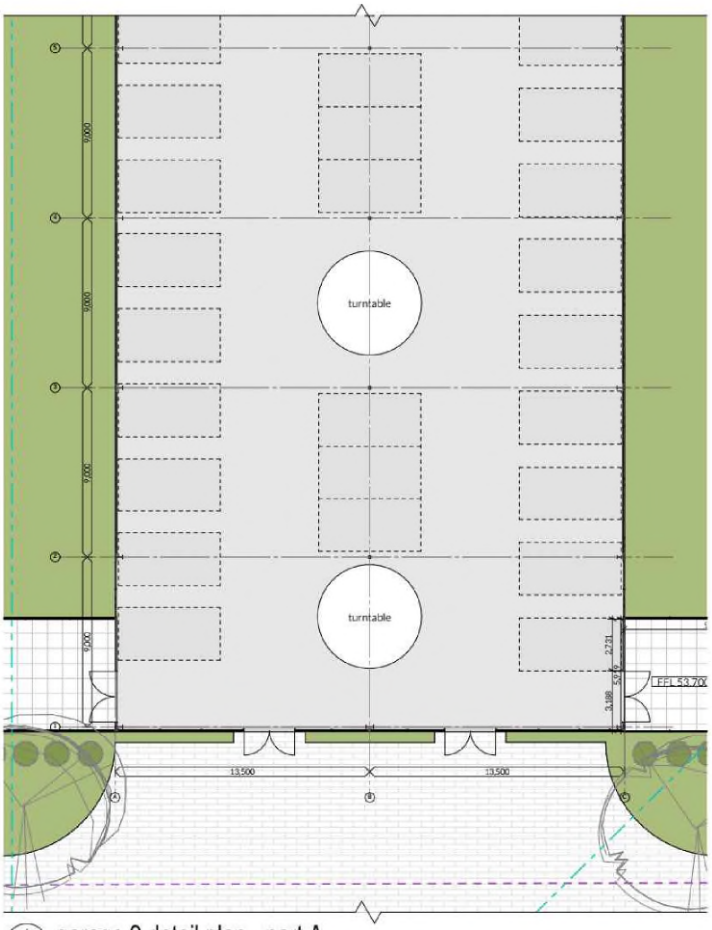
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P6	01/05/24	issue to consultants
P5	09/04/24	issue to QS
P4	14/03/24	SARA response issue
P3	12/03/24	Revised issue to consultants
P2	08/03/24	Revised issue to consultants
P1	08/03/24	Revised issue to consultants

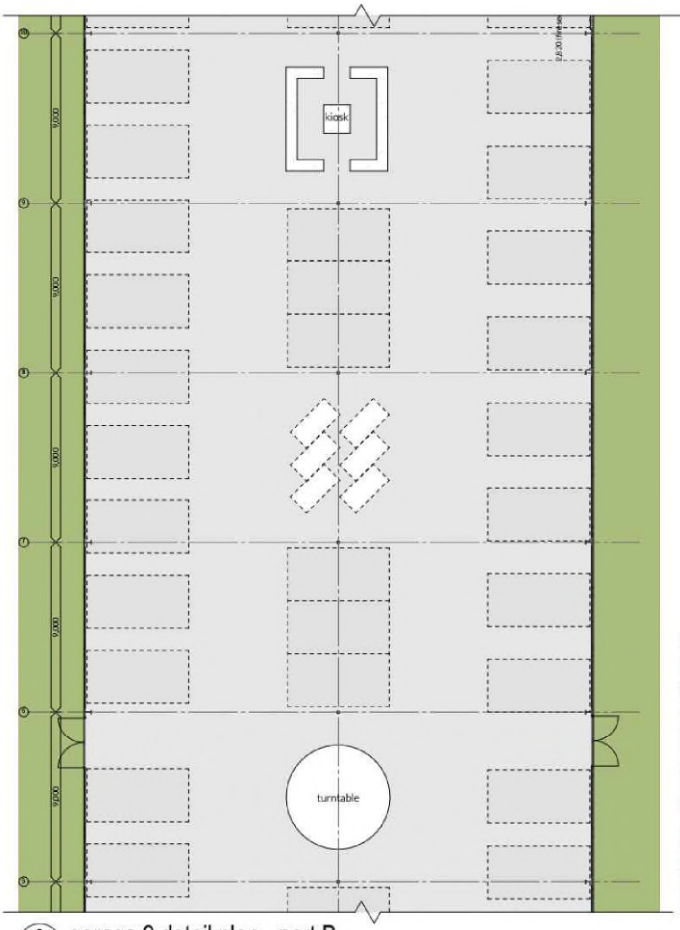
drawing no. **DD.2105**

scale 1:200@A3

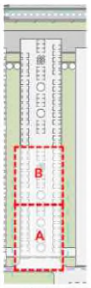
drawn LNR



1 garage 9 detail plan - part A
SCALE 1:200



2 garage 9 detail plan - part B
SCALE 1:200



KEY PLAN

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drawing title **floor plan - garage 9 detail plans - page 1**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P1

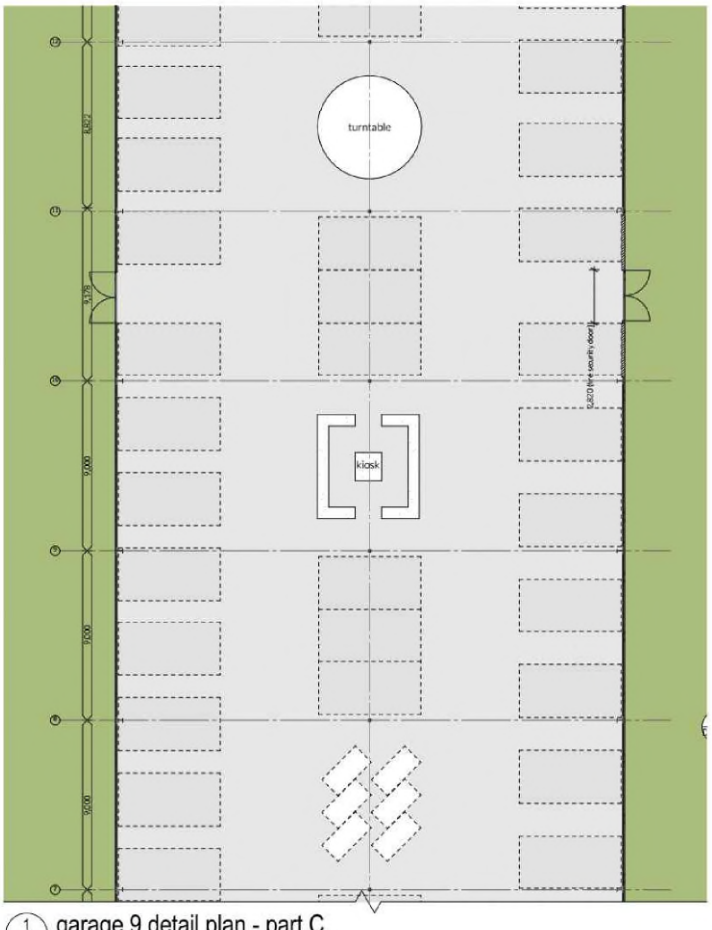
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

P1 01/05/24 issue to consultants
issue date revision

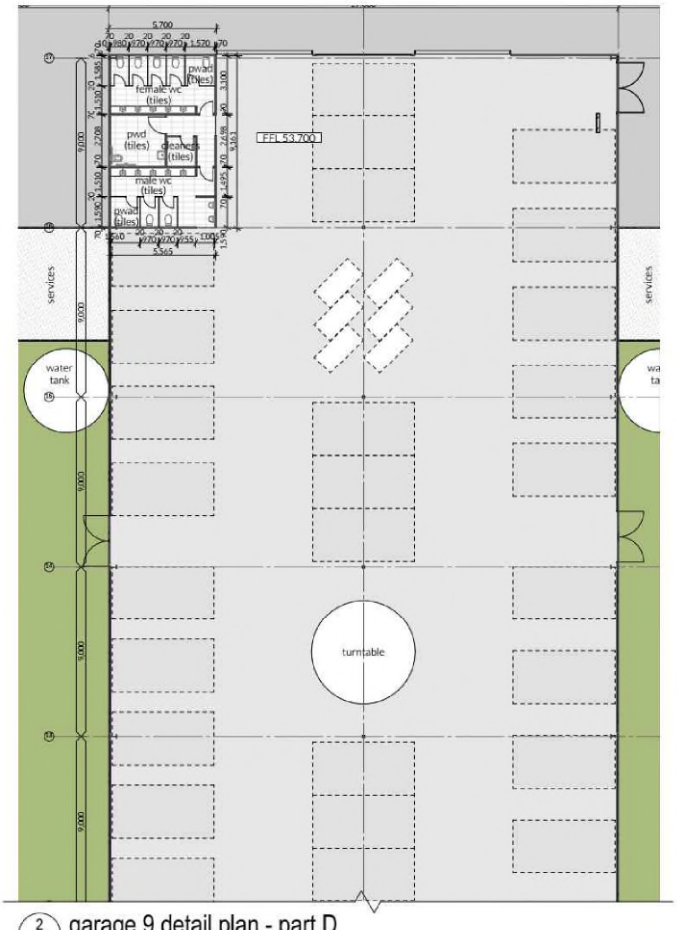
drawing no. **DD.2106**

scale 1:200 @ A3

drawn LNR



1 garage 9 detail plan - part C
SCALE 1:200



2 garage 9 detail plan - part D
SCALE 1:200

KEY

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drawing title **floor plan - garage 9 detail plans - page 2**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P1

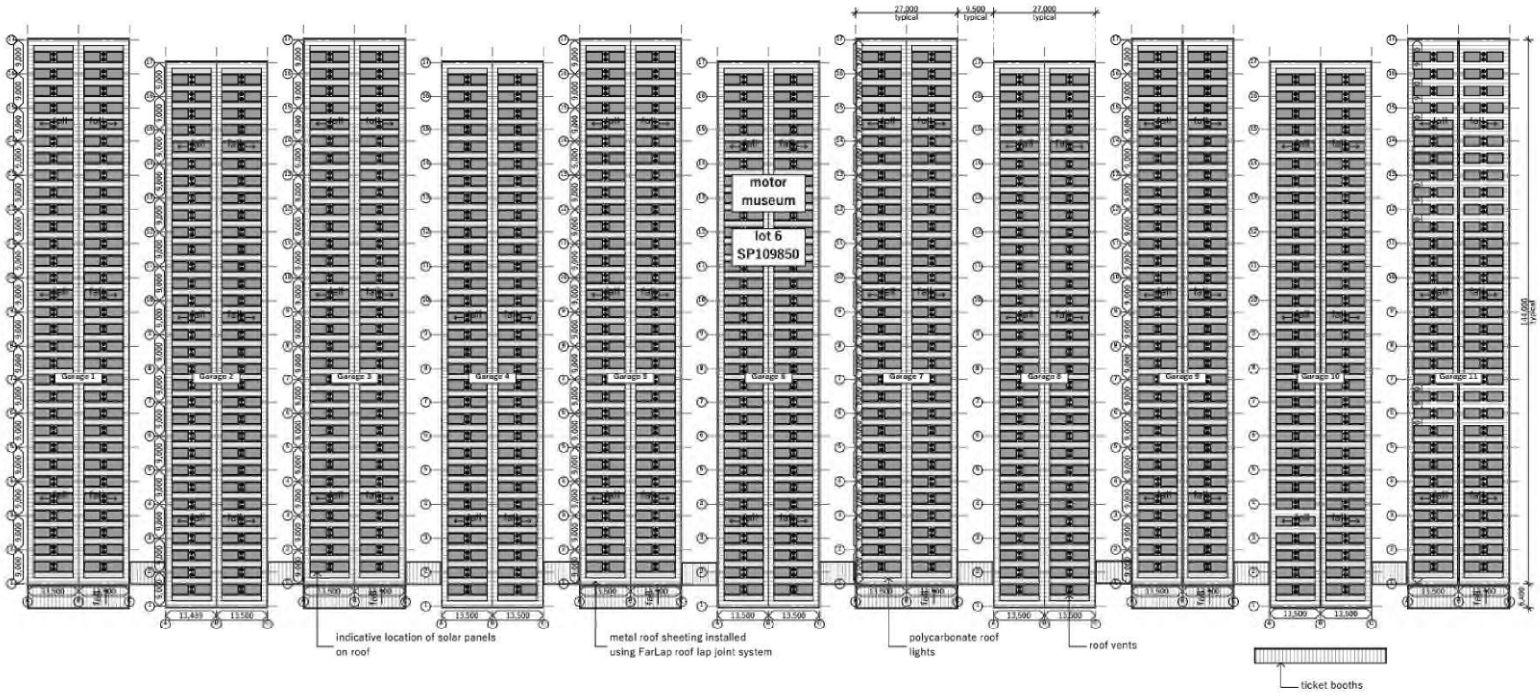
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

P1 01/05/24 issue to consultants
issue date revision

drawing no. **DD.2107**

scale 1:200 @ A3

drawn LNR



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drawing title **motor museum roof plan - proposed**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P16

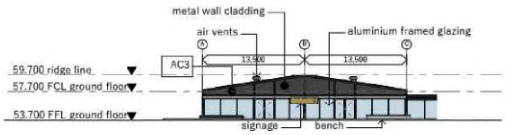
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction

issue	date	revision
P16	01/05/24	issue to consultants
P15	09/04/24	issue to QS
P14	14/03/24	SARA response issue
P13	01/03/24	Revised issue to consultants
P12	17/01/24	DA RFI Response Issue
P11	01/12/23	Revised issue to consultant

drawing no. **DD.2109**

scale: **1:1000 @ A3**

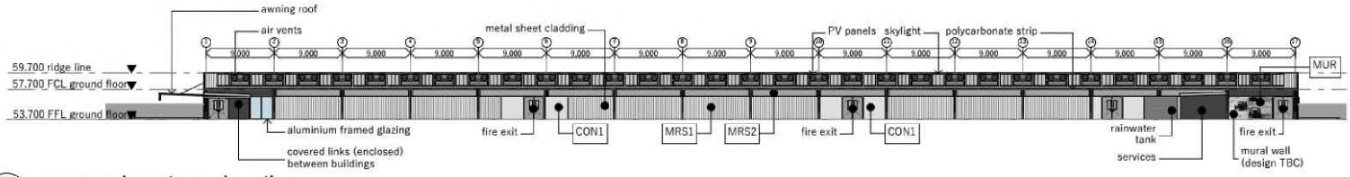
drawn LNR



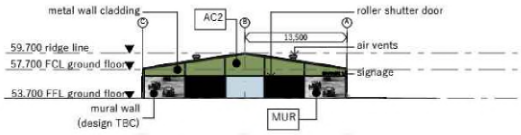
external finishes legend

CON1	concrete panelling
AC1	aluminium cladding type 1 - bronze finish
AC2	aluminium cladding type 2 - green finish
AC3	aluminium cladding type 3 - black finish
MRS1	metal roof sheeting type 1
MRS2	metal roof sheeting type 2
MUR	wall mural (TBC)

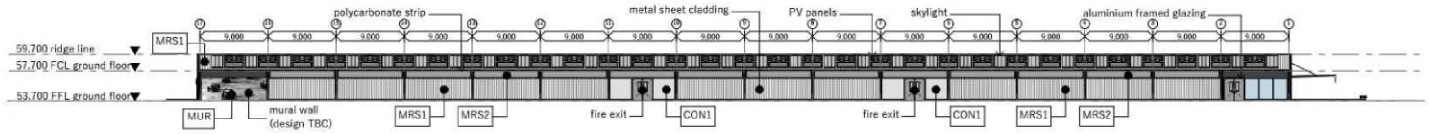
1 proposed southern elevation
SCALE 1:500



2 proposed eastern elevation
SCALE 1:500



3 proposed northern elevation
SCALE 1:500



4 proposed western elevation
SCALE 1:500

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drawing title **elevations - garage 1-9 (typical)**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P17

do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction

issue	date	revision
P17	01/05/24	issue to consultants
P16	09/04/24	issue to QS
P15	14/03/24	SARA response issue
P14	01/03/24	Revised issue to consultants
P13	17/01/24	DA RFI Response Issue
P12	1/12/23	Revised issue to consultants

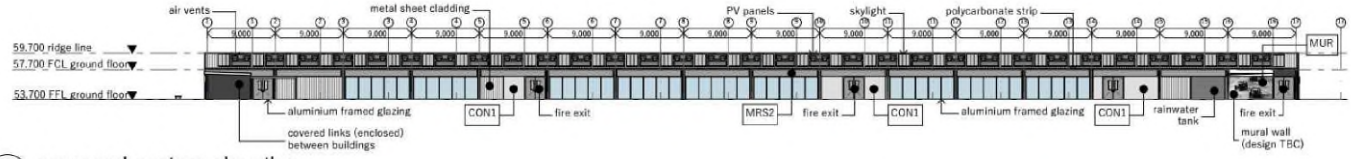
drawing no. **DD.2110**

scale: 1:500 @ A3

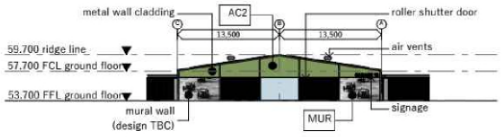
drawn LNR

external finishes legend	
CON1	concrete panelling
AC1	aluminium cladding type 1 - bronze finish
AC2	aluminium cladding type 2 - green finish
AC3	aluminium cladding type 3 - black finish
MRS1	metal roof sheeting type 1
MRS2	metal roof sheeting type 2
MUR	wall mural (TBC)

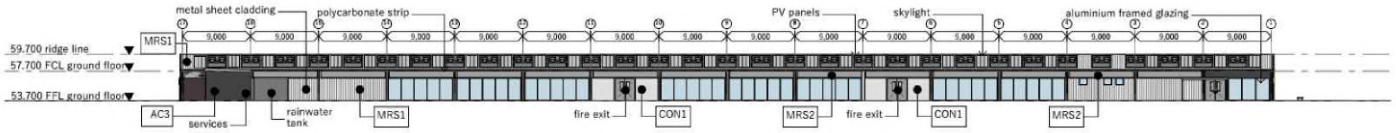
1 - proposed southern elevation
SCALE 1:500



2 - proposed eastern elevation
SCALE 1:500



3 - proposed northern elevation
SCALE 1:500



4 - proposed western elevation
SCALE 1:500

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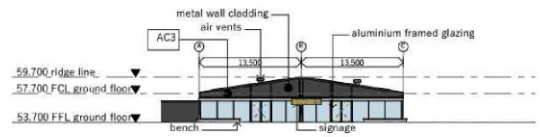
drawing title **elevations - garage 10 - Concourse Car Display**
project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311
client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P7

do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

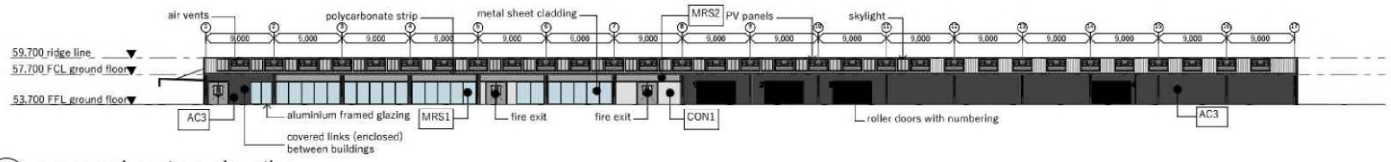
issue date	revision
P7 01/05/24	issue to consultants
P6 09/04/24	issue to QS
P5 14/03/24	SARA response issue
P4 01/03/24	Revised Issue to consultants
P3 17/01/24	DA RFI Response Issue
P2 1/12/23	Revised Issue to consultants

drawing no. **DD.2111**
scale 1:500 @ A3
drawn LNR

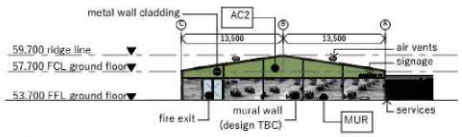


external finishes legend	
CON1	concrete panelling
AC1	aluminium cladding type 1 - bronze finish
AC2	aluminium cladding type 2 - green finish
AC3	aluminium cladding type 3 - black finish
MRS1	metal roof sheeting type 1
MRS2	metal roof sheeting type 2
MUR	wall mural (TBC)

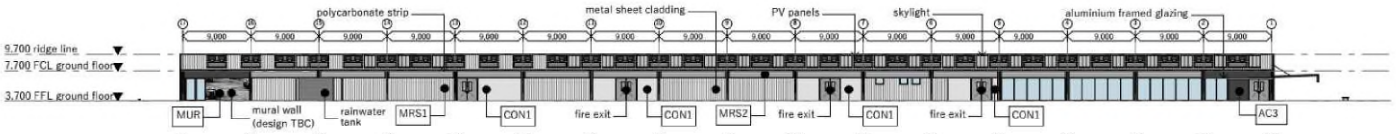
1 - proposed southern elevation
SCALE 1:500



2 - proposed eastern elevation
SCALE 1:500



3 - proposed northern elevation
SCALE 1:500



4 - proposed western elevation
SCALE 1:500

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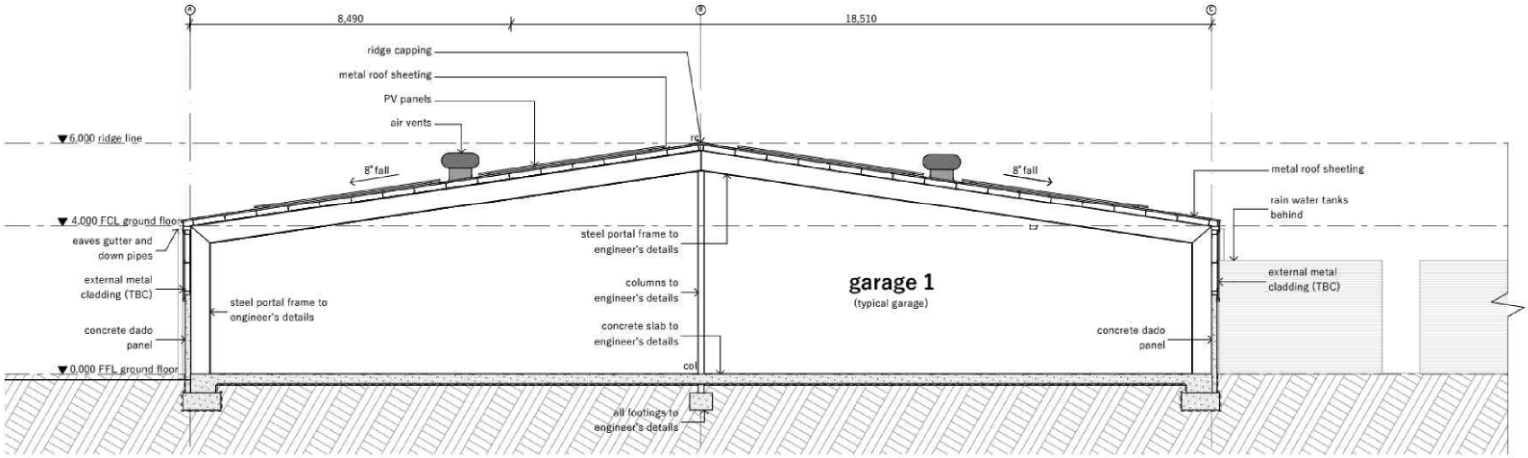
drawing title **elevations - garage 11 - Workshop and Feature Car Display**
project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311
client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 | issue. P7

do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue date	revision
P7 01/05/24	issue to consultants
P6 09/04/24	issue to QS
P5 14/03/24	SARA response issue
P4 01/03/24	Revised Issue to consultants
P3 17/01/24	DA RFI Response Issue
P2 1/12/23	Revised Issue to consultants

drawing no. **DD.2112**
scale 1:500 @ A3
drawn LNR



1 section 1
SCALE 1:100

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drawing title **section - typical garage**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue P7

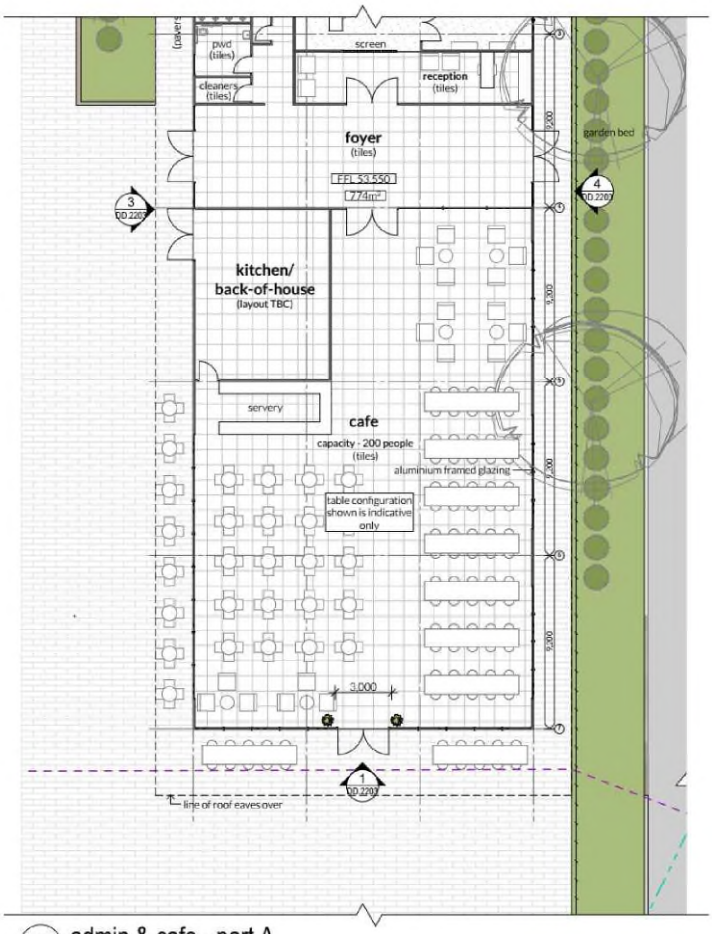
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P7	01/05/24	issue to consultants
P6	09/04/24	issue to QS
P5	14/03/24	SARA response issue
P4	01/03/24	Revised issue to consultants
P3	17/01/24	Revised issue to consultants
P2	1/12/23	Revised issue to consultants

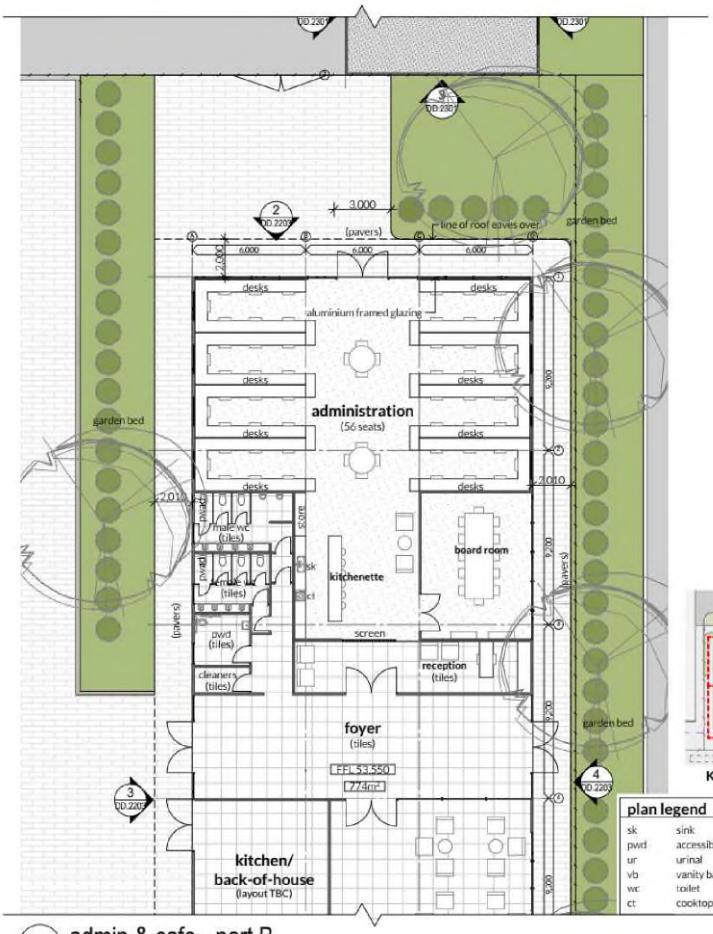
drawing no. **DD.2113**

scale 1:100 @ A3

drawn LNR



- admin & cafe - part A
SCALE 1:200



- admin & cafe - part B
SCALE 1:200

KEY PLAN

plan legend	
sk	sink
pwd	accessible toilet
ur	urinal
vb	vanity basin
wc	toilet
ct	cooktop

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drawing title **floor plan - admin & cafe**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue P7

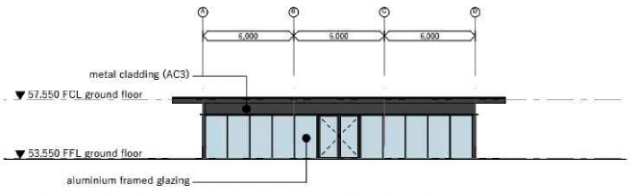
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P7	01/05/24	issue to consultants
P6	09/04/24	issue to QS
P5	14/03/24	SARA response issue
P4	12/03/24	Revised issue to consultants
P3	06/03/24	Revised issue to consultants
P2	06/03/24	Revised issue to consultants

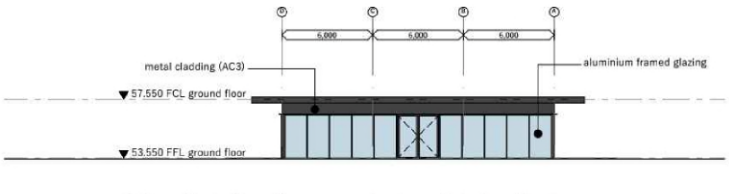
drawing no. **DD.2201**

scale 1:200 @ A3

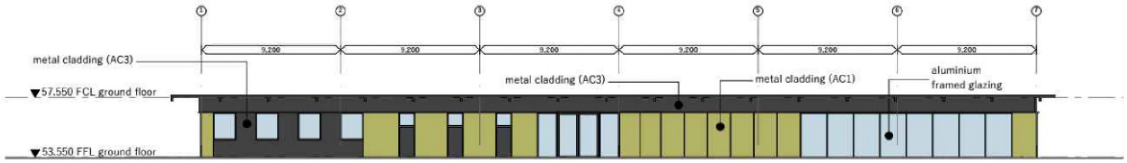
drawn LNR



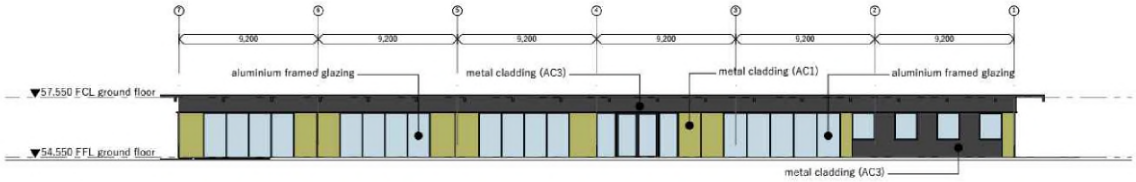
1 admin & cafe - proposed south elevation
SCALE 1:250



2 admin & cafe - proposed north elevation
SCALE 1:250



3 admin & cafe - proposed west elevation
SCALE 1:250



4 admin & cafe - proposed east elevation
SCALE 1:250

external finishes legend

CON1	concrete panelling
AC1	aluminium cladding type 1 - bronze finish
AC2	aluminium cladding type 2 - green finish
AC3	aluminium cladding type 3 - black finish
MRS1	metal roof sheeting type 1
MRS2	metal roof sheeting type 2
MUR	wall mural (TBC)

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drawing title **elevations - admin & cafe**

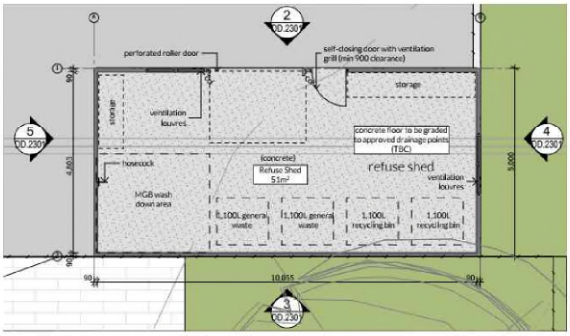
project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311
client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P6

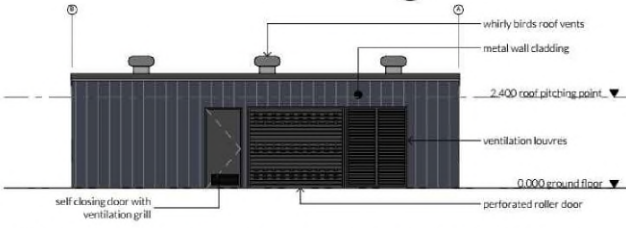
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P6	01/05/24	issue to consultants
P5	09/04/24	issue to QS
P4	14/03/24	SARA response issue
P3	01/03/24	Revised issue to consultants
P2	17/01/24	DA RFI Response Issue
P1	1/12/23	Preliminary Issue to consultants

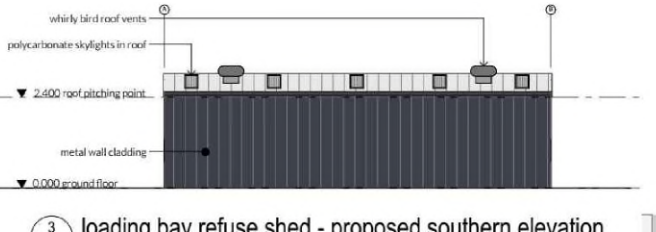
drawing no. **DD.2203**
scale varies @ A3
drawn LNR



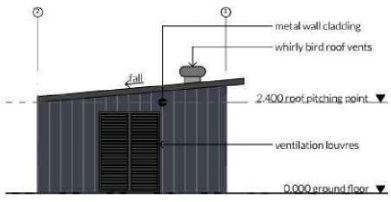
- hardstand & loading bay refuse shed - floor plan
SCALE 1:100



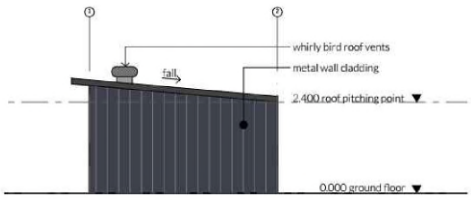
2 loading bay refuse shed - proposed northern elevation
SCALE 1:100



3 loading bay refuse shed - proposed southern elevation
SCALE 1:100



4 loading bay refuse shed - proposed eastern elevation
SCALE 1:100



5 loading bay refuse shed - proposed western elevation
SCALE 1:100

KEY PLAN

services room notes:
1) appropriate colour coded signage to be provided in the bin storage room.
2) artificial lighting controlled by switches - to be provided to both inside and outside of storage area.
3) all internal walls and ceiling to be finished with compressed fibre cement cladding (paint finish) or other suitable robust/waterproof surface.

BILLY DAWSON ARCHITECTS

BILLY DAWSON ARCHITECTS PTY LTD
ACN: 634 540 622
p 07 3708 1084
e info@billydawsonarchitects.com

drawing title **plans & elevations - hardstand & loading bay refuse shed**

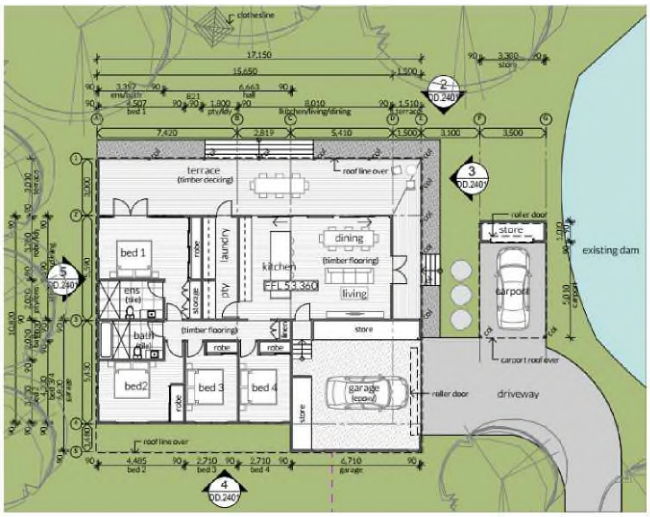
project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311
client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P2

do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

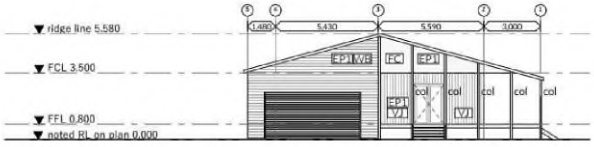
issue	date	revision
P2	01/05/24	issue to consultants
P1	12/04/24	issue to consultants

drawing no. **DD.2301**
scale
drawn LNR



caretaker's residence - floorplan
SCALE 1:200

caretakers residence - north elevation
SCALE 1:200



caretakers residence - east elevation
SCALE 1:200

caretakers residence - south elevation
SCALE 1:200

caretakers residence - west elevation
SCALE 1:200

KEY PLAN

external finishes legend	
COL	column
FC	fibre cement cladding
EP1	external paint finish (white)
LVR	louvre window
VJ	external vertical joint panelling
WB	weatherboard cladding

BILLY DAWSON ARCHITECTS

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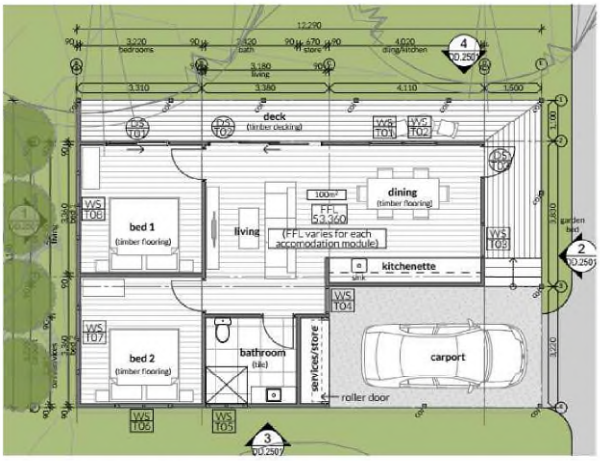
drawing title **plans & elevations - caretaker's residence**
project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311
client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313
issue P2

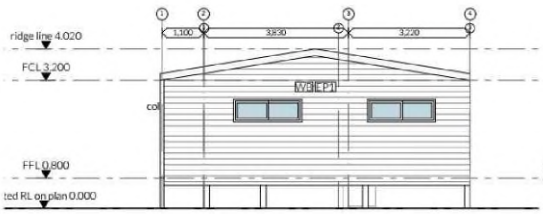
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P2	01/05/24	issue to consultants
P1	12/04/24	issue to consultants

drawing no. **DD.2401**
scale
drawn LNR



typical short term acom. module
SCALE 1:100

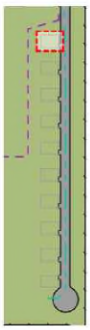


typical short term module - western elevation
SCALE 1:100

typical short term module - eastern elevation
SCALE 1:100

typical short term module - northern elevation
SCALE 1:100

typical short term module - southern elevation
SCALE 1:100



KEY PLAN

external finishes legend	
COL	column
FC	fibre cement cladding
EP1	external paint finish (white)
LVR	louvre window
VJ	external vertical joint panelling
WB	weatherboard cladding

BILLY DAWSON ARCHITECTS

BILLY DAWSON ARCHITECTS PTY LTD
ACN: 634 540 622
p 07 3708 1084
e info@billydawsonarchitects.com

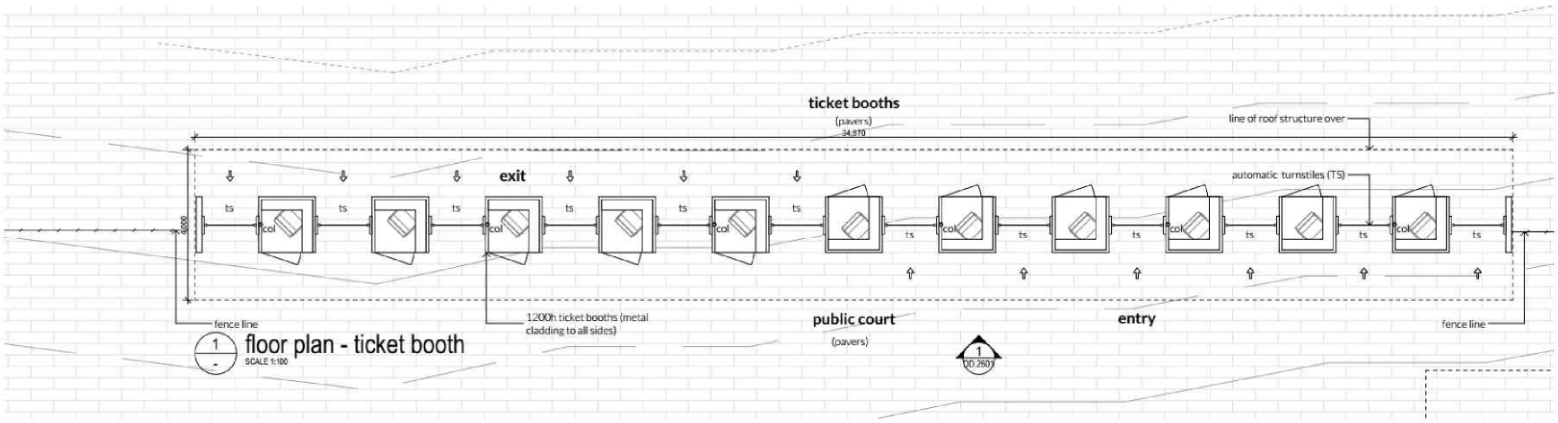
drawing title **floor plans & elevations - typical short stay accom. modules**
project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311
client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313
issue P2

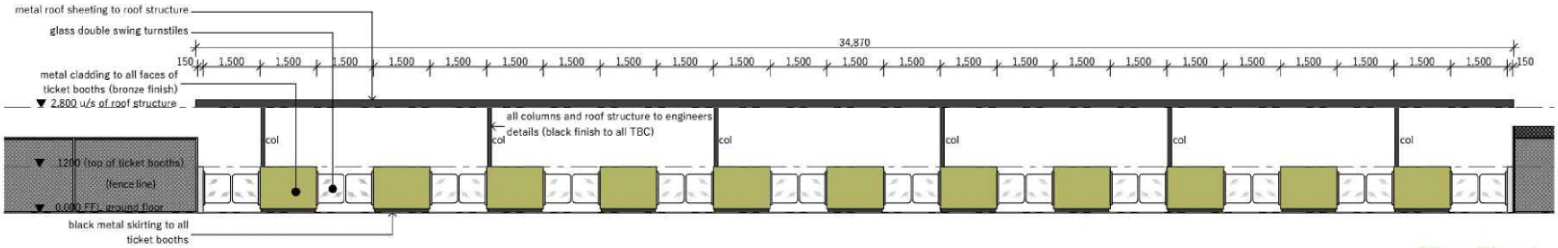
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P2	01/05/24	issue to consultants
P1	12/04/24	issue to consultants

drawing no. **DD.2501**
scale
drawn LNR



1 floor plan - ticket booth
SCALE 1:100



1 ticket booths - south elevation
SCALE 1:100

KEY

BILLY DAWSON ARCHITECTS

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drawing title **floor plan & elevations - ticket booths**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P2

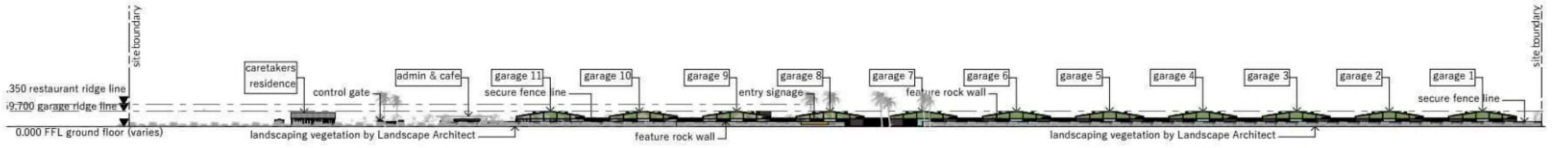
do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P2	01/05/24	issue to consultants
P1	12/04/24	issue to consultants

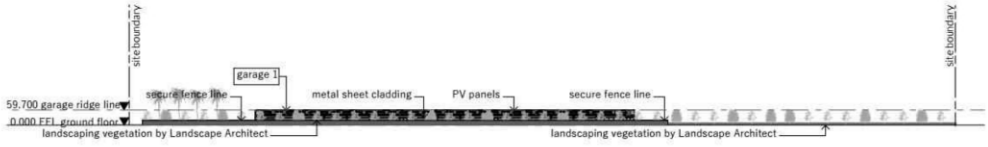
drawing no. **DD.2601**

scale 100 @ A3

drawn LNR



1 proposed site elevation - north (west road)
SCALE 1:500



2 proposed site elevation - west
SCALE 1:500

3 proposed site elevation - east
SCALE 1:500

BILLY DAWSON ARCHITECTS

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e info@billydawsonarchitects.com

drawing title **elevations - full site**

project Patrick Estate Car Museum - 620-635 West Road, Patrick Estate, Lowood QLD 4311

client Clive Palmer c/o Doug McCabe - Palmer Motorama Pty Ltd 89 119 456 594

job no. 2313 issue. P6

do not scale drawing. should dimensions be conflicting or missing, notify the architect and await further instruction.

issue	date	revision
P6	01/05/24	issue to consultants
P5	09/04/24	issue to QS
P4	14/03/24	SARA response
P3	01/03/24	Revised Issue to consultants
P2	17/01/24	DA RFI Response Issue
P1	1/12/23	Preliminary Issue to consultants

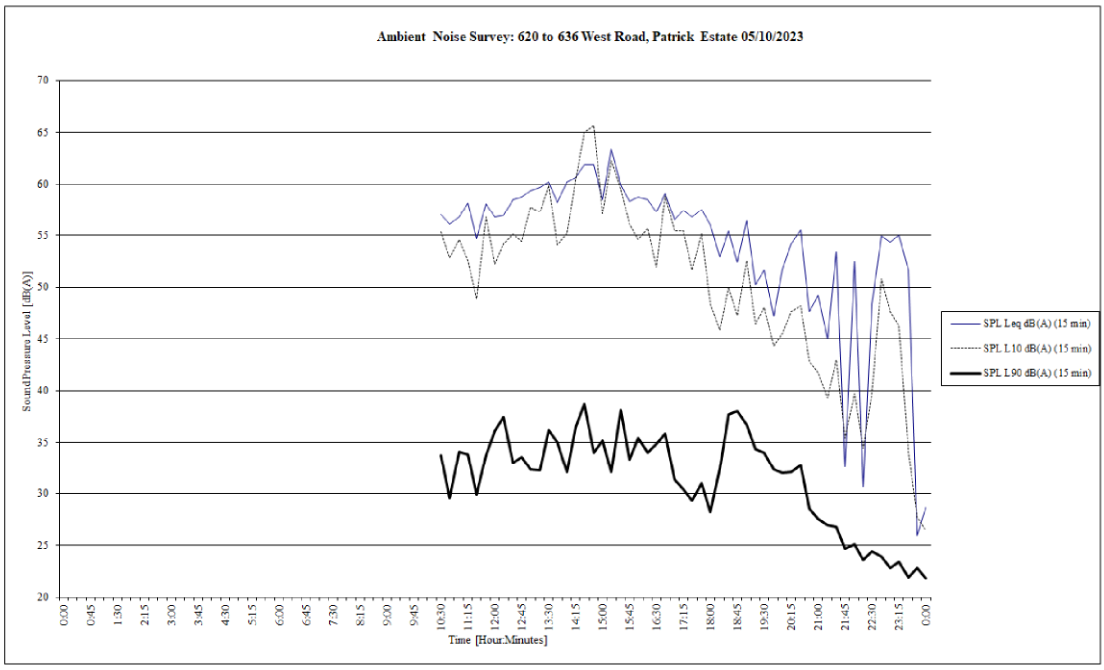
drawing no. **DD.2801**

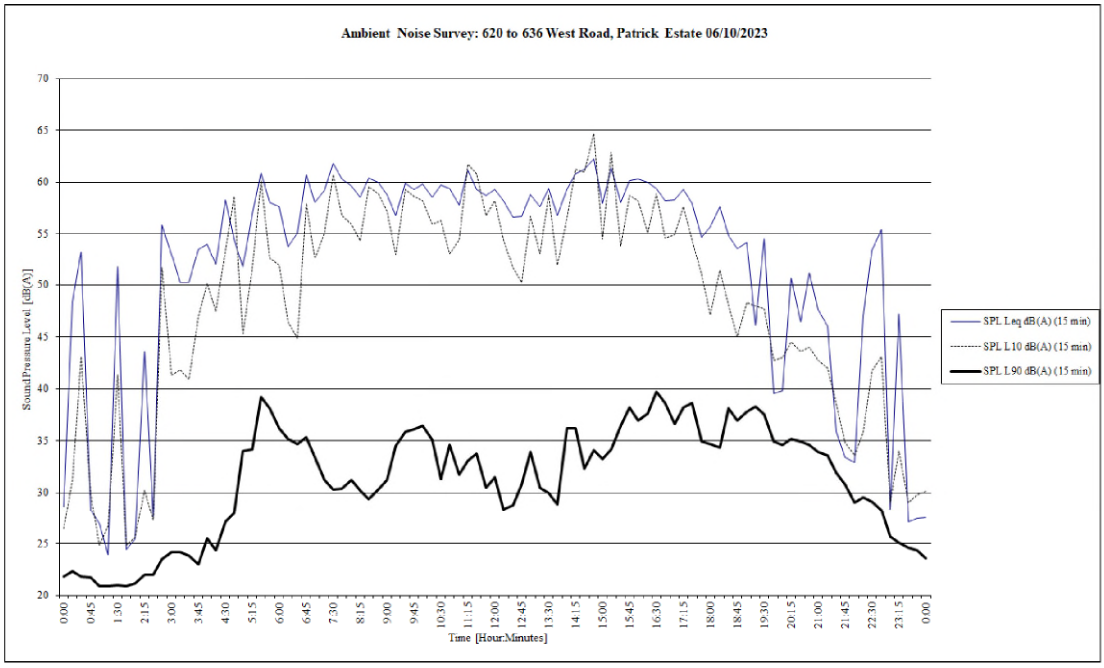
scale 1500 @ A3

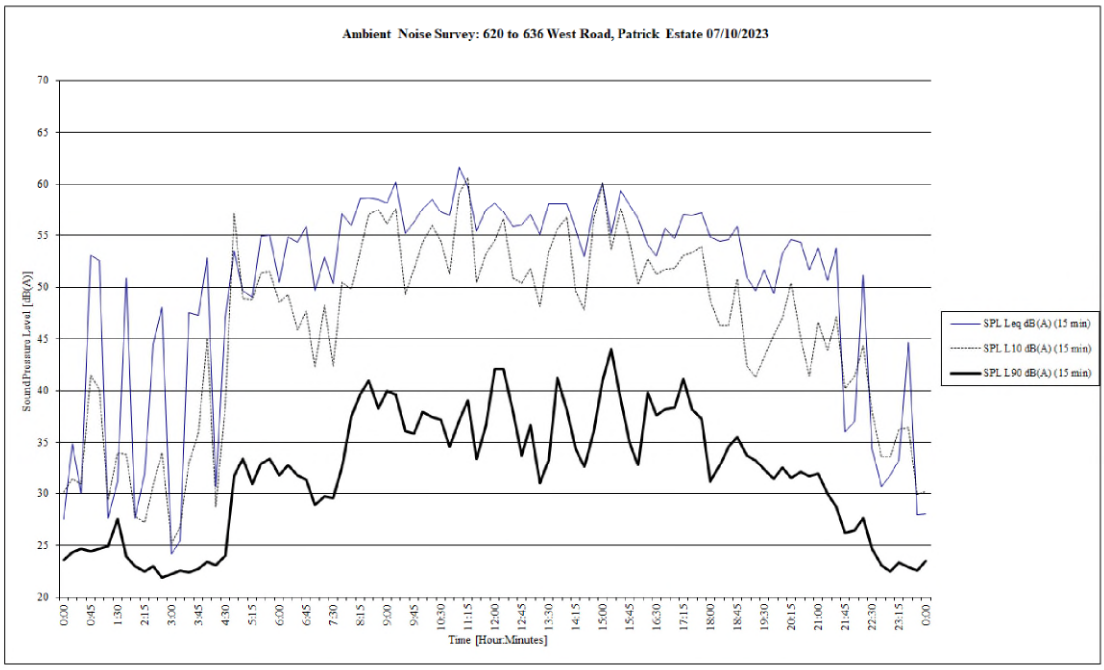
drawn LNR

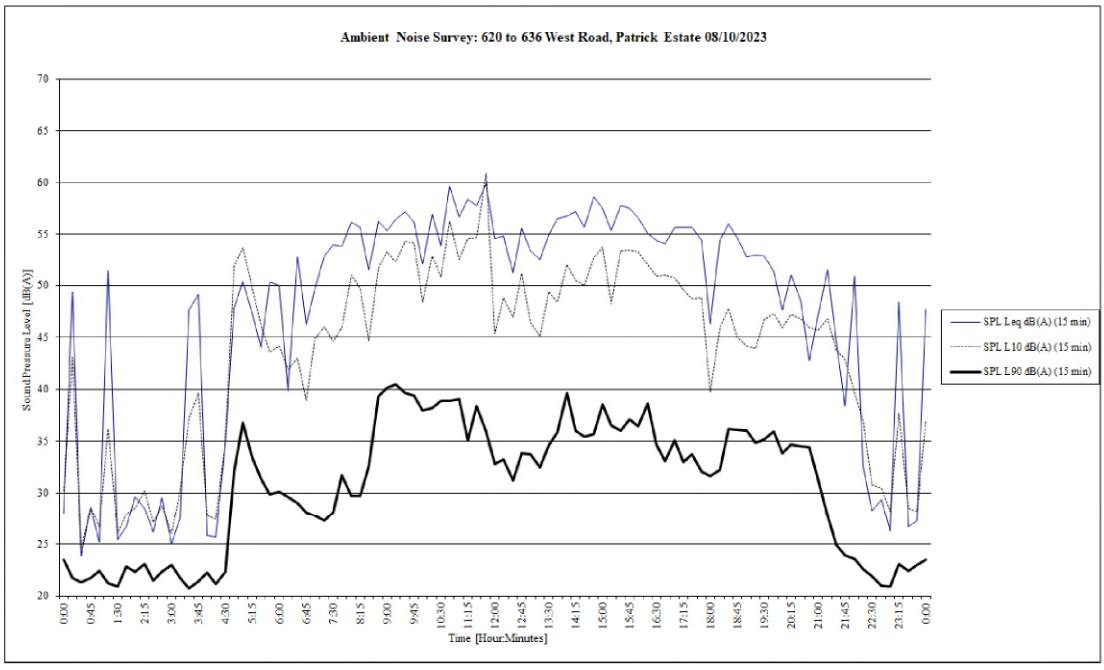
APPENDIX C

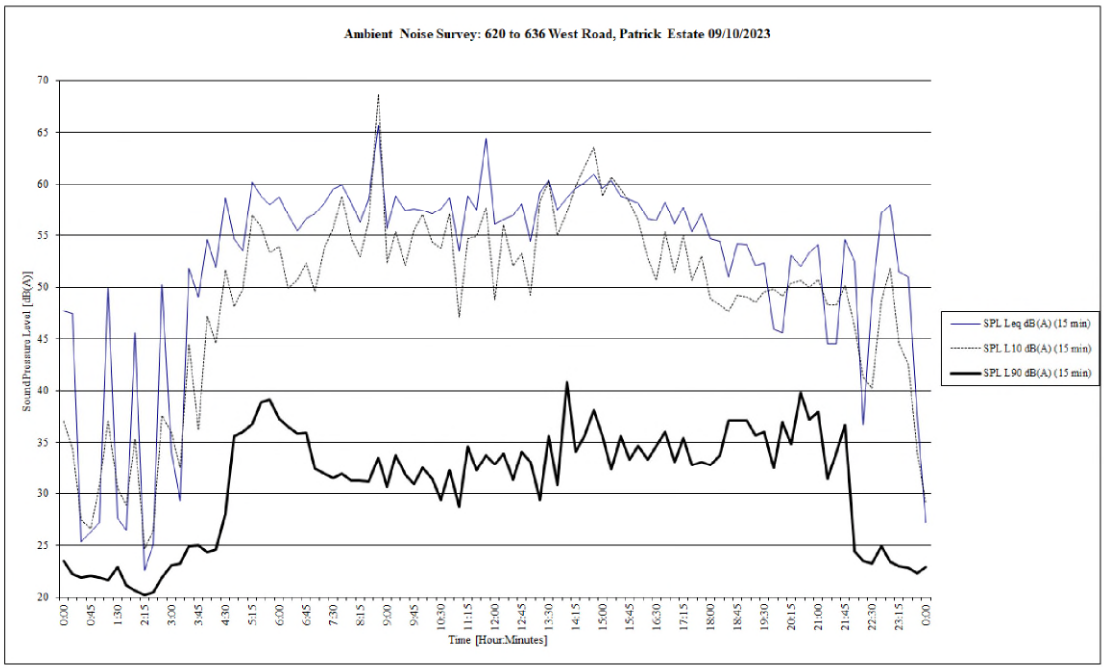
Measurement Results and Model Calculations / Predictions

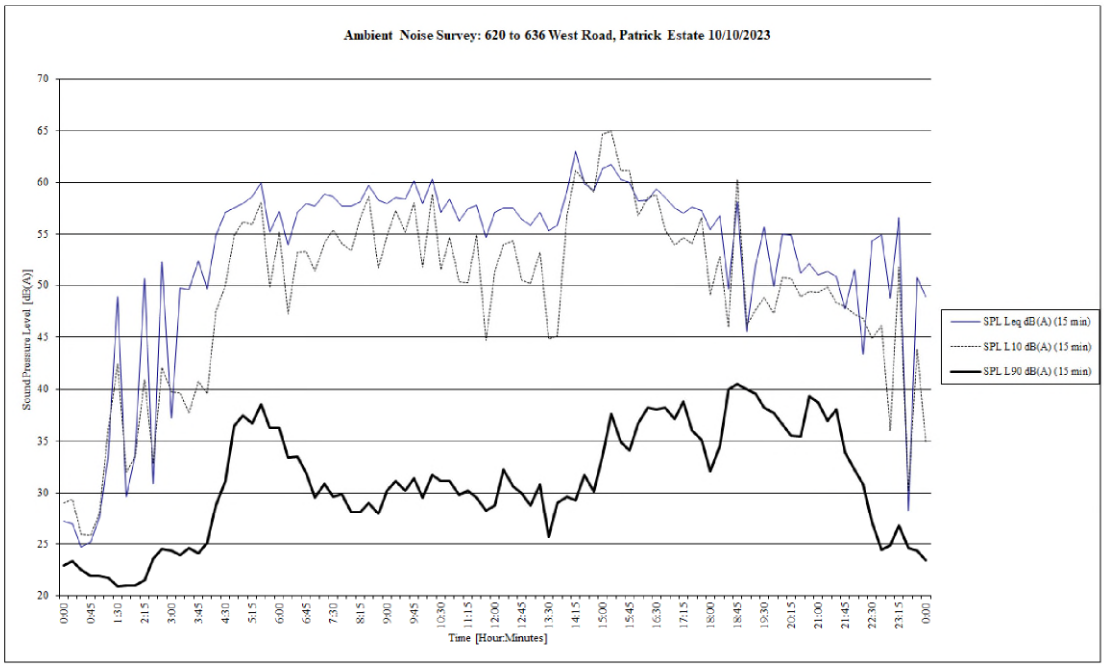

Ambient Noise Survey: 620 to 636 West Road, Patrick Estate 05/10/2023
Sound Pressure Level [dB(A)]
Time [Hour:Minutes]
SPL Leq dB(A) (15 min)
SPL L10 dB(A) (15 min)
SPL L90 dB(A) (15 min)

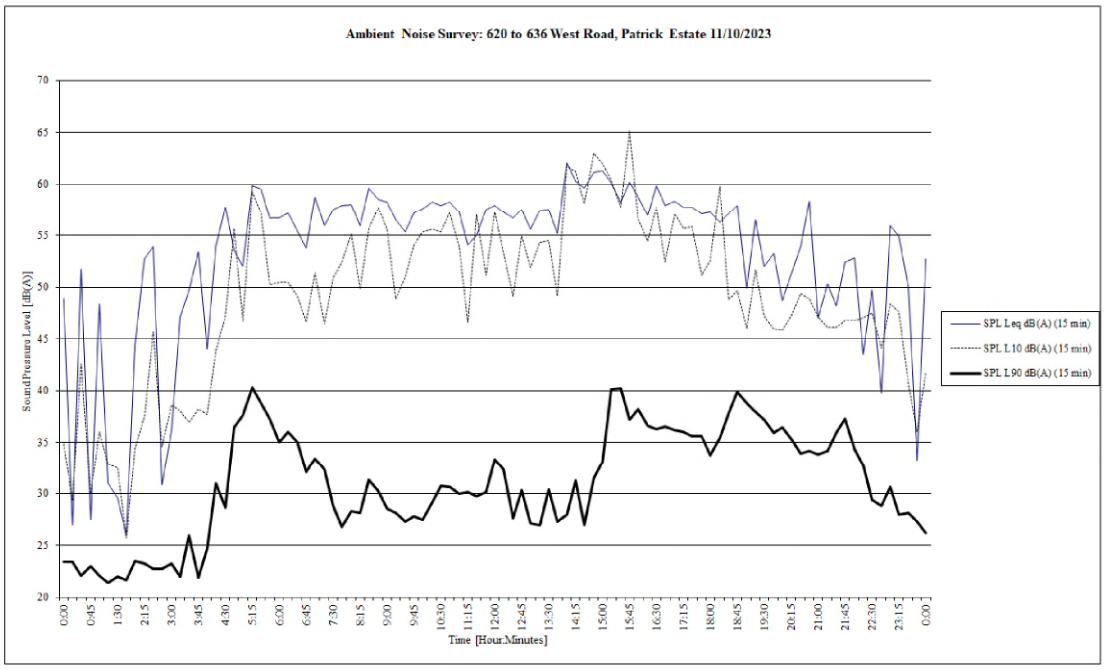

Ambient Noise Survey: 620 to 636 West Road, Patrick Estate 06/10/2023
Sound Pressure Level [dB(A)]
Time [Hour:Minutes]
SPL Leq dB(A) (15 min)
SPL L10 dB(A) (15 min)
SPL L90 dB(A) (15 min)

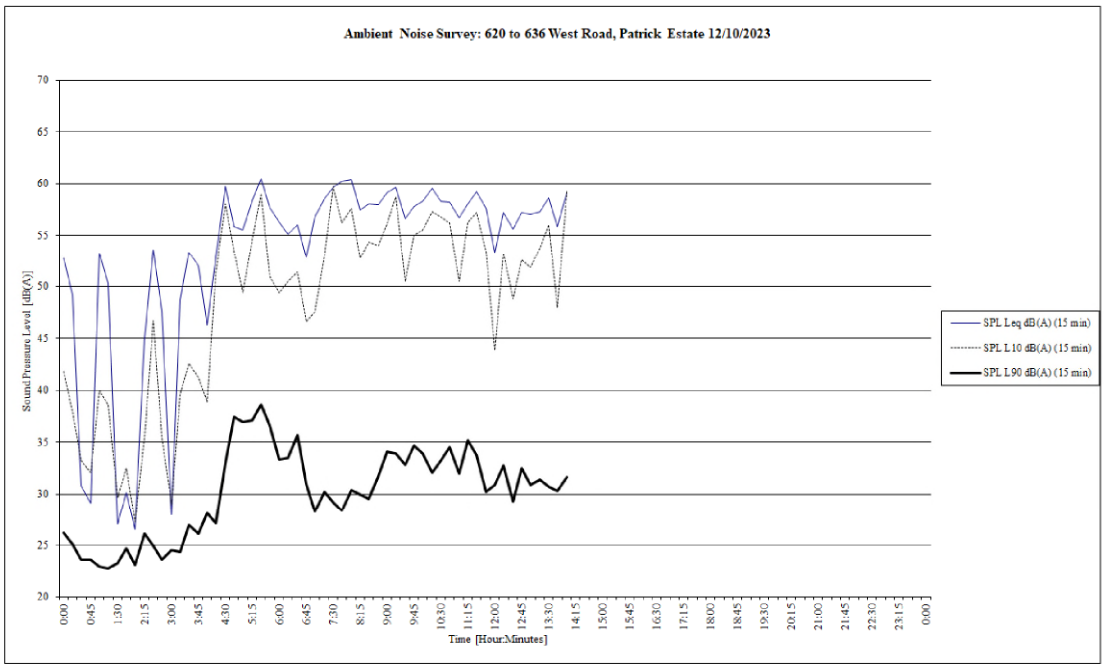

Ambient Noise Survey: 620 to 636 West Road, Patrick Estate 07/10/2023
Sound Pressure Level [dB(A)]
Time [Hour:Minutes]
SPL Leq dB(A) (15 min)
SPL L10 dB(A) (15 min)
SPL L90 dB(A) (15 min)


Ambient Noise Survey: 620 to 636 West Road, Patrick Estate 08/10/2023
Sound Pressure Level [dB(A)]
Time [Hour:Minutes]
SPL Leq dB(A) (15 min)
SPL L10 dB(A) (15 min)
SPL L90 dB(A) (15 min)


Ambient Noise Survey: 620 to 636 West Road, Patrick Estate 09/10/2023
Sound Pressure Level [dB(A)]
Time [Hour:Minutes]
SPL Leq dB(A) (15 min)
SPL L10 dB(A) (15 min)
SPL L90 dB(A) (15 min)


Ambient Noise Survey: 620 to 636 West Road, Patrick Estate 10/10/2023
Sound Pressure Level [dB(A)]
Time [Hour:Minutes]
SPL Leq dB(A) (15 min)
SPL L10 dB(A) (15 min)
SPL L90 dB(A) (15 min)


Ambient Noise Survey: 620 to 636 West Road, Patrick Estate 11/10/2023
Sound Pressure Level [dB(A)]
Time [Hour:Minutes]
SPL Leq dB(A) (15 min)
SPL L10 dB(A) (15 min)
SPL L90 dB(A) (15 min)


Ambient Noise Survey: 620 to 636 West Road, Patrick Estate 12/10/2023
Sound Pressure Level [dB(A)]
Time [Hour:Minutes]
SPL Leq dB(A) (15 min)
SPL L10 dB(A) (15 min)
SPL L90 dB(A) (15 min)

Leq
COMBINED - NO DELIVERIES OR WASTE COLLECTION
Pen3D2000 V 1.10.0
Project Code:23094a
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 12:17:59
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		25.7	
R1B	456771.2	6969376.2	2	58.2		31.2	
R2	456748.5	6969187.7	4.5	56.2		31.1	
R3	457591	6968926.6	2	57.4		31.8	
R4	457464.2	6968023.4	2	47.5		22.9	
R5A	456328.8	6968177.1	2	50		22.1	
R5B	456412.8	6968186.6	2	49.8		22.9	
R5C	456567.1	6968163.2	2	49.3		23.9	
R5D	456472.9	6968068	2	49.5		22.2	
R6 CLASS		457258.9	6967967.4	2	49.5		23.2
R6 PLAY	457291.7	6967924.4	2	49.3		22.6	
Caretaker's N		457245.1	6969201	1.5	53.4		35.5
Caretaker's E		457253.9	6969192.3	1.5	53.4		33.3
Caretaker's S		457238.2	6969187.2	1.5	53.4		41
Caretaker's W		457235.7	6969191.1	1.5	53.4		40.9
Accom 1	457273.1	6969089.9	1.5	53.4		44.5	
Accom 2	457270.5	6969072.8	1.5	53.3		45	
Accom 3	457268.1	6969055.3	1.5	53.2		45.3	
Accom 4	457265.3	6969037.9	1.5	53.1		45.5	
Accom 5	457262.7	6969020.6	1.5	53		45.5	
Accom 6	457260.1	6969003.5	1.5	52.9		45.2	
Accom 7	457257.4	6968986	1.5	52.9		44.8	
Accom 8	457255	6968968.6	1.5	52.8		44.2	
Accom 9	457252.4	6968951.2	1.5	52.7		43.6	
Accom 10	457249.7	6968934	1.5	52.6		43	

Environmental Calculations (Railway - Moving Line Source)
All railway (moving line) sources included. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results include the Leq(1 hour) of all the railway noise sources
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

R1A	456602.7	6969476.3	2		25.9		
R1B	456771.2	6969376.2	2		30.5		
R2	456748.5	6969187.7	4.5		24.7		
R3	457591	6968926.6	2		30.8		
R4	457464.2	6968023.4	2		20.6		
R5A	456328.8	6968177.1	2		18.4		
R5B	456412.8	6968186.6	2		19.1		
R5C	456567.1	6968163.2	2		20.5		
R5D	456472.9	6968068	2		18.8		
R6 CLASS		457258.9	6967967.4	2		20.7	
R6 PLAY	457291.7	6967924.4	2		20.1		
Caretaker's N		457245.1	6969201	1.5		44.1	
Caretaker's E		457253.9	6969192.3	1.5		38.5	
Caretaker's S		457238.2	6969187.2	1.5		47.6	
Caretaker's W		457235.7	6969191.1	1.5		49.7	
Accom 1	457273.1	6969089.9	1.5		44.7		
Accom 2	457270.5	6969072.8	1.5		43.8		
Accom 3	457268.1	6969055.3	1.5		43.7		
Accom 4	457265.3	6969037.9	1.5		43.6		
Accom 5	457262.7	6969020.6	1.5		43.4		
Accom 6	457260.1	6969003.5	1.5		43.2		
Accom 7	457257.4	6968986	1.5		42.9		
Accom 8	457255	6968968.6	1.5		42.5		
Accom 9	457252.4	6968951.2	1.5		42		
Accom 10	457249.7	6968934	1.5		41.4		

CAR DOOR CLOSURES
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ Leq May24.PEN

Friday 03 May, 2024 at 09:31:03
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm

Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		6.7	
R1B	456771.2	6969376.2	2	58.2		9.9	
R2	456748.5	6969187.7	4.5	56.2		16	
R3	457591	6968926.6	2	57.4		16.6	
R4	457464.2	6968023.4	2	47.5		9.7	
R5A	456328.8	6968177.1	2	50		10.5	
R5B	456412.8	6968186.6	2	49.8		11.2	
R5C	456567.1	6968163.2	2	49.3		12	
R5D	456472.9	6968068	2	49.5		10.3	
R6 CLASS		457258.9	6967967.4	2	49.5		10
R6 PLAY	457291.7	6967924.4	2	49.3		9.4	
Caretaker's N		457245.1	6969201	1.5	53.4		2.8
Caretaker's E		457253.9	6969192.3	1.5	53.4		1.4
Caretaker's S		457238.2	6969187.2	1.5	53.4		13.9
Caretaker's W		457235.7	6969191.1	1.5	53.4		13.9
Accom 1	457273.1	6969089.9	1.5	53.4		21.4	
Accom 2	457270.5	6969072.8	1.5	53.3		23.2	
Accom 3	457268.1	6969055.3	1.5	53.2		25.4	
Accom 4	457265.3	6969037.9	1.5	53.1		26.2	
Accom 5	457262.7	6969020.6	1.5	53		26.3	
Accom 6	457260.1	6969003.5	1.5	52.9		26.4	
Accom 7	457257.4	6968986	1.5	52.9		26.5	
Accom 8	457255	6968968.6	1.5	52.8		26.4	
Accom 9	457252.4	6968951.2	1.5	52.7		26.3	
Accom 10	457249.7	6968934	1.5	52.6		26.1	

CAR MOVEMENTS
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ movements.PEN

Friday 03 May, 2024 at 09:31:03
Environmental Calculations (Railway - Moving Line Source)
All railway (moving line) sources included. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results include the Leq(1 hour) of all the railway noise sources
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		
R1A	456602.7	6969476.3	2		21.5	
R1B	456771.2	6969376.2	2		25.8	
R2	456748.5	6969187.7	4.5		23.1	
R3	457591	6968926.6	2		28.4	
R4	457464.2	6968023.4	2		18.5	
R5A	456328.8	6968177.1	2		17.2	
R5B	456412.8	6968186.6	2		18	
R5C	456567.1	6968163.2	2		18.8	
R5D	456472.9	6968068	2		17.1	
R6 CLASS		457258.9	6967967.4	2		18.8
R6 PLAY	457291.7	6967924.4	2		18.2	
Caretaker's N		457245.1	6969201	1.5		39.2
Caretaker's E		457253.9	6969192.3	1.5		38.3
Caretaker's S		457238.2	6969187.2	1.5		44.7
Caretaker's W		457235.7	6969191.1	1.5		45.4
Accom 1	457273.1	6969089.9	1.5		41.8	
Accom 2	457270.5	6969072.8	1.5		40	
Accom 3	457268.1	6969055.3	1.5		40	
Accom 4	457265.3	6969037.9	1.5		40	

Accom 5	457262.7	6969020.6	1.5	39.9
Accom 6	457260.1	6969003.5	1.5	39.7
Accom 7	457257.4	6968986	1.5	39.4
Accom 8	457255	6968968.6	1.5	39
Accom 9	457252.4	6968951.2	1.5	38.5
Accom 10	457249.7	6968934	1.5	38

PEOPLE TALKING
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 09:23:31
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		21.8	
R1B	456771.2	6969376.2	2	58.2		27.9	
R2	456748.5	6969187.7	4.5	56.2		23.1	
R3	457591	6968926.6	2	57.4		24.8	
R4	457464.2	6968023.4	2	47.5		16.9	
R5A	456328.8	6968177.1	2	50		17	
R5B	456412.8	6968186.6	2	49.8		17.7	
R5C	456567.1	6968163.2	2	49.3		18.5	
R5D	456472.9	6968068	2	49.5		16.9	
R6 CLASS		457258.9	6967967.4	2	49.5		17.1
R6 PLAY	457291.7	6967924.4	2	49.3		16.4	
Caretaker's N		457245.1	6969201	1.5	53.4		19.9
Caretaker's E		457253.9	6969192.3	1.5	53.4		25.5
Caretaker's S		457238.2	6969187.2	1.5	53.4		35
Caretaker's W		457235.7	6969191.1	1.5	53.4		34.6
Accom 1	457273.1	6969089.9	1.5	53.4		34.8	
Accom 2	457270.5	6969072.8	1.5	53.3		35.6	
Accom 3	457268.1	6969055.3	1.5	53.2		36	
Accom 4	457265.3	6969037.9	1.5	53.1		35.9	
Accom 5	457262.7	6969020.6	1.5	53		36.2	
Accom 6	457260.1	6969003.5	1.5	52.9		36.2	
Accom 7	457257.4	6968986	1.5	52.9		35.8	
Accom 8	457255	6968968.6	1.5	52.8		35.6	
Accom 9	457252.4	6968951.2	1.5	52.7		35.4	
Accom 10	457249.7	6968934	1.5	52.6		35	

ALFRESCO
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 12:03:53
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.

Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)	Noise Level (dB(A))
R1A	456602.7	6969476.3	2	62	5.5
R1B	456771.2	6969376.2	2	58.2	9.1
R2	456748.5	6969187.7	4.5	56.1	11.8
R3	457591	6968926.6	2	57.4	23.1
R4	457464.2	6968023.4	2	47.4	14.6
R5A	456328.8	6968177.1	2	50	13
R5B	456412.8	6968186.6	2	49.8	13.8
R5C	456567.1	6968163.2	2	49.3	14.8
R5D	456472.9	6968068	2	49.5	13.1

R6 CLASS		457258.9	6967967.4	2	49.5		14.5
R6 PLAY	457291.7	6967924.4	2	49.3		13.9	
Caretaker's N		457245.1	6969201	1.5	53.4		12.5
Caretaker's E		457253.9	6969192.3	1.5	53.4		13.7
Caretaker's S		457238.2	6969187.2	1.5	53.4		32.2
Caretaker's W		457235.7	6969191.1	1.5	53.4		32
Accom 1	457273.1	6969089.9	1.5	53.4		37.6	
Accom 2	457270.5	6969072.8	1.5	53.3		38.2	
Accom 3	457268.1	6969055.3	1.5	53.2		38.6	
Accom 4	457265.3	6969037.9	1.5	53.1		38.8	
Accom 5	457262.7	6969020.6	1.5	53		38.8	
Accom 6	457260.1	6969003.5	1.5	52.9		38.6	
Accom 7	457257.4	6968986	1.5	52.9		38.2	
Accom 8	457255	6968968.6	1.5	52.8		37.6	
Accom 9	457252.4	6968951.2	1.5	52.7		37	
Accom 10	457249.7	6968934	1.5	52.6		36.3	

CAFÉ INDOOR DINING **OPEN DOORS**

File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ Leq May24.PEN

Friday 03 May, 2024 at 12:04:45
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm

Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		9.5	
R1B	456771.2	6969376.2	2	58.2		13.1	
R2	456748.5	6969187.7	4.5	56.1		14	
R3	457591	6968926.6	2	57.4		28.3	
R4	457464.2	6968023.4	2	47.4		18	
R5A	456328.8	6968177.1	2	50		16.3	
R5B	456412.8	6968186.6	2	49.8		17.1	
R5C	456567.1	6968163.2	2	49.3		18.1	
R5D	456472.9	6968068	2	49.5		16.4	
R6 CLASS		457258.9	6967967.4	2	49.5		17.8
R6 PLAY	457291.7	6967924.4	2	49.3		17.2	
Caretaker's N		457245.1	6969201	1.5	53.4		16.3
Caretaker's E		457253.9	6969192.3	1.5	53.4		17.5
Caretaker's S		457238.2	6969187.2	1.5	53.4		25.7
Caretaker's W		457235.7	6969191.1	1.5	53.4		25.6
Accom 1	457273.1	6969089.9	1.5	53.4		41.5	
Accom 2	457270.5	6969072.8	1.5	53.3		42	
Accom 3	457268.1	6969055.3	1.5	53.2		42.4	
Accom 4	457265.3	6969037.9	1.5	53.1		42.6	
Accom 5	457262.7	6969020.6	1.5	53		42.5	
Accom 6	457260.1	6969003.5	1.5	52.9		42.2	
Accom 7	457257.4	6968986	1.5	52.9		41.7	
Accom 8	457255	6968968.6	1.5	52.8		41	
Accom 9	457252.4	6968951.2	1.5	52.7		40.3	
Accom 10	457249.7	6968934	1.5	52.6		39.6	

BUS ENGINE STARTS
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 08:58:26
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.

Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		-6.8	
R1B	456771.2	6969376.2	2	58.2		-3.3	
R2	456748.5	6969187.7	4.5	56.2		1.2	
R3	457591	6968926.6	2	57.4		7.9	
R4	457464.2	6968023.4	2	47.4		-1	
R5A	456328.8	6968177.1	2	50		-2.2	
R5B	456412.8	6968186.6	2	49.8		-1.4	
R5C	456567.1	6968163.2	2	49.3		-0.4	
R5D	456472.9	6968068	2	49.5		-2.1	
R6 CLASS		457258.9	6967967.4	2	49.5		-1.1
R6 PLAY	457291.7	6967924.4	2	49.3		-1.7	
Caretaker's N		457245.1	6969201	1.5	53.4		-6.1
Caretaker's E		457253.9	6969192.3	1.5	53.4		-5.4
Caretaker's S		457238.2	6969187.2	1.5	53.4		4.3
Caretaker's W		457235.7	6969191.1	1.5	53.4		4.3
Accom 1	457273.1	6969089.9	1.5	53.4		13.1	
Accom 2	457270.5	6969072.8	1.5	53.3		17.4	
Accom 3	457268.1	6969055.3	1.5	53.2		18.6	
Accom 4	457265.3	6969037.9	1.5	53.1		19	
Accom 5	457262.7	6969020.6	1.5	53		19.3	
Accom 6	457260.1	6969003.5	1.5	52.9		19.4	
Accom 7	457257.4	6968986	1.5	52.9		19.5	
Accom 8	457255	6968968.6	1.5	52.8		19.4	
Accom 9	457252.4	6968951.2	1.5	52.7		19.2	
Accom 10	457249.7	6968934	1.5	52.6		18.9	

BUS MOVEMENTS
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ movements.PEN

Wednesday 17 Jan, 2024 at 08:48:06
Environmental Calculations (Railway - Moving Line Source)
All railway (moving line) sources included. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.

Noise level results include the Leq(1 hour) of all the railway noise sources
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)	
R1A	456602.7	6969476.3	2	22.7	
R1B	456771.2	6969376.2	2	27.6	
R2	456748.5	6969187.7	4.5	18.9	
R3	457591	6968926.6	2	25.9	
R4	457464.2	6968023.4	2	15.8	
R5A	456328.8	6968177.1	2	11.8	
R5B	456412.8	6968186.6	2	12.6	
R5C	456567.1	6968163.2	2	15.5	
R5D	456472.9	6968068	2	13.9	
R6 CLASS		457258.9	6967967.4	2	15.6
R6 PLAY	457291.7	6967924.4	2	15	
Caretaker's N		457245.1	6969201	1.5	40.3
Caretaker's E		457253.9	6969192.3	1.5	22.4
Caretaker's S		457238.2	6969187.2	1.5	42.8
Caretaker's W		457235.7	6969191.1	1.5	46
Accom 1	457273.1	6969089.9	1.5	40.5	
Accom 2	457270.5	6969072.8	1.5	40.5	
Accom 3	457268.1	6969055.3	1.5	40.4	

Accom 4	457265.3	6969037.9	1.5	40.4
Accom 5	457262.7	6969020.6	1.5	40.2
Accom 6	457260.1	6969003.5	1.5	40
Accom 7	457257.4	6968986	1.5	39.8
Accom 8	457255	6968968.6	1.5	39.4
Accom 9	457252.4	6968951.2	1.5	39
Accom 10	457249.7	6968934	1.5	38.4

TRUCK ENGINE STARTS
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 08:48:40
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.

Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		-15.3	
R1B	456771.2	6969376.2	2	58.2		-11.6	
R2	456748.5	6969187.7	4.5	56.1		-10.9	
R3	457591	6968926.6	2	57.4		2.4	
R4	457464.2	6968023.4	2	47.4		-19.6	
R5A	456328.8	6968177.1	2	50		-22.5	
R5B	456412.8	6968186.6	2	49.8		-21.5	
R5C	456567.1	6968163.2	2	49.3		-20.3	
R5D	456472.9	6968068	2	49.5		-22	
R6 CLASS		457258.9	6967967.4	2	49.5		-20
R6 PLAY	457291.7	6967924.4	2	49.3		-20.5	
Caretaker's N		457245.1	6969201	1.5	53.4		-5.9
Caretaker's E		457253.9	6969192.3	1.5	53.4		-5.6
Caretaker's S		457238.2	6969187.2	1.5	53.4		16.6
Caretaker's W		457235.7	6969191.1	1.5	53.4		16.5
Accom 1	457273.1	6969089.9	1.5	53.4		16.1	
Accom 2	457270.5	6969072.8	1.5	53.3		15.9	
Accom 3	457268.1	6969055.3	1.5	53.2		15.6	
Accom 4	457265.3	6969037.9	1.5	53.1		15.2	
Accom 5	457262.7	6969020.6	1.5	53		3.8	
Accom 6	457260.1	6969003.5	1.5	52.9		2.9	
Accom 7	457257.4	6968986	1.5	52.9		2.1	
Accom 8	457255	6968968.6	1.5	52.8		1.3	
Accom 9	457252.4	6968951.2	1.5	52.7		0.6	
Accom 10	457249.7	6968934	1.5	52.6		-0.2	

TRUCK MOVEMENTS

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ movements.PEN

Wednesday 17 Jan, 2024 at 08:43:46
Environmental Calculations (Railway - Moving Line Source)
All railway (moving line) sources included. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.

Noise level results include the Leq(1 hour) of all the railway noise sources
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)	
R1A	456602.7	6969476.3	2	12.1	
R1B	456771.2	6969376.2	2	16.8	
R2	456748.5	6969187.7	4.5	9.2	
R3	457591	6968926.6	2	19	
R4	457464.2	6968023.4	2	6.5	
R5A	456328.8	6968177.1	2	-4.9	
R5B	456412.8	6968186.6	2	-4	
R5C	456567.1	6968163.2	2	-2.1	
R5D	456472.9	6968068	2	-3.6	
R6 CLASS		457258.9	6967967.4	2	7.3
R6 PLAY	457291.7	6967924.4	2	6.8	
Caretaker's N		457245.1	6969201	1.5	34.3
Caretaker's E		457253.9	6969192.3	1.5	15.7
Caretaker's S		457238.2	6969187.2	1.5	37.5
Caretaker's W		457235.7	6969191.1	1.5	39.6
Accom 1	457273.1	6969089.9	1.5	33.9	
Accom 2	457270.5	6969072.8	1.5	33.3	
Accom 3	457268.1	6969055.3	1.5	32.7	
Accom 4	457265.3	6969037.9	1.5	31.9	
Accom 5	457262.7	6969020.6	1.5	31.1	
Accom 6	457260.1	6969003.5	1.5	30.3	
Accom 7	457257.4	6968986	1.5	29.6	
Accom 8	457255	6968968.6	1.5	28.8	
Accom 9	457252.4	6968951.2	1.5	28.1	
Accom 10	457249.7	6968934	1.5	27	

TRUCK WITH REFRIGERATION UNITS

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 08:49:31
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.

Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		3.3	
R1B	456771.2	6969376.2	2	58.2		6.9	
R2	456748.5	6969187.7	4.5	56.1		7.5	
R3	457591	6968926.6	2	57.4		20.5	
R4	457464.2	6968023.4	2	47.4		-1.5	
R5A	456328.8	6968177.1	2	50		-4.2	
R5B	456412.8	6968186.6	2	49.8		-3.4	
R5C	456567.1	6968163.2	2	49.3		-2.1	
R5D	456472.9	6968068	2	49.5		-3.8	
R6 CLASS		457258.9	6967967.4	2	49.5		-1.9
R6 PLAY	457291.7	6967924.4	2	49.3		-2.4	
Caretaker's N		457245.1	6969201	1.5	53.4	12.3	
Caretaker's E		457253.9	6969192.3	1.5	53.4	12.6	
Caretaker's S		457238.2	6969187.2	1.5	53.4	34.7	
Caretaker's W		457235.7	6969191.1	1.5	53.4	34.7	
Accom 1	457273.1	6969089.9	1.5	53.4		34.3	
Accom 2	457270.5	6969072.8	1.5	53.3		34.2	

Accom 3	457268.1	6969055.3	1.5	53.2	33.8
Accom 4	457265.3	6969037.9	1.5	53.1	33.4
Accom 5	457262.7	6969020.6	1.5	53	32.8
Accom 6	457260.1	6969003.5	1.5	52.9	21.1
Accom 7	457257.4	6968986	1.5	52.9	20.2
Accom 8	457255	6968968.6	1.5	52.8	19.4
Accom 9	457252.4	6968951.2	1.5	52.7	18.6
Accom 10	457249.7	6968934	1.5	52.6	17.9

DELIVERIES

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 08:50:21
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		3.2	
R1B	456771.2	6969376.2	2	58.2		6.9	
R2	456748.5	6969187.7	4.5	56.1		7.5	
R3	457591	6968926.6	2	57.4		17.1	
R4	457464.2	6968023.4	2	47.4		-3	
R5A	456328.8	6968177.1	2	50		-4	
R5B	456412.8	6968186.6	2	49.8		-3.1	
R5C	456567.1	6968163.2	2	49.3		-0.4	
R5D	456472.9	6968068	2	49.5		-2.1	
R6 CLASS		457258.9	6967967.4	2	49.5		-3.4
R6 PLAY	457291.7	6967924.4	2	49.3		-4	
Caretaker's N		457245.1	6969201	1.5	53.4		13.4
Caretaker's E		457253.9	6969192.3	1.5	53.4		13.8
Caretaker's S		457238.2	6969187.2	1.5	53.4		36.2
Caretaker's W		457235.7	6969191.1	1.5	53.4		36
Accom 1	457273.1	6969089.9	1.5	53.4		35.9	
Accom 2	457270.5	6969072.8	1.5	53.3		35.7	
Accom 3	457268.1	6969055.3	1.5	53.2		35.4	
Accom 4	457265.3	6969037.9	1.5	53.1		34.9	
Accom 5	457262.7	6969020.6	1.5	53		34.2	
Accom 6	457260.1	6969003.5	1.5	52.9		33.6	
Accom 7	457257.4	6968986	1.5	52.9		32.8	
Accom 8	457255	6968968.6	1.5	52.8		18.5	
Accom 9	457252.4	6968951.2	1.5	52.7		17.7	
Accom 10	457249.7	6968934	1.5	52.6		16.8	

WORKSHOP NUT RUNNER

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 08:51:41Environmental Calculations

Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)	Noise Level (dB(A))
R1A	456602.7	6969476.3	2	61.9	8.4
R1B	456771.2	6969376.2	2	58.2	12.5
R2	456748.5	6969187.7	4.5	56.1	13.1
R3	457591	6968926.6	2	57.4	9.9
R4	457464.2	6968023.4	2	47.4	2.2
R5A	456328.8	6968177.1	2	50	1
R5B	456412.8	6968186.6	2	49.8	2
R5C	456567.1	6968163.2	2	49.3	3.8
R5D	456472.9	6968068	2	49.5	2

R6 CLASS		457258.9	6967967.4	2	49.5		4.1
R6 PLAY	457291.7	6967924.4	2	49.3		3.2	
Caretaker's N		457245.1	6969201	1.5	53.4		23.2
Caretaker's E		457253.9	6969192.3	1.5	53.4		19.5
Caretaker's S		457238.2	6969187.2	1.5	53.4		26
Caretaker's W		457235.7	6969191.1	1.5	53.4		26.2
Accom 1	457273.1	6969089.9	1.5	53.4		22.3	
Accom 2	457270.5	6969072.8	1.5	53.3		22	
Accom 3	457268.1	6969055.3	1.5	53.2		21.7	
Accom 4	457265.3	6969037.9	1.5	53.1		21.4	
Accom 5	457262.7	6969020.6	1.5	53		21.1	
Accom 6	457260.1	6969003.5	1.5	52.9		20.7	
Accom 7	457257.4	6968986	1.5	52.9		20.3	
Accom 8	457255	6968968.6	1.5	52.8		19.9	
Accom 9	457252.4	6968951.2	1.5	52.7		19.6	
Accom 10	457249.7	6968934	1.5	52.6		19.2	

WORKSHOP HAMMERING METAL

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 08:52:47
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		18.6	
R1B	456771.2	6969376.2	2	58.2		22.7	
R2	456748.5	6969187.7	4.5	56.1		23.3	
R3	457591	6968926.6	2	57.4		19.9	
R4	457464.2	6968023.4	2	47.4		12	
R5A	456328.8	6968177.1	2	50		11.2	
R5B	456412.8	6968186.6	2	49.8		12.2	
R5C	456567.1	6968163.2	2	49.3		14	
R5D	456472.9	6968068	2	49.5		12.2	
R6 CLASS		457258.9	6967967.4	2	49.5		14
R6 PLAY	457291.7	6967924.4	2	49.3		13.1	
Caretaker's N		457245.1	6969201	1.5	53.4		32.8
Caretaker's E		457253.9	6969192.3	1.5	53.4		29.1
Caretaker's S		457238.2	6969187.2	1.5	53.4		36
Caretaker's W		457235.7	6969191.1	1.5	53.4		36.2
Accom 1	457273.1	6969089.9	1.5	53.4		32.2	
Accom 2	457270.5	6969072.8	1.5	53.3		32	
Accom 3	457268.1	6969055.3	1.5	53.2		31.7	
Accom 4	457265.3	6969037.9	1.5	53.1		31.3	
Accom 5	457262.7	6969020.6	1.5	53		30.9	
Accom 6	457260.1	6969003.5	1.5	52.9		30.6	
Accom 7	457257.4	6968986	1.5	52.9		30.2	
Accom 8	457255	6968968.6	1.5	52.8		29.8	
Accom 9	457252.4	6968951.2	1.5	52.7		29.4	
Accom 10	457249.7	6968934	1.5	52.6		29.1	

WORKSHOP AIR RELEASE
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 08:53:53
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		-19.6	
R1B	456771.2	6969376.2	2	58.2		-15.5	
R2	456748.5	6969187.7	4.5	56.1		-14.8	
R3	457591	6968926.6	2	57.4		-17.6	
R4	457464.2	6968023.4	2	47.4		-25.3	
R5A	456328.8	6968177.1	2	50		-26.8	
R5B	456412.8	6968186.6	2	49.8		-25.7	
R5C	456567.1	6968163.2	2	49.3		-23.9	
R5D	456472.9	6968068	2	49.5		-25.7	
R6 CLASS		457258.9	6967967.4	2	49.5		-23.4
R6 PLAY	457291.7	6967924.4	2	49.3		-24.3	
Caretaker's N		457245.1	6969201	1.5	53.4		-5.8
Caretaker's E		457253.9	6969192.3	1.5	53.4		-8.6
Caretaker's S		457238.2	6969187.2	1.5	53.4		-2
Caretaker's W		457235.7	6969191.1	1.5	53.4		-1.9
Accom 1	457273.1	6969089.9	1.5	53.4		-5.2	
Accom 2	457270.5	6969072.8	1.5	53.3		-5.4	
Accom 3	457268.1	6969055.3	1.5	53.2		-5.6	
Accom 4	457265.3	6969037.9	1.5	53.1		-6	
Accom 5	457262.7	6969020.6	1.5	53		-6.3	
Accom 6	457260.1	6969003.5	1.5	52.9		-6.7	
Accom 7	457257.4	6968986	1.5	52.9		-7	
Accom 8	457255	6968968.6	1.5	52.8		-7.4	
Accom 9	457252.4	6968951.2	1.5	52.7		-7.8	
Accom 10	457249.7	6968934	1.5	52.6		-8.1	

WORKSHOP CAR HOIST
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 08:54:51
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		-21.3	
R1B	456771.2	6969376.2	2	58.2		-17.1	
R2	456748.5	6969187.7	4.5	56.1		-16.5	
R3	457591	6968926.6	2	57.4		-19.6	
R4	457464.2	6968023.4	2	47.4		-27.4	
R5A	456328.8	6968177.1	2	50		-28.6	
R5B	456412.8	6968186.6	2	49.8		-27.6	
R5C	456567.1	6968163.2	2	49.3		-25.7	
R5D	456472.9	6968068	2	49.5		-27.5	
R6 CLASS		457258.9	6967967.4	2	49.5		-25.6
R6 PLAY	457291.7	6967924.4	2	49.3		-26.3	
Caretaker's N		457245.1	6969201	1.5	53.4		-7.5
Caretaker's E		457253.9	6969192.3	1.5	53.4		-11.1
Caretaker's S		457238.2	6969187.2	1.5	53.4		-3.6
Caretaker's W		457235.7	6969191.1	1.5	53.4		-3.5
Accom 1	457273.1	6969089.9	1.5	53.4		-7.2	
Accom 2	457270.5	6969072.8	1.5	53.3		-7.4	
Accom 3	457268.1	6969055.3	1.5	53.2		-7.7	
Accom 4	457265.3	6969037.9	1.5	53.1		-8.1	

Accom 5	457262.7	6969020.6	1.5	53	-8.5
Accom 6	457260.1	6969003.5	1.5	52.9	-8.8
Accom 7	457257.4	6968986	1.5	52.9	-9.2
Accom 8	457255	6968968.6	1.5	52.8	-9.6
Accom 9	457252.4	6968951.2	1.5	52.7	-10
Accom 10	457249.7	6968934	1.5	52.6	-10.3

WASTE COLLECTION
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ.PEN

Friday 03 May, 2024 at 08:47:32
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		18.8	
R1B	456771.2	6969376.2	2	58.2		22.2	
R2	456748.5	6969187.7	4.5	56.1		22.9	
R3	457591	6968926.6	2	57.4		33.6	
R4	457464.2	6968023.4	2	47.4		22.9	
R5A	456328.8	6968177.1	2	50		10.5	
R5B	456412.8	6968186.6	2	49.8		15.3	
R5C	456567.1	6968163.2	2	49.3		16.1	
R5D	456472.9	6968068	2	49.5		14.5	
R6 CLASS		457258.9	6967967.4	2	49.5		22.5
R6 PLAY	457291.7	6967924.4	2	49.3		22	
Caretaker's N		457245.1	6969201	1.5	53.4		25.8
Caretaker's E		457253.9	6969192.3	1.5	53.4		26.4
Caretaker's S		457238.2	6969187.2	1.5	53.4		48.1
Caretaker's W		457235.7	6969191.1	1.5	53.4		48
Accom 1	457273.1	6969089.9	1.5	53.4		48.1	
Accom 2	457270.5	6969072.8	1.5	53.3		47.9	
Accom 3	457268.1	6969055.3	1.5	53.2		47.4	
Accom 4	457265.3	6969037.9	1.5	53.1		46.8	
Accom 5	457262.7	6969020.6	1.5	53		46.1	
Accom 6	457260.1	6969003.5	1.5	52.9		45.3	
Accom 7	457257.4	6968986	1.5	52.9		44.6	
Accom 8	457255	6968968.6	1.5	52.8		43.8	
Accom 9	457252.4	6968951.2	1.5	52.7		43	
Accom 10	457249.7	6968934	1.5	52.6		42.3	

MECHANICAL PLANT
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ Leq May24.PEN

Friday 03 May, 2024 at 12:07:07
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 10 degrees. Calculations for specified meteorology.
Noise level results are the logarithmic addition of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm

Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		20.9	
R1B	456771.2	6969376.2	2	58.2		26.6	
R2	456748.5	6969187.7	4.5	56.2		28.8	
R3	457591	6968926.6	2	57.4		22.5	
R4	457464.2	6968023.4	2	47.5		14.4	
R5A	456328.8	6968177.1	2	50		13.3	
R5B	456412.8	6968186.6	2	49.8		14.3	
R5C	456567.1	6968163.2	2	49.3		15.8	
R5D	456472.9	6968068	2	49.5		13.9	
R6 CLASS		457258.9	6967967.4	2	49.5		15.1
R6 PLAY	457291.7	6967924.4	2	49.3		14.4	
Caretaker's N		457245.1	6969201	1.5	53.4		31.1
Caretaker's E		457253.9	6969192.3	1.5	53.4		29.1
Caretaker's S		457238.2	6969187.2	1.5	53.4		35.2
Caretaker's W		457235.7	6969191.1	1.5	53.4		35.3
Accom 1	457273.1	6969089.9	1.5	53.4		35.5	
Accom 2	457270.5	6969072.8	1.5	53.3		35.9	
Accom 3	457268.1	6969055.3	1.5	53.2		36.1	
Accom 4	457265.3	6969037.9	1.5	53.1		36.2	
Accom 5	457262.7	6969020.6	1.5	53		35.9	
Accom 6	457260.1	6969003.5	1.5	52.9		35.4	
Accom 7	457257.4	6968986	1.5	52.9		34.9	
Accom 8	457255	6968968.6	1.5	52.8		34.2	
Accom 9	457252.4	6968951.2	1.5	52.7		33.5	
Accom 10	457249.7	6968934	1.5	52.6		32.8	

L01
COMBINED - NO DELIVERIES OR WASTE COLLECTION
POINT CALCULATIONS
Pen3D2000 V 1.10.0
Project Code:23094a
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:54:17
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		42	
R1B	456771.2	6969376.2	2	58.2		46.2	
R2	456748.5	6969187.7	4.5	56.2		46.6	
R3	457591	6968926.6	2	57.4		43.5	
R4	457464.2	6968023.4	2	47.5		35.7	
R5A	456328.8	6968177.1	2	50		34.3	
R5B	456412.8	6968186.6	2	49.8		35.4	
R5C	456567.1	6968163.2	2	49.3		37.2	
R5D	456472.9	6968068	2	49.5		35.4	
R6 CLASS		457258.9	6967967.4	2	49.5		37.6
R6 PLAY	457291.7	6967924.4	2	49.3		36.8	
Caretaker's N		457245.1	6969201	1.5	53.4		56.2
Caretaker's E		457253.9	6969192.3	1.5	53.4		52.3
Caretaker's S		457238.2	6969187.2	1.5	53.4		59.7
Caretaker's W		457235.7	6969191.1	1.5	53.4		59.9
Accom 1	457273.1	6969089.9	1.5	53.4		56.1	
Accom 2	457270.5	6969072.8	1.5	53.3		55.9	
Accom 3	457268.1	6969055.3	1.5	53.2		55.6	
Accom 4	457265.3	6969037.9	1.5	53.1		55.3	
Accom 5	457262.7	6969020.6	1.5	53		54.9	
Accom 6	457260.1	6969003.5	1.5	52.9		54.6	
Accom 7	457257.4	6968986	1.5	52.9		54.2	
Accom 8	457255	6968968.6	1.5	52.8		53.8	
Accom 9	457252.4	6968951.2	1.5	52.7		53.4	
Accom 10	457249.7	6968934	1.5	52.6		53	

Environmental Calculations (Railway - Moving Line Source)

All railway (moving line) sources included. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results include the maximum of all the noise sources

Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

R1A	456602.7	6969476.3	2	37.4		
R1B	456771.2	6969376.2	2	42.7		
R2	456748.5	6969187.7	4.5	32.9		
R3	457591	6968926.6	2	38.7		
R4	457464.2	6968023.4	2	28.9		
R5A	456328.8	6968177.1	2	26.5		
R5B	456412.8	6968186.6	2	27.4		
R5C	456567.1	6968163.2	2	28.5		
R5D	456472.9	6968068	2	26.8		
R6 CLASS		457258.9	6967967.4	2		28.6
R6 PLAY	457291.7	6967924.4	2	28		
Caretaker's N		457245.1	6969201	1.5		61.9
Caretaker's E		457253.9	6969192.3	1.5		48.8
Caretaker's S		457238.2	6969187.2	1.5		64.9
Caretaker's W		457235.7	6969191.1	1.5		66.5
Accom 1	457273.1	6969089.9	1.5	54.8		
Accom 2	457270.5	6969072.8	1.5	54.8		
Accom 3	457268.1	6969055.3	1.5	54.8		
Accom 4	457265.3	6969037.9	1.5	54.8		
Accom 5	457262.7	6969020.6	1.5	54.9		
Accom 6	457260.1	6969003.5	1.5	54.9		
Accom 7	457257.4	6968986	1.5	54.9		

Accom 8	457255	6968968.6	1.5	54.9
Accom 9	457252.4	6968951.2	1.5	54.8
Accom 10	457249.7	6968934	1.5	54.6

CAR DOOR CLOSURES

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:16:42
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		23.7	
R1B	456771.2	6969376.2	2	58.2		26.6	
R2	456748.5	6969187.7	4.5	56.2		33.7	
R3	457591	6968926.6	2	57.4		34.7	
R4	457464.2	6968023.4	2	47.5		24.9	
R5A	456328.8	6968177.1	2	50		25.5	
R5B	456412.8	6968186.6	2	49.8		26.2	
R5C	456567.1	6968163.2	2	49.3		26.8	
R5D	456472.9	6968068	2	49.5		25.1	
R6 CLASS		457258.9	6967967.4	2	49.5		24.9
R6 PLAY	457291.7	6967924.4	2	49.3		24.2	
Caretaker's N		457245.1	6969201	1.5	53.4		20.9
Caretaker's E		457253.9	6969192.3	1.5	53.4		22.3
Caretaker's S		457238.2	6969187.2	1.5	53.4		43.5
Caretaker's W		457235.7	6969191.1	1.5	53.4		43.3
Accom 1	457273.1	6969089.9	1.5	53.4		46.1	
Accom 2	457270.5	6969072.8	1.5	53.3		46.8	
Accom 3	457268.1	6969055.3	1.5	53.2		47.4	
Accom 4	457265.3	6969037.9	1.5	53.1		48	
Accom 5	457262.7	6969020.6	1.5	53		48.3	
Accom 6	457260.1	6969003.5	1.5	52.9		48.5	
Accom 7	457257.4	6968986	1.5	52.9		48.4	
Accom 8	457255	6968968.6	1.5	52.8		48.2	
Accom 9	457252.4	6968951.2	1.5	52.7		47.7	
Accom 10	457249.7	6968934	1.5	52.6		47.3	

CAR MOVEMENTS

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01 movements.PEN

Tuesday 16 Jan, 2024 at 15:17:45
Environmental Calculations (Railway - Moving Line Source)

All railway (moving line) sources included. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results include the maximum of all the noise sources
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)	
R1A	456602.7	6969476.3	2	22.8	
R1B	456771.2	6969376.2	2	27.5	
R2	456748.4	6969186.6	4.5	34.8	
R3	457591	6968926.6	2	24.2	
R4	457464.2	6968023.4	2	13.3	
R5A	456328.8	6968177.1	2	14.2	
R5B	456412.8	6968186.6	2	14.9	
R5C	456567.1	6968163.2	2	15.2	
R5D	456472.9	6968068	2	13.5	
R6 CLASS		457258.9	6967967.4	2	13.1
R6 PLAY	457291.7	6967924.4	2	12.5	
Caretaker's N		457245.1	6969201	1.5	48.6

Caretaker's E	457253.9	6969192.3	1.5		48.8
Caretaker's S	457238.2	6969187.2	1.5		52.2
Caretaker's W	457235.7	6969191.1	1.5		52.9
Accom 1	457273.1	6969089.9	1.5	40.9	
Accom 2	457270.5	6969072.8	1.5	40.8	
Accom 3	457268.1	6969055.3	1.5	40.9	
Accom 4	457265.3	6969037.9	1.5	41	
Accom 5	457262.7	6969020.6	1.5	41	
Accom 6	457260.1	6969003.5	1.5	41	
Accom 7	457257.4	6968986	1.5	41	
Accom 8	457255	6968968.6	1.5	40.7	
Accom 9	457252.4	6968951.2	1.5	39.8	
Accom 10	457249.7	6968934	1.5	38.9	

PEOPLE TALKING

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:34:45
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		25	
R1B	456771.2	6969376.2	2	58.2		32.2	
R2	456748.5	6969187.7	4.5	56.2		24.4	
R3	457591	6968926.6	2	57.4		25.5	
R4	457464.2	6968023.4	2	47.5		13	
R5A	456328.8	6968177.1	2	50		13.4	
R5B	456412.8	6968186.6	2	49.8		14.1	
R5C	456567.1	6968163.2	2	49.3		14.8	
R5D	456472.9	6968068	2	49.5		13	
R6 CLASS		457258.9	6967967.4	2	49.5		13
R6 PLAY	457291.7	6967924.4	2	49.3		12.4	
Caretaker's N		457245.1	6969201	1.5	53.4		24.6
Caretaker's E		457253.9	6969192.3	1.5	53.4		36.1
Caretaker's S		457238.2	6969187.2	1.5	53.4		38.8
Caretaker's W		457235.7	6969191.1	1.5	53.4		38.7
Accom 1	457273.1	6969089.9	1.5	53.4		37.4	
Accom 2	457270.5	6969072.8	1.5	53.3		37.8	
Accom 3	457268.1	6969055.3	1.5	53.2		37.9	
Accom 4	457265.3	6969037.9	1.5	53.1		37.8	
Accom 5	457262.7	6969020.6	1.5	53		37.4	
Accom 6	457260.1	6969003.5	1.5	52.9		36.8	
Accom 7	457257.4	6968986	1.5	52.9		36	
Accom 8	457255	6968968.6	1.5	52.8		35.2	
Accom 9	457252.4	6968951.2	1.5	52.7		34.6	
Accom 10	457249.7	6968934	1.5	52.6		34.2	

ALFRESCO

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:43:25
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm

Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)	Noise Level (dB(A))
R1A	456602.7	6969476.3	2	62	11.8
R1B	456771.2	6969376.2	2	58.2	15.4
R2	456748.5	6969187.7	4.5	56.1	18.9

R3	457591	6968926.6	2	57.4		30.3	
R4	457464.2	6968023.4	2	47.4		20.3	
R5A	456328.8	6968177.1	2	50		18.6	
R5B	456412.8	6968186.6	2	49.8		19.4	
R5C	456567.1	6968163.2	2	49.3		20.4	
R5D	456472.9	6968068	2	49.5		18.7	
R6 CLASS		457258.9	6967967.4	2	49.5		20.2
R6 PLAY	457291.7	6967924.4	2	49.3		19.6	
Caretaker's N		457245.1	6969201	1.5	53.4		18.3
Caretaker's E		457253.9	6969192.3	1.5	53.4		19.3
Caretaker's S		457238.2	6969187.2	1.5	53.4		40.5
Caretaker's W		457235.7	6969191.1	1.5	53.4		40.4
Accom 1	457273.1	6969089.9	1.5	53.4		43.3	
Accom 2	457270.5	6969072.8	1.5	53.3		44	
Accom 3	457268.1	6969055.3	1.5	53.2		44.5	
Accom 4	457265.3	6969037.9	1.5	53.1		44.8	
Accom 5	457262.7	6969020.6	1.5	53		44.9	
Accom 6	457260.1	6969003.5	1.5	52.9		44.7	
Accom 7	457257.4	6968986	1.5	52.9		44.3	
Accom 8	457255	6968968.6	1.5	52.8		43.8	
Accom 9	457252.4	6968951.2	1.5	52.7		43.1	
Accom 10	457249.7	6968934	1.5	52.6		42.4	

INDOOR DINING

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:45:35
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm

Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	62		15.1	
R1B	456771.2	6969376.2	2	58.2		18.7	
R2	456748.5	6969187.7	4.5	56.1		19.6	
R3	457591	6968926.6	2	57.4		33.9	
R4	457464.2	6968023.4	2	47.4		23.6	
R5A	456328.8	6968177.1	2	50		21.9	
R5B	456412.8	6968186.6	2	49.8		22.7	
R5C	456567.1	6968163.2	2	49.3		23.7	
R5D	456472.9	6968068	2	49.5		22	
R6 CLASS		457258.9	6967967.4	2	49.5		23.4
R6 PLAY	457291.7	6967924.4	2	49.3		22.8	
Caretaker's N		457245.1	6969201	1.5	53.4		21.9
Caretaker's E		457253.9	6969192.3	1.5	53.4		23.1
Caretaker's S		457238.2	6969187.2	1.5	53.4		31.3
Caretaker's W		457235.7	6969191.1	1.5	53.4		31.2
Accom 1	457273.1	6969089.9	1.5	53.4		47.1	
Accom 2	457270.5	6969072.8	1.5	53.3		47.6	
Accom 3	457268.1	6969055.3	1.5	53.2		48	
Accom 4	457265.3	6969037.9	1.5	53.1		48.2	
Accom 5	457262.7	6969020.6	1.5	53		48.1	
Accom 6	457260.1	6969003.5	1.5	52.9		47.8	
Accom 7	457257.4	6968986	1.5	52.9		47.3	
Accom 8	457255	6968968.6	1.5	52.8		46.6	
Accom 9	457252.4	6968951.2	1.5	52.7		45.9	
Accom 10	457249.7	6968934	1.5	52.6		45.2	

BUS MOVEMENTS

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01 movements.PEN

Tuesday 16 Jan, 2024 at 15:36:57
Environmental Calculations (Railway - Moving Line Source)

All railway (moving line) sources included. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.

Noise level results include the maximum of all the noise sources
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		
R1A	456602.7	6969476.3	2		36.8	
R1B	456771.2	6969376.2	2		42.2	
R2	456748.4	6969186.6	4.5		33.1	
R3	457591	6968926.6	2		38.6	
R4	457464.2	6968023.4	2		28.8	
R5A	456328.8	6968177.1	2		26.8	
R5B	456412.8	6968186.6	2		27.7	
R5C	456567.1	6968163.2	2		28.7	
R5D	456472.9	6968068	2		27	
R6 CLASS		457258.9	6967967.4	2		28.5
R6 PLAY	457291.7	6967924.4	2		27.9	
Caretaker's N		457245.1	6969201	1.5		61.8
Caretaker's E		457253.9	6969192.3	1.5		39.8
Caretaker's S		457238.2	6969187.2	1.5		65.1
Caretaker's W		457235.7	6969191.1	1.5		66.8
Accom 1	457273.1	6969089.9	1.5		54.9	
Accom 2	457270.5	6969072.8	1.5		54.9	
Accom 3	457268.1	6969055.3	1.5		54.9	
Accom 4	457265.3	6969037.9	1.5		55	
Accom 5	457262.7	6969020.6	1.5		55	
Accom 6	457260.1	6969003.5	1.5		55	
Accom 7	457257.4	6968986	1.5		55	
Accom 8	457255	6968968.6	1.5		54.9	
Accom 9	457252.4	6968951.2	1.5		54.8	
Accom 10	457249.7	6968934	1.5		54.6	

TRUCK MOVEMENTS

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01 movements.PEN

Tuesday 16 Jan, 2024 at 15:32:24
Environmental Calculations (Railway - Moving Line Source)
All railway (moving line) sources included. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.

Noise level results include the maximum of all the noise sources
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		
R1A	456602.7	6969476.3	2		37.4	
R1B	456771.2	6969376.2	2		42.7	
R2	456748.4	6969186.6	4.5		33.5	
R3	457591	6968926.6	2		40.9	
R4	457464.2	6968023.4	2		23.6	
R5A	456328.8	6968177.1	2		25.2	
R5B	456412.8	6968186.6	2		26	
R5C	456567.1	6968163.2	2		27	
R5D	456472.9	6968068	2		25.4	
R6 CLASS		457258.9	6967967.4	2		22.2
R6 PLAY	457291.7	6967924.4	2		27	
Caretaker's N		457245.1	6969201	1.5		63
Caretaker's E		457253.9	6969192.3	1.5		63.2
Caretaker's S		457238.2	6969187.2	1.5		66.4
Caretaker's W		457235.7	6969191.1	1.5		67.7
Accom 1	457273.1	6969089.9	1.5		61.7	
Accom 2	457270.5	6969072.8	1.5		45.5	
Accom 3	457268.1	6969055.3	1.5		46.7	

Accom 4	457265.3	6969037.9	1.5	46.6
Accom 5	457262.7	6969020.6	1.5	46
Accom 6	457260.1	6969003.5	1.5	45.4
Accom 7	457257.4	6968986	1.5	44.9
Accom 8	457255	6968968.6	1.5	44.3
Accom 9	457252.4	6968951.2	1.5	43.8
Accom 10	457249.7	6968934	1.5	43.3

TRUCK WITH REFRIGERATION UNITS
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:47:57
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		15.1	
R1B	456771.2	6969376.2	2	58.2		18.7	
R2	456748.5	6969187.7	4.5	56.1		19.3	
R3	457591	6968926.6	2	57.4		32.3	
R4	457464.2	6968023.4	2	47.4		10.3	
R5A	456328.8	6968177.1	2	50		7.6	
R5B	456412.8	6968186.6	2	49.8		8.4	
R5C	456567.1	6968163.2	2	49.3		9.7	
R5D	456472.9	6968068	2	49.5		8	
R6 CLASS		457258.9	6967967.4	2	49.5		9.9
R6 PLAY	457291.7	6967924.4	2	49.3		9.4	
Caretaker's N		457245.1	6969201	1.5	53.4		24.1
Caretaker's E		457253.9	6969192.3	1.5	53.4		24.4
Caretaker's S		457238.2	6969187.2	1.5	53.4		46.5
Caretaker's W		457235.7	6969191.1	1.5	53.4		46.5
Accom 1	457273.1	6969089.9	1.5	53.4		46.1	
Accom 2	457270.5	6969072.8	1.5	53.3		46	
Accom 3	457268.1	6969055.3	1.5	53.2		45.6	
Accom 4	457265.3	6969037.9	1.5	53.1		45.2	
Accom 5	457262.7	6969020.6	1.5	53		44.6	
Accom 6	457260.1	6969003.5	1.5	52.9		32.9	
Accom 7	457257.4	6968986	1.5	52.9		32	
Accom 8	457255	6968968.6	1.5	52.8		31.2	
Accom 9	457252.4	6968951.2	1.5	52.7		30.4	
Accom 10	457249.7	6968934	1.5	52.6		29.7	

DELIVERIES
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:48:39
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		18	
R1B	456771.2	6969376.2	2	58.2		21.7	
R2	456748.5	6969187.7	4.5	56.1		22.3	
R3	457591	6968926.6	2	57.4		31.9	
R4	457464.2	6968023.4	2	47.4		11.8	
R5A	456328.8	6968177.1	2	50		10.8	
R5B	456412.8	6968186.6	2	49.8		11.7	
R5C	456567.1	6968163.2	2	49.3		14.4	
R5D	456472.9	6968068	2	49.5		12.7	
R6 CLASS		457258.9	6967967.4	2	49.5		11.4
R6 PLAY	457291.7	6967924.4	2	49.3		10.8	
Caretaker's N		457245.1	6969201	1.5	53.4		28.2
Caretaker's E		457253.9	6969192.3	1.5	53.4		28.6
Caretaker's S		457238.2	6969187.2	1.5	53.4		51
Caretaker's W		457235.7	6969191.1	1.5	53.4		50.8
Accom 1	457273.1	6969089.9	1.5	53.4		50.7	
Accom 2	457270.5	6969072.8	1.5	53.3		50.5	
Accom 3	457268.1	6969055.3	1.5	53.2		50.2	
Accom 4	457265.3	6969037.9	1.5	53.1		49.7	
Accom 5	457262.7	6969020.6	1.5	53		49	
Accom 6	457260.1	6969003.5	1.5	52.9		48.4	
Accom 7	457257.4	6968986	1.5	52.9		47.6	
Accom 8	457255	6968968.6	1.5	52.8		33.3	
Accom 9	457252.4	6968951.2	1.5	52.7		32.5	
Accom 10	457249.7	6968934	1.5	52.6		31.6	

WORKSHOP NUT RUNNER
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:49:12
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		32.4	
R1B	456771.2	6969376.2	2	58.2		36.6	
R2	456748.5	6969187.7	4.5	56.1		37	
R3	457591	6968926.6	2	57.4		34	
R4	457464.2	6968023.4	2	47.4		26.2	
R5A	456328.8	6968177.1	2	50		24.6	
R5B	456412.8	6968186.6	2	49.8		25.7	
R5C	456567.1	6968163.2	2	49.3		27.5	
R5D	456472.9	6968068	2	49.5		25.7	
R6 CLASS		457258.9	6967967.4	2	49.5		28.2
R6 PLAY	457291.7	6967924.4	2	49.3		27.3	
Caretaker's N		457245.1	6969201	1.5	53.4		48.1
Caretaker's E		457253.9	6969192.3	1.5	53.4		43.9
Caretaker's S		457238.2	6969187.2	1.5	53.4		50.6
Caretaker's W		457235.7	6969191.1	1.5	53.4		50.9
Accom 1	457273.1	6969089.9	1.5	53.4		46.8	
Accom 2	457270.5	6969072.8	1.5	53.3		46.6	
Accom 3	457268.1	6969055.3	1.5	53.2		46.4	
Accom 4	457265.3	6969037.9	1.5	53.1		46.1	
Accom 5	457262.7	6969020.6	1.5	53		45.7	
Accom 6	457260.1	6969003.5	1.5	52.9		45.3	
Accom 7	457257.4	6968986	1.5	52.9		44.9	
Accom 8	457255	6968968.6	1.5	52.8		44.5	
Accom 9	457252.4	6968951.2	1.5	52.7		44.1	
Accom 10	457249.7	6968934	1.5	52.6		43.8	

WORKSHOP HAMMERING METAL
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:50:05
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		42	
R1B	456771.2	6969376.2	2	58.2		46.2	
R2	456748.5	6969187.7	4.5	56.1		46.6	
R3	457591	6968926.6	2	57.4		43.5	
R4	457464.2	6968023.4	2	47.4		35.7	
R5A	456328.8	6968177.1	2	50		34.3	
R5B	456412.8	6968186.6	2	49.8		35.4	
R5C	456567.1	6968163.2	2	49.3		37.2	
R5D	456472.9	6968068	2	49.5		35.4	
R6 CLASS		457258.9	6967967.4	2	49.5		37.6
R6 PLAY	457291.7	6967924.4	2	49.3		36.8	
Caretaker's N		457245.1	6969201	1.5	53.4		56.2
Caretaker's E		457253.9	6969192.3	1.5	53.4		52.3
Caretaker's S		457238.2	6969187.2	1.5	53.4		59.7
Caretaker's W		457235.7	6969191.1	1.5	53.4		59.9
Accom 1	457273.1	6969089.9	1.5	53.4		56.1	
Accom 2	457270.5	6969072.8	1.5	53.3		55.9	
Accom 3	457268.1	6969055.3	1.5	53.2		55.6	

Accom 4	457265.3	6969037.9	1.5	53.1	55.3
Accom 5	457262.7	6969020.6	1.5	53	54.9
Accom 6	457260.1	6969003.5	1.5	52.9	54.6
Accom 7	457257.4	6968986	1.5	52.9	54.2
Accom 8	457255	6968968.6	1.5	52.8	53.8
Accom 9	457252.4	6968951.2	1.5	52.7	53.4
Accom 10	457249.7	6968934	1.5	52.6	53

WORKSHOP CAR HOIST

Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:51:02
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		3.8	
R1B	456771.2	6969376.2	2	58.2		7.9	
R2	456748.5	6969187.7	4.5	56.1		8.6	
R3	457591	6968926.6	2	57.4		5.6	
R4	457464.2	6968023.4	2	47.4		-2.2	
R5A	456328.8	6968177.1	2	50		-3.6	
R5B	456412.8	6968186.6	2	49.8		-2.5	
R5C	456567.1	6968163.2	2	49.3		-0.7	
R5D	456472.9	6968068	2	49.5		-2.5	
R6 CLASS		457258.9	6967967.4	2	49.5		-0.5
R6 PLAY	457291.7	6967924.4	2	49.3		-1.2	
Caretaker's N		457245.1	6969201	1.5	53.4		16.5
Caretaker's E		457253.9	6969192.3	1.5	53.4		12.9
Caretaker's S		457238.2	6969187.2	1.5	53.4		21.7
Caretaker's W		457235.7	6969191.1	1.5	53.4		21.9
Accom 1	457273.1	6969089.9	1.5	53.4		18.1	
Accom 2	457270.5	6969072.8	1.5	53.3		17.9	
Accom 3	457268.1	6969055.3	1.5	53.2		17.5	
Accom 4	457265.3	6969037.9	1.5	53.1		17.2	
Accom 5	457262.7	6969020.6	1.5	53		16.8	
Accom 6	457260.1	6969003.5	1.5	52.9		16.4	
Accom 7	457257.4	6968986	1.5	52.9		16	
Accom 8	457255	6968968.6	1.5	52.8		15.7	
Accom 9	457252.4	6968951.2	1.5	52.7		15.3	
Accom 10	457249.7	6968934	1.5	52.6		14.9	

WASTE COLLECTION
Project Description:Noise assessment of Patrick Estate Car
File:C:\Users\Matty\Desktop\PEN3D 2023\23094a_environ L01.PEN

Friday 03 May, 2024 at 11:52:01
Environmental Calculations
Selected point & line sources only. Line source segmentation angle: 5 degrees. Calculations for specified meteorology.
Noise level results are the maximum of all the noise sources
Noise level results incorporate the incoherent ground reflection algorithm
Meteorology :
Wind speed 0.0 (m/s) Wind direction 0 Mast height 10.0 (m)
Temperature 20.0 (C) Temperature Gradient 0.0 (C/100m) Humidity 50.0 (%)
Surface Roughness of terrain 0.023000000 (m) Zero plane offset 0.080000000 (m)

Receptor	X Posn (m)	Y Posn (m)	Height (m)	Ground (m)		Noise Level (dB(A))	
R1A	456602.7	6969476.3	2	61.9		26.1	
R1B	456771.2	6969376.2	2	58.2		29.5	
R2	456748.5	6969187.7	4.5	56.1		30.2	
R3	457591	6968926.6	2	57.4		40.9	
R4	457464.2	6968023.4	2	47.4		30.2	
R5A	456328.8	6968177.1	2	50		17.8	
R5B	456412.8	6968186.6	2	49.8		22.6	
R5C	456567.1	6968163.2	2	49.3		23.4	
R5D	456472.9	6968068	2	49.5		21.8	
R6 CLASS		457258.9	6967967.4	2	49.5		29.8
R6 PLAY	457291.7	6967924.4	2	49.3		29.3	
Caretaker's N		457245.1	6969201	1.5	53.4		33.1
Caretaker's E		457253.9	6969192.3	1.5	53.4		33.7
Caretaker's S		457238.2	6969187.2	1.5	53.4		55.4
Caretaker's W		457235.7	6969191.1	1.5	53.4		55.3
Accom 1	457273.1	6969089.9	1.5	53.4		55.4	
Accom 2	457270.5	6969072.8	1.5	53.3		55.2	
Accom 3	457268.1	6969055.3	1.5	53.2		54.7	
Accom 4	457265.3	6969037.9	1.5	53.1		54.1	
Accom 5	457262.7	6969020.6	1.5	53		53.4	
Accom 6	457260.1	6969003.5	1.5	52.9		52.6	
Accom 7	457257.4	6968986	1.5	52.9		51.9	
Accom 8	457255	6968968.6	1.5	52.8		51.1	
Accom 9	457252.4	6968951.2	1.5	52.7		50.3	
Accom 10	457249.7	6968934	1.5	52.6		49.6	

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620-635 WEST ROAD, PATRICK ESTATE, LOWOOD QLD 4311

WASTE MANAGEMENT PLAN

For DA Submission to Somerset Regional Council

Prepared for:	Drewmaster Pty Ltd
Date Prepared	May 2024
Revision:	1.24
Somerset Regional Council Application #:	DA23911

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- Any third party who interests may be affected by any decision made regarding the contents of this report, and/or
- Any conclusion drawn resulting from omission or lack of full disclosure by the client, or the clients' consultants.

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Introduction

AusWide Consulting was commissioned by Drewmaster to prepare a Waste Management Plan (WMP) for approval of a proposed heritage car and motorcycle museum at 620-635 West Road, Patrick Estate, Lowood QLD 4311. The proposed development consists of the relocation of 20 existing buildings, ranging in size, offsite and the construction of 11 display buildings, a cafe, a car park, and storage facilities.

In the course of preparing this WMP, the subject site and its environs have been inspected, plans of the development examined, and all relevant council requirements and documentation collected and analysed.

This WMP has been prepared based on the following information:

- Architectural Plans provided by Billy Dawson Architects Pty Ltd;
- NSW EPA – Better Practise Guide for Resource Recovery in Residential Developments.

This Waste Management Plan demonstrates that the waste management facilities and processes at the proposed site are able to handle the expected waste streams in an efficient and environmentally responsible manner.

Background and Existing Conditions

The subject site is located at 620-635 West Road, Patrick Estate, Lowood QLD 4311 on the southern side of West Rd. The nearby land use is primarily rural. The following **Figures 1** & **2** (on the following page) provide an overview of the existing site.

Figure 1 provides an overview of the area, and its surrounding land uses whilst **Figure 2** provides an aerial view of the subject site and immediate area surrounding the site.

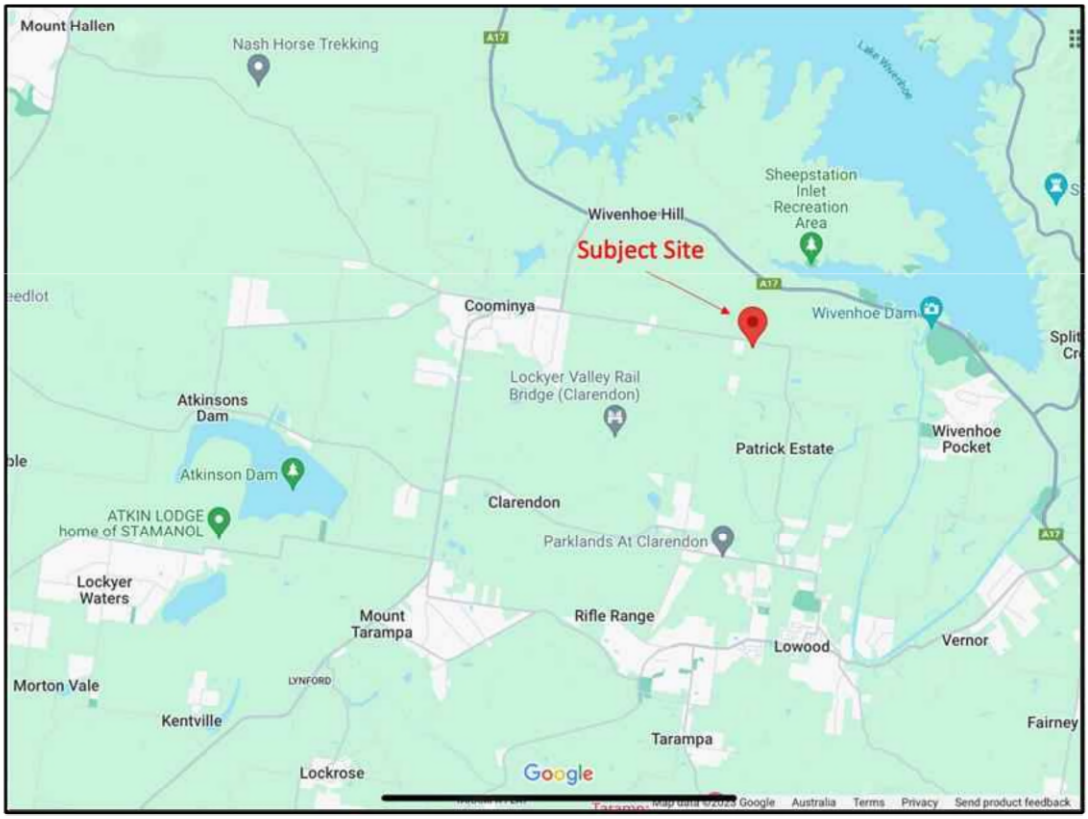


Figure 1: Location of the Subject Site

Figure 2: Aerial View of the Subject Site

Proposed Development

The proposed development consists of the relocation of 20 existing buildings offsite and the construction of 11 display buildings, workshop, café and administration building, caretaker's cottage, a car park, and waste storage facility. Ten (10) short stay accommodation modules will be constructed in stage 2 of the development.

Vehicular access to the proposed development will be provided via West Road to the north of the subject site. The following Table 1 details the range of buildings across the proposed development and the gross floor area (GFA).

Table 1 : Car Museum GFAs

Car Museum - Gross Floor Area Calc's

as per Somerset Planning Regulations

Car Museum - Common Garages (1-9)	
showroom floor	3,820m²
amenities	50m²
kiosk	30m²
total common garage GFA	3,900m²
grand total common garage GFA	35,100m²

Car Museum - Garage 10	
Concours Car Display area	3,850m²
amenities	50m²
total Garage 10 GFA	3,900m²

Car Museum - Garage 11	
feature display	1,114m²
gift shop	213 m²
amenities	50 m²
workshop	2,188 m²
total Garage 11 GFA	3,592m²
Garage 11 lobby (not included in GFA)	*308m²*
GRAND TOTAL CAR MUSEUM GFA	42,592 m²

Admin & Cafe - Gross Floor Area Calc's

as per Somerset Planning Regulations

admin	399 m²
foyer	99 m²
cafe	497 m²
grand total restaurant GFA	995 m²
outdoor dining space (not included in GFA)	*84m²*
services/refuse sheds (not included in GFA)	*51m²*
loading area (not included in GFA)	*70m²*

Other Buildings - Gross Floor Area Calc's

caretakers residence	249 m²
short term accomodation (x10)	1000m²
grand total other buildings GFA	1,249m²

Grand Totals

car museum buildings - GFA	42,592m²
admin & cafe - GFA	995m²
other buildings - GFA	1,249m²

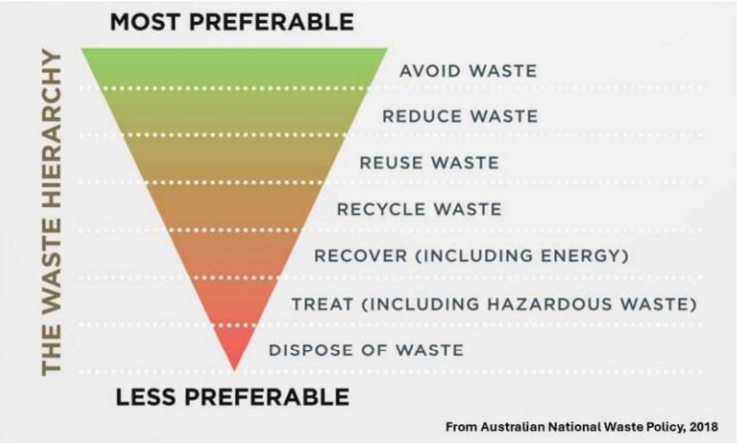
GRAND TOTAL SITE GFA **44,836m²**

Anticipated Waste Generation, Storage and Collection

The waste collection service will be provided by a private contractor, with internal collection managed by the site management.

Waste Management Principles

When dealing with waste, the following hierarchy has been adopted from the Australian National Waste Policy, prioritising from top to bottom:



Avoid/Reduce

Particularly during the construction phase, avoidance of waste will be achieved through:

- Selecting design options with the most efficient use of materials; and
- Selecting materials with minimal wastage, such as prefabricated materials.

Reuse

Some of the materials encountered in the demolition and construction stages can be recovered and reused both on-site and off-site. This will be practised wherever possible. Reusable materials shall be appropriately stored to avoid damage from weather or machinery.

Recycle

Similarly, many materials from the demolition and construction stages will be recyclable. These materials will be identified prior to demolition, and a system incorporated to efficiently separate reusable materials, recyclable materials, and disposable materials. Recyclable materials shall be appropriately stored to avoid damage from weather or machinery. Details and receipts verifying the recycling of these materials shall be kept present on site at all times.

Recover/Treat

Processing of waste to recover resources, including energy, may be an option, with many waste companies processing demolition and construction waste before disposal. Some waste may also be treated to reduce its environmental impact before disposal.

Disposal

The waste disposal contractor chosen for the job will comply with Council's DCP. Details and receipts verifying the disposal of these materials shall be kept present on site at all times.

Handling

When handling waste on-site, the system (including bin placement, volumes, and access) shall be designed with the following factors in mind:

- Safety (highest priority);
- Ease of use; and
- Aesthetics.

Stockpiling

Waste sorting areas on-site during demolition and construction shall be adequately maintained. The material (demolition material, excavation material, construction material and waste) stockpiling area shall always remain within the site boundary and relocate during different demolition and construction stages as necessary. The waste area shall be largely located at the front of the site to provide access for waste collection vehicles via the site construction entrance. This is to maintain easy access and removal of waste. The stockpiling area shall not infringe on access to the site however, hoardings shall bind the site perimeter; therefore, the waste shall not be visible from the street.

Demolition & Construction Stage

The proposal involves the relocation of 20 existing buildings and the construction of 11 display garages and a workshop, a café and administration building, caretaker's cottage, car and bus parking, waste handling shed, and 10 short stay accommodation modules in Stage 2.

Demolition Works

It should be noted that the demolition stage has the greatest potential for waste minimisation. With this particular development, all existing buildings will be relocated and re-used offsite.

Site contractors should demonstrate project management which seeks to:

- Re-use excavated material on-site and dispose of any excess to an approved site;
- Re-use green waste mulch in landscaping either on-site or off-site;
- Re-use bricks, tiles and concrete on-site as appropriate, or recycle off-site;
- Re-use plasterboard in landscaping on-site or return to supplier for recycling;
- Re-use framing timber on-site or recycle elsewhere;
- Recycle windows, doors and joinery off-site;
- Recycle plumbing, fittings and metal elements off-site;
- Dispose of all asbestos, hazardous and/or intractable wastes in accordance with Workcover Authority and EPA requirements;
- Identity locations of on-site storage facilities for material to be reused on-site, or separated for recycling off-site;
- Identify destination and transportation routes of all materials to be either recycled or disposed of off-site.

Construction Works

The following measures shall be considered during the construction stage in order to save resources and minimise waste:

- Purchasing Policy – i.e., ordering the right quantities of materials and prefabrication of materials where possible;
- Reusing formwork;
- Minimising site disturbance, limiting unnecessary excavation;
- Careful source separation of off-cuts to facilitate re-use, resale, or efficient recycling;
- Co-ordination/sequencing of various trades.

Wastage Types and Handling

Waste volumes produced by excavation, demolition and construction stages are estimated in the following tables. Detailed waste volumes will be provided by the contractor at the construction certificate stage. Where possible, materials shall be reused or recycled, with disposal being the last resort. The destination of all recycled and disposed material shall be announced upon selecting the waste collectors and recyclers.

The arrangements for all reused, recycled and disposed waste shall be tracked and recorded, and all receipts shall be held on-site.

The client has indicated that the 20 existing structures (mainly steel farm sheds) will be dismantled and rebuilt or stored offsite. As such minimal waste will be generated except for some concrete footings, excavated material, and vegetation waste.

Table 2 : Waste Types and Handling

Materials on Site	Waste Estimate Volume	On-Site Reuse	Off-Site Recycling	Off-Site Disposal (Accordance with QLD EPA)
Concrete	60t	Existing driveways to be retained during construction. Crushed and used as aggregate, drainage backfill. 75-90%	25-10%	0%
Excavated material and overburden	8,400m^3	Yes. Keep and reuse topsoil for landscaping. Balance cut and fill or store on site. Use some for support of retaining walls (Excavated materials are only to be used if the material is not contaminated or has been remediated in accordance with any requirements specified by any Environmental Consultancy engaged to carry out any contamination assessment of excavated material).	To be determined	0%
Metals (fencing, etc)	12t	0%	95%	5%
Residual Waste	20t	0%	50%	50%

Demolition Phase for Existing Buildings

The Demolition reuse/recycling/disposal information will be confirmed when a demolition contactor is engaged.

It is noted that the quantities of materials detailed in this section are estimates only, based on current industry standards and quantity analysis, and may vary due to the prevailing nature of construction constraints, weather conditions, and any other unforeseeable activities associated with the removal of the buildings, which are beyond the control of the developer, including but

not being limited to theft, accidents, and other acts of misadventure. Notwithstanding any of the above, the developer will provide Council with all details in relation to any major variations in this regard.

The developer will keep a written record of all documentation associated with the transportation, disposal and processing of all materials associated with the removal of all structures from the site.

Construction Phase

If sound construction management practices are in place, then waste volumes should be minimised with the majority of this waste being recyclable. Greater detail will be provided by the contractor at the construction stage.

Table 3, below, provides an estimate of waste volumes during construction.

Table 3 : Waste Types During Construction

Materials on Site	Waste Estimate - Volume (m^3) or Weight (T)	On-Site Reuse	Off-Site Recycling	Off-Site Disposal (Accordance with QLD EPA)
Timber	8t	Re-use for formwork and studwork, landscaping, shoring 20-30%	70-80%	<10%
Concrete	8t	Broken up and used as fill, aggregate, driveways 20-30%	70-80%	<10%
Metals	6t	0%	95%	5%
Plaster Board	8t	0%	100%	0%
Packaging & Residual Waste	8t	0%	50%	50%

Ongoing Waste Generation - Operation

The following Table 4 illustrates the expected waste generation rates for the proposed development. Waste will be primarily generated from three sources:

1. The museum – the client has indicated that there would not be any restrictions on eating and drinking as people walk through the 11 car display halls, and that there may be drink vending machines in these buildings. However, as people will be walking through the halls, and as meals are provided in the cafe, it is expected that any waste generated will be low; generally, in the order of 0.5L of general waste and 0.5L of recycling per visitor;
2. The café – The plans for the café are not detailed but waste generation is based on 15 staff at the café and the generation rates is based on the number of nominated staff to provide meals and service in the cafe at the rate of 17.5m^3/staff member/year, with recyclables making up around 20%. The café will use the same general/recyclable bins placed in the display halls be used (**Figure 5**) and taken to the car museum waste area;
3. Administration – this is a 399m^2 office for site management, so has waste generation rates for typical office space (assuming 5 days per week operation).
4. Stort-term accommodation modules – 10 prefabricated short-term accommodation modules will be placed on site. These modules are 100m^2 in size. It is estimated that each unit when occupied will generate 100L of general waste and 100L of recyclables per week, collected by site management and taken to the museum waste area.
5. Mechanical servicing – the vehicles on display will need to be maintained on site. This will mainly generate waste streams that will be handled separately to the solid waste, such as waste oils, parts washing liquid, scrap metal and batteries, and tyres, all of which will be taken off-site for recovery. The workshop will generate minor amounts of general waste and recyclable packaging waste (240L each per week).
6. Grounds management – the grounds will be maintained by contract or staff gardeners. All garden waste will be reused on site through mulching or composting, and any excess disposed appropriately off-site.

The caretaker's residence will utilise the kerbside residential waste collection service offered by Council, which at this address consists of a weekly 240L general waste bin and a fortnightly 240L comingled waste bin.

Table 4 : Waste Generation Rates

Type of Premises	General Landfill Waste	Commingled Recycling Waste
Museum (assuming food and beverage consumption allowed in halls)	0.5L/person/visit	0.5L/person/visit
Café (per staff member)	14m^3/year	3.5m^3/year
Office	10L/100m^2/day	15L/100m^2/day
Accommodation Modules	100L/unit/week	100L/unit/week
Mechanical Workshop	240L/week	240L/week

Waste within Overall Development

Using the garbage and recycling generation rates above, the following can be calculated:

Total Waste Generation of the Café (15 staff)

- General Waste = 4,050L per week (uncompacted);
- Recycling Waste = 1,700L per week (uncompacted).

Total Waste Generation of the Museum (Estimated Peak Visitation 4,000/week)

- General Waste = 2,000L per week (uncompacted);
- Recycling Waste = 2,000L per week (uncompacted).

Accommodation Modules Waste Generation (for all 10 occupied)

- General Waste = 1,000L per week (uncompacted);
- Recycling Waste = 1,000L per week (uncompacted).

Mechanical Workshop Waste Generation

- General Waste = 240L per week (uncompacted);
- Recycling Waste = 240L per week (uncompacted).

Office Waste Generation

- General Waste = 200L per week (uncompacted);
- Recycling Waste = 300L per fortnight (uncompacted).

Total Waste Generation (at peak patronage)

- General Waste = 7,490L per week (uncompacted);
- Recycling Waste = 5,240L per week (uncompacted).

Waste Storage Areas

Based on the total waste generated by the development, the following combination of mobile garbage bins (MGBs) should be provided:

Central Waste Shed

- 4 x 1,100L General Waste MGBs – collected and emptied twice weekly.
- 3 x 1,100L Recycling Waste MGB – collected and emptied twice weekly.

NB: No MGB has been allocated for food and organic waste. This waste stream will be placed in the general waste MGBs however space can be provided for future processing, if required.

The following Table 5 illustrates the typical dimensions of the 1,100L MGBs mentioned above.

Table 5 : Typical Measurements for 1,110L MGBs.

Size	Height (mm)	Width (mm)	Depth (mm)
1,100L	1,470	1,370	1,245

It should be noted that the waste generation will be dependent on the level of patronage of the facility, which may vary due to the level of promotion and seasonal factors. However, the waste management areas on the site are large and could readily cope with waste generation rates larger than those estimated in this plan.

There could be further opportunities to divert other waste streams such as:

- Separate collection of eligible containers for container deposit, potentially for a charitable cause;
- Separate collection of coffee cups through a scheme such as Simply Cups (simplycups.com.au).

There is adequate space for handling of these separate waste streams on site.

Waste Storage Area Design Requirements

Both general and recyclable MGBs will be located across the facility for customers to dispose of their waste. These will be collected and emptied at least daily and transported to a central waste storage area.

The car museum waste storage area will be located in a dedicated building adjacent to the entry and exit to the proposed facility. A number of design considerations will be implemented. These considerations are listed below:

1. The floors, walls and ceilings of the waste and recycling storage area will be finished with a rigid, smooth-faced impermeable material capable of being easily cleaned;
2. The floors of the waste and recycling storage area will be graded and drained to an approved drainage fitting;
3. A close-fitting and self-closing door or gate operable from within the room is to be fitted to the waste and recycling storage area;
4. Doors/gates to the waste and recycling storage rooms will have a minimum clearance width of 900 mm;
5. At least one door or gate to the waste and recycling storage area is to have sufficient dimensions to allow the entry and exit of waste containers of a capacity nominated for the development;
6. The design shall restrict the entry of trespassers, vermin, or other animals into the area;
7. The waste and recycling storage area is to be provided with an adequate supply of water for cleaning purposes with a hose cock;
8. The waste and recycling storage area is to be adequately ventilated by either:
    a) Natural ventilation openings to external air. The dimension of the openings are not to be less than 5 per cent of the bin bay or bin room floor area;
    b) A mechanical exhaust ventilation system in accordance with relevant Australian standards;
9. Waste and recycling areas are to be provided with artificial light controlled by switches located both outside and inside the storage area.

Signage

Appropriate colour coded signage will be provided in the bin storage room and waste education material will be provided on the MGBs across the facility. This will assist customers to dispose of their waste into the correct MGB.

The following **Figure 3** (on the next page) show examples of waste education material sourced from the Somerset Regional Council Waste Recycling Brochure and could provide an easy guide for consumers at the proposed facility. The private waste collector should be able to provide signage of acceptable items in the collected waste streams.

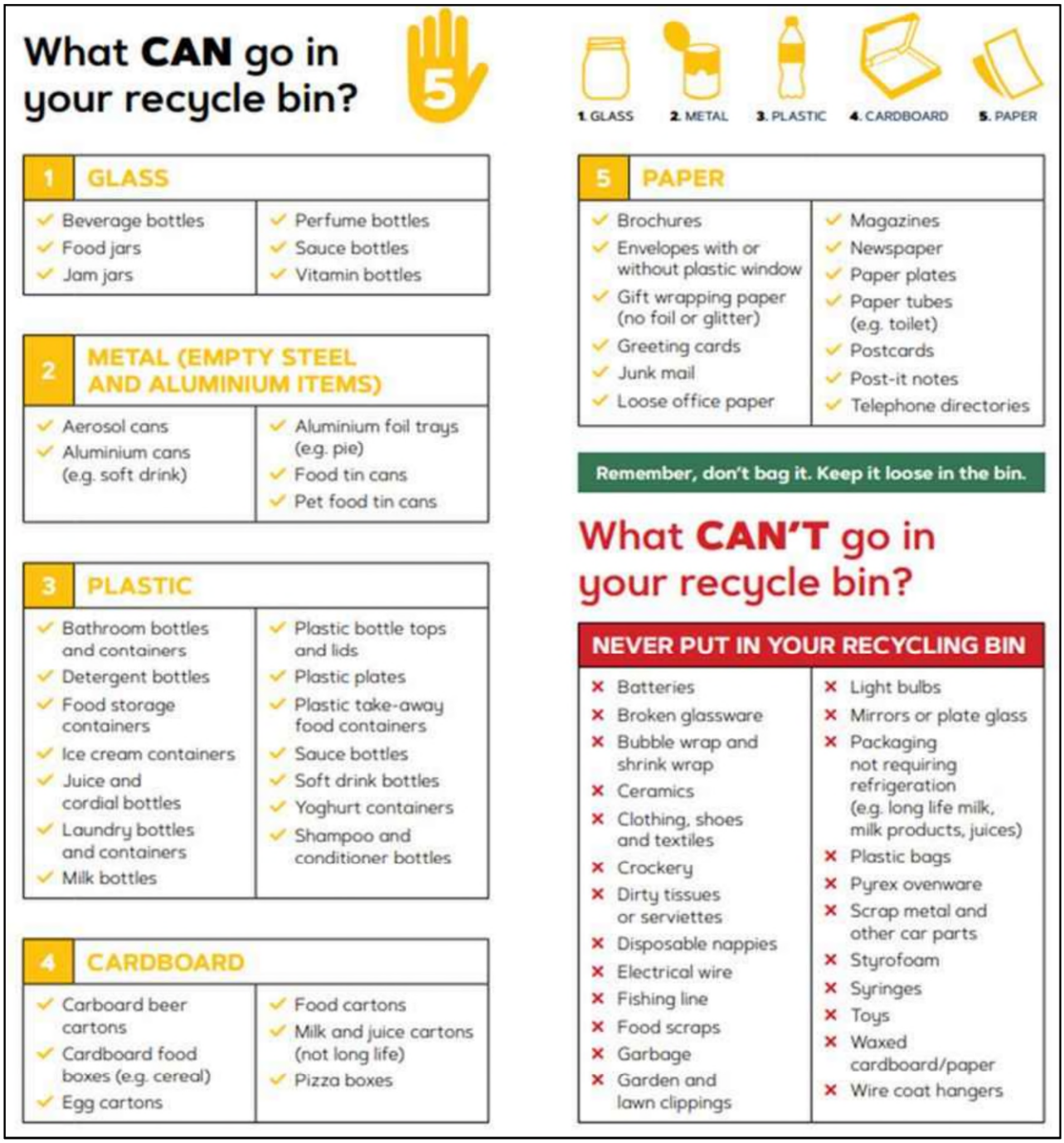


Figure 3: Acceptable Comingled Recyclables, Somerset Regional Council

The following **Figure 4** is a scaled diagram of the MGBs within the dedicated waste storage area. Further details on the waste storage area are contained in **Appendix A**.

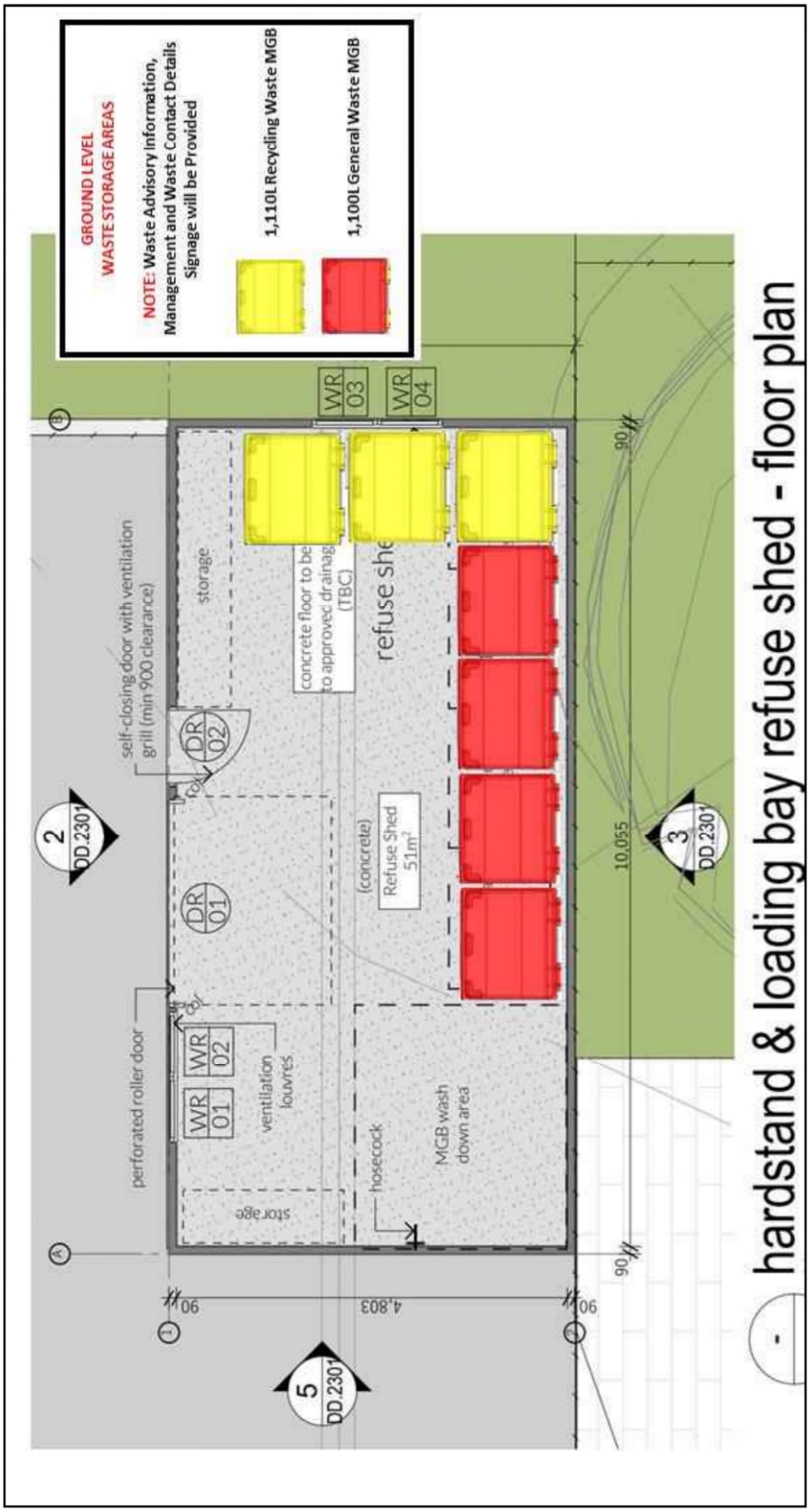


Figure 4: Scaled Diagram of the Proposed Waste Area

Internal Waste Storage and Handling

There will be 240L MGBs for both general waste and recycling located in each of the halls for the convenience of visitors to dispose of their waste as they traverse the museum, in the café and in the market hall when in operation. It is suggested to have two pairs per display hall. Each set of MGBs will be enclosed to improve amenity and to clearly distinguish between general and recyclable waste. The following **Figure 5** shows an example of the bin enclosures.

Figure 5: Internal Waste Bin Enclosures

The caretakers will be responsible for ferrying the 240L MGBs to the care museum waste storage area and emptying them into the 1,100L MGBs in the central waste on a daily basis. This could be using a bin tug and trailer, or a ute with a tail lift given the size of the site. A bin lifter will be required in the waste storage area to conveniently empty the 240L MGBs into the 1,100L MGBs. An example of the bin lifter is shown in **Figure 6** (the next page).