

**Our ref:** AU009935

135 Abbott Street  
Cairns QLD 4870  
T +61 7 4031 1336

Date: 20 October 2023

Chief Executive Officer  
Mareeba Shire Council  
PO Box 154  
Mareeba QLD 4880

Attn: Carl Ewin, Planning Officer

Dear Carl,

**121 Douglas Track Road, Speewah, MCU (Function Facility)**  
**Information request response (pursuant to Section 13 of the Development Assessment Rules)**  
**Your Ref: MCU/23/0014**

We refer to Council's information request, dated 31 July 2023, for the development application over the above site.

Pursuant to sections 13.2 of the *Development Assessment Rules* we provide our response to this information request below.

In accordance with Section 13.3 of the *Development Assessment Rules*, we confirm that this letter and attachments constitute our response to Council's information request. Accordingly, we advise that you must proceed with assessment of this development application.

## Information request response

### 1 Acoustic Assessment

Please provide an acoustic assessment/ prepared by a suitably qualified Registered Professional Engineer of Queensland (RPEQ), that demonstrates that the proposed function facility will not have an unacceptable impact on the residential amenity of adjacent sensitive land uses. Of particular concern is the use of the site for functions that include amplified music and sounds (microphones etc.) The acoustic assessment should provide clarity as to the number of events to be held on-site on at least a monthly basis and at minimum/ address the following:

- The appropriateness of the proposed frequency of events and the type and scale of events (i.e. ceremony only with no reception provided on-site, ceremony and reception packages, other functions that may not include amplified music/noise etc.);
- The topography of the site and established mature vegetation and its effectiveness as a noise buffer. It is understood that function location "M" which is proposed for use for large functions (up to 150 persons) is in an elevated position which may increase the impacts of amplified noise on surrounding sensitive receptors situated at a lower elevation;
- The level of noise and nuisance likely to be experienced at nearby sensitive receptors, particularly during the more noise sensitive evening and night time hours;
- Recommendations for noise mitigation measures and controls to be implemented by the applicant/developer as well as any third party specialist event company used to manage events.

## Response

A Noise Impact Assessment has been prepared by Dedicated Acoustics and is attached at **Appendix A**. The assessment has considered the surrounding environment and the proposed use comprising a number of event sites and events of varying sizes. It has also considered the potential for noise impacts from on-site car parking. The assessment has had regard to the requirements of the *Environmental Protection Act 1994* and the *Environmental Protection (Noise) Policy 2019*.

Noise impacts from the development and use were identified as:

- Patron noise;
- Music/entertainment noise; and,
- Noise from vehicle movements.

The sensitive receptors were identified as the nearby and adjacent dwellings with the closest dwelling being 80 metres from the south west corner of the site and approximately 130 metres from the nearest function site.

The assessment concluded that the vehicle movements were expected to be within acceptable noise forecast levels for all scenarios and that function noise may exceed noise criteria depending on the intensity of noise generation.

In order to ensure that the noise generation remained within acceptable levels, controls have been recommended for each of the proposed function sites with music being limited to background music at the sites closest to the sensitive receptors.

Refer to **Attachment A** Noise Impact Assessment, Dedicated Acoustics.

## 2 Traffic Impact Assessment

Please provide a Traffic Impact Assessment (TIA), prepared by a suitably qualified RPEQ investigating the proposed developments impacts on the local road network. The TIA should investigate anticipated vehicle movements/ and any upgrades required to Speewah Road and Douglas Track. Douglas Track reverts back to a formed gravel standard approximately 40 metres to the west of the site access crossover.

## Response

CivilWalker Consulting Engineers were engaged to undertake a Traffic Impact Assessment, which has been provided at **Appendix B**.

The Traffic Impact Assessment considered the existing road network and development in the locality and current traffic volumes on the local road network and the requirements of the FNQROC Regional Development Manual for road design.

An assessment of the likely traffic generated by the proposed development and use of the site in the context of the existing traffic volumes has indicated that there is no trigger for road upgrades associated with an increase in traffic volume by the proposed development and no road pavement upgrades are considered warranted. However, minor line marking and signage upgrades are recommended to the existing causeway between Pioneer Close and William Smith Drive to improve safety.

Refer to **Attachment B** – Traffic Impact Assessment Report, CivilWalker

## 3 Ecological Assessment

The majority of the site is covered in remnant vegetation inclusive of rainforest vegetation and is also situated adjacent and nearby to mapped conservation areas, including World Heritage Areas. Furthermore, anecdotal evidence suggests that Cassowaries frequent the subject site.

Please provide an ecological assessment/ prepared by a suitably qualified professional demonstrating that the use of the site as a function facility, in particular for functions with amplified music and noise, is not likely to have a detrimental impact on the site's biodiversity area as well as adjacent and nearby conservation areas. The ecological assessment should address the relevant Strategic Outcomes and Elements of Part 3.4 of the Planning Scheme's Strategic Framework as well as the relevant acceptable outcomes/performance outcomes of the Environmental significance overlay code.

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## **Response**

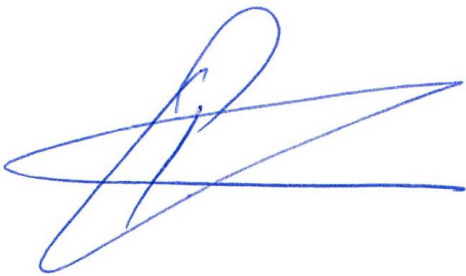
Land Plan have been engaged to prepare an Ecological Report for the site and proposed development and use and is attached at **Appendix C**.

The report concludes that the existing and proposed development and use of the site would not result in an adverse impact on the ecological values of the site, the sites biodiversity area or any protected species, including the Southern Cassowary, which may inhabit or passage through the site.

Refer to **Attachment C** Ecological Report 2023, Land Plan.

We look forward to continuing working with you on this development. In the meantime, if you have any queries please contact the writer (contact details below).

Yours sincerely,  
for RPS AAP Consulting Pty Ltd



**Patrick Clifton**

Senior Principal | Practice Leader - Planning, Cairns

patrick.clifton@rpsgroup.com.au

+61 7 4276 1017

# Appendix A

## Noise Impact Assessment, Dedicated Acoustics

Brisbane  
Sunshine Coast  
Gold Coast  
Townsville  
Cairns  
Byron Bay  
Toowoomba

Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
ABN: 67909058720



# **NOISE IMPACT ASSESSMENT**

## **MATERIAL CHANGE OF USE – FUNCTION FACILITY**

121 Douglas Track Speewah QLD 4881  
(Lot 45 on N157358)




Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## Document Control Page

**Document Title:** A482 - 121 Douglas Track Speewah - Function Facility - Noise Impact Assessment (Rev 0)  
**Date:** 6 October 2023  
**Prepared by:** Craig O'Sullivan, BEng (Mech) RPEQ 26472 MIEAust NER MAAS

### Revision History

Date	Revision	Description	Authorised	
			Name/Position	Signature
6/10/2023	0	Draft for Client Review	Craig O'Sullivan Principal Engineer	

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The client is authorised, upon payment to Dedicated Acoustics of the agreed report preparation fee, to provide this report in full to any third party. Recommendations made in this report are intended to resolve acoustical problems only. We make no claim of expertise in other areas and draw your attention to the possibility that our recommendations may not meet the structural, fire, thermal, or other aspects of building construction

We encourage clients to check with us before using materials or equipment that are alternative to those specified in our Acoustical Report.

The use of contractors that are experienced in acoustic construction and the use of materials and equipment that are supported by acoustic laboratory test data are encouraged.

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## Dedicated Acoustics: Noise Impact Assessment

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Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## **EXECUTIVE SUMMARY**

A material change of use has been proposed for a Function Facility at 121 Douglas Track, Speewah QLD 4881 (Lot 45 on N157358).

A Noise Impact Assessment is required for development approval from Mareeba Shire Council due to potential noise emission impacts from the development onto surrounding areas.

The development site is a large allotment, mostly covered with thick rainforest with cleared areas towards the west boundary, and is currently used as a tropical flower farm and commercial garden. Surrounding land uses are typically rural, conservation and rural residential with a number of dwellings along the west boundary of the site and a few along the southern boundary of the site.

The proposed development will use the existing gardens and a number of buildings to accommodate hosting of weddings, civil ceremonies and other similar functions set amongst the tropical gardens and within existing buildings on the site. Outdoor receptions would be held under marquees and car parking would be provided on a cleared area on-site. It is also proposed that the managing event company would monitor noise levels to ensure that noise emissions do not exceed acceptable levels.

Functions would be held at one of several potential on-site locations, with different sites catering for less than 20 people and others up to a maximum of 150 people.

Functions would typically be limited to day time and evening hours (i.e. 7am-10pm) and on occasion may continue between 10pm and midnight. The use of the facility would also be limited to a single function at any one time.

It is proposed to host a maximum of two large weddings a month (i.e. 100-150 persons) with smaller events spread throughout the year between weddings.

## **Conclusions and Recommendations**

It is concluded that -

- In the absence of specific noise emission criteria within the Mareeba Shire Council Planning Scheme 2016, noise emission criteria have been recommended based on the Acoustic Quality Objectives and Background Creep criteria of the Environmental Protection (Noise) Policy 2019 and the superseded Environmental Protection (Noise) Policy 2008, and measured



**Dedicated Acoustics**  
**Mobile: +61 4 3428 9997**  
**Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)**  
**Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)**

background levels. We note that these criteria would typically be applied for frequent or daily use of the development site.

- The proposed development is expected to involve the following noise sources:
  - Patron noise;
  - Music/entertainment noise; and,
  - Noise from vehicle movements.
- Noise emission forecasts were undertaken for a range of activities (i.e. patron numbers and music levels varying between background music to the hosting of a small band).

It was found that:

- Car parking noise was forecast to comply with criteria for all assessed scenarios; and,
- Function noise was forecast to exceed criteria for some usage scenarios depending on the intensity of noise generation.
- Limiting sound power levels and expected usage limits have been calculated for each of the function areas to achieve compliance at all assessed receivers and are shown in **Section 6.6**.
- As the recommended criteria applied in the assessment is typical of frequent (e.g. daily) operation, we consider the proposed frequency of operation would be generally acceptable provided the noise emission criteria is not exceeded.

We recommend that:

- The development is operated in a manner considerate of neighbours and is managed to minimise noise emissions.
- Where possible sound-systems are directed away from the closest receivers.
- The managing event company possesses a suitable sound level meter for periodic checks of noise emission levels at 3m from the speaker; and,
- The noise assessment and recommendations be revised if actual usage rates are significantly greater than what has been assessed.

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## 1. INTRODUCTION

A material change of use has been proposed for a Function Facility at 121 Douglas Track, Speewah QLD 4881 (Lot 45 on N157358).

A Noise Impact Assessment is required for development approval from Mareeba Shire Council due to potential noise emission impacts from the development onto surrounding areas.

## 2. DEVELOPMENT SITE AND SURROUNDING AREA

The development site consists of a large (i.e. approx. 65 hectare) rectangular allotment which is mostly vegetated with thick rainforest. Areas around the west boundary have been partially cleared to facilitate the following uses:

- Horticultural cropping (i.e. tropical fruit farm and commercial gardens) and garden tours; and,
- Dwelling house, laundry building, studio cabins, main building as well as various outbuildings located through out the site.

Surrounding uses are a mix of rural residential, rural and conservation areas.

An aerial photograph showing the development site and surrounds is shown in **Figure 2.1**

Under the Mareeba Shire Council Planning Scheme 2016 the development site is zoned Rural.

Surrounding land uses are zoned:

- Rural Residential C to the west;
- Rural and Conservation to the north;
- Rural to the east; and,
- Rural, Recreation and Open Space, and Rural Residential.

A map showing zoning of the development site and surrounds is shown in **Figure 2.2**.

Photographs of the existing site is shown in **Figure 2.3**.

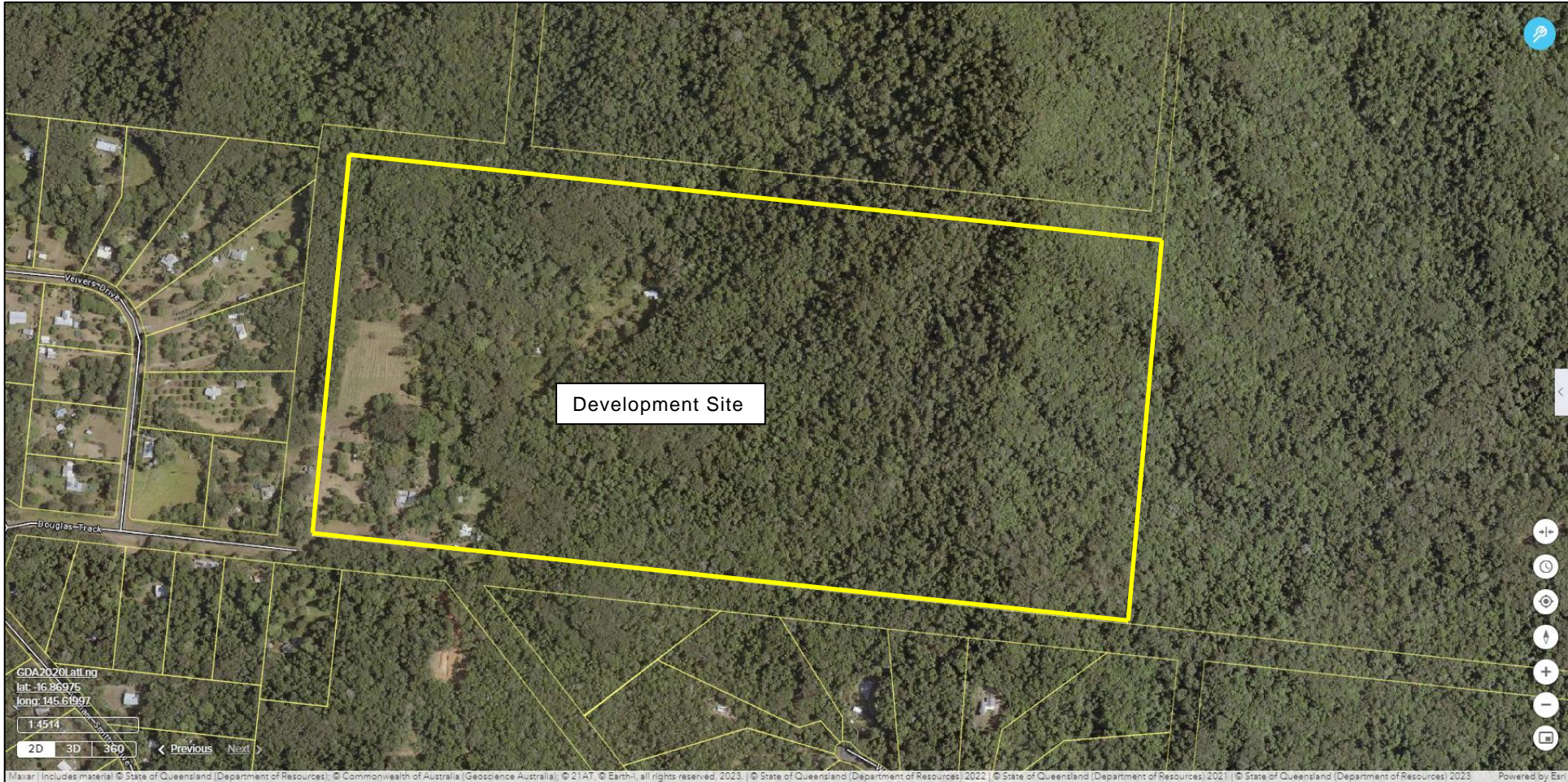
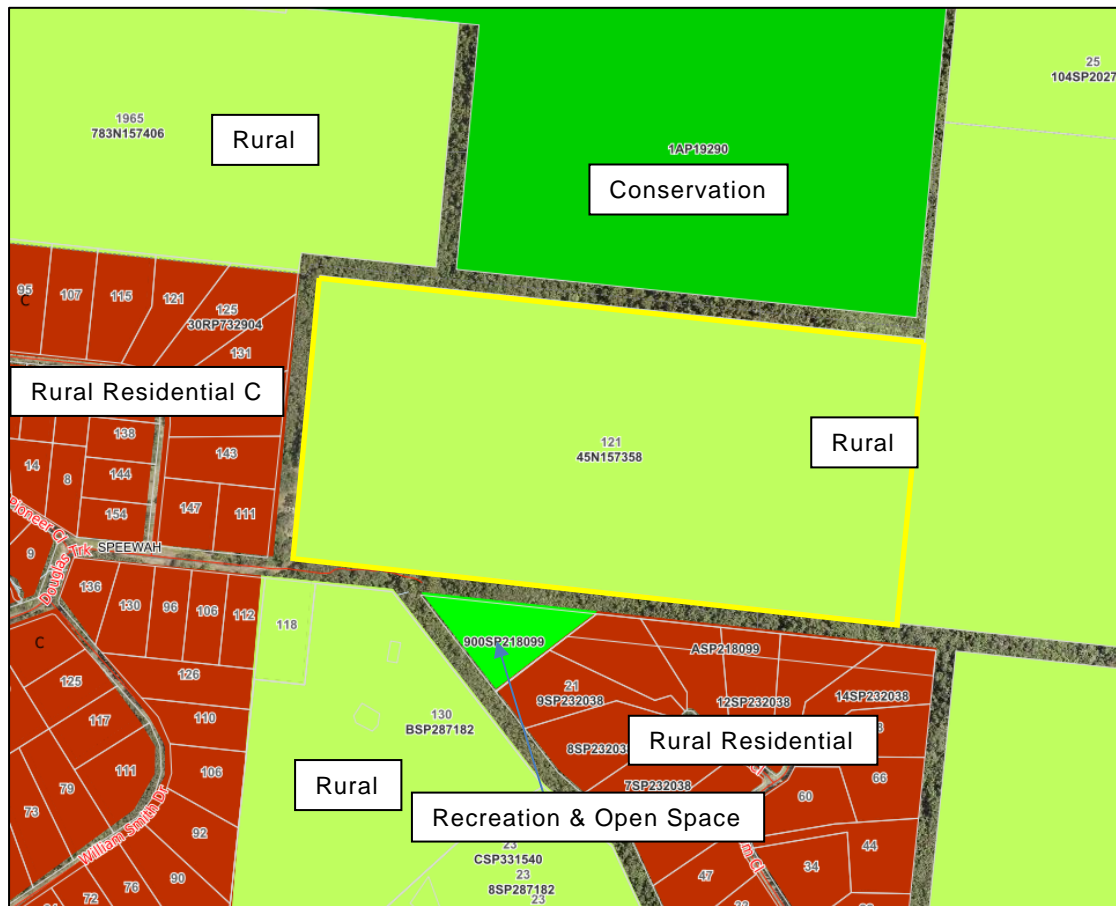


Figure 2.1: Aerial photograph showing subject site and surrounds (QGlobe)

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)



**Figure 2.2:** Zoning of development site and surround (Mareeba Shire Council Interactive Mapping)

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)



**Figure 2.3:** Photograph showing a partially cleared area in the existing development site

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

### 3. PROPOSED DEVELOPMENT

The proposed development will use the existing gardens and a number of buildings to accommodate hosting of weddings, civil ceremonies and other similar functions set amongst the tropical gardens and within existing buildings on the site. Outdoor receptions would be held under marquees and car parking would be provided on a cleared area on-site. It is also proposed that the managing event company would monitor noise levels to ensure that noise emissions do not exceed acceptable levels.

Functions would be held at one of several potential on-site locations, as shown on the proposal plan in **Figure 3.1**, with different sites catering for less than 20 people and others up to a maximum of 150 people.

The following function sites and car parking areas are noted on the proposal plan:

- A – Outdoor function site – Approx.  $\leq$  20 people;
- B – Outdoor function site – Approx.  $\leq$  20 people, 150 people max;
- C – Proposed car park – Approx. 250 m<sup>2</sup>;
- D – Outdoor function site – Approx.  $\leq$  20 people, 150 people max;
- L – Existing building function site - Approx.  $\leq$  20 people; and,
- M – Existing building function site - Approx.  $\geq$  150 people.

Functions would typically be limited to day time and evening hours (i.e. 7am-10pm) and on occasion may continue between 10pm and midnight. The use of the facility would also be limited to a single function at any one time.

It is proposed to host a maximum of two large weddings a month (i.e. 100-150 persons) with smaller events spread throughout the year between weddings.

Noise emission from the development is expected to be generally controlled by the level of amplified music/entertainment. Indicative sound pressure levels for a range of music levels are shown in **Table 3.1**.

Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

**Table 3.1:** Indicative sound pressure levels for a range of music activities

Source	Sound Pressure Level at 3m	
	dB(A)	dB(C)
Background music low level (e.g. allows patrons to converse at normal level)	65-75	69-79
Background music raised (e.g. patrons would be required to talk at raised level)	70-80	74-84
Foreground music – DJ/music for dancing or a soloist/duo	85-90	89-94
Small rock/blues band– Approx. 100 dB(A) at 3m from speakers	90-105	95-110

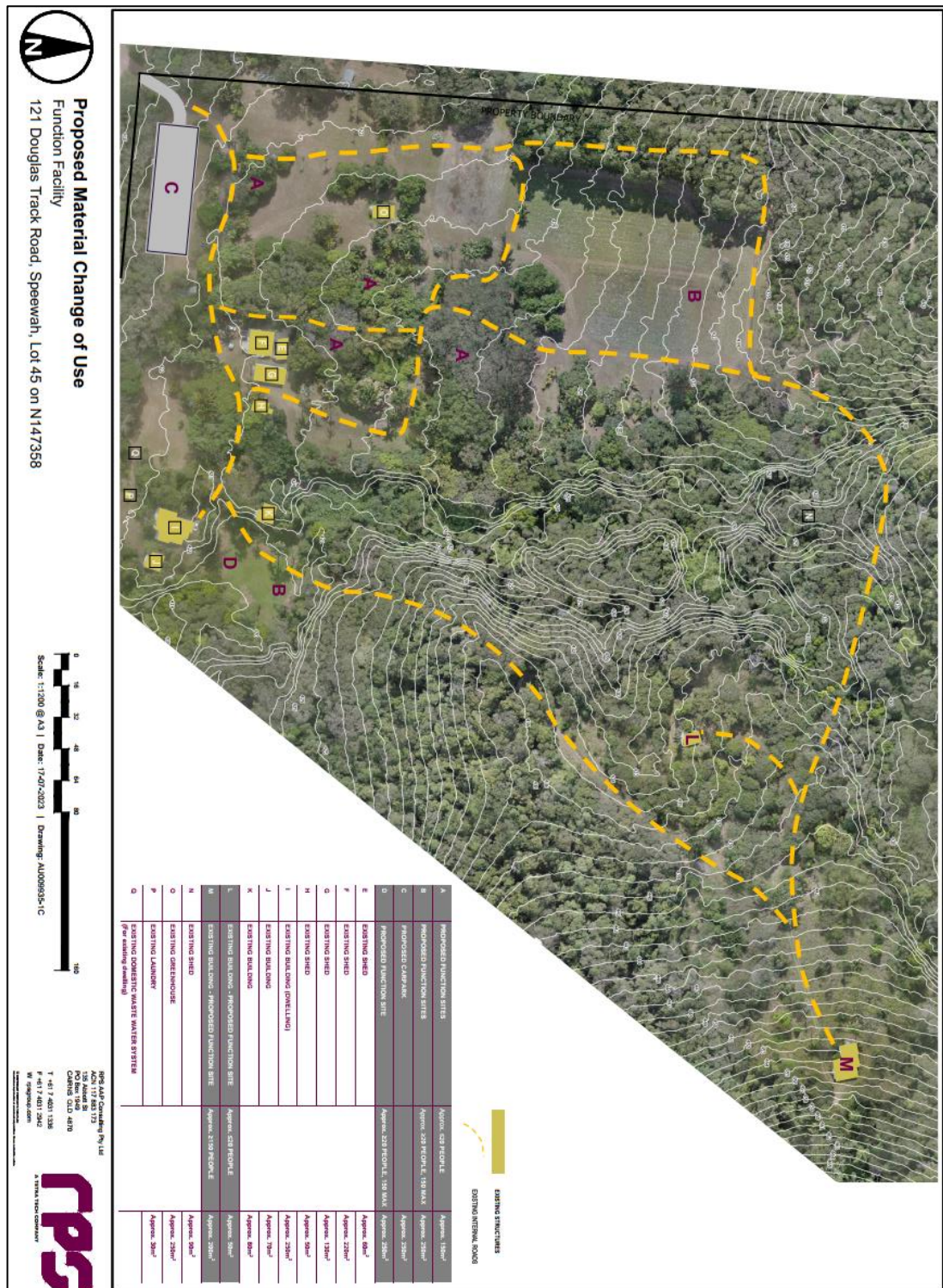


Figure 3.1: Layout for the site



#### 4. EXISTING NOISE ENVIRONMENT

An ambient noise survey was undertaken at rear of the development site, as shown in **Figure 4.1**, from Thursday 17 August 2023 to Friday 25 August 2023. The aim of the survey was to measure existing ambient and background noise levels at the site to help quantify noise emission criteria for the development.



**Figure 4.1:** Aerial photograph showing the noise logging location (X-Noise)

The measurement location was positioned at a height of 1.5m above ground level and is considered free field. Photographs of the measurement location are shown in **Figure 4.2**

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)



**Figure 4.2:** Photographs of the noise logging location

Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

The following instruments were used to measure the ambient noise levels and possessed current NATA laboratory calibration -

- BSWA Type 2 Sound Level Meter (S/N 540124); and,
- SVANTEK SV36 Type 1 Field Calibrator (S/N 124002).

The sound level meter was calibrated at the beginning and end of the measurement period with minimal calibration drift.

Weather observations were drawn from a portable weather station installed at the monitoring location.

It was noted that weather during the survey was considered suitable for measurement and no data has been excluded.

Noise monitoring data recorded for these periods has been excluded from the survey.

Ambient sound pressure levels were measured generally in accordance with Australian Standard AS1055:2018 – ‘Acoustics-Description and measurement of environmental noise’. The measurement location was generally free of substantial reflective surfaces, excluding the ground plane, and was considered to be capturing free field noise levels.

A summary of overall measurement results is shown in **Table 4.1**. Measured daily ambient noise levels are shown in **Appendix C**.

**Table 4.1:** Average ambient noise levels recorded at the noise logging location

Date	Time	Measured Noise Level dB(A)					Rated Background Level
		L <sub>Amax</sub>	L <sub>A01</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	
Average	Day (7am – 6pm)	69	56	49	40	51	37
	Evening (6pm – 10pm)	62	51	45	38	50	35
	Night (10pm – 12am)	57	48	41	35	42	32
	Night (12am – 7am)	57	46	41	39	38	30

Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

An attended measurement was taken at the noise logging location on Thursday 17 August 2023, from 11:44am to 11:59am, to gain an appreciation of the existing noise environment at the subject site.

Recorded levels and observations from the attended measurements are shown in **Table 4.2**.

**Table 4.2:** Recorded levels and observations from attended measurements at noise logging location

Date	Time	Measured Noise Level dB(A)					Observations
		L <sub>Amax</sub>	L <sub>A01</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	
17 August 2023	11:49am – 11:59am	67	57	48	36	46	No vehicle traffic on access road or Douglas Track Road.  Occasional birdsong from afar. Still breeze. No flora or fauna activity. Moist ground nearby. Automatic sprinkler system present (not operating at time of visit).

## 5. NOISE EMISISON CRITERIA

Potential noise emission criteria for the development have been drawn from the Mareeba Shire Council Planning Scheme 2016.

### 5.1 MAREEBA SHIRE COUNCIL PLANNING SCHEME

The assessment considers the following aspects of the Mareeba Shire Council Planning Scheme 2016 to be relevant to the development:

- Rural Zone Code.

#### 5.1.1 RURAL ZONE CODE

The Rural Zone Code notes that it's purpose will be achieved through a number of overall outcomes. Of these overall outcomes, the following are considered relevant for acoustic impacts:

- Uses that require isolation from urban areas as a consequence of their impacts such as noise or odour may be appropriate where land use conflicts are minimized; and,
- Adverse impacts of development both on-site and from adjoining areas are avoided and any impacts are minimized through location, design, operation and management.

Relevant, noise related assessment benchmarks for this code are shown in **Table 5.1**.

**Table 5.1:** Noise related assessment benchmarks for the Rural Zone Code

Performance Outcomes		Acceptable Outcomes	
<b>Amenity</b>			
<b>PO6</b>	Development must not detract from the amenity of the local area, having regard to: a) Noise	<b>AO6</b>	No acceptable outcome is provided
<b>PO7</b>	Development must take into account and seek to ameliorate any existing negative environmental impacts, having regard to: Noise	<b>AO7</b>	No acceptable outcome is provided

Adverse impacts on amenity and environmental nuisance or harm will be considered through the Environmental Protection Act 1994 as well as the

**Dedicated Acoustics**  
**Mobile: +61 4 3428 9997**  
**Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)**  
**Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)**

subordinate Environmental Protection (Noise) Policy 2019 and superseded Environmental Protection (Noise) Policy 2008.

## **5.2 ENVIRONMENTAL PROTECTION ACT 1994**

The object of the Environmental Protection Act (EPA 94) is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (i.e. ecologically sustainable development).

Under EPA 94:

- An environmental value is defined as:
  - A quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety; or
  - Another quality of the environment identified and declared to be an environmental value under an environmental protection policy or regulation.
- Environmental harm:
  - Is any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value, and includes environmental nuisance.
  - May be caused by any activity:
    - Whether the harm is a direct or indirect result of the activity; or
    - Whether the harm results from the activity alone or from the combined effects of the activity and other activity or factors.
- Environmental nuisance:
  - Is unreasonable interference or likely interference with an environmental value caused by –
    - Aerosols, fumes, light, noise, odour, particles or smoke; or
    - An unhealthy, offensive or unsightly condition because of contamination; or
    - Another way prescribed by regulation.

**Dedicated Acoustics**  
**Mobile: +61 4 3428 9997**  
**Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)**  
**Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)**

Environmental values for the acoustic environment are defined in the Environmental Protection (Noise) Policy 2019 and are discussed in **Section 5.3**.

### **5.3 ENVIRONMENTAL PROTECTION (NOISE) POLICY 2019**

The *Queensland Environmental Protection (Noise) Policy 2019* (EPP Noise 2019) is intended to achieve the object of the Environmental Protection Act 1994 in relation to the acoustic environment.

The purpose of the policy is achieved by –

- Identifying and declaring the environmental values of the acoustic environment; and,
- Stating acoustic quality objectives that are directed at enhancing or protecting the environmental values; and,
- Providing a framework for making consistent, equitable and informed decisions that relate to the acoustic environment.

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

- The qualities of the acoustic environment that conducive to protecting the health and biodiversity of ecosystems; and,
- 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 –
  - Sleep;
  - Study or learn;
  - Be involved in recreation, including relaxation and conversation; and
- The qualities of the acoustic environment that are conducive to protecting the amenity of the community.

#### Acoustic Quality Objectives

EPP Noise 2019 establishes Acoustic Quality Objectives (AQO) to be achieved and maintained under the policy and are intended to enhance or protect environmental values. The AQO assist in identifying whether the environmental values are protected.

Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

The AQO are considered in assessment processes and help inform the decision making process, including any conditions that may be placed on approvals for environmentally relevant activities. The AQO are not individual point source emission standards but are total levels of noise in the surrounding environment. They assist to inform what the point source acoustic emission level as a condition of approval for a particular activity at a site may be.

Applicable AQO are shown in **Table 5.2**.

**Table 5.2:** Applicable Acoustic Quality Objectives

Sensitive Receptor	Time of day	Acoustic Quality Objective dB(A)			Environmental Value
		L <sub>Aeq,adj,1hr</sub>	L <sub>A10,adj,1hr</sub>	L <sub>A1,adj,1hr</sub>	
Dwelling (for outdoors)	Daytime and evening	50	55	65	Health and wellbeing
Dwelling (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

Assessment of internal noise levels has been undertaken assuming a 7 dB noise reduction, from free-field external levels, through partially open windows as per the Queensland Ecoaccess Guideline *Planning for Noise Control* (2004); which correlates with a 10 dB noise reduction from façade affected external levels. A 15 dB reduction has been assumed, from free-field external levels, across a closed building façade, which correlates with an 18 dB reduction from façade affected external levels.



**Dedicated Acoustics**  
**Mobile: +61 4 3428 9997**  
**Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)**  
**Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)**

### Management Hierarchy for Noise

EPP Noise 2019 states the management hierarchy for an activity involving noise that affects, or may affect an environmental value to be enhanced or protected under the policy.

The policy states that to the extent it is reasonable to do so, noise must be dealt with in the following order of preference –

- Firstly – avoid the noise (e.g. locating an industrial activity in an area that is not near a sensitive receptor);
- Secondly – minimise the noise in the following order –
  - Firstly – orientate an activity to minimise noise (e.g. facing a part of an activity that makes noise away from a sensitive receptor)
  - Secondly – use the best available technology to minimise the noise;
- Thirdly – manage the noise (e.g. using heavy machinery only during business hours).

### Management Intent for Noise

EPP Noise 2019 states the management intent for an activity involving noise that affects, or may affect, an environmental value to be enhanced or protected under the policy.

The policy states that to the extent it is reasonable to do so, noise must be dealt with in a way that ensures –

- The noise does not have any adverse effect, or potential adverse effect, on any environmental value under this policy; and
- Background creep in an area or place is prevented or minimised.

EPP Noise 2019 defines Background creep, for noise in an area or place, as 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.

Background creep is not quantified in EPP Noise 2019. It is however quantified in the repealed Environmental Protection (Noise) Policy 2008 (EPP Noise 2008) as:

To the extent that is reasonable to do so, noise from an activity must not be –

- (a) For noise that is continuous noise measured by  $L_{A90,T}$  – more than nil dB(A) greater than the existing acoustic environment measured by  $L_{A90,T}$ ; or
- (b) For noise that varies over time measured by  $L_{Aeq,adj,T}$  – more than 5 dB(A) greater than the existing acoustic environment measured by  $L_{A90,T}$ .

Potential criteria for control of background creep, based on measured rated background levels, described in **Section 4**, are shown in **Table 5.3** and are considered to be component levels (i.e. the contribution from the development site only). We consider that the “Noise that varies with time” criteria would be suitable for assessment of noise emission from the site.

**Table 5.3:** Applicable noise limits for compliance with background creep criteria

Applicable To	Time	Criteria	Measured Rated Background Level, dB(A)	Required Component Noise Limit	Descriptor
Continuous noise	Day (7am – 6pm)	B/G+0 dB	37	37	$L_{A90,T}$
	Evening (6pm – 10pm)		35	35	
	Night (10pm – 12am)		32	32	
	Night (12am – 7am)		30	30	
Noise that varies with time	Day (7am – 6pm)	B/G+5 dB	37	42	$L_{Aeq,adj,T}$

Applicable To	Time	Criteria	Measured Rated Background Level, dB(A)	Required Component Noise Limit	Descriptor
	Evening (6pm – 10pm)		35	40	
	Night (10pm – 12am)		32	37	
	Night (12am – 7am)		30	35	

Component limits are considered to be applicable in external areas around dwellings and useful open space (e.g. yards and gardens), and are considered to be free field. An additional 3 dB of noise emission criteria is applicable for levels around buildings due to reflections from the façade.

#### 5.4 RECOMMENDED CRITERIA

Noise impacts from the development are required to be assessed against the Mareeba Shire Council Planning Scheme 2016. The planning scheme does not provide quantifiable criteria for assessment of noise impacts. In the absence of this criteria, context has been drawn from the Environmental Protection Act 1994 and the subordinate Environmental Protection (Noise) Policy 2019.

The provisions of EPA 94 and EPP Noise 2019 are not directly applicable at the planning approval stage and do not apply to a development or activities operating within the conditions of a development approval or local law. As such Council can set their own conditions on the acceptability of noise impacts in the overall balance of amenity and progress.

It should be noted that the provisions of EPA 94 and EPP Noise 2019 are generic and do not take into account the frequency of operation (i.e. continuous operation and intermittent operation with significant idle periods are not considered differently), potential for community benefit, or the character of the existing receiving environment.

We recommend that these provisions are used to consider the potential effects of noise impacts, but not necessarily to be used as limiting criteria. The potential for noise

Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

nuisance (i.e. unreasonable interference with environmental values – specifically health, well-being and the ability to sleep) should be considered against these mitigating factors.

Noise emission criteria has been recommended based on the EPP(Noise) Background Creep – noise that varies with time  $L_{Aeq}$  criteria for day, evening and night time periods which are slightly more stringent than the Acoustic Quality Objectives; along with the Acoustic Quality Objectives  $L_{A01}$  criteria to assess sleep disturbance impacts during night time periods.

Recommended free-field external criteria are shown in **Table 5.4**.

**Table 5.4:** Recommended free field external criteria

Period	Time	EPP(Noise)	
		Background Creep	Acoustic Quality Objectives
		$L_{Aeq,adj,1hr}$	$L_{A01,adj,1hr}$
Day	7:00am – 6:00pm	42	-
Evening	6:00pm – 10:00pm	40	
Night	10:00pm – 12:00am	37	47
	12:00am – 7:00am	35	

These levels are considered free-free field (i.e. away from building facades or other reflective surfaces except ground) and an additional 3 dB would typically be applied to these criteria to account for reflections when assessing noise levels at building facades.

## 6. NOISE EMISSION ASSESSMENT

### 6.1 POTENTIAL IMPACTS

The proposed development is expected to involve the following noise sources:

- Patron noise;
- Music/entertainment noise; and,
- Noise from vehicle movements.

### 6.2 NOISE SENSITIVE RECEPTORS

The following noise sensitive receptors have been considered incorporated into the model:

- R1 – Dwelling setback approximately 230m from the west site boundary.
- R2 – Dwelling setback approximately 130m from the west site boundary;
- R3 – Dwelling setback approximately 120m from the west site boundary;
- R4 – Dwelling setback approximately 120m from the west site boundary;
- R5 – Dwelling setback approximately 60m from the west site boundary;
- R6 – Dwelling setback approximately 80m from the south west corner of the site;
- R7 – Dwelling setback approximately 150m from the south boundary of the site;
- R8 – Dwelling setback approximately 180m from the south boundary of the site; and,
- R9 – Dwelling setback approximately 120m from the south boundary of the site.

Locations of noise receptor points are shown in **Figure 6.1**.



**Figure 6.1:** Noise sensitive receptors considered within the assessment

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

### 6.3 NOISE MODELLING METHODOLOGY

The SoundPLAN (Version 8.2) noise modelling software has been used to predict noise emission from the development. The model incorporates a three-dimensional digital terrain map, ground cover, foliage attenuation, screening from buildings and barrier, atmospheric information and noise source data to forecast noise emission levels to sensitive receptors.

The noise model is based on the following parameters:

- Calculation algorithms of ISO9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General Method of calculation prediction methodology* (ISO9613-2). ISO9613-2 implements downwind propagation conditions within its overall noise prediction calculation by default and is considered to suitably represent typical adverse conditions (i.e. a moderate wind blowing from source to receiver or a moderate temperature inversion).
- Terrain data (2011) sourced from Geosciences Australia for the subject site and surrounds.
- Ground absorption
  - Hard surfaces (e.g. roads and concrete) have been modelled as fully reflective with an absorption coefficient of 0; and,
  - Soft surfaces (e.g. grass and earth) have been modelled as mostly absorptive with an absorption coefficient of 0.8.
- Vegetation
  - Heavily vegetated areas on the subject site and immediate surrounds have been modelled as a volume attenuation area with an assumed effective height of 4m.
- Buildings
  - Building footprints have been digitised from aerial imagery with an assumed height of 4m.
- Noise receptor points

- Approximately 4m from buildings (shown as yellow dots) at a height of 1.8m above ground level.
- Car park usage – assumed 1 vehicle movement for every 2 patrons attending site.
- Car park and function noise (i.e. crowd and music) are expected to operate consecutively and have been assessed separately.
- Sound power data used in the assessment is shown in **Table 6.1**.

**Table 6.1:** Sound power data used in the assessment

Source	Sound Power Level, dB(A)	
	L <sub>Aeq,adj,15min</sub>	L <sub>Amax</sub>
Group of 20 patrons <sup>1</sup>	84	95
Group of 150 patrons <sup>1</sup>	97	105
Background music low level (e.g. allows patrons to converse at normal level) – Approx. 75 dB(A) at 3m from speakers	94	98
Background music raised (e.g. patrons would be required to talk at raised level) – Approx. 80 dB(A) at 3m from speakers	99	103
Foreground music (e.g. DJ/music for dancing or a soloist/duo) – Approx. 95 dB(A) at 3m from speakers	113	118
Small rock/blues band– Approx. 100 dB(A) at 3m from speakers	118	123
1 car park movement (i.e. an arrival or departure) per hour <sup>2</sup>	64	97

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<sup>1</sup> Proceedings of Acoustics 2011 – *Prediction of noise from small to medium sized crowds* (Hayne et. al.)

<sup>2</sup> Proceedings of Acoustics 2011 – *Prediction of parking area noise in Australian conditions* (Nicol and Johnson)



Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

#### 6.4 MODELLED SCENARIOS

The following scenarios have been considered (refer to **Figure 6.2** for location references):

- Scenario 1 – 20 person function in Location 1 (Function Site A toward south west site boundary):
  - 10 vehicle movements per hour in car parking area;
  - 20 people in function area with low level background music; and,
  - 20 people in function area with raised level background music.
- Scenario 2 – 20 person function in Location 2 (Any of the 3 Function Site A areas set back approximately 150m from south and west site boundaries):
  - 10 vehicle movements per hour in car parking area;
  - 20 people in function area with low level background music; and,
  - 20 people in function area with raised level background music.
- Scenario 3 – 150 person function in Location 3 (Function Site B set back approximately 150m from west site boundary):
  - 75 vehicle movements per hour in car parking area;
  - 150 people in function area with raised level background music;
  - 150 people in function area with foreground music; and,
  - 150 people in function area with small rock/blues band.
- Scenario 4 – 150 person function in Location 4 (Function Sites B and D approximately 60m from south site boundary):
  - 75 vehicle movements per hour in car parking area;
  - 150 people in function area with raised level background music;
  - 150 people in function area with foreground music; and,
  - 150 people in function area with small rock/blues band.
- Scenario 5 – 150 person function in Location 5 (Function Site L):
  - 75 vehicle movements per hour in car parking area;

**Dedicated Acoustics**

**Mobile: +61 4 3428 9997**

**Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)**

**Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)**

- 150 people in function area with raised level background music;
- 150 people in function area with foreground music; and,
- 150 people in function area with small rock/blues band.
- Scenario 6 – 150 person function in Location 6 (Function Site M):
  - 75 vehicle movements per hour in car parking area;
  - 150 people in function area with raised level background music;
  - 150 people in function area with foreground music; and,
  - 150 people in function area with small rock/blues band.

The layout of the noise sources in the modelling scenarios are shown in **Appendix D**.

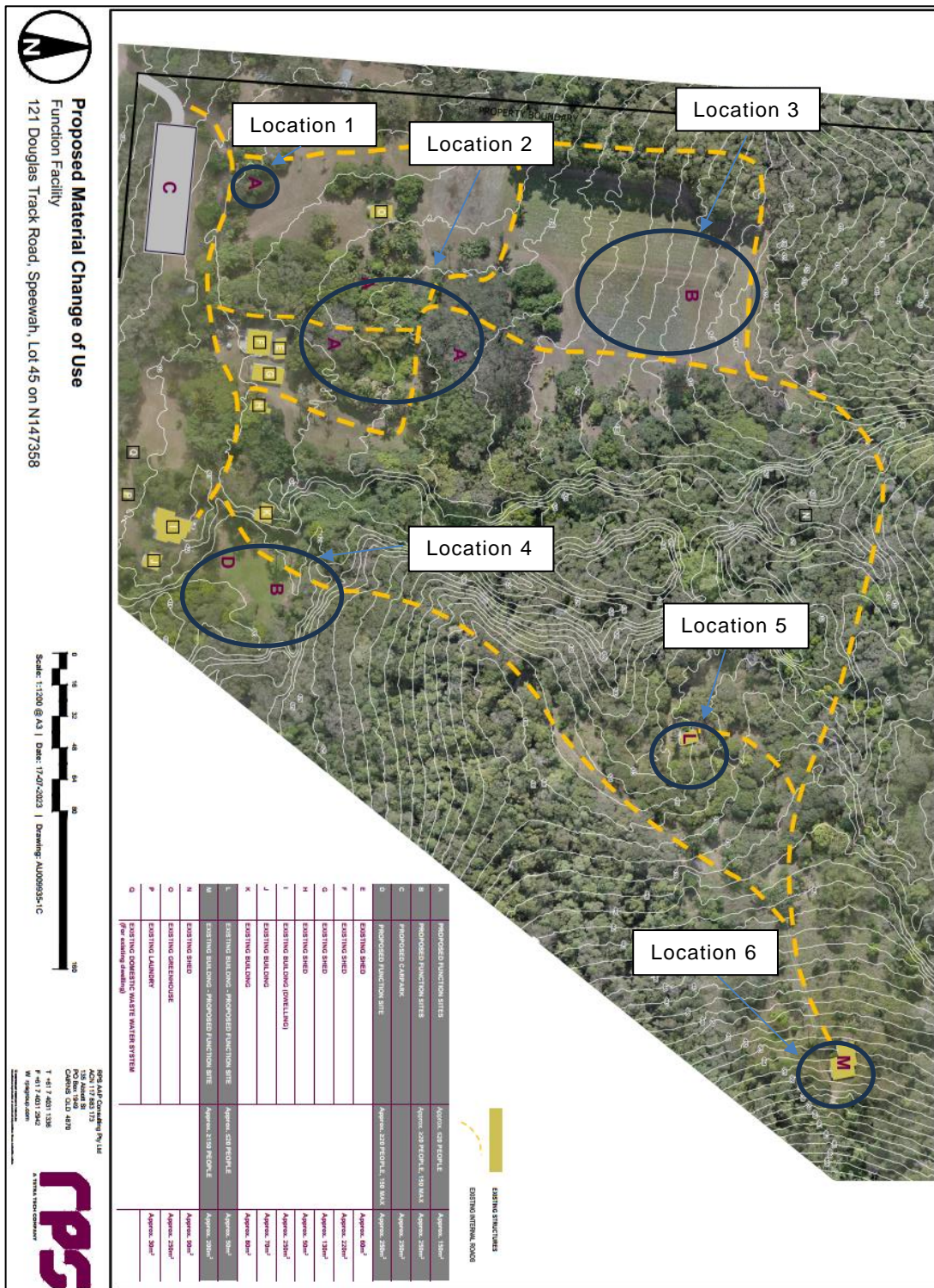


Figure 6.2: Function areas for assessment

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## **6.5 FORECAST NOISE LEVELS FOR A RANGE OF POTENTIAL ACTIVITIES**

A summary of the highest forecast noise levels at receivers for each scenario are shown in **Table 6.2** for a range of activities and compared to criteria. Detailed noise emission forecast results are shown in **Appendix E**.

Vehicle noise was forecast to comply with noise emission criteria for all scenarios however noise from patrons and music was forecast to exceed under some usage scenarios. Limiting sound levels and expected allowable usages are described in **Section 6.6**.

**Table 6.2:** Summary of the highest forecast noise levels for all receivers

Scenario	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 47 dB(A)
1	Vehicle movements	24	47	Yes	Yes	Yes	Yes
	20 people in function area low level background music	42	48	Yes	Exceeds by 2 dB	Exceeds by 5 dB	Exceeds by 1 dB
	20 people in function area raised level background music	47	53	Exceeds by 5 dB	Exceeds by 7 dB	Exceeds by 10 dB	Exceeds by 6 dB
2	Vehicle movements	24	47	Yes	Yes	Yes	Yes
	20 people in function area low level background music	36	42	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	41	46	Yes	Exceeds by 1 dB	Exceeds by 4 dB	Yes
3	Vehicle Movements	37	47	Yes	Yes	Yes	Yes
	150 people in function area raised background music	42	48	Yes	Exceeds by 2 dB	Exceeds by 5 dB	Exceeds by 1 dB

Scenario	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 47 dB(A)
	150 people in function area with foreground music	56	61	Exceeds by 14 dB	Exceeds by 16 dB	Exceeds by 19 dB	Exceeds by 14 dB
	150 people in function area with small rock/blues band	58	65	Exceeds by 16 dB	Exceeds by 18 dB	Exceeds by 21 dB	Exceeds by 18 dB
4	Vehicle Movements	37	47	Yes	Yes	Yes	Yes
	150 people in function area raised background music	31	39	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	44	51	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 4 dB
	150 people in function area with small rock/blues band	48	56	Exceeds by 6 dB	Exceeds by 8 dB	Exceeds by 11 dB	Exceeds by 9 dB
5	Vehicle Movements	37	47	Yes	Yes	Yes	Yes
	150 people in function area raised background music	33	39	Yes	Yes	Yes	Yes

Scenario	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 47 dB(A)
	150 people in function area with foreground music	46	51	Exceeds by 4 dB	Exceeds by 6 dB	Exceeds by 9 dB	Exceeds by 4 dB
	150 people in function area with small rock/blues band	50	56	Exceeds by 8 dB	Exceeds by 10 dB	Exceeds by 13 dB	Exceeds by 9 dB
6	Vehicle Movements	37	47	Yes	Yes	Yes	Yes
	150 people in function area raised background music	32	38	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	45	50	Exceeds by 3 dB	Exceeds by 5 dB	Exceeds by 8 dB	Exceeds by 3 dB
	150 people in function area with small rock/blues band	48	55	Exceeds by 6 dB	Exceeds by 8 dB	Exceeds by 11 dB	Exceeds by 8 dB

## 6.6 LIMITING SOUND LEVELS AND EXPECTED ALLOWABLE

Limiting sound power levels and expected usage limits have been calculated for each of the function areas to achieve compliance at all assessed receivers and are shown in **Table 6.3**. We note that other types of music may potentially be permitted provided the noise emission is controlled to achieve the level at 3m.

**Table 6.3:** Limiting sound power levels and expected usage limits to achieve compliance for each function area

Function Area	Time	Limiting Sound Power Level, dB(A)	Usage Limits		
			No. Patrons	Music Level dB(C) at 3m from Speakers	Anticipated Allowable Music Type
1	7am-6pm	94	20	80	Low level/raised background music
	6pm-10pm	92	20	78	Low level background music
	10pm-12am	89	20	74	Low level background music
2	7am-6pm	100	20	87	Raised level background music
	6pm-10pm	98	20	85	Raised level background music
	10pm-12am	95	20	81	Raised level background music
3	7am-6pm	101	150	85	Raised level background music
	6pm-10pm	99	150	81	Low level/raised background music
	10pm-12am	96	80	79	Low level background music
4	7am-6pm	112	150	98	Foreground entertainment (e.g. DJ or performer)



Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

Function Area	Time	Limiting Sound Power Level, dB(A)	Usage Limits		
			No. Patrons	Music Level dB(C) at 3m from Speakers	Anticipated Allowable Music Type
	6pm-10pm	110	150	96	Foreground entertainment (e.g. DJ or performer)
	10pm-12am	107	150	92	Foreground entertainment (e.g. DJ or performer)
5	7am-6pm	110	150	96	Foreground entertainment (e.g. DJ or performer)
	6pm-10pm	108	150	94	Foreground entertainment (e.g. DJ or performer)
	10pm-12am	105	150	90	Foreground entertainment (e.g. DJ or performer)
6	7am-6pm	111	150	98	Foreground entertainment (e.g. DJ or performer)
	6pm-10pm	109	150	95	Foreground entertainment (e.g. DJ or performer)
	10pm-12am	106	150	92	Foreground entertainment (e.g. DJ or performer)

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## **7. CONCLUSIONS AND RECOMMENDATIONS**

A material change of use has been proposed for a Function Facility at 121 Douglas Track, Speewah QLD 4881 (Lot 45 on N157358).

A Noise Impact Assessment is required for development approval from Mareeba Shire Council due to potential noise emission impacts from the development onto surrounding areas.

The development site is a large allotment, mostly covered with thick rainforest with cleared areas towards the west boundary, and is currently used as a tropical flower farm and commercial garden. Surrounding land uses are typically rural, conservation and rural residential with a number of dwellings along the west boundary of the site and a few along the southern boundary of the site.

The proposed development will use the existing gardens and a number of buildings to accommodate hosting of weddings, civil ceremonies and other similar functions set amongst the tropical gardens and within existing buildings on the site. Outdoor receptions would be held under marquees and car parking would be provided on a cleared area on-site. It is also proposed that the managing event company would monitor noise levels to ensure that noise emissions do not exceed acceptable levels.

Functions would be held at one of several potential on-site locations, with different sites catering for less than 20 people and others up to a maximum of 150 people.

Functions would typically be limited to day time and evening hours (i.e. 7am-10pm) and on occasion may continue between 10pm and midnight. The use of the facility would also be limited to a single function at any one time.

It is proposed to host a maximum of two large weddings a month (i.e. 100-150 persons) with smaller events spread throughout the year between weddings.

### **Conclusions and Recommendations**

It is concluded that -

- In the absence of specific noise emission criteria within the Mareeba Shire Council Planning Scheme 2016, noise emission criteria have been recommended based on the Acoustic Quality Objectives and Background Creep criteria of the Environmental Protection (Noise) Policy 2019 and the superseded Environmental Protection (Noise) Policy 2008, and measured

**Dedicated Acoustics**  
**Mobile: +61 4 3428 9997**  
**Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)**  
**Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)**

background levels. We note that these criteria would typically be applied for frequent or daily use of the development site.

- The proposed development is expected to involve the following noise sources:
  - Patron noise;
  - Music/entertainment noise; and,
  - Noise from vehicle movements.
- Noise emission forecasts were undertaken for a range of activities (i.e. patron numbers and music levels varying between background music to the hosting of a small band).

It was found that:

- Car parking noise was forecast to comply with criteria for all assessed scenarios; and,
- Function noise was forecast to exceed criteria for some usage scenarios depending on the intensity of noise generation.
- Limiting sound power levels and expected usage limits have been calculated for each of the function areas to achieve compliance at all assessed receivers and are shown in **Section 6.6**.
- As the recommended criteria applied in the assessment is typical of frequent (e.g. daily) operation, we consider the proposed frequency of operation would be generally acceptable provided the noise emission criteria is not exceeded.

We recommend that:

- The development is operated in a manner considerate of neighbours and is managed to minimise noise emissions.
- Where possible sound-systems are directed away from the closest receivers.
- The managing event company possesses a suitable sound level meter for periodic checks of noise emission levels at 3m from the speaker; and,
- The noise assessment and recommendations be revised if actual usage rates are significantly greater than what has been assessed.

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## APPENDIX A – GLOSSARY OF ACOUSTIC TERMS

The following is a brief description of the technical terms used to describe traffic noise to assist in understanding the technical issues presented in this document.

### ***Event maximum sound pressure level ( $LA_{\%,adj,T}$ ), L01***

The L01 level is calculated as the noise level equalled and exceeded for 1% of the measurement time, for example 9 seconds in any 15 minute interval. L01 is an appropriate level to characterise single events, such as from impulsive or distinctive pass-by noise.

### ***Average maximum sound pressure level ( $LA_{\%,adj,T}$ ), L10***

The “L10” level is an indicator of “steady-state” noise or intrusive noise conditions from traffic, music and other relatively non-impulsive noise sources. The L10 level is calculated as the noise level equalled and exceeded for 10% the measurement time, for example 90 seconds in any 15 minute interval. The measured L10 time-intervals for day/evening/night are arithmetically averaged to present the “average maximum” levels of the environment for day/evening/night. The level can be adjusted for tonality or impulsiveness.

### ***Background sound pressure level ( $LA_{90,T}$ ), L90***

Commonly called the “L90” or “background” level and is an indicator of the quietest times of day, evening or night. The L90 level is calculated as the noise level equalled and exceeded for 90% the measurement time. The measured L90 time-intervals are arithmetically averaged to present the “average background” levels of the environment for day/evening/night. The level is recorded in the absence of any noise under investigation. The level is not adjusted for tonality or impulsiveness.

### ***Equivalent Continuous or time average sound pressure level ( $LA_{eq,T}$ ), Leq***

Commonly called the “Leq” level it is the logarithmic average noise level from all sources far and near. The maximum 1-hour levels within the day/evening/night time intervals are referenced for building design. The level can be adjusted for tonality.

### ***Façade-adjusted level***

A sound level that is measured at a distance of 1.0 metre from a wall or facade. The level is nominally 2.5 dB higher than the free-field level.

### ***Free-field level***

A sound level that is measured at a distance of more than 3.5 metres from a wall or facade.

Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## APPENDIX B – DEVELOPMENT PLANS

## APPENDIX C – MEASURED DAILY AMBIENT NOISE

**Table C1:** Average ambient noise levels recorded at the noise logging location

Date	Time	Measured Noise Level dB(A)					Rated Background Level
		L <sub>Amax</sub>	L <sub>A01</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	
Thursday 17 August 2023	7:00am – 6:00pm	67.0	55.8	47.8	37.6	49.0	35.0
	6:00pm – 10:00pm	57.4	47.2	40.5	34.7	42.8	31.8
	10:00pm – 12:00am	54.0	43.1	36.1	31.2	35.0	29.8
	12:00am – 7:00am						
Friday 18 August 2023	7:00am – 6:00pm	70.3	58.9	49.8	38.8	57.0	33.7
	6:00pm – 10:00pm	61.1	49.4	43.7	38.2	57.8	35.5
	10:00pm – 12:00am	52.3	41.8	35.9	32.5	40.7	31.2
	12:00am – 7:00am	53.8	43.5	37.5	30.6	42.0	26.9
Saturday 19 August 2023	7:00am – 6:00pm	68.4	55.3	46.7	37.8	47.0	35.2
	6:00pm – 10:00pm	65.5	51.6	43.5	35.9	51.1	30.5
	10:00pm – 12:00am	55.2	42.3	33.6	28.3	33.1	27.3
	12:00am – 7:00am	53.4	40.9	34.9	30.2	35.7	28.9
Sunday 20 August 2023	7:00am – 6:00pm	69.5	55.6	49.3	40.4	49.2	37.1
	6:00pm – 10:00pm	65.1	52.6	42.8	35.2	49.0	32.6
	10:00pm – 12:00am	49.5	39.4	34.4	30.0	33.0	29.3

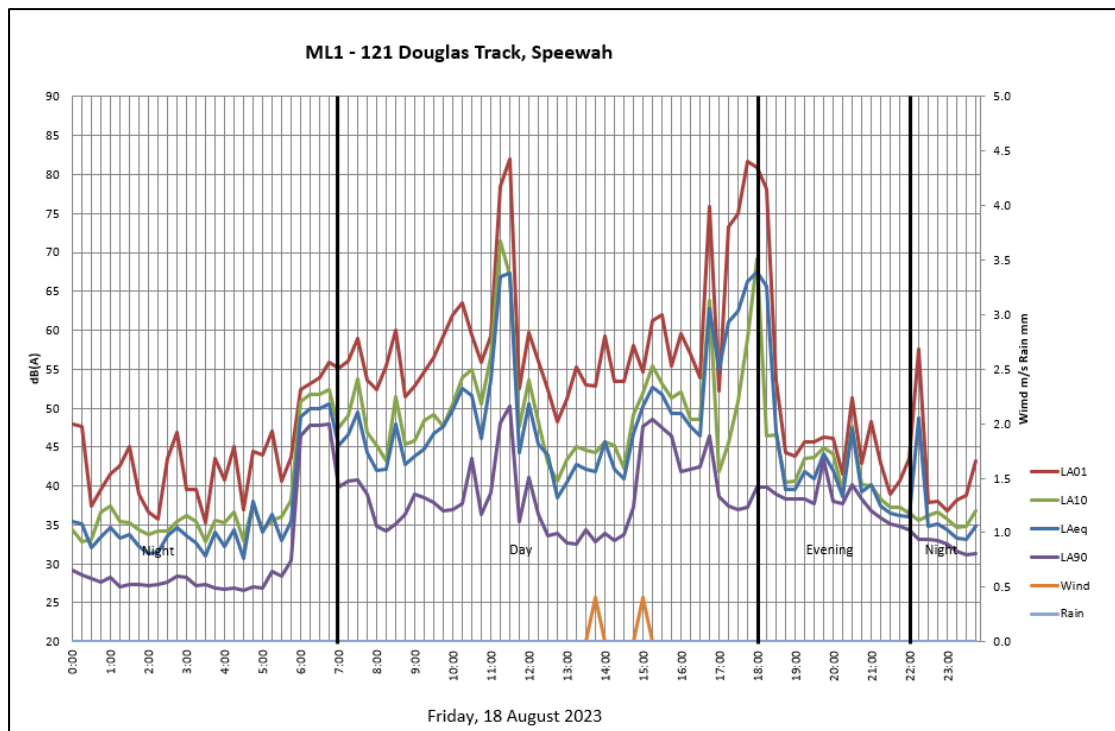
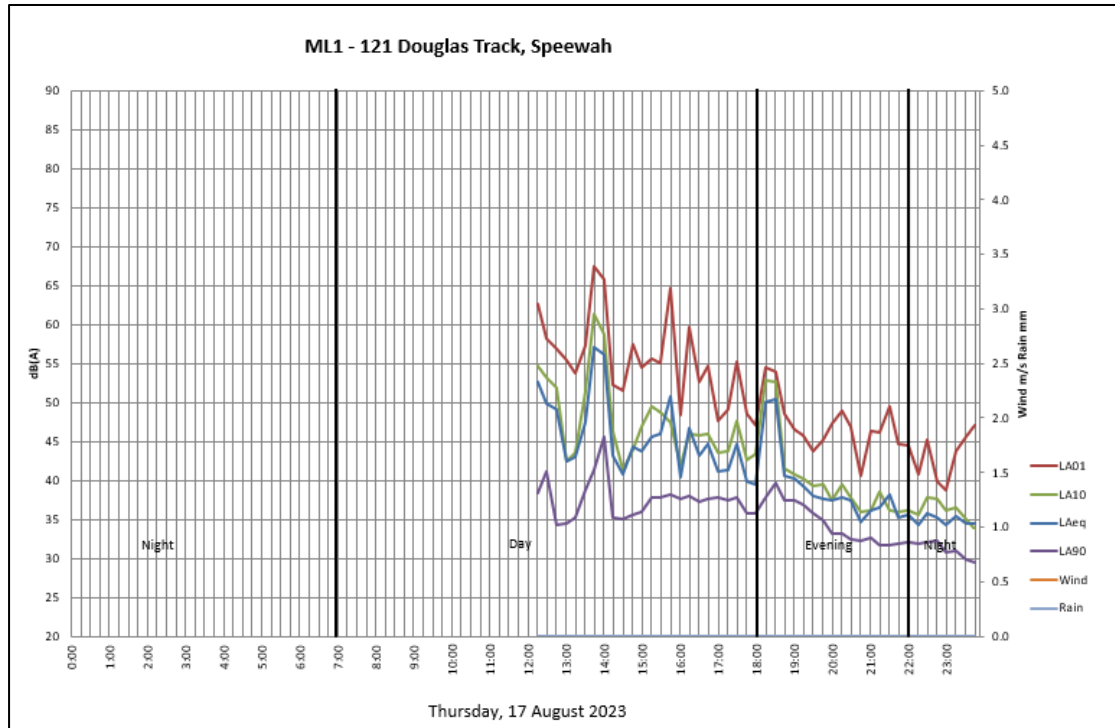
Date	Time	Measured Noise Level dB(A)					Rated Background Level
		L <sub>Amax</sub>	L <sub>A01</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	
	12:00am – 7:00am	53.3	43.0	34.6	27.9	41.6	23.4
Monday 21 August 2023	7:00am – 6:00pm	67.0	54.6	47.8	39.3	49.0	36.8
	6:00pm – 10:00pm	61.1	51.6	47.5	41.1	49.5	35.4
	10:00pm – 12:00am	56.6	45.7	39.9	33.9	40.8	32.2
	12:00am – 7:00am	56.9	43.6	37.3	40.5	31.1	27.6
Tuesday 22 August 2023	7:00am – 6:00pm	67.5	55.3	50.0	41.4	49.3	36.8
	6:00pm – 10:00pm	57.8	48.1	43.6	39.6	45.7	36.0
	10:00pm – 12:00am	69.6	63.2	50.6	39.9	54.9	35.5
	12:00am – 7:00am	60.5	48.8	44.1	45.5	35.7	30.3
Wednesday 23 August 2023	7:00am – 6:00pm	70.1	58.9	51.7	40.6	59.4	38.2
	6:00pm – 10:00pm	60.0	54.4	49.9	40.7	51.3	36.2
	10:00pm – 12:00am	62.5	58.4	55.9	44.0	53.1	39.0
	12:00am – 7:00am	61.7	47.9	41.7	45.9	35.5	31.3
Thursday 24 August 2023	7:00am – 6:00pm	69.8	56.8	49.3	40.5	51.1	38.5
	6:00pm – 10:00pm	64.1	54.5	48.4	40.6	49.5	37.7

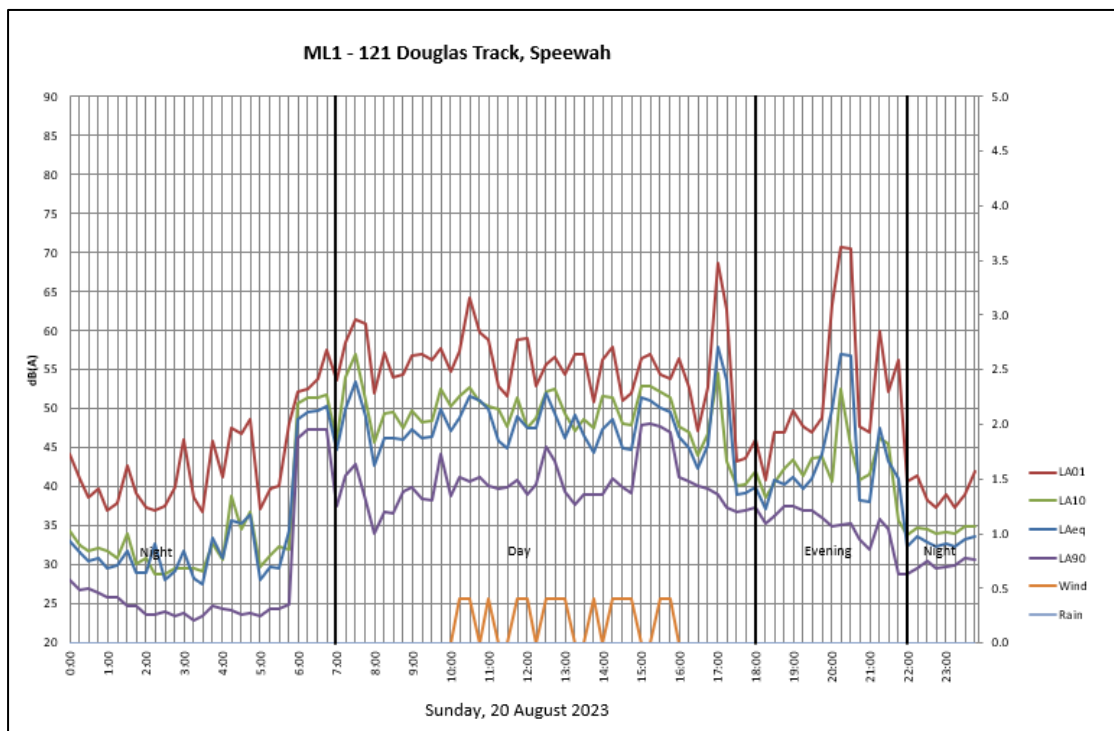
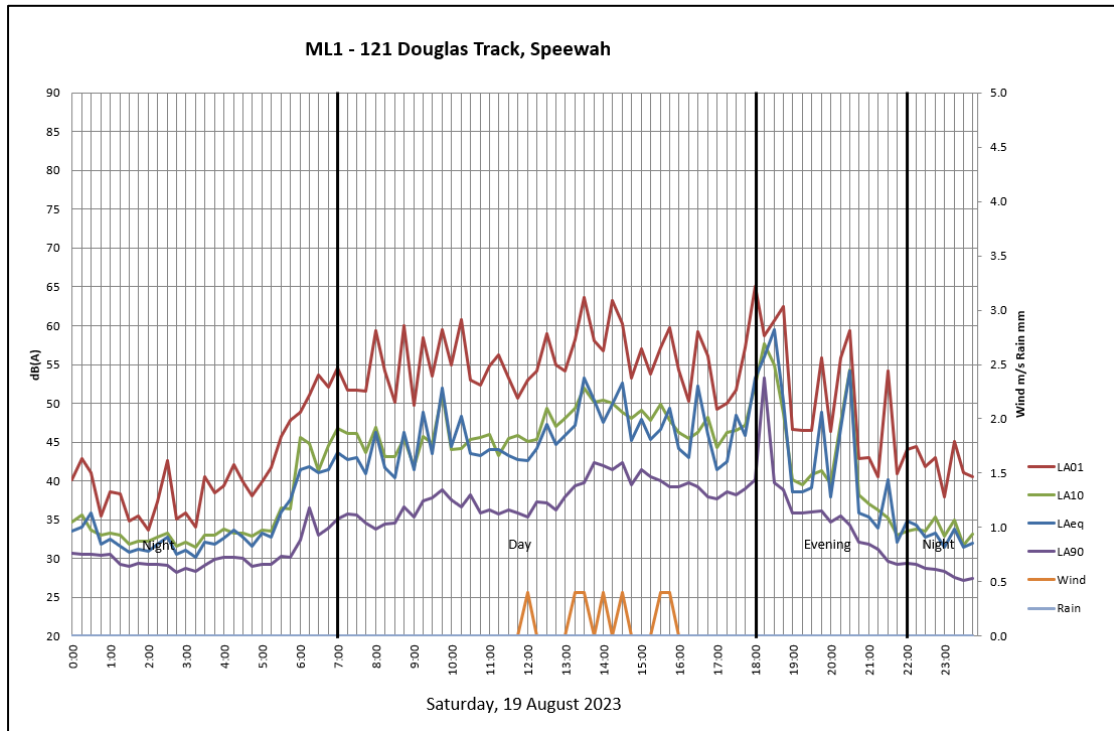
Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

Date	Time	Measured Noise Level dB(A)					Rated Background Level
		L <sub>Amax</sub>	L <sub>A01</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	
	10:00pm – 12:00am	57.1	49.9	45.3	39.2	45.2	38.1
	12:00am – 7:00am	58.6	51.6	46.1	45.4	38.9	37.6
Friday 25 August 2023	7:00am – 6:00pm						
	6:00pm – 10:00pm						
	10:00pm – 12:00am						
	12:00am – 7:00am	57.1	51.3	47.9	48.5	41.6	38.1
Average	7:00am – 6:00pm	69	56	49	40	51	37
	6:00pm – 10:00pm	62	51	45	38	50	35
	10:00pm – 12:00am	57	48	41	35	42	32
	12:00am – 7:00am	57	46	41	39	38	30

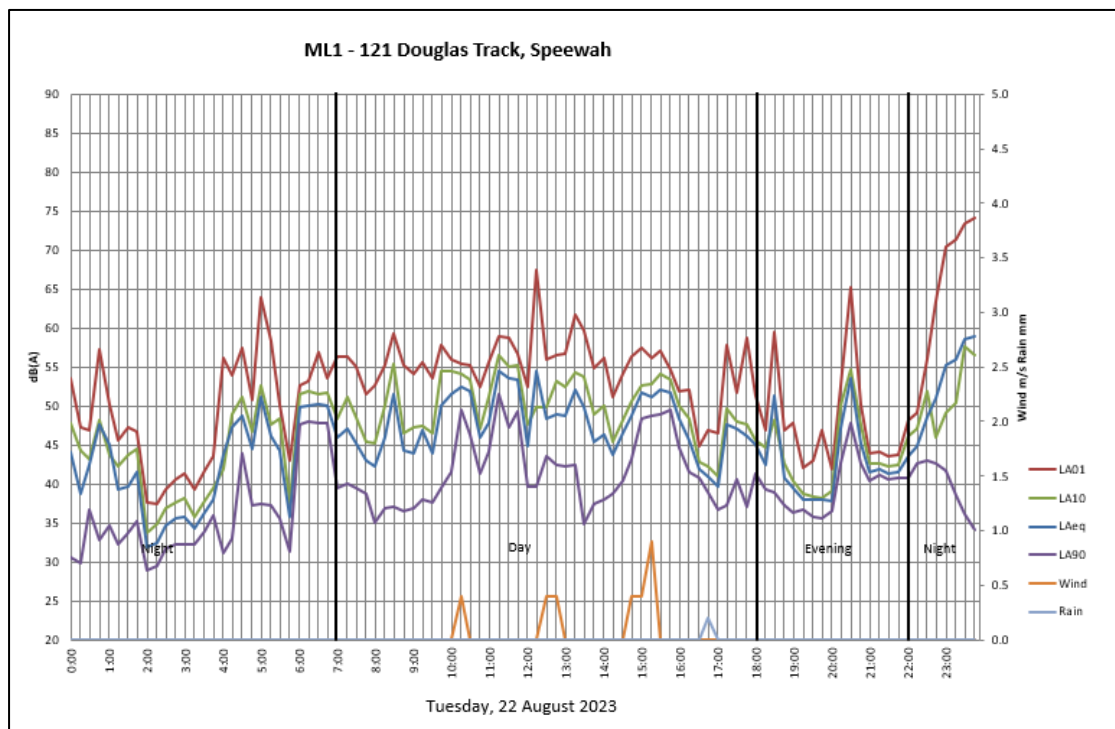
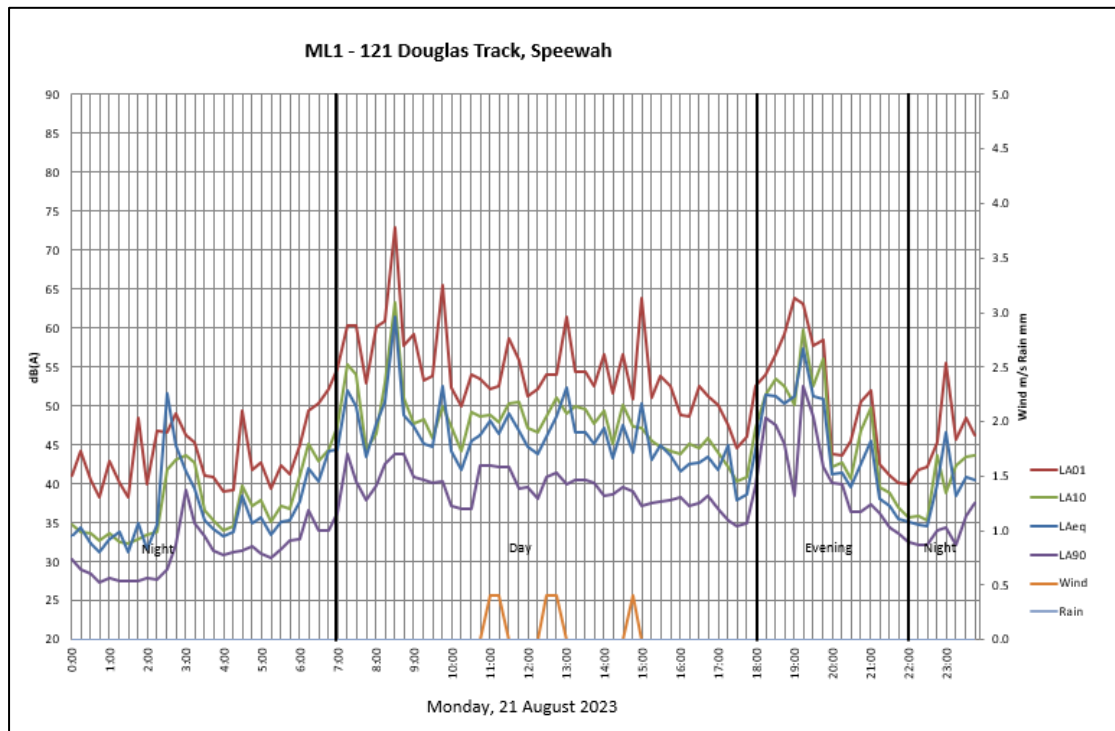


Figure C1: Daily noise traces recorded at the noise logging location

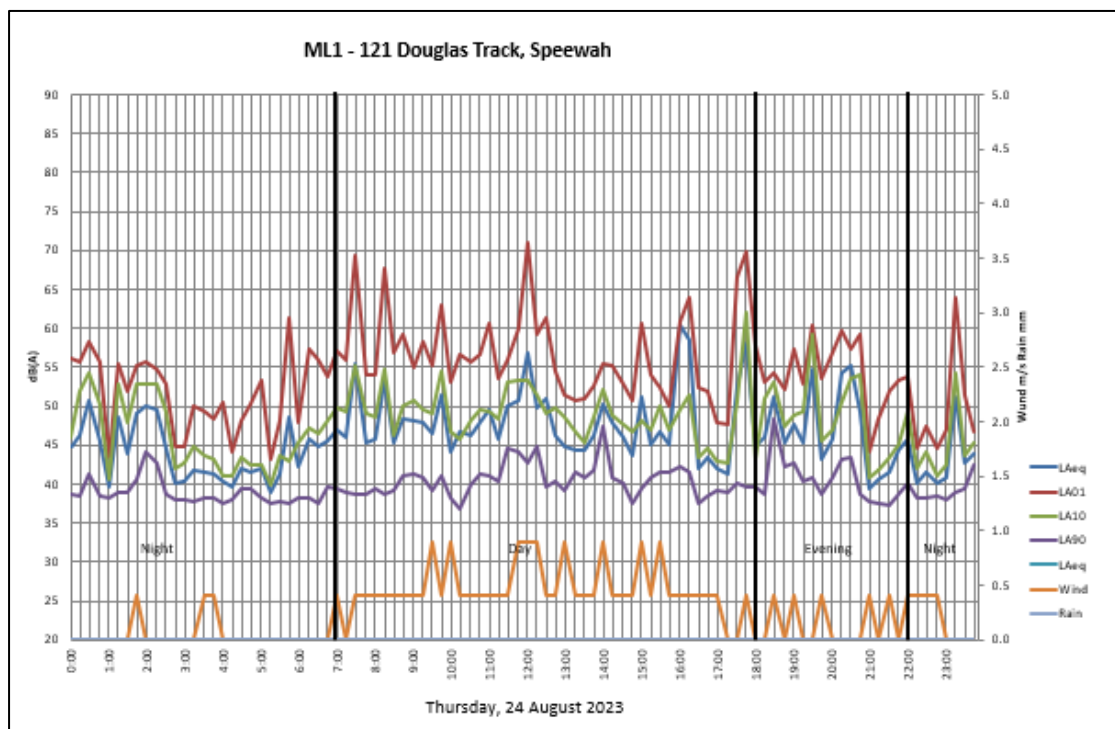
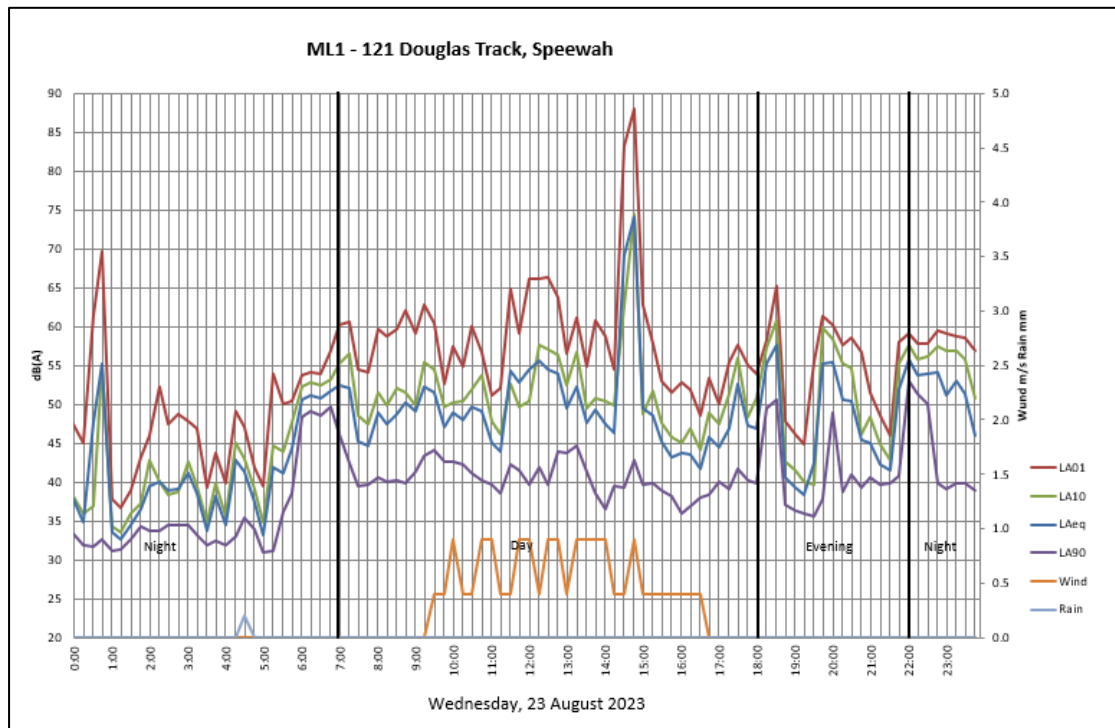




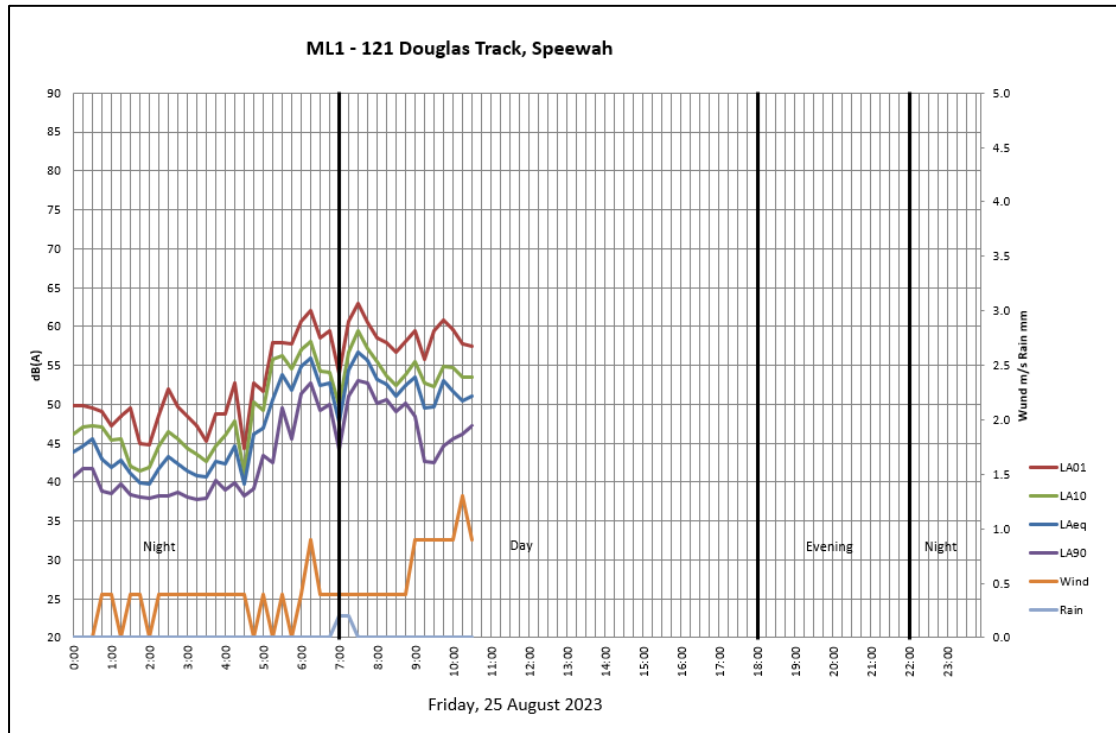
Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)



Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)



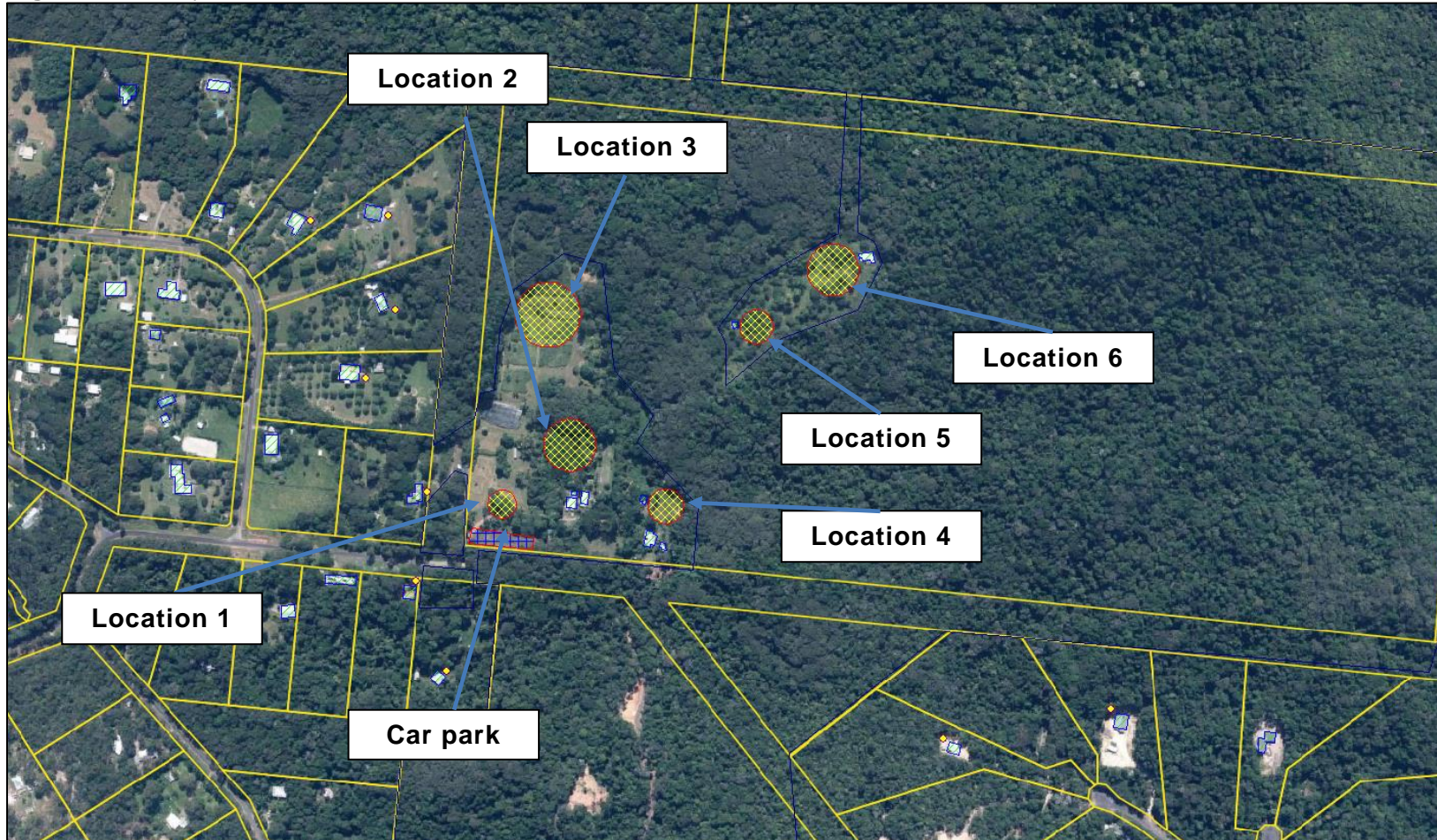
Dedicated Acoustics  
 Mobile: +61 4 3428 9997  
 Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
 Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)



Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## APPENDIX D – LAYOUT OF NOISE SOURCES IN MODELS

Figure D1: Layout of noise sources



Dedicated Acoustics  
Mobile: +61 4 3428 9997  
Email: [info@dedicatedacoustics.com.au](mailto:info@dedicatedacoustics.com.au)  
Web: [www.dedicatedacoustics.com.au](http://www.dedicatedacoustics.com.au)

## APPENDIX E – DETAILED NOISE EMISSION FORECAST



**Table E1:** Forecast noise emission levels for a range of potential uses

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
				7am-6pm	6pm-10pm	10pm-Midnight	
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
Scenario 1 – 20 Person Function in Location 1							
R1	Vehicle movements	11	31	Yes	Yes	Yes	Yes
	20 people in function area low level background music	27	32	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	33	36	Yes	Yes	Yes	Yes
R2	Vehicle movements	12	32	Yes	Yes	Yes	Yes
	20 people in function area low level background music	28	32	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	33	37	Yes	Yes	Yes	Yes
R3	Vehicle movements	14	35	Yes	Yes	Yes	Yes
	20 people in function area low level background music	32	36	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	20 people in function area raised level background music	37	41	Yes	Yes	Yes	Yes
R4	Vehicle movements	15	36	Yes	Yes	Yes	Yes
	20 people in function area low level background music	33	38	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	39	43	Yes	Yes	Exceeds by 2 dB	Yes
R5	Vehicle movements	24	47	Yes	Yes	Yes	Yes
	20 people in function area low level background music	42	48	Yes	Exceeds by 2 dB	Exceeds by 5 dB	Exceeds by 1 dB
	20 people in function area raised level background music	47	53	Exceeds by 5 dB	Exceeds by 7 dB	Exceeds by 10 dB	Exceeds by 6 dB
R6	Vehicle movements	22	45	Yes	Yes	Yes	Yes
	20 people in function area low level background music	35	41	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	20 people in function area raised level background music	41	46	Yes	Exceeds by 1 dB	Exceeds by 4 dB	Yes
R7	Vehicle movements	21	42	Yes	Yes	Yes	Yes
	20 people in function area low level background music	36	41	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	42	46	Yes	Exceeds by 2 dB	Exceeds by 5 dB	Yes
R8	Vehicle movements	8	29	Yes	Yes	Yes	Yes
	20 people in function area low level background music	22	26	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	27	31	Yes	Yes	Yes	Yes
R9	Vehicle movements	3	23	Yes	Yes	Yes	Yes
	20 people in function area low level background music	11	16	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	20 people in function area raised level background music	16	20	Yes	Yes	Yes	Yes
Scenario 2 – 20 Person Function in Location 2							
R1	Vehicle movements	11	31	Yes	Yes	Yes	Yes
	20 people in function area low level background music	27	32	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	33	37	Yes	Yes	Yes	Yes
R2	Vehicle movements	12	32	Yes	Yes	Yes	Yes
	20 people in function area low level background music	29	34	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	34	39	Yes	Yes	Yes	Yes
R3	Vehicle movements	14	35	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	20 people in function area low level background music	32	37	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	37	42	Yes	Yes	Yes	Yes
R4	Vehicle movements	15	36	Yes	Yes	Yes	Yes
	20 people in function area low level background music	33	40	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	39	44	Yes	Yes	Exceeds by 2 dB	Yes
R5	Vehicle movements	24	47	Yes	Yes	Yes	Yes
	20 people in function area low level background music	36	42	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	41	46	Yes	Exceeds by 1 dB	Exceeds by 4 dB	Yes
R6	Vehicle movements	22	45	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	20 people in function area low level background music	28	35	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	33	40	Yes	Yes	Yes	Yes
R7	Vehicle movements	21	42	Yes	Yes	Yes	Yes
	20 people in function area low level background music	32	38	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	38	42	Yes	Yes	Exceeds by 1 dB	Yes
R8	Vehicle movements	8	29	Yes	Yes	Yes	Yes
	20 people in function area low level background music	19	25	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	24	29	Yes	Yes	Yes	Yes
R9	Vehicle movements	3	23	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	20 people in function area low level background music	5	11	Yes	Yes	Yes	Yes
	20 people in function area raised level background music	10	15	Yes	Yes	Yes	Yes
Scenario 3 – 150 Person Function in Location 3							
R1	Vehicle Movements	24	31	Yes	Yes	Yes	Yes
	150 people in function area raised background music	37	42	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	50	55	Exceeds by 8 dB	Exceeds by 10 dB	Exceeds by 13 dB	Exceeds by 8 dB
	150 people in function area with small rock/blues band	53	59	Exceeds by 11 dB	Exceeds by 13 dB	Exceeds by 16 dB	Exceeds by 12 dB
R2	Vehicle Movements	25	32	Yes	Yes	Yes	Yes
	150 people in function area raised background music	40	46	Yes	Yes	Exceeds by 3 dB	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	53	59	Exceeds by 11 dB	Exceeds by 13 dB	Exceeds by 16 dB	Exceeds by 12 dB
	150 people in function area with small rock/blues band	56	63	Exceeds by 14 dB	Exceeds by 16 dB	Exceeds by 19 dB	Exceeds by 16 dB
R3	Vehicle Movements	27	35	Yes	Yes	Yes	Yes
	150 people in function area raised background music	42	48	Yes	Exceeds by 2 dB	Exceeds by 5 dB	Exceeds by 1 dB
	150 people in function area with foreground music	56	61	Exceeds by 14 dB	Exceeds by 16 dB	Exceeds by 19 dB	Exceeds by 14 dB
	150 people in function area with small rock/blues band	58	65	Exceeds by 16 dB	Exceeds by 18 dB	Exceeds by 21 dB	Exceeds by 18 dB
R4	Vehicle Movements	29	36	Yes	Yes	Yes	Yes
	150 people in function area raised background music	42	48	Yes	Exceeds by 2 dB	Exceeds by 5 dB	Exceeds by 1 dB



Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	56	61	Exceeds by 14 dB	Exceeds by 16 dB	Exceeds by 19 dB	Exceeds by 14 dB
	150 people in function area with small rock/blues band	58	65	Exceeds by 16 dB	Exceeds by 18 dB	Exceeds by 21 dB	Exceeds by 18 dB
R5	Vehicle Movements	37	47	Yes	Yes	Yes	Yes
	150 people in function area raised background music	40	47	Yes	Yes	Exceeds by 3 dB	Yes
	150 people in function area with foreground music	54	60	Exceeds by 12 dB	Exceeds by 14 dB	Exceeds by 17 dB	Exceeds by 13 dB
	150 people in function area with small rock/blues band	57	64	Exceeds by 15 dB	Exceeds by 17 dB	Exceeds by 20 dB	Exceeds by 17 dB
R6	Vehicle Movements	35	45	Yes	Yes	Yes	Yes
	150 people in function area raised background music	31	37	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	44	48	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 1 dB
	150 people in function area with small rock/blues band	47	53	Exceeds by 5 dB	Exceeds by 7 dB	Exceeds by 10 dB	Exceeds by 6 dB
R7	Vehicle Movements	34	42	Yes	Yes	Yes	Yes
	150 people in function area raised background music	35	40	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	48	53	Exceeds by 6 dB	Exceeds by 8 dB	Exceeds by 11 dB	Exceeds by 6 dB
	150 people in function area with small rock/blues band	51	57	Exceeds by 9 dB	Exceeds by 11 dB	Exceeds by 14 dB	Exceeds by 10 dB
R8	Vehicle Movements	21	29	Yes	Yes	Yes	Yes
	150 people in function area raised background music	24	28	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	36	40	Yes	Yes	Yes	Yes
	150 people in function area with small rock/blues band	41	47	Yes	Exceeds by 1 dB	Exceeds by 4 dB	Yes
R9	Vehicle Movements	16	23	Yes	Yes	Yes	Yes
	150 people in function area raised background music	18	23	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	30	34	Yes	Yes	Yes	Yes
	150 people in function area with small rock/blues band	37	42	Yes	Yes	Yes	Yes
Scenario 4 – 150 Person Function in Location 4							
R1	Vehicle Movements	24	31	Yes	Yes	Yes	Yes
	150 people in function area raised background music	30	36	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	43	49	Exceeds by 1 dB	Exceeds by 3 dB	Exceeds by 6 dB	Exceeds by 2 dB
	150 people in function area with small rock/blues band	46	53	Exceeds by 4 dB	Exceeds by 6 dB	Exceeds by 9 dB	Exceeds by 6 dB
R2	Vehicle Movements	25	32	Yes	Yes	Yes	Yes
	150 people in function area raised background music	31	38	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	44	51	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 4 dB
	150 people in function area with small rock/blues band	47	55	Exceeds by 5 dB	Exceeds by 7 dB	Exceeds by 10 dB	Exceeds by 8 dB
R3	Vehicle Movements	27	35	Yes	Yes	Yes	Yes
	150 people in function area raised background music	31	38	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	44	51	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 4 dB
	150 people in function area with small rock/blues band	48	55	Exceeds by 6 dB	Exceeds by 8 dB	Exceeds by 11 dB	Exceeds by 8 dB
R4	Vehicle Movements	29	36	Yes	Yes	Yes	Yes
	150 people in function area raised background music	31	39	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	44	51	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 4 dB
	150 people in function area with small rock/blues band	48	56	Exceeds by 6 dB	Exceeds by 8 dB	Exceeds by 11 dB	Exceeds by 9 dB
R5	Vehicle Movements	37	47	Yes	Yes	Yes	Yes
	150 people in function area raised background music	29	38	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	41	51	Yes	Exceeds by 1 dB	Exceeds by 4 dB	Exceeds by 4 dB
	150 people in function area with small rock/blues band	47	56	Exceeds by 5 dB	Exceeds by 7 dB	Exceeds by 10 dB	Exceeds by 9 dB
R6	Vehicle Movements	35	45	Yes	Yes	Yes	Yes
	150 people in function area raised background music	26	33	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	39	45	Yes	Yes	Exceeds by 2 dB	Yes
	150 people in function area with small rock/blues band	44	51	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 4 dB
R7	Vehicle Movements	34	42	Yes	Yes	Yes	Yes
	150 people in function area raised background music	30	38	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	43	50	Exceeds by 1 dB	Exceeds by 3 dB	Exceeds by 6 dB	Exceeds by 3 dB
	150 people in function area with small rock/blues band	48	55	Exceeds by 6 dB	Exceeds by 8 dB	Exceeds by 11 dB	Exceeds by 8 dB
R8	Vehicle Movements	21	29	Yes	Yes	Yes	Yes
	150 people in function area raised background music	18	25	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	31	37	Yes	Yes	Yes	Yes
	150 people in function area with small rock/blues band	37	44	Yes	Yes	Yes	Yes
R9	Vehicle Movements	16	23	Yes	Yes	Yes	Yes
	150 people in function area raised background music	5	11	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	18	23	Yes	Yes	Yes	Yes
	150 people in function area with small rock/blues band	25	31	Yes	Yes	Yes	Yes
Scenario 5 – 150 Person Function in Location 5							
R1	Vehicle Movements	24	31	Yes	Yes	Yes	Yes
	150 people in function area raised background music	29	34	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	42	47	Yes	Exceeds by 2 dB	Exceeds by 5 dB	Yes
	150 people in function area with small rock/blues band	46	51	Exceeds by 4 dB	Exceeds by 6 dB	Exceeds by 9 dB	Exceeds by 4 dB
R2	Vehicle Movements	25	32	Yes	Yes	Yes	Yes
	150 people in function area raised background music	31	37	Yes	Yes	Yes	Yes



Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	44	49	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 2 dB
	150 people in function area with small rock/blues band	47	54	Exceeds by 5 dB	Exceeds by 7 dB	Exceeds by 10 dB	Exceeds by 7 dB
R3	Vehicle Movements	27	35	Yes	Yes	Yes	Yes
	150 people in function area raised background music	31	36	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	44	49	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 2 dB
	150 people in function area with small rock/blues band	48	53	Exceeds by 6 dB	Exceeds by 8 dB	Exceeds by 11 dB	Exceeds by 6 dB
R4	Vehicle Movements	29	36	Yes	Yes	Yes	Yes
	150 people in function area raised background music	33	39	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	46	51	Exceeds by 4 dB	Exceeds by 6 dB	Exceeds by 9 dB	Exceeds by 4 dB
	150 people in function area with small rock/blues band	49	56	Exceeds by 7 dB	Exceeds by 9 dB	Exceeds by 12 dB	Exceeds by 9 dB
R5	Vehicle Movements	37	47	Yes	Yes	Yes	Yes
	150 people in function area raised background music	33	38	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	46	51	Exceeds by 4 dB	Exceeds by 6 dB	Exceeds by 9 dB	Exceeds by 4 dB
	150 people in function area with small rock/blues band	50	55	Exceeds by 8 dB	Exceeds by 10 dB	Exceeds by 13 dB	Exceeds by 8 dB
R6	Vehicle Movements	35	45	Yes	Yes	Yes	Yes
	150 people in function area raised background music	26	31	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	39	43	Yes	Yes	Exceeds by 2 dB	Yes
	150 people in function area with small rock/blues band	43	49	Exceeds by 1 dB	Exceeds by 3 dB	Exceeds by 6 dB	Exceeds by 2 dB
R7	Vehicle Movements	34	42	Yes	Yes	Yes	Yes
	150 people in function area raised background music	26	32	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	39	44	Yes	Yes	Exceeds by 2 dB	Yes
	150 people in function area with small rock/blues band	44	50	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 3 dB
R8	Vehicle Movements	21	29	Yes	Yes	Yes	Yes
	150 people in function area raised background music	17	22	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	30	33	Yes	Yes	Yes	Yes
	150 people in function area with small rock/blues band	36	41	Yes	Yes	Yes	Yes
R9	Vehicle Movements	16	23	Yes	Yes	Yes	Yes
	150 people in function area raised background music	6	14	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	19	26	Yes	Yes	Yes	Yes
	150 people in function area with small rock/blues band	26	34	Yes	Yes	Yes	Yes
Scenario 6 – 150 Person Function in Location 6							
R1	Vehicle Movements	24	31	Yes	Yes	Yes	Yes
	150 people in function area raised background music	28	34	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	41	47	Yes	Exceeds by 1 dB	Exceeds by 4 dB	Yes
	150 people in function area with small rock/blues band	45	52	Exceeds by 3 dB	Exceeds by 5 dB	Exceeds by 8 dB	Exceeds by 5 dB
R2	Vehicle Movements	25	32	Yes	Yes	Yes	Yes
	150 people in function area raised background music	30	37	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	43	49	Exceeds by 1 dB	Exceeds by 3 dB	Exceeds by 6 dB	Exceeds by 2 dB
	150 people in function area with small rock/blues band	47	54	Exceeds by 5 dB	Exceeds by 7 dB	Exceeds by 10 dB	Exceeds by 7 dB
R3	Vehicle Movements	27	35	Yes	Yes	Yes	Yes
	150 people in function area raised background music	30	36	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	44	49	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 2 dB
	150 people in function area with small rock/blues band	47	54	Exceeds by 5 dB	Exceeds by 7 dB	Exceeds by 10 dB	Exceeds by 7 dB
R4	Vehicle Movements	29	36	Yes	Yes	Yes	Yes
	150 people in function area raised background music	32	38	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	45	50	Exceeds by 3 dB	Exceeds by 5 dB	Exceeds by 8 dB	Exceeds by 3 dB
	150 people in function area with small rock/blues band	48	55	Exceeds by 6 dB	Exceeds by 8 dB	Exceeds by 11 dB	Exceeds by 8 dB
R5	Vehicle Movements	37	47	Yes	Yes	Yes	Yes
	150 people in function area raised background music	31	37	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	45	49	Exceeds by 3 dB	Exceeds by 5 dB	Exceeds by 8 dB	Exceeds by 2 dB
	150 people in function area with small rock/blues band	48	53	Exceeds by 6 dB	Exceeds by 8 dB	Exceeds by 11 dB	Exceeds by 6 dB
R6	Vehicle Movements	35	45	Yes	Yes	Yes	Yes
	150 people in function area raised background music	27	32	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	40	44	Yes	Yes	Exceeds by 3 dB	Yes
	150 people in function area with small rock/blues band	44	49	Exceeds by 2 dB	Exceeds by 4 dB	Exceeds by 7 dB	Exceeds by 2 dB
R7	Vehicle Movements	34	42	Yes	Yes	Yes	Yes
	150 people in function area raised background music	30	34	Yes	Yes	Yes	Yes

Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	43	47	Exceeds by 1 dB	Exceeds by 3 dB	Exceeds by 6 dB	Yes
	150 people in function area with small rock/blues band	46	52	Exceeds by 4 dB	Exceeds by 6 dB	Exceeds by 9 dB	Exceeds by 5 dB
R8	Vehicle Movements	21	29	Yes	Yes	Yes	Yes
	150 people in function area raised background music	23	28	Yes	Yes	Yes	Yes
	150 people in function area with foreground music	36	40	Yes	Yes	Yes	Yes
	150 people in function area with small rock/blues band	41	47	Yes	Exceeds by 1 dB	Exceeds by 4 dB	Yes
R9	Vehicle Movements	16	23	Yes	Yes	Yes	Yes
	150 people in function area raised background music	10	16	Yes	Yes	Yes	Yes



Receiver	Source	Forecast Noise Level, dB(A)		Compliant?			
		L <sub>Aeq,adj,15min</sub>	L <sub>Amax,adj,15min</sub>	7am-6pm	6pm-10pm	10pm-Midnight	
				L <sub>Aeq,adj,15min</sub> 42 dB(A)	L <sub>Aeq,adj,15min</sub> 40 dB(A)	L <sub>Aeq,adj,15min</sub> 37 dB(A)	L <sub>Amax,adj,15min</sub> 37 dB(A)
	150 people in function area with foreground music	22	28	Yes	Yes	Yes	Yes
	150 people in function area with small rock/blues band	30	37	Yes	Yes	Yes	Yes

## Appendix B

### Traffic Impact Assessment Report, CivilWalker

Ref: 249-001-001L2

4 October 2023

Caldante Holdings Pty Ltd  
c/- RPS AAP Consulting Pty Ltd  
PO Box 1949  
Cairns Qld 4879  
via email: patrick.clifton@rpsgroup.com.au

**Proposed Development at Rosebud Farm  
121 Douglas Track, Speewah  
Traffic Impact Assessment Report**

**Introduction**

CivilWalker Consulting Engineers have been commissioned by Caldante Holdings Pty Ltd to update a traffic assessment prepared previously for Rosebud Farm associated with a proposed development located at 121 Douglas Track, Speewah. The proposed development parameters have changed, which are described in RPS' town planning report "Town Planning Report for Material Change of Use (Function Facility)" dated 18 July 2023.

In response to RPS' submission, Council have issued a confirmation notice (dated 31 July 2023) which included an information request relating to assessment of traffic impacts. Council's request is as follows:

*Please provide a Traffic Impact Assessment (TIA), prepared by a suitably qualified RPEQ investigating the proposed development's impact on the local road network. The TIA should investigate anticipated vehicle movements and any upgrades required to Speewah Road and Douglas Track. Douglas Track reverts back to a formed gravel standard approximately 40 metres to the west of the site access crossover.*

The purpose of this report is to respond to Council's information request by updating the previously issued traffic report considering the proposed new development proposal and its impact on the existing road.

**Existing Site Development**

The subject site is more formally described as Lot 45 on N157358 and is identified in **Figure 1** below. It is located at the end of the trafficable portion of Douglas Track and contains a considerable number of existing building structures that include a dwelling house, studio cabins, another separate building with bedroom / kitchen, multiple sheds, an out-house, a greenhouse and a laundry hut. There are also several existing cleared areas on the site. Access to the site is provided directly from Douglas Track, which is shown in **Photograph 1**.



Figure 1 – Site Location (courtesy Qld Globe)



Photograph 1 – Site Access from Douglas Track

### Proposed Development

The proposed development involves formalisation of function areas, which would be used for weddings, civil receptions, and other similar social events. Functions would be held within existing open grassed / garden areas and existing on-site structures. It is not proposed to provide additional structures as part of the development. Functions are proposed to cater for up to a maximum of 150 people.

It is noted within RPS' submission that guests will be encouraged by the venue to access the site via an organised bus service, however this will not be a strict requirement or able to be enforced and therefore allowance shall be made for guests to arrive in their own vehicles.

The proposal is depicted on the “proposal plan” provided in **Attachment 1**.

### Existing Road

A site inspection of Douglas Track Road was undertaken by CivilWalker Consulting Engineers on 19 October 2021. It is understood that no further upgrade work has occurred on the road since the previously issued report and therefore the outcomes of this site inspection are considered to remain relevant. During the inspection, a series of measurements were undertaken to determine the existing road formation and seal width along Douglas Track Road. The pavement and seal extent were generally for the full width of formation along the road, with the widths as documented in **Table 1** below identified. Reference is made to drawing 249-001-SK01 (**Attachment 2**), which provides additional detail.

Section	From	To	Width	Comments
1	Development Site	Veivers Dr	4.0m	
2	Veivers Dr	Pioneer Cl	4.5m	
3	Causeway Crossing		6.0m	localised widening
4	Pioneer Cl	William Smith Dr	5.0m	5.5m at locations
5	William Smith Dr	Veivers Dr	5.0m	5.5m at locations
6	Veivers Dr	Speewah Rd	5.5m	
7	Speewah Rd	Kennedy Hwy	7.5m	min, generally greater

**Table 1 – Existing Typical Road Width**

Council’s information request also requested consideration of Speewah Road. Speewah Road is a local road that services properties on Ganyan Drive, Stoney Creek Road, William Smith Drive and other smaller residential access streets. It is not connected to the greater external road network. Guests to the proposed development will likely be travelling from further afield via the Kennedy Highway; it is not considered that a great proportion of guests will attend regular events at the site from the Stoney Creek road catchment and therefore Stoney Creek Road has not been considered further in this report.

### Existing Traffic Volumes

There are a several publications that provide traffic generation rates for urban type residential developments, with rates varying as noted below (sources: RTA (now RMS), QT (now TMR), AMCORD and Queensland Streets):

- 6 – 10 vehicles per day for detached dwelling (ie typical detached dwelling subdivision development)
- 4 – 6.5 vehicles per day for medium density development
- 3 – 6 vehicles per day for high density development

It is noted that as density increases from a typical detached type dwelling development, through medium density and higher density developments that traffic generation reduces. This is generally because medium type density developments are typically closer to public transport facilities and commercial / retail type developments. It is therefore not necessary for people who live in this type of development to utilise private transportation as much. For higher density developments, this trend continues.

The sources / publications noted above do not provide for rural type areas. For this type of development, the opposite is the case when considering proximity to commercial / retail type developments. These facilities are typically much further away and therefore residents in rural areas have been found to plan for reduced trips to save continual extended travel times to access such facilities. The trend in rural type areas is that the number of vehicle trips are lower than typical

detached dwelling type developments. Caboolture Shire Council has undertaken work to determine an appropriate vehicle trip allowance per day for rural type development, which is identified in their Planning Scheme Policy 21A “Transport Network Developer Contributions”. Table 5.1 within that document identifies:

Rural Dwelling traffic generation rate of 6.5 vehicles per day per dwelling

This is comparable to the lower end of a traffic generation rate typical for a detached dwelling type development and therefore, seems a reasonable figure to adopt for the purpose of this report.

A traffic catchment plan has been prepared (refer drawing 249-001-SK02 in **Attachment 2**) that identifies the number of rural allotments contributing to selected locations along the Douglas Track Road for assessment. Daily vehicle numbers have been calculated based on the abovementioned traffic generation rate of 6.5 vehicles per day. Drawing 249-001-SK02 details the generated traffic numbers.

### Existing Road Requirements

Section D1 “Road Geometry” of the FNQROC Regional Development Manual (FNQROC) provides details on minimum requirements for the design of road work using principles of street design to provide appropriate safety and reduce vehicular / pedestrian conflicts. In particular, Table D1.4 “Rural Road Elements” provides rural road design elements for formation, pavement and seal width in areas identified as being suited to rural and rural residential developments. The following elements apply:

#### Traffic Volume of < 100 vehicles per day

- Pavement Width = 5.5m
- Seal Width = 4.5m

#### Traffic Volume of 100 - 999 vehicles per day

- Pavement Width = 6.5m
- Seal Width = 6.5m

A summary of the existing road widths compared to FNQROC requirements is provided in **Table 2** below.

Section	Existing Width	Existing Daily Traffic (vehicles)	FNQROC	Comments
1	Pavement = 4.0m Seal = 4.0m	39	Pavement = 5.5m Seal = 4.5m	Pavement 1.5m shortfall Seal 0.5m shortfall
2	Pavement = 4.5m Seal = 4.5m	117	Pavement = 6.5m Seal = 6.5m	Pavement 2.0m shortfall Seal 2.0m shortfall
3	Pavement = 6.0 m Seal = 6.0m	163	Pavement = 6.5m Seal = 6.5m	Pavement 0.5m shortfall Seal 0.5m shortfall
4	Pavement = 5.0m Seal = 5.0m	163	Pavement = 6.5m Seal = 6.5m	Pavement 1.5m shortfall Seal 1.5m shortfall
5	Pavement = 5.0m Seal = 5.0m	300	Pavement = 6.5m Seal = 6.5m	Pavement 1.5m shortfall Seal 1.5m shortfall
6	Pavement = 5.5m Seal = 5.5m	482	Pavement = 6.5m Seal = 6.5m	Pavement 1.0m shortfall Seal 1.0m shortfall
7	Pavement = 7.5m Seal = 7.5m	>482	Pavement = 6.5m Seal = 6.5m	Pavement 1.0m shortfall Seal 1.0m shortfall

**Table 2 – Existing Road vs FNQROC Requirements**

It is noted that, based on the traffic generation calculations provided above, the existing Douglas Track road width is narrower than current FNQROC requirements by between 0.5m and 2.0m.

### Development Traffic Generation

As noted within the RPS submission, the proposed development will allow for up to a maximum of 150 guests. As noted within the “Proposed Development” section of this report, guests will be encouraged by the venue to access the site via an organised bus service, however this will not be a strict requirement or able to be enforced. Therefore, for the purpose of this report, it has been conservatively assumed that guests will arrive in private vehicles.

In considering arrival of guests to a function in private vehicles it is noted that the passenger / vehicle configurations could vary significantly. Depending on the type of function (ie wedding, other social or corporate) some guests may arrive separately, a considerable portion are likely to arrive in pairs (ie husband / wife, partners, friends, work colleagues etc.) and some may car pool providing a higher number of passengers per vehicle. For the purpose of this report, it has been assumed that vehicles arriving at the site will contain the following passengers:

▪ 50% of guests (ie 75) travelling with 2 guests per vehicle	38 vehicles
▪ 30% of guests (ie 50) travelling with 4 guests per vehicle (ie car pooling)	11 vehicles
▪ <u>20% of guests (ie 30) travelling with 6 guests per vehicle (ie mini-bus)</u>	<u>5 vehicles</u>
▪ Total guest vehicles (average number of guests per vehicle = 2.8)	54 vehicles

This is considered a reasonable assumption given the rural location of the site will likely encourage car-pooling and other forms of transport with higher capacity than a standard passenger vehicle (ie a mini-bus).

Further vehicles have also been allowed associated with a function event, these being delivery vehicles, vehicles associated with set-up and cleaning activities both before and after each event. The following has been allowed for:

▪ Deliveries (furniture, food and beverage)	3 vehicles
▪ Post event cleaning services	1 vehicle

It has been assumed that only a single event will occur in any one day. Therefore, the adopted number of vehicles accessing the site for a maximum capacity event of 150 people has been adopted as:

- Maximum assumed development generated traffic per day = 54 + 3 + 1 = 58 vehicles / day

It is noted that social events occurring at the proposed function facility are unlikely to occur during peak hours and therefore an assessment on daily traffic has been undertaken. Furthermore, the applicant has advised that these types of events will occur (on average) approximately once a fortnight (i.e. an event with 150 guests every 14 calendar days), reducing the annual average daily traffic (the unit applied within FNQROC) associated with a large event over a fortnightly period to 58 vehicles / 14 days = 4.1 vehicles / day. Notwithstanding this, assessment has been undertaken for a day on which a large event occurs.

Adopting the existing traffic and proposed development generation calculations, the total traffic after development is estimated to be as documented in **Table 3** (referencing drawing 227-001-SK02 for locations).

Location	Existing Contributing Catchments	Existing Daily Vehicles	Post Development Vehicles on Event Day
1	A	39	97
2	A + B	117	175
3	A + B + C	163	221
4	A + B + C + D	300	358
5	A + B + C + E	482	540

**Table 3 – Estimated Traffic Generated After Development**

### Road Upgrade Assessment

Based on the above calculations, there is no trigger for road upgrades associated with an increase in traffic volume by the proposed development when considering road carriageway or pavement width in accordance with FNQROC requirements. Section 1 (Development Site to Veivers Drive) remains within the “<100 vehicles per day” parameter and Locations 2 to 7 (Veivers Drive to Kennedy Highway) remain within the “100 – 999 vehicles per day” parameter. No road pavement upgrades are therefore considered warranted.

Additional consideration has been given to the existing causeway between Pioneer Close and William Smith Drive. It is currently 6m wide and not proposed to be widened however, it is proposed to provide the following to improve safety of the crossing:

- Provide warning signage / line marking on the causeway approaches advising motorists of the up-coming causeway.
- Provide guideposts / raised reflective pavement markers on the causeway and its approaches to provided improved delineation at night.
- Provide flood depth markers on the causeway approaches.
- Reduce the speed limit over the causeway to 20km/h.

It is proposed that costs associated with the upgrade be offset against the ultimate development headwork contributions. This is considered a reasonable request because the existing road between the development site and Speewah Road is currently below current design standard and the upgrade work would provide a community benefit.

Yours faithfully

**CivilWalker Consulting Engineers**



**Daryl Walker**

Director | Principal Engineer

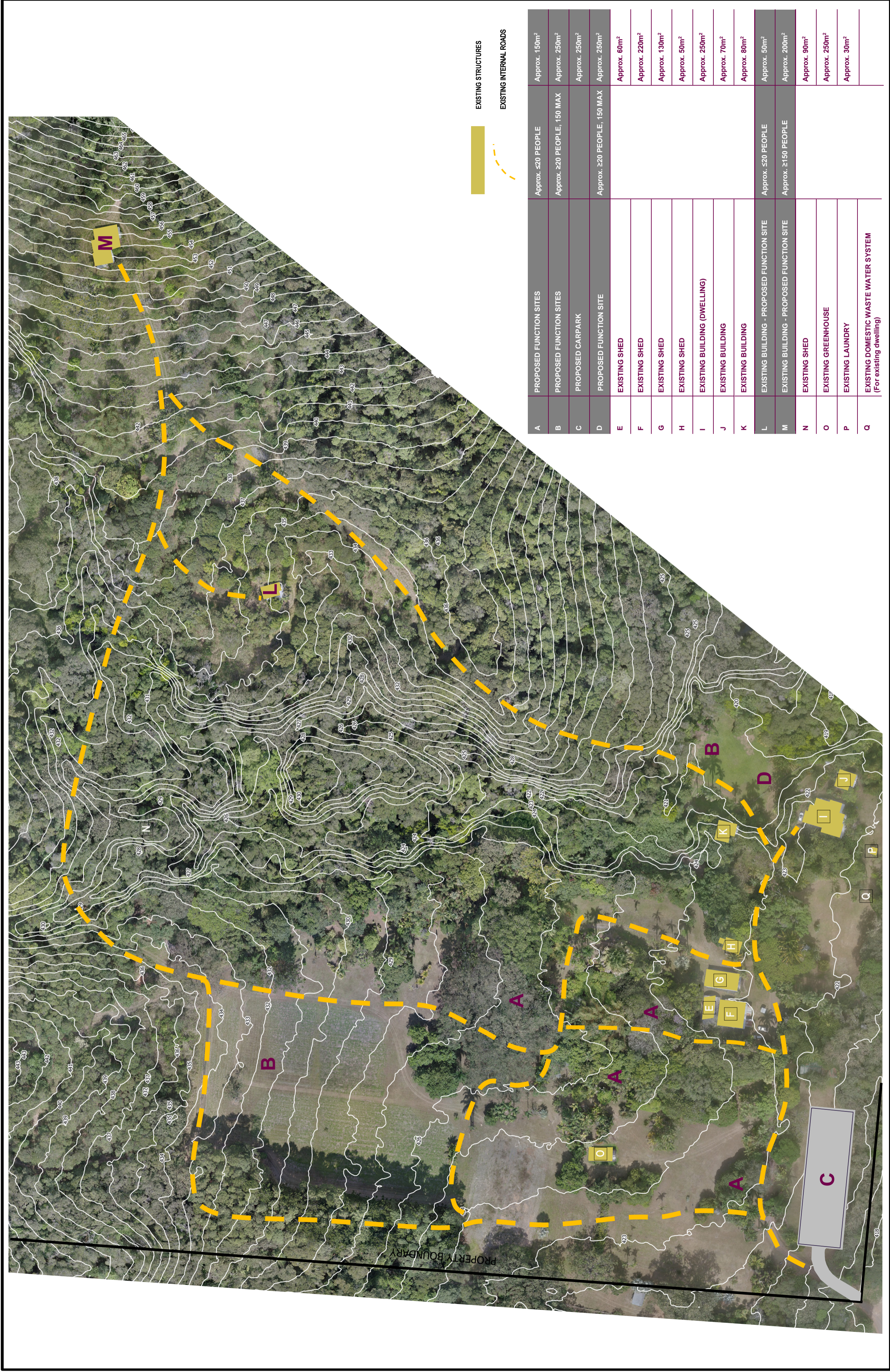
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enc. Attachment 1 – Development Proposal Plan  
Attachment 2 – CivilWalker Consulting Engineers’ Drawings 249-001-SK01, SK02 and SK03



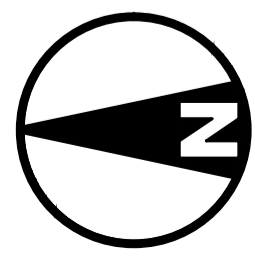


**Attachment 1**  
*Development Proposal Plan*

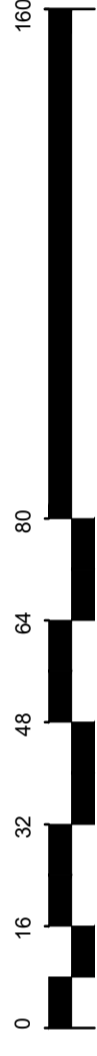


EXISTING STRUCTURES  
 EXISTING INTERNAL ROADS

PROPOSED FUNCTION SITES	Approx. ≤20 PEOPLE	Approx. 150m <sup>2</sup>
A	Approx. ≤20 PEOPLE	Approx. 150m <sup>2</sup>
B	Approx. ≥20 PEOPLE, 150 MAX	Approx. 250m <sup>2</sup>
C	PROPOSED CARPARK	Approx. 250m <sup>2</sup>
D	PROPOSED FUNCTION SITE	Approx. 250m <sup>2</sup>
E	EXISTING SHED	Approx. 60m <sup>2</sup>
F	EXISTING SHED	Approx. 220m <sup>2</sup>
G	EXISTING SHED	Approx. 130m <sup>2</sup>
H	EXISTING SHED	Approx. 50m <sup>2</sup>
I	EXISTING BUILDING (DWELLING)	Approx. 250m <sup>2</sup>
J	EXISTING BUILDING	Approx. 70m <sup>2</sup>
K	EXISTING BUILDING	Approx. 80m <sup>2</sup>
L	EXISTING BUILDING - PROPOSED FUNCTION SITE	Approx. 50m <sup>2</sup>
M	EXISTING BUILDING - PROPOSED FUNCTION SITE	Approx. 200m <sup>2</sup>
N	EXISTING SHED	Approx. 90m <sup>2</sup>
O	EXISTING GREENHOUSE	Approx. 250m <sup>2</sup>
P	EXISTING LAUNDRY	Approx. 30m <sup>2</sup>
Q	EXISTING DOMESTIC WASTE WATER SYSTEM (For existing dwelling)	



**Proposed Material Change of Use**  
 Function Facility  
 121 Douglas Track Road, Speewah, Lot 45 on N147358



Scale: 1:1200 @ A3 | Date: 17-07-2023 | Drawing: AU009935-1C

**RPS**  
 A TETRA TECH COMPANY

RPS AAP Consulting Pty Ltd  
 ACN 117 683 173  
 135 Abbott St  
 PO Box 1949  
 CAIRNS QLD 4870

T +61 7 4031 1336  
 F +61 7 4031 2942  
 W rpsgroup.com

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**Attachment 2**  
*CivilWalker Consulting Engineers' Drawings*  
*249-001-SK01 and SK02*



**EXISTING ROAD WIDTH ANALYSIS**

SECTION	FROM	TO	EXISTING WIDTH	COMMENTS
1	DEVELOPMENT SITE	VEIVERS DRIVE	4.0m	
2	VEIVERS DRIVE	PIONEER CLOSE	4.5m	
3	CAUSEWAY CROSSING		6.0m	LOCAL INCREASE IN WIDTH AT CAUSEWAY ONLY
4	PIONEER CLOSE	WILLIAM SMITH DRIVE	5.0m	WIDENS UP TO 5.5m AT SOME LOCATIONS
5	WILLIAM SMITH DRIVE	VEIVERS DRIVE	5.0m	WIDENS UP TO 5.5m AT SOME LOCATIONS
6	VEIVERS DRIVE	SPEEDWAH ROAD	5.5m	
7	SPEEDWAH ROAD	KENNEDY HIGHWAY	7.5m	THIS IS GENERAL MINIMUM. WIDTH UP TO >9.0m

NO.	DATE	DESCRIPTION	DESIGN	APPROVED
1	09.09.23	INITIAL ISSUE		

CLIENT  
**CALDANTE HOLDINGS PTY LTD**

SCALE  
ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE






DRAWN	CW	CHECKED	DJW
DESIGNED	CW	CHECKED	DJW

DRAWING NO.		DATE	REVISION
249-001-SK01			1

121 DOUGLAS TRACK, SPEEDWAH  
DOUGLAS TRACK  
EXISTING TYPICAL ROAD WIDTH

**LEGEND**

-  TRAFFIC CATCHMENT BOUNDARY
-  TRAFFIC CATCHMENT LABEL
-  ROAD WIDTH ANALYSIS LOCATION

THIS PROPERTY HAS DIRECT ACCESS TO KENNEDY HIGHWAY

TRAVEL DISTANCE TO DOUGLAS TRACK /  
SPEEWAH ROAD INTERSECTION = 1,188m

TRAVEL DISTANCE TO DOUGLAS TRACK /  
SPEEWAH ROAD INTERSECTION = 1,200m

SPEEWAH ROAD

DOUGLAS TRACK

VEIVERS DRIVE

WILLIAM SMITH DRIVE

DEVELOPMENT SITE

TRAFFIC CATCHMENT BOUNDARY FOR USE IN  
CALCULATION OF EXISTING TRAFFIC VOLUMES

TRAVEL DISTANCE TO DOUGLAS TRACK /  
SPEEWAH ROAD INTERSECTION = 1,316m

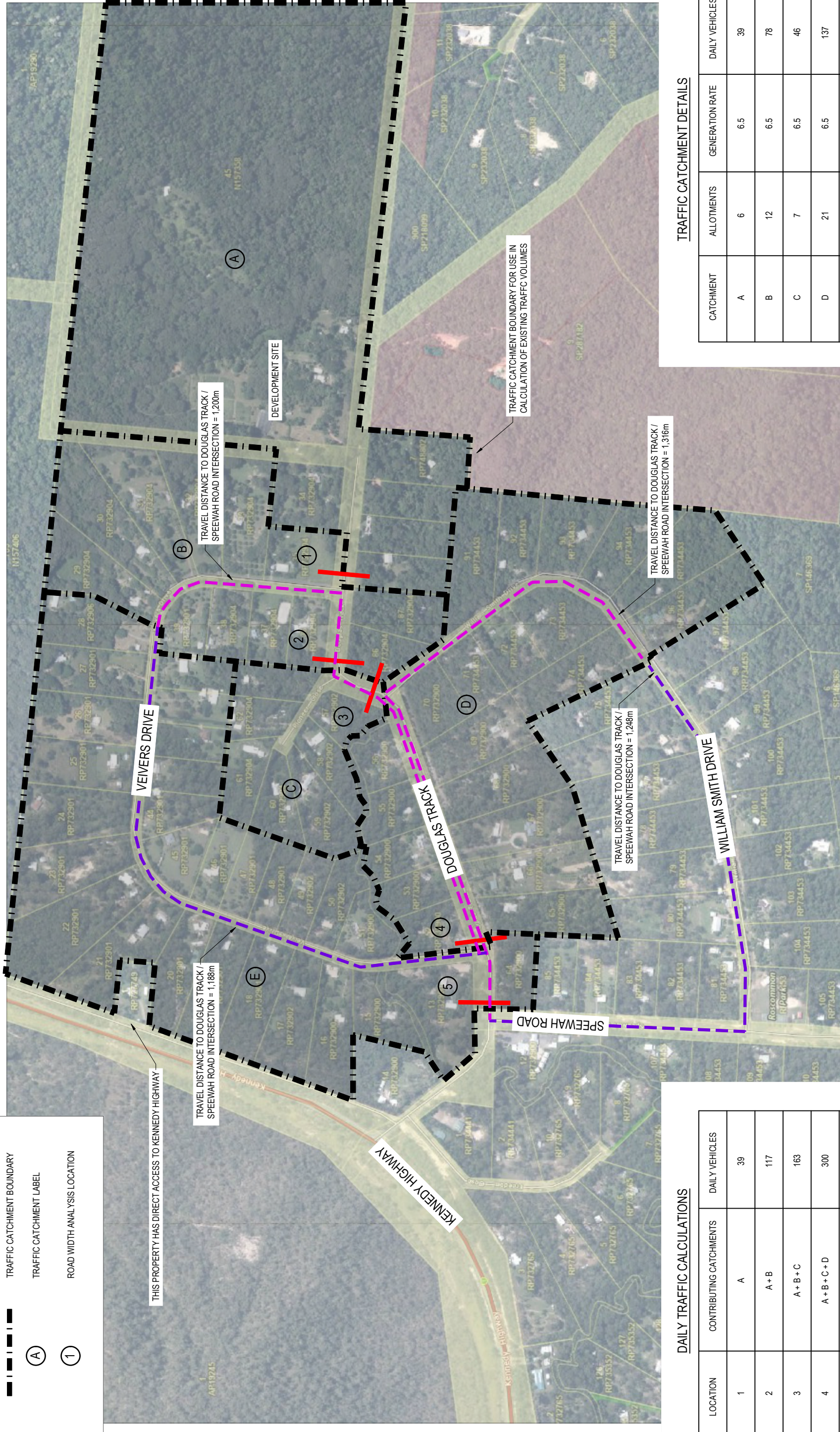
TRAVEL DISTANCE TO DOUGLAS TRACK /  
SPEEWAH ROAD INTERSECTION = 1,248m

**DAILY TRAFFIC CALCULATIONS**

LOCATION	CONTRIBUTING CATCHMENTS	DAILY VEHICLES
1	A	39
2	A + B	117
3	A + B + C	163
4	A + B + C + D	300
5	A + B + C + D + E	482

**TRAFFIC CATCHMENT DETAILS**

CATCHMENT	ALLOTMENTS	GENERATION RATE	DAILY VEHICLES
A	6	6.5	39
B	12	6.5	78
C	7	6.5	46
D	21	6.5	137
E	28	6.5	182



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1	08.09.23	INITIAL ISSUE		

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DESIGNED	CW	CHECKED	DJW
APPROVED			

121 DOUGLAS TRACK, SPEEWAH	
EXISTING TRAFFIC CATCHMENT PLAN	
DRAWING NO.	249-001-SK02
REVISION	1

# Appendix C

## Ecological Report 2023, Land Plan

# Ecological Report 2023

121 Douglas Track, Speewah, Queensland, Australia 4881



**Land Plan**  
"Plant a Seed and The World Will Grow"  
ABN: 72 486 134 042

Written by Julian Pitcher 0439 722 277

# Ecological Report 2023

121 Douglas Track, Speewah, Queensland, Australia 4881

## Front Cover images

Right: Aerial view over site

Top Left: *Alpinia hylandii* in flower

Middle Left: *Randia audasii* in flower

Bottom Left: *Rhodamnia sessiliflora* in flower



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## 1. Abstract

### Summary points

- Potential noise impact area of typical site is approximately 3ha (Poje, 2023) and does not extend to nature refuges. Actual noise impact area expected to be significantly less when adhering to levels outlined in table 6.3 of Noise Impact Assessment provided by Dedicated Acoustics.
- Various noise impact mitigation strategies recommended as per ecological requirements and noise impact assessment
- No clearing to occur overall, compliant with PO1, PO2, PO3, PO4, PO5 acceptable outcomes as per MSC environmental significance overlay code, and not within a legally secured offset area or protected area (PO6, PO7)
- MSC additional information request and potential EPBC referral – detrimental impact on site biodiversity believed unlikely. EPBC significant impacts believed to be avoided, EPBC referral not required
- Three CEEVNT flora species were identified (NCA 1992 and EPBC 1999) and propagation recommended
- Ongoing camera monitoring recommended
- Recommend continuing control of invasive flora and fauna
- Recommend pets be kept as per local government by laws
- Works can protect and enhance habitat by control of invasive flora and fauna, by supporting natural regeneration, and stabilising EVNT flora populations through a propagation program

## 2. Introduction

At the request of the Mareeba Shire Council, to support a proposed development by the landholder, this report has been produced to assist with a material change in use application for function/event facilities at Lot 45 Douglas Track N157358. This report shall propose mitigation strategies of potential negative impacts to relative natural assets, and demonstrate compliance with;

- Mareeba Shire Council Environmental Significance Overlays
- Address additional information request and potential need for EPBC referral

Occupying an approximately 64.75-hectare tract at 121 Douglas Track Road, Speewah, Speewah Gardens distinguishes itself as a sanctuary of biological diversity. The site is home to an impressive collection of over 660 plant species, encompassing a diverse array of palms, cycads, exotics, and tropical fruit trees. This living tableau serves as the backdrop for the proposal's dual purpose - to facilitate celebratory events and maintain the site's ecological integrity.

Among the inhabitants of this ecosystem are noteworthy species, including the Southern cassowary, vital contributors to the rainforest ecosystem, and the tapping green-eyed tree frogs, whose calls punctuate the nocturnal ambiance. These inhabitants contribute to the area's ecological significance and underscore the need for harmonious coexistence.

As stewards of ecological preservation, scrutiny extends beyond the festivities to the operational intricacies that govern the proposal. Designated event areas and prescribed pathways will minimize disturbances, ensuring the conservation of both habitat and ambiance. The proposal aligns with a comprehensive ethos of ecological awareness and in particular, commits to no clearing of remnant, or non-remnant vegetation. An acknowledgement of the site's biodiversity and its significance within the larger landscape.

This property overall is highly vegetated with various natural values and environmental legislation/layers existing across the site. It is located in close proximity to the Speewah shops, just a 15-minute walk away. The property is rectangle in shape, with the longest side running 1200m East to West, and being 560m wide.

Various properties of similar dimension and landscape exist on each side of the property, and access is via the Douglas Track which meets with the South West corner. The Barron Gorge and Glacier rock sit within just a couple kilometres to the North east, and further abroad is a network of national parks and housing estates.

A gentle slope exists across the western part of the property, which sits at around 460m ASL, and then towards the East gives rise to a series of peaks reaching up to 570m ASL. Numerous drainage lines flow from these peaks in a south westerly direction, with multiple confluences forming close to the main dwellings.

The property has a history of significant disturbance with around 16ha having been seen to be cleared in the early 1950's, and numerous logging tracks extending out into the now largely intact peaks and gullies. Over the past 70 years of various utilisation, significant regeneration has occurred alongside manicured gardens, which now gives rise to an intricate balance of natural and horticultural services..



*Figure 1: Aerial view over Speewah Gardens, Speewah, Queensland Australia 4881.*

### 3. Exemptions

#### Local Government (MSC)

The majority of the property in question is situated within one or more layers on the Mareeba Shire Councils environmental significance overlay map, and is in close proximity to various nature refuges. Despite no vegetation clearing being planned as part of the development application, an ecological report has been requested along with addressing an additional information request to identify and mitigate potential impacts of noise pollution on the surrounding Cassowary population.

#### DCCEEW EPBC Act 1999

After self-assessment of the ongoing broadest potential noise impacts associated with the development application, it is believed that significant impacts are unlikely and EPBC referral is not required. Please see Section 5 for more details.

### 4. Site assessment / methodology

#### Flora

Prior to the commencement of field works, a desktop survey was conducted. This included the use of MSES spatial data, generation of DNR vegetation reports, and review of the Australian Virtual Herbarium (AVH) EVNT records. Historical imagery was also sought to further understand the history of the site in question.

Various research papers were also sought to address the additional information request and the possibility of noise pollution from the function facilities disturbing the Cassowary population, particularly in the nature refuges to the North.

This data demonstrated that the property has a rich history of disturbance, development, and natural regeneration. The property is comprised of both non-remnant and remnant vegetation, the non-remnant vegetation is largely made up of orchards, and ornamental nursery stock along with regenerated creek lines. These areas are now identified under the VMA as being Category C, R and X. The remnant vegetation under the VMA is listed as Category B least concern 7.11.7a.

As a result of the noise pollution research papers (further discussed in section 5), a potential noise impact area was identified and this has guided both the vegetation quality and the Cassowary activity survey location.

On the 14/8/2023 a timed meander was carried out to identify vegetation quality and to confirm the presence or absence of the Southern Cassowary (*Casuarius casuarius johnsonii*). This timed meander was carried out in a section of vegetation that is listed a remnant, which overlaps with the potential noise impact area, and is topographically positioned in a manner that allows movement from one side of the property to the other. There are other smaller areas of remnant vegetation where the potential noise impact area extends into, however they are either significantly disturbed with weeds, vehicle access tracks, and dog walking, and are not as strategic to movement for the Cassowary.

A flora species list was prepared to correlate with the RE details to gauge basic habitat quality. As a result, the survey area is deemed to be of high quality, despite having a significantly disturbed fringe with two species of restricted matter (invasive flora) under the Biosecurity Act 2014.

Based off personal familiarity and field books/keys, approximately 70 flora species were identified in situ, the upper canopy consisting largely of *Acacia Celsa*, *Castanospermum australe*, *Mellicope vitiflora*, *Alstonia muelleriana*, *Flindersia ifflana* and various others. The middle canopy is dominated by *Macaranga inamoena*, *Gardenia ovularis*, and a variety of other shrubs yet is generally sparse. The ground layer is again sparse with seedlings from the upper and middle canopy and minor occurrences of ground ferns (*Taenitis pinnata*).

Vine elements consist of *Tetracera nordtiana*, *Calamus australis* and *Calamus caryotoides*.

Two Near threatened flora were found during the timed meander, *Alpinia hylandii* and *Randia audasii*. *Rhodamnia sessiliflora* which is listed as endangered was also observed on the property however not during the survey.

The survey area can best be described as wild and remnant, with no exotics present outside of the disturbed fringe.

Remote Sensing was carried out using remote piloted aircraft and an RGB (camera) sensor, this was used to assist with the identification of canopy species and any epiphytes that were not detectable from the ground.

## Fauna

Prior to the commencement of field works, a desktop survey was again conducted. This too included the use of MSES spatial data, generation of DNRME vegetation reports, EPBC reports, and also the Atlas of Living Australia datasets.

ALA datasets identify 1333 fauna species within 5km of the property, of which 283 are birds.

DNR vegetation and management reports identify essential habitat as being vegetation that is used permanently or during the life cycle of fauna which is special least concern or EVNT and found within 1.1km of the vegetation. Fauna listed as using this essential habitat within the report include;

- *Casuarius casuarius johnsonii* – Southern Cassowary

A visual survey via timed meander was conducted on the 14/8/23 (during day light hours) and was to identify various forms of evidence such as scats, tracks, nests or other evidence of presence. The potential for Cassowary being in the immediate vicinity was high with audible footsteps being heard from a large animal. These footsteps were in line with the pattern of Cassowary movement however visual confirmation was not made as it was decided best to avoid the animal. Two recent droppings were found during the survey and they were largely comprised of *Elaeocarpus bancroftii* and Lauraceae sp. seeds.

Southern Cassowary adults, and chicks have been observed several times by the author in the immediate area whilst conducting floristic surveys in the past, and also by surrounding landholders. The current occupants of the property have also conducted camera trapping across vehicle tracks throughout the property and along with personal observations, claim to observe cassowary presence 2-3 times a week. Additionally, feral pigs (*Sus scrofa*) and dogs are observed regularly.



*Figure 2: Historical imagery demonstrating the initial full clearing in the early 1950's*



*Figure 3: Aerial view (facing East) of approximate survey area.*



*Figure 4: Section of vegetation within the survey area.*



*Figure 5: Cassowary droppings within the survey area.*



*Figure 6: Pig trap used to control feral pigs.*



*Figure 7. Looking North over function site M. Fringe of survey site is to the right. Note the hill in the distance which is the approximate border of the Cassowary nature refuge.*



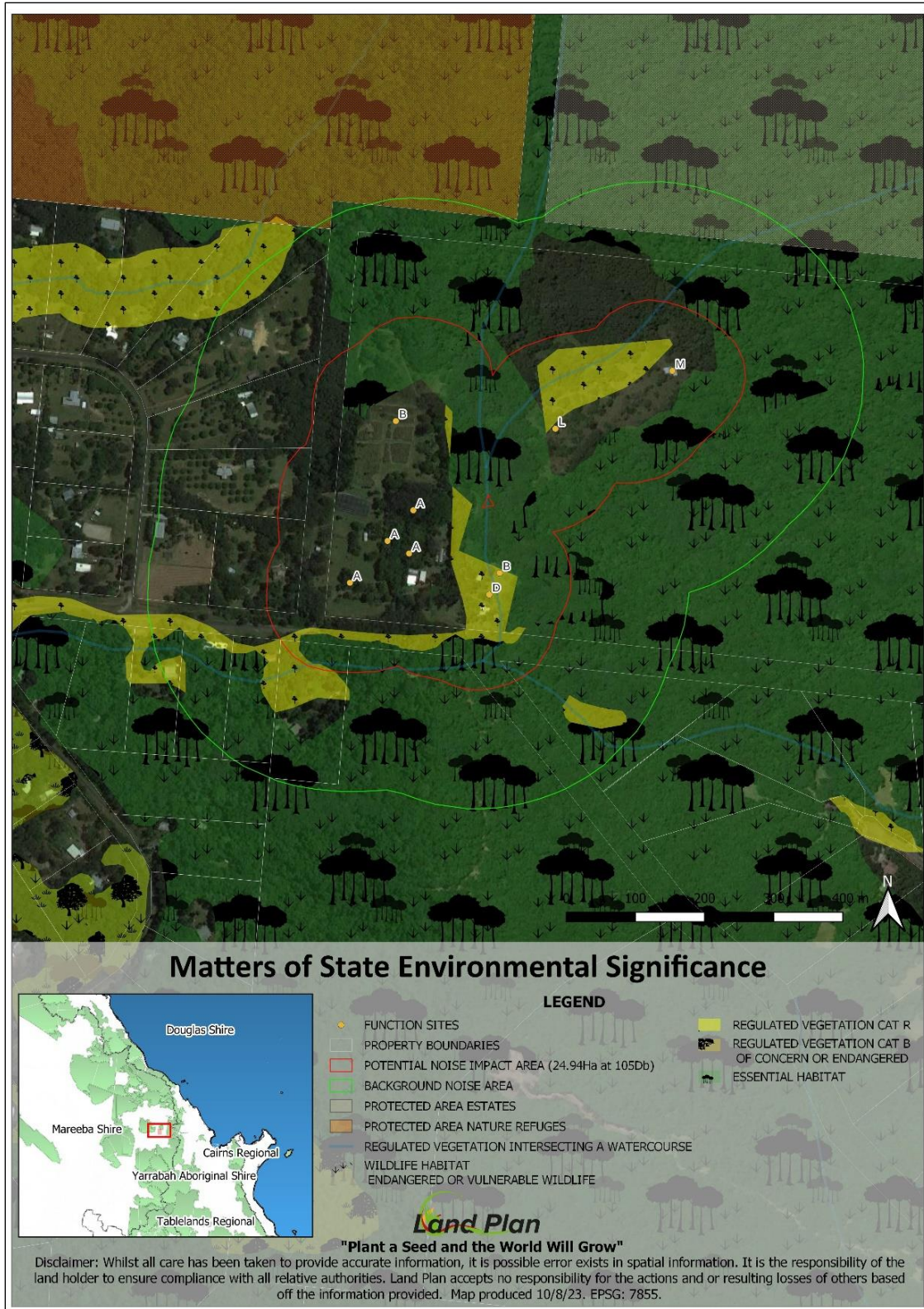


Figure 8: Matters of state environmental Significance map. Note the majority of the potential noise impact area is within non-remnant vegetation. The total area mapped for potential noise pollution is 24.94ha, but with events likely to occur one at a time, a more realistic area is almost ten times less at approx. 3ha.

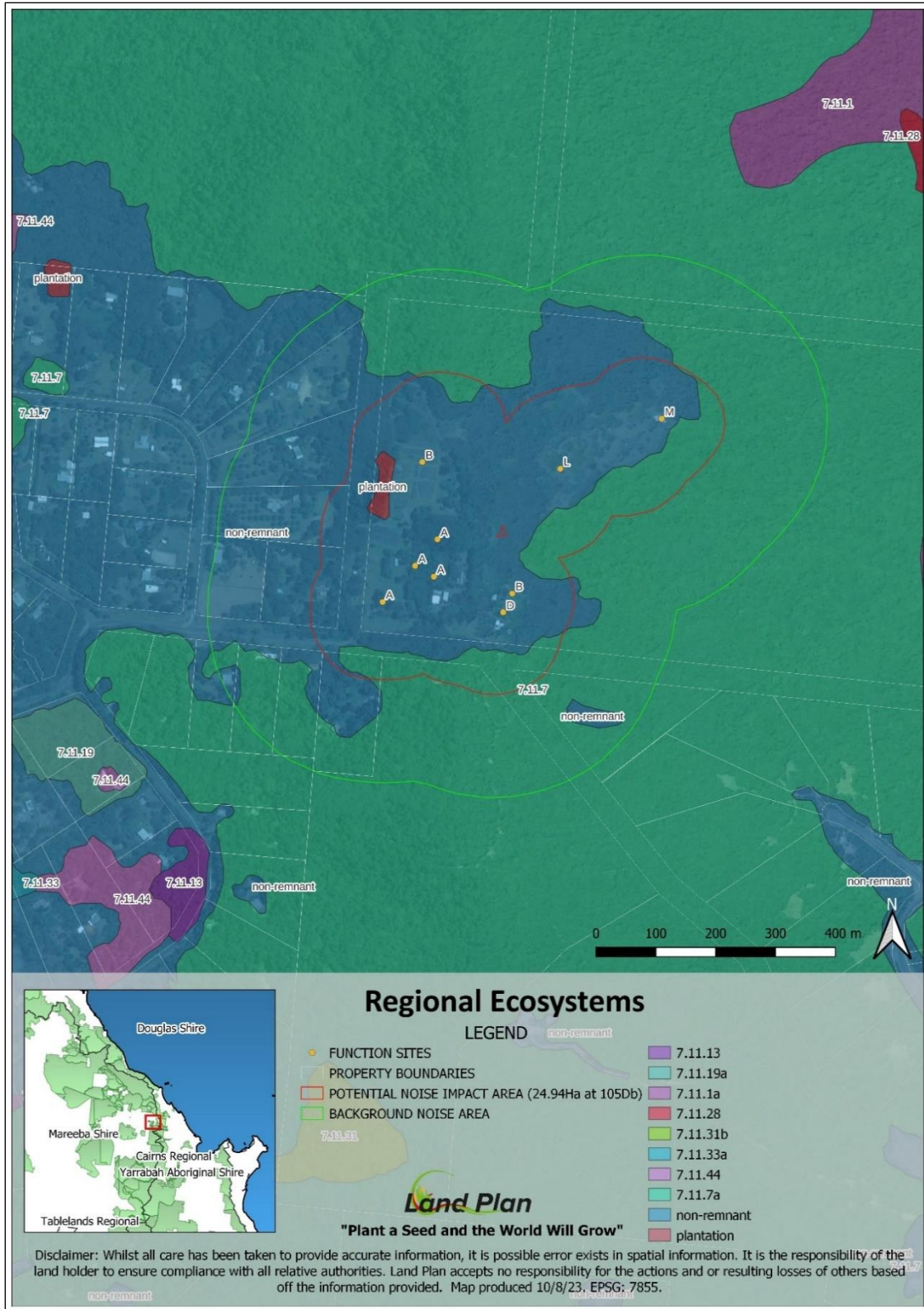


Figure 9: A map of surrounding regional ecosystems.

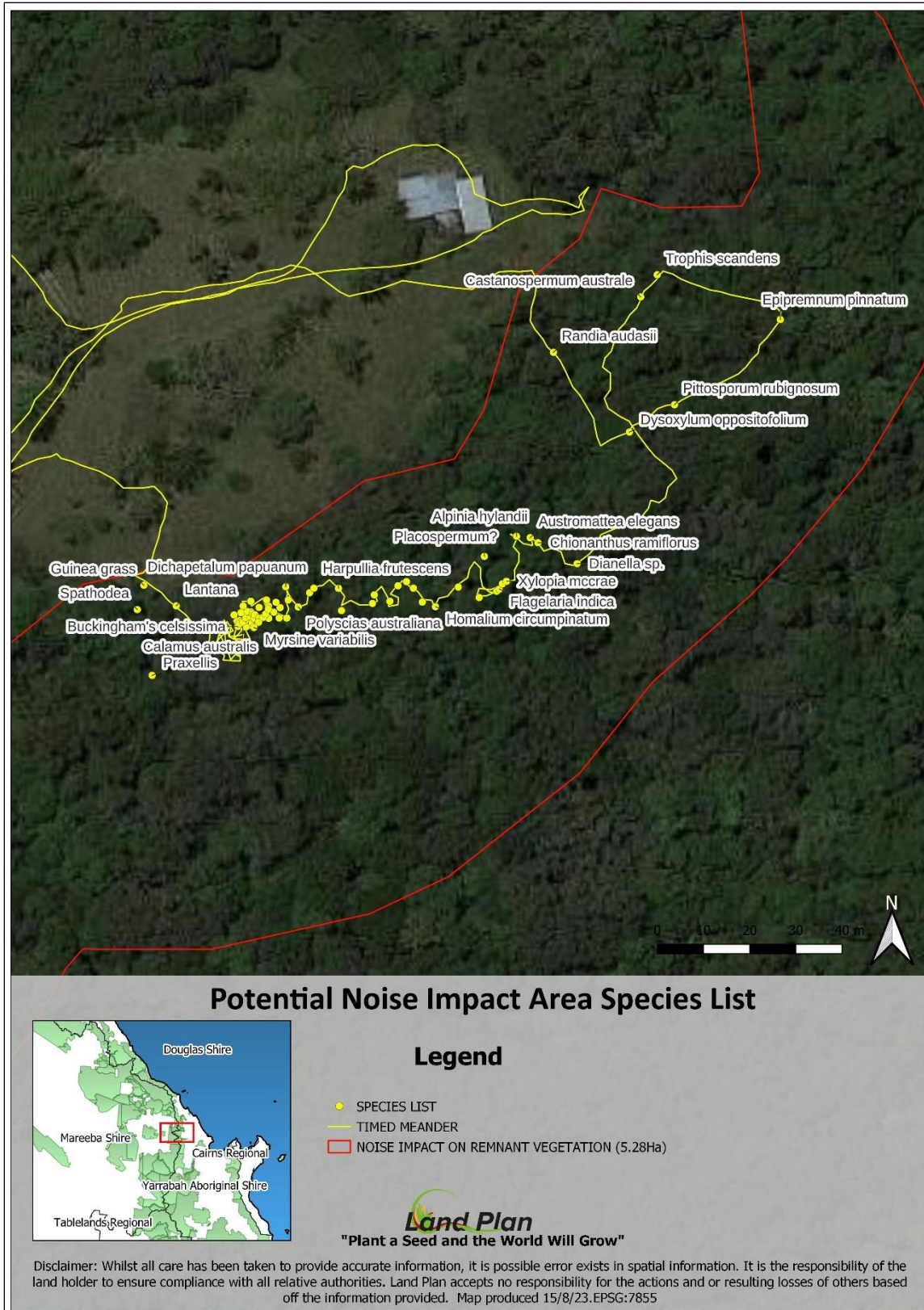


Figure 10: Aerial view showing original GPS data from timed meander. Note names are the result of initial field based identification and may have changed after desktop analysis (See Table 1).

**Table 1:** Species list of indigenous and exotic flora (in red) identified on timed meander.

Flora species list						
Scientific name	Common name	Family	Lifeform	EVNT (NCA)	EVNT (EPBC)	Wons / Restricted
<i>Acacia celsa</i>	Wattle	Fabaceae	Tree/Shrub	No	No	No
<i>Aidia racemosa</i>	n/a	Rubiaceae	Tree/Shrub	No	No	No
<i>Alphitonia whitei</i>	Red Ash	Rhamnaceae	Tree	No	No	No
<i>Alpinia hylandii</i>	Slender ginger	Zingiberaceae	Herb	Yes	No	No
<i>Alstonia muelleriana</i>	Milkwood	Apocynaceae	Tree/Shrub	No	No	No
<i>Alyxia oblongata</i>	Prickly Fruit	Apocynaceae	Shrub	No	No	No
<i>Ardisia brevipedata</i>	Rambling spear-flower	Myrsinaceae	Shrub	No	No	No
<i>Argyrodendron polyandrum</i>	Brown Tulip oak	Sterculiaceae	Tree	No	No	No
<i>Aristolochia deltantha</i>	Mountain Aristolochia	Aristolochiaceae	Vine	No	No	No
<i>Austromatthaea elegans</i>	n/a	Monimiaceae	Shrub	No	No	No
<i>Belanophora fungosa</i>	Flowering Fungus	Balanaphoraceae	Herb	No	No	No
<i>Brombya platynema</i>	Brombya	Rutaceae	Tree/Shrub	No	No	No
<i>Buckinghamia celsissima</i>	Ivory Curl	Proteaceae	Tree/Shrub	No	No	No
<i>Calamus australis</i>	Hairy Mary	Arecaceae	Vine	No	No	No
<i>Calamus caryotoides</i>	Fish Tail Wait awhile	Arecaceae	Vine	No	No	No
<i>Calamus moti</i>	Vicious Hairy Mary	Arecaceae	Vine	No	No	No
<i>Castanospermum australe</i>	Black Bean	Fabaceae	Tree/Shrub	No	No	No
<i>Chionanthus ramiflorus</i>	Northern Olive	Oleaceae	Tree/Shrub	No	No	No
<i>Connarus conchocarpus var. conchocarpus</i>	Danis Vine	Connaraceae	Vine	No	No	No
<i>Cordyline cannifolia</i>	Palm Lilly	Asparagaceae	Shrub	No	No	No
<i>Cryptocarya corrugata</i>	Corduroy Laurel	Lauraceae	Tree/Shrub	No	No	No
<i>Darlingia darlingiana</i>	Brown Silky Oak	Proteaceae	Tree/Shrub	No	No	No
<i>Dianella atraxis</i>	Northern Flax Lily	Hemerocallidaceae	Sedge	No	No	No
<i>Dichapetalum papuanum</i>		Dichapetalaceae	Shrub	No	No	No
<i>Dinosperma erythroccum</i>	Tingle Tongue	Rutaceae	Shrub	No	No	No
<i>Dysoxylum oppositifolium</i>	Pink Mahogany	Meliaceae	Tree	No	No	No
<i>Elaeocarpus bancroftii</i>	Kuranda Quandong	Eleaocarpaceae	Tree	No	No	No
<i>Epipremnum pinnatum</i>		Araceae	Vine	No	No	No
<i>Flagellaria indica</i>	Supplejack	Flagellariaceae	Vine	No	No	No
<i>Flindersia iffiana</i>	Hickory Ash	Rutaceae	Tree/Shrub	No	No	No
<i>Garcenia warrenii</i>	Native Mangosteen	Clusiaceae	Tree/Shrub	No	No	No
<i>Gardenia ovularis</i>	Native Gardenia	Rubiaceae	Tree	No	No	No
<i>Harpullia frutescens</i>	Dwarf Harpullia	Sapindaceae	Shrub	No	No	No

<i>Helicia nortoniana</i>		Proteaceae	Tree/Shrub	No	No	No
<i>Homalium circumpinnatum</i>	Brown Boxwood	Salicaceae	Shrub	No	No	No
<i>Hypserpa laurina</i>	Laurel-leaf hypserpa	Menispermaceae	Vine	No	No	No
<i>Lantana camara</i>	Lantana	Verbenaceae	Vine	No	No	Yes
<i>Legnephora moorei</i>	Big Leaf-vine	Menispermaceae	Vine	No	No	No
<i>Lethodon setosa</i>	n/a	Thymelaeaceae	Shrub	No	No	No
<i>Linospadix minor</i>	Walking Stick Palm	Arecaceae	Tree/Shrub	No	No	No
<i>Litsea leefeana</i>		Lauraceae	Tree/Shrub	No	No	No
<i>Macaranga inamoena</i>	Buff Macaranga	Euphorbiaceae	Tree/Shrub	No	No	No
<i>Mackinlaya macrosciadea</i>	Blue umbrella	Apiaceae	Shrub	No	No	No
<i>Megathyrsus maximus</i>	Guinea grass	Poaceae	Large graminoid	No	No	No
<i>Mellicope vitiflora</i>	Toothache Tree	Rutaceae	Tree/Shrub	No	No	No
<i>Melodinus australis</i>	Bellbird vine	Apocynaceae	Vine	No	No	No
<i>Mischocarpus lachnocarpus</i>	Woolly Brush	Sapindaceae	Tree/Shrub	No	No	No
<i>Myrsine variabilis</i>		Myrsinaceae	Shrub	No	No	No
<i>Pittosporum rubiginosum</i>	Hairy Red Pittosporum	Pittosporaceae	Tree/Shrub	No	No	No
<i>Placospermum coriaceum</i>	Rose Silky Oak	Proteaceae	Tree/Shrub	No	No	No
<i>Podocarpus grayae</i>	Grey Pine	Podocarpaceae	Tree	No	No	No
<i>Polyscias australiana</i>	Basswood	Araliaceae	Tree/Shrub	No	No	No
<i>Polyscias elegans</i>	Celerywood	Araliaceae	Tree/Shrub	No	No	No
<i>Praxelis clematidea</i>	Praxelis	Asteraceae	Herb	No	No	No
<i>Randia audasii</i>	Daintree Gardenia	Rubiaceae	Tree/Shrub	Yes	No	No
<i>Rhodamnia spongiosa</i>	Northern Malletwood	Myrtaceae	Tree/Shrub	No	No	No
<i>Rourea brachyandra</i>		Connaraceae	Vine	No	No	No
<i>Sarcopteryx reticulata</i>	n/a	Sapindaceae	Tree/Shrub	No	No	No
<i>Smilax glycyphylla</i>	Sarsaparilla	Smilacaceae	Vine	No	No	No
<i>Spathodea campanulata</i>	African Tulip Tree	Bignoniaceae	Tree/Shrub	No	No	Yes
<i>Syzigium cryptophlebium</i>		Myrtaceae	Tree/Shrub	No	No	No
<i>Syzigium luehmannii</i>	Small leaved Lilly Pilly	Myrtaceae	Tree	No	No	No
<i>Taenitis pinnata</i>	Morse Fern	Pteridaceae	Prostrate fern	No	No	No
<i>Tetracera nordtiana</i>	Small-leaved Fire Vine	Dilleniaceae	Vine	No	No	No
<i>Toechima erythrocarpum</i>	Pink Tamarind	Sapindaceae	Tree	No	No	No
<i>Trophis scandens</i>	Burney vine	Moraceae	Vine	No	No	No
<i>Uvaria uhrui</i>	n/a	Annonaceae	Vine	No	No	No
<i>Wilkiea smithii</i>	n/a	Monimiaceae	Shrub	No	No	No
<i>Xylopia maccraeae</i>	MacCreas Xylopia	Annonaceae	Tree	No	No	No

## 5. Primary Environmental Compliance

Performance Outcomes (MSC) – potential impacts and mitigation

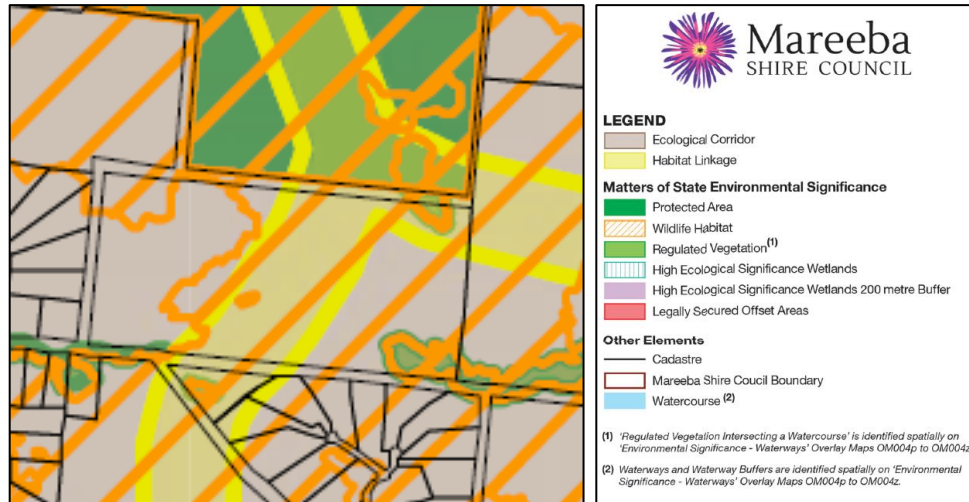


Figure 11: Overlay Map 4 (Environmental Significance) and legend from MSC.

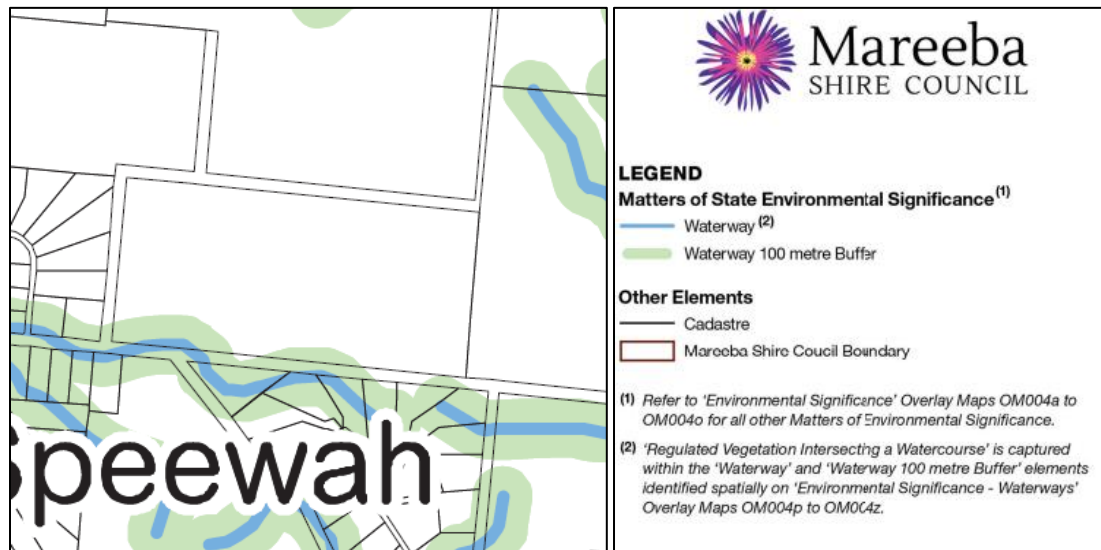


Figure 12: Overlay map of waterway elements from MSC.

As per MSC Environmental overlay acceptable outcomes, there is no native vegetation clearing associated with the development application for the Speewah Gardens function facilities and related development is believed to be within acceptable outcomes or not within the designated area.

**Table 2: Local Government environmental overlay compliance.**

Performance outcome	Acceptable outcome	Compliant Y/N
<b>PO1</b> Vegetation clearing in areas mapped as 'Regulated vegetation' identified on the Environmental Significance Overlay Maps (OM-004a-o) is avoided..	AO1.1 No clearing of native vegetation is undertaken within areas of 'Regulated vegetation' identified on the Environmental Significance Overlay Maps (OM-004a-o)...	Compliant, no native vegetation clearing to take place, despite regulated vegetation present on property.
<b>Development on sites adjacent to areas of 'Regulated vegetation' identified on the Environmental Significance Overlay Maps (OM-004a-o) protects the environmental significance of regulated vegetation..</b>	AO2 Development (excluding roads, earthworks, drainage infrastructure and underground infrastructure) is not located within 20 metres of 'Regulated vegetation' areas identified on the Environmental Significance Overlay Maps (OM-004a-o)..	Compliant, only existing vehicle facilities within 20m of regulated vegetation
<b>PO3</b> Vegetation clearing in areas mapped as 'Regulated vegetation intersecting a watercourse', identified as 'Waterway' and 'Waterway buffer' on the Environmental Significance - Waterway Overlay Maps (OM-004p-z) is avoided..	Where within a 'Waterway buffer' on Environmental Significance - Waterway Overlay Maps (OM-004p-z)  AO3.2 No clearing of native vegetation is undertaken within the minimum setback identified at AO3.1..	Compliant, no native vegetation clearing within waterway/waterway buffer. Existing roads and cleared areas present, but not jeopardising local or regional movement and comply with minimum set back
<b>PO4</b> 'High ecological significance wetlands' identified on the Environmental Significance Overlay Maps (OM-004a-o) and 'Waterways' on Environmental Significance - Waterway Overlay Maps (OM-004p-z) and are protected..	Where within a 'Waterway buffer' on Environmental Significance - Waterway Overlay Maps (OM-004p-z)  AO4.3 No stormwater is discharged to a 'Waterway' on Environmental Significance - Waterway Overlay Maps (OM-004p-z)..	Compliant, maintain existing conditions of drainage to roadside drainage lines. In line with minimum set back. No HES wetlands on site. No stormwater/wastewater discharged to natural drainage line.
<b>PO5</b> Development within a 'Wildlife habitat' area identified on the Environmental Significance Overlay Maps (OM-004a-o)..	AO5 No acceptable outcome is provided	Compliant, no development within wildlife habitat area.
<b>PO6</b> Development within a 'Legally secured offset area' identified on the Environmental Significance Overlay Maps (OM-004a-o)..	AO6 No acceptable outcome is provided.	Compliant, no development planned within legally secured offset areas.
<b>PO7</b> Development within a 'Protected area' identified on the Environmental Significance Overlay Maps (OM-004a-o) is consistent with the values of the Protected Area..	AO7 No acceptable outcome is provided	Compliant, no development planned within a protected area.

As per additional information request, it has been identified that there are neighbouring refuges dedicated to Cassowary conservation and issues such as fragmentation, habitat loss, and reduced breeding is of high concern.

Due to the lack of research on cassowary populations and noise pollution, and the highly variable nature of “noise” (including measuring it), data has been drawn from a number of sources including published research, government safety data, anecdotal observations, and general best practice principles to prepare the following impact mitigation strategies and prevent significant disturbance to the Speewah Cassowary population.

A research paper which looks at the effects of noise pollution in a rainforest environment comparable to the Speewah region, identifies that the typical output of a chainsaw at 105dB (12.5kHz-80Hz) will penetrate up to 80m into the rainforest, where by at that point the noise is identified as “background noise” (Poje, 2023). The potential noise impact area (please see figure 9) used within this plan is based off this data but should be used as a guide only, actual noise outputs and the way they interact with the environment may vary.

Originally named “Rosebud Farm Nursery”, Speewah Gardens has a history of environmental disturbance with around 40 acres fully cleared in the 1890’s for a coffee farm and various private dwellings. Over the next 30 years logging of the surrounding hillsides would also be carried out before being sold in the 1960’s as a hobby farm for grazing cattle and other self-reliance based food crops. Since then, natural regeneration has been supported and more exotics have been planted. Horticulture operations have been in place since the early 1980’s (History, 2023) and heavy machinery such as tractors and chainsaws have been frequently used over this period (Love, 2023). During the last few years since ownership was transferred to the current owners, Speewah Gardens staff report Cassowaries have been observed on average around 2 times a week on camera traps (across the whole property), and instances have even been observed where Cassowary have inspected drop saws and concrete mixers whilst in use (Curtis, 2023). It is hoped that the Speewah Gardens function facilities will host up to 24 events of varying nature over any 12 month period (Love, 2023).

### Potential Risks

Concerns with noise pollution and Cassowary populations have been seen in the Cairns region previously, and as such, anecdotal and research based potential risks have been identified. Sporadic and frequent noise pollution in highly fragmented areas may be of concern, and an example of a negative impact from a helicopter was seen by an observer (Jeff Larson) in 2014. He photographed a Cassowary reacting to a military helicopter which caused the bird to “tear through a fence, across a road and fall over” (Larson, 2023). Concern was also noted that a vehicle strike could have easily occurred during this instance with the bird acting in an erratic manner.

An article by Dr Helen K. Larson also draws on a paper which has looked at the impacts of noise pollution on Emu’s and Ostriches under captive conditions. It states, “behaviours indicating stress and agitation” were observed in relation to loud or constant anthropogenic noise (Jakob-Hoff, 2023).

An additional paper which looked at smaller birds, found in response to anthropogenic noise, birds avoided noisy areas, had changes in reproductive success, and changes in vocal communication (Ortega, 2023). These cases overall give a good demonstration of potential risks, however the particulars of Speewah Gardens can be seen to be quite different.



Safe Work Australia identifies the maximum safe time for being exposed to 106dB as 3.8 minutes. The risks associated with such noise includes both temporary and permanent hearing loss (Australia, 2023) and this may be replicated to some degree within a Cassowary. It is also noteworthy that “exposed” is in relation to a worker within metres of the sound source. Noise can be seen to drop off exponentially and it is highly unlikely that a cassowary would be “within metres” of the source and incur such hearing impacts.

Acoustic surveys on cassowary have identified they have a particularly low call, almost below the hearing range of the human ear. *Casuarius casuarius johnsonii* has been recorded as having a call “booming” as low as 32Hz (Mack, 2023). Any broadcasting of noise around this frequency could travel much further than the 80m potential noise impact area in a rainforest environment (hence being used by the cassowary) and confuse communications between birds. Humid air, and the natural amphitheatre formation of hills around the function facilities may also exacerbate the projection of noise regardless of its frequency.

Although a little out of the scope of this report, it is also plausible to deduce that other risks outside of noise related issues could be incurred from function facilities. These may include an increase in human contact which could cause dietary issues or dependencies if individuals attempt to feed the birds. It is advisable to follow DES advice on this matter and avoid feeding cassowary. Additionally, vehicle access to the site has also been limited to a car park at the front of the property, to reduce the potential for vehicle strikes..

### Positive Impacts

Considering the effort that has been put into restoring the natural environment, and consideration to fragmentation, it is understandable to consider that positive effects may be incurred by the local Cassowary population also.

Speewah Gardens is positioned in a manner where it sits on the outside of considerable development to its West. This may mean with appropriate noise levels it can act as a buffer between the refuges homing Cassowary, and the dangers of urban areas such as dog attacks, vehicle strikes and negative human interactions such as feeding and anxiety inducing interest. Fencing on Speewah Gardens also supports this with the function sites being sectioned off in two areas, and the non-remnant corridor running between them (aligning with MSC environmental overlay layers) being still freely accessible by fauna.

Despite the corridor being present, Speewah Gardens does not directly provide connectivity between significant reserves, parks or refuges. It does connect refuges to similar private properties, which will inevitably provide the same resources and risks. The Douglas track running south of the nursery is highly disturbed with invasive flora, vehicle traffic, and dog walking, yet does not impede the corridor following the natural drainage lines.

### Impact Mitigation Strategies

#### **12-month introduction and monitoring phase**

Monitoring and camera trapping to continue with scat survey after 12-month period to reassess possible disturbance and best way to move forward. Any observations in erratic cassowary behaviour or observed significant impacts within the 12-month period is reason to call for early reassessment.

### **Noise management**

For ecological assessment, this report draws on data which is centred around research on a chainsaw at 105dB, but noise from events can be more specifically in line with recommendations made in table 6.3 of the noise impact assessment provided by Dedicated Acoustics (Acoustic, 2023). It is recommended that no noise over 105dB is generated at any site as impacts to ecological considerations are difficult to understand over this, and such levels could project disturbing impacts to surrounding refuges. With noise levels of around 70dB, the maximum safe exposure time (for humans) goes from 3.8 minutes, to more than 16 hours (Australia, 2023). All though the anticipated number of major events in general is around one per fortnight, functions closer to these noise levels (70dB) could occur at any site more frequently, with negligible impacts to site biodiversity and neighbouring refuges a likely outcome. Recommend incremental volume increases with “gentle music” at L and M, prior to events to alert any Cassowary of potential disturbance. Commence music during daytime to avoid disturbing cassowary with poor visibility at night. Recommend rotating sites used in general, to avoid persistent impacts. When possible have westerly facing speakers, shielded/indoors, avoiding excessive noise. Avoid low frequency sounds (32Hz and below) which may compete with Cassowary calls. Events below 105db are believed to not impact the surrounding nature refuges with anything louder than “wind noise” (Poje, 2023) at 140m from the source. The surrounding hills may further decrease this, acting as a natural buffer to the broader refuge areas.

### **Site specific noise management**

The topography of the land and layout of the function sites is such that each site has particular attributes which may aid in reducing or increasing negative impacts. Table 3 is to act as a guide on potential frequency of use and maximum noise levels of each particular site, in an effort of reducing disturbance to remnant vegetation when food may be scarce, or damp conditions which may further amplify noise.

Based off the 80m potential noise impact area (though the noise impact assessment levels cover a significantly less area), a common scenario for site M (most ecologically remote site), without site rotation and other mitigation strategies may include around 1ha of disturbed remnant vegetation and 2ha of non-remnant vegetation once every fortnight for around 6 hours. This is in comparison to 50ha+ of undisturbed remnant vegetation remaining across the property, and 13ha of non-remnant vegetation. The non-remnant vegetation also aligns with MSC habitat linkages and ecological corridors which connect the northern refuges to private property on the South. Bearing in mind a portion of the non-remnant areas will be fenced off, 3ha of disturbance over 6 hours a fortnight, is accompanied by around 55ha of usable land (on Speewah gardens alone), and 57ha for the remaining 330 hours.

If a cassowary home range is 50 -235ha (cassowaries, 2023), then with a disturbance of 3ha for 6 hours a fortnight, and fenced off non-remnant vegetation, Speewah Gardens can still provide a minimum home range at any given time.

In the interest of protecting various forms of potential CEEVNT fauna, mitigation strategies for frogs have also been suggested.

**Table 3. The following table has been developed in line with table 3.1 and 6.3 (Acoustic, 2023) and topographical / seasonal site attributes to further minimise impact on fauna populations. A line is seen to be drawn where foreground “DJ” music starts in the more ecologically sensitive areas. Please see table 6.3 in noise impact assessment for site specific noise levels and time frames, as the below table is an approximate guide from an ecological perspective. (Numbers) are for reference purposes to noise impact assessment.**

Site Specific Noise Management							
Site	Potential frequency of use and maximum noise level					Cassowary Mitigation Strategies	Threatened Frog Mitigation Strategies
	up to 80dB	up to 85 dB	Up to 87 dB	Up to 96dB	up to 98 dB		
A (1)	Several events per fortnight in total across property	As per acoustic report (Acoustic, 2023)	As per acoustic report (Acoustic, 2023)	As per acoustic report (Acoustic, 2023)	As per acoustic report (Acoustic, 2023)	Used all year, and preferably during dry season, to support foraging in remnant vegetation	N/A
A (2)	Several events per fortnight in total across property	Several events per fortnight in total across property	Several events per fortnight in total across property	As per acoustic report (Acoustic, 2023)	As per acoustic report (Acoustic, 2023)	As per impact mitigation strategies. Used all year, and preferably during dry season to support foraging in remnant vegetation n	N/A
B North (3)	Several events per fortnight in total across property	Several events per fortnight in total across property	As per acoustic report (Acoustic, 2023)	As per acoustic report (Acoustic, 2023)	As per acoustic report (Acoustic, 2023)	As per impact mitigation strategies. Used all year, and preferably during dry season to support foraging in remnant vegetation	N/A
B South and D (4)	Several events per fortnight in total across property	No more than 1 event per fortnight total across property	No more than 1 event per fortnight total across property	No more than 1 event per fortnight total across property	No more than 1 event per fortnight total across property	As per impact mitigation strategies. Used all year, and preferably during dry season to support foraging in remnant vegetation	Conduct audio surveys to confirm presence / absence. If present, avoid amplified noise and outdoor lighting after dark during peak breeding season (Spring-Summer)
L (5)	Several events per fortnight in total across property	No more than 1 event per fortnight total across property	No more than 1 event per fortnight total across property	No more than 1 event per fortnight total across property	As per acoustic report (Acoustic, 2023)	As per impact mitigation strategies. Used all year, and preferably during wet season when cassowary food is abundant elsewhere	Conduct audio surveys to confirm presence / absence. If present, avoid amplified noise and outdoor lighting after dark during peak breeding season (Spring-Summer)
M (6)	Several events per fortnight in total across property	No more than 1 event per fortnight total across property	No more than 1 event per fortnight total across property	No more than 1 event per fortnight total across property	No more than 1 event per fortnight total across property	As per impact mitigation strategies. Used all year, and preferably during wet season when cassowary food is abundant elsewhere	Conduct audio surveys to confirm presence / absence. If present, avoid amplified noise and outdoor lighting after dark during peak breeding season (Spring-Summer)

### **Protect and enhance habitat**

The continued protection and enhancement of the previously degraded areas of Speewah Gardens is paramount in balancing the potential risks associated with noise based impacts. In opening more suitable habitat, the sporadic disturbance of noise is further mediated.

Conservation works that have been undertaken for some time now include the control of feral pigs, which have been observed to eat cassowary eggs and displace birds aggressively. It is noted that 14 pigs have currently been removed (Curtis, 2023) and the property managers have been in close contact with Mareeba Shire Council (Love, 2023) to work together in trapping feral pigs.

Furthermore, significant environmental weeds such as Lantana, African Tulip Tree, (listed as restricted matter under Biosecurity Act 2014) and Brillantasia (emerging environmental weed) are being controlled with organic methods to help restore the non-remnant areas which contain Category R and C vegetation. It is also desirable to control Guinea grass on fringes, and support natural regeneration in these areas, which will continue to attenuate noise disturbance into the surrounding vegetation and provide a more natural forest structure to support Cassowary movement.

The flora survey conducted on the 14/8/23 identified three CEEVNT flora species, of which the nursery is in a good position to propagate, and redistribute across the property (and broader community) to assist in stabilising the threatened populations.

As mentioned previously, with the fencing of the two areas containing the function sites, the corridor which runs between them is reinforced for the foreseeable future, and supports the broader conservation efforts in line with the Mareeba Shire Council environmental overlays.

### **Broader contribution**

It is recommended that where possible, the property managers provide cassowary occurrence data to an online platform to assist in the broader management of cassowary populations. Inaturalist, the Atlas of living Australia, and Wildnet (DES) are suggested.

Considering the data presented, and the application of such impact mitigation strategies, it is believed that noise pollution from the Speewah Gardens function facility is not likely to have detrimental impacts on the sites biodiversity, or its adjacent conservation areas.

### DCCEEW EPBC Act 1999

On the 15/8/23, DAWE was contacted to confirm the decision-making processes in this report as sufficient to reduce significant impact, and avoid an EPBC referral. After self-assessment of the ongoing potential noise impacts associated with development application, it is believed that significant impacts are unlikely and the below points (as per DCCEEW guidelines) demonstrate the decision-making process.

#### **1. Are there any matters of national environmental significance located in the area of the proposed action?**

A PMST report has identified a number of Critically endangered, endangered and vulnerable species or species habitat that may, be likely, or are known to occur within area.

#### **2. Considering the proposed action at its broadest scope, is there potential for impacts on matters of national environmental significance?**

The potential for impact exists, noise pollution may disrupt the use of habitat in various ways according to the species and their particular requirements. Concerns are present for the known Cassowary population in the refuges to the North, and the corridor on the property in question which connects the refuges to comparable private properties.

At its broadest scope, it is estimated that one major (150 person/Foreground entertainment) and several minor events may be averaged per fortnight. The location and intensity of noise from such an event is highly variable. Based off the potential noise impact areas (at 105db), it is estimated that at site M (the most ecologically remote site) there would be approximately one hectare of remnant vegetation, and two hectares of non-remnant vegetation that may be exposed to noise pollution (Poje, 2023). However, according to the recommendations in the noise impact assessment events of up to 98dB, comparable to a small rock band, can be expected (Acoustic, 2023). Due to the exponential and variable nature of sound, it is difficult to estimate what sort of area based reduction results from this, however it is believed to be significantly less. Considering the size of the property in question, at any given time, the minimum 50+ hectares for a Cassowary home range (cassowaries, 2023) of remnant vegetation remains available, on top of available non-remnant vegetation (approx. 13 hectares).

The overall duration of the broadest potential event is 17 hours (Acoustic, 2023), which leaves 319 hours for that given area. Events of around 6 hours are more likely. It is noteworthy that the property in question is used for intensive horticulture ( for around 40 years) and noises such as chainsaws, tractors, cement mixers and other loud equipment is not uncommon on a day to day basis. These activities are typically restricted to the non-remnant vegetation during the day, but will have noise impacts on remnant vegetation of a shorter duration and anecdotal evidence exists which demonstrates the cassowary population has adapted to, and even inspected such activities at close proximity. Prior to being used for intensive horticulture the section of the property in question had been completely cleared since the 1890's, so a long history of disturbance exists and suggests the surrounding environment will be adjusted accordingly.

Research (Poje, 2023) suggests that noise pollution which is in line with the recommended impact mitigation strategies will not cause off site impacts (to neighbouring refuges), or indirect impacts to

habitat and fauna abroad. There are no downstream, downwind, upstream, upwind, or facilitated impacts that are believed to be caused by the mitigated potential noise pollution.

### **3. Are there any proposed measures to avoid or reduce impacts on matters of national environmental significance?**

Numerous avoid and minimise, along with protect and enhance strategies have been employed to reduce potential noise impacts, they include;

- No clearing of remnant, or non-remnant vegetation (only removal of invasive flora)
- No more than one major event per fortnight, but smaller events may happen more often
- “potential noise impact areas” identified, and no noise over “wind noise” to reach neighbouring refuges (Poje, 2023)
- Event noise levels in line with EPA QLD noise standards as per noise impact assessment (Acoustic, 2023).
- Recommend managing noise levels and monitoring their impacts for the first 12 months. if impacts are observed then additional management practices should be investigated.
- Recommend incremental volume increases to “gently alert” fauna of events
- Continued increase in overall habitat quality through organic removal of invasive flora and fauna (Feral pigs, Lantana, Brillantaisia, African tulip tree, Guinea grass) and support for natural regeneration. Note the area of occupation was initially cleared around 1890, was completely cleared in the 1950’s, and is now at around 70% foliage cover again.
- Seasonal rotation of sites used to avoid continual disruption. Specially for listed frogs when breeding near waterways, and Cassowary when foraging for food in the dry season or using corridor in general
- Contribute to broader Cassowary management with occurrence data via online platforms
- Ongoing monitoring and reassessment to work in conjunction with previously established baseline of observations via camera traps and property occupants.
- Fencing to support existing corridor (identified in local government overlays) and avoid undesirable contact with humans during events
- Minimum cassowary home range available in remnant vegetation at any given time on the property in question, along with comparable neighbouring properties
- Recommend propagating EVNT flora identified on property and using to revegetate/stabilise surrounding populations
- No patron vehicle traffic to enter site beyond (potentially fenced) car park at front of property

#### 4. Are any impacts of the proposed action on matters of national environmental significance likely to be significant impacts?

The below tables have been prepared in conjunction with the previous sections of this report to demonstrate potential significant effects to EPBC listed flora and fauna in relation to the previous questions. Note, it is believed no significant impacts are present.

Table 4: Critically endangered or endangered species (within PMST report) significant impact criteria and outcome.

Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	lead to a long-term decrease in the size of a population	reduce the area of occupancy of the species	fragment an existing population into two or more populations	adversely affect habitat critical to the survival of a species	disrupt the breeding cycle of a population	modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	result in invasive species that are harmful to a critically endangered or endangered species becoming	introduce disease that may cause the species to decline, or	interfere with the recovery of the species.	Other	
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	Bird	May	Species or species habitat may occur	Critically Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A
<i>Leichhardtia araujacea</i>	null	Plant	May	Species or species habitat may occur	Critically Endangered	No	No	No	No	No	No	No	No	No	No	N/A
<i>Calidris ferruginea</i>	Curlew Sandpiper	Bird	May	Species or species habitat may occur	Critically Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A
<i>Litoria nyakalensis</i>	Mountain Mistfrog, Nyakala Frog	Frog	Likely	Species or species habitat likely to occur	Critically Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A
<i>Phlegmariurus squarrosus</i>	Rock Tassel-fern, Water Tassel-fern	Plant	May	Species or species habitat may occur	Critically Endangered	No	No	No	No	No	No	No	No	No	No	N/A
<i>Casuarium casuarium johnsonii</i>	Southern Cassowary, Australian	Bird	Known	Species or species habitat known to occur	Endangered	No	Not to significant level	No	No	Mitigation strategies in place	No	No	No	No	No	N/A
<i>Rostratula australis</i>	Australian Painted Snipe	Bird	Likely	Species or species habitat likely to occur	Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A
<i>Diplazium pallidum</i>	null	Plant	Known	Species or species habitat known to occur	Endangered	No	No	No	No	No	No	No	No	No	No	N/A
<i>Erythrotrichis radiatus</i>	Red Goshawk	Bird	Likely	Species or species habitat likely to occur	Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A
<i>Phascolarctos cinereus</i> (combined populations of QLD, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Dwarf Butterfly)	Mammal	Likely	Species or species habitat likely to occur within area	Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A
<i>Vappodes lithocala</i>	Orchid, Cooktown Orchid	Plant	Likely	Species or species habitat likely to occur	Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A
<i>Polyphlebium endlicherianum</i>	Middle Filmy Fern	Plant	Likely	Species or species habitat likely to occur	Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A
<i>Dasyurus hallucatus</i>	Northern Quoll, Dugal [Gogo-Yimidji], Wijjingadda	Mammal	Known	Species or species habitat known to occur within area	Endangered	No	Not to significant level	No	No	Mitigation Strategies in place	No	No	No	No	No	N/A
<i>Pteropus conspicillatus</i>	Spectacled Flying-fox	Mammal	Known	Species or species habitat known to occur	Endangered	No	Not to significant level	No	No	Mitigation Strategies in place	No	No	No	No	No	N/A
<i>Bettongia tropica</i>	Northern Bettong	Mammal	Likely	Species or species habitat likely to occur	Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A
<i>Dasyurus maculatus gracilis</i>	Spotted-tailed Quoll (North Queensland), Yarli	Mammal	May	Species or species habitat may occur	Endangered	No	Not to significant level	No	No	No	No	No	No	No	No	N/A

Table 5: Vulnerable species (within PMST report) significant impact criteria and outcome.

Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	lead to a long-term decrease in the size of an important population of a species	reduce the area of occupancy of an important population	fragment an existing important population into two or more populations	adversely affect habitat critical to the survival of a species	disrupt the breeding cycle of an important population	modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	introduce disease that may cause the species to decline	interfere substantially with the recovery of the species	Other
<i>Mesembriomys gouldii rattoides</i>	Black-footed Tree-rat (north Queensland), Shaggy Rabbit-rat	Mammal	May	Species or species habitat may occur within area	Vulnerable	No	No	No	No	No	No	No	No	No	N/A
<i>Falco hypoleucos</i>	Grey Falcon	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	No	Not to significant level	No	No	No	No	No	No	No	N/A
<i>Litoria dayi</i>	Australian Lace-lid, Lace-eyed Tree Frog, Day's Big-eyed Treefrog	Frog	Likely	Species or species habitat likely to occur within area	Vulnerable	No	Not to significant level	No	No	Mitigation Strategies in place	No	No	No	No	N/A
<i>Macroderma gigas</i>	Ghost Bat	Mammal	Likely	Species or species habitat likely to occur within area	Vulnerable	No	Not to significant level	No	No	No	No	No	No	No	N/A
<i>Rhinolophus robertsi</i>	Large-eared Horseshoe Bat, Greater Large-eared Horseshoe Bat	Mammal	Likely	Species or species habitat likely to occur within area	Vulnerable	No	Not to significant level	No	No	No	No	No	No	No	N/A
<i>Hipposideros semoni</i>	Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat	Mammal	May	Species or species habitat may occur within area	Vulnerable	No	Not to significant level	No	No	No	No	No	No	No	N/A
<i>Tyto novaehollandiae kimberii</i>	Masked Owl (northern)	Bird	Likely	Species or species habitat likely to occur within area	Vulnerable	No	Not to significant level	No	No	No	No	No	No	No	N/A
<i>Hirundapus caudacutus</i>	White-throated Needle-tail	Bird	Known	Species or species habitat known to occur within area	Vulnerable	No	Not to significant level	No	No	Mitigation Strategies in place	No	No	No	No	N/A
<i>Myrmecodia beccarii</i>	Ant Plant	Plant	May	Species or species habitat may occur within area	Vulnerable	No	No	No	No	No	No	No	No	No	N/A
<i>Diplazium cordifolium</i>		Plant	Likely	Species or species habitat likely to occur within area	Vulnerable	No	No	No	No	No	No	No	No	No	N/A
<i>Phaius pictus</i>		Plant	Likely	Species or species habitat likely to occur within area	Vulnerable	No	No	No	No	No	No	No	No	No	N/A
<i>Saccolaimus saccolaimus nudicliniatus</i>	Bare-rumped Sheath-tailed Bat, Bare-rumped Sheath-tail Bat	Mammal	Likely	Species or species habitat likely to occur within area	Vulnerable	No	Not to significant level	No	No	No	No	No	No	No	N/A
<i>Zeuxine polygonoides</i>	Velvet Jewel Orchid	Plant	Likely	Species or species habitat likely to occur within area	Vulnerable	No	No	No	No	No	No	No	No	No	N/A
<i>Alloxylon flammeum</i>	Red Silky Oak, Queensland Waratah, Tree Waratah	Plant	Likely	Species or species habitat likely to occur within area	Vulnerable	No	No	No	No	No	No	No	No	No	N/A



## 6. Additional Environmental Compliance

### Biosecurity Act 2014

Under the Biosecurity Act 2014, every Queensland resident has a “General Biosecurity Obligation” (GBO).

The Act states (S24) that a person has “an obligation (a **general biosecurity obligation**) to take all reasonable and practical measures to prevent or minimise the biosecurity risk.”

In short, this means that landholders are legally obliged to manage biosecurity risks such as invasive flora and fauna to prevent negative impacts to biosecurity considerations such health, agriculture and the environment. Suitable measures include controlling weeds, cleaning construction/garden equipment before entering and leaving site and engaging various biosecurity programs to survey and control pests on the property.

- Property exists within National Electric Ant Eradication Program Biosecurity Zone. Category 1 listed pest, notify authorised inspector within 24 hrs of suspected identification.
- Property may exist within Yellow Crazy Ant Eradication Program Biosecurity Zone. Category 2 listed pest, notify authorised officer within 24 hrs of suspected identification.
- Property may exist within National Tropical Weeds Eradication Program Biosecurity Zone, NTWEP notify authorised officer within 24 hrs of suspected identification.



Figure 13: Electric ants (*Wasmannia auropunctata*).



Figure 14: Yellow Crazy ants (*Solenopsis gracilipes*)



Figure 15: Several species controlled by the NTWEP and a native Melastome look alike.

## Local Government (MSC)

### Pet By-laws

It is recommended all domestic pets are kept according to local government guidelines. A summary is provided below but it is advisable to contact your local office for the most up to date version.

#### Cats

Mareeba Shire Council has laws and regulations (Local Law 2) regarding pets.

It is an offence to;

- Keep more than two cats on any property
- To allow cats to wander onto public or other private property
- Or to keep cats without a microchip

Failure to comply with these laws and regulations may lead to your cat being impounded, fines, and can cause significant loss of life to native wildlife by either direct attack or disturbance.

Microchipping and desexing your cat is important, it can help find your pet if lost and also prevent unwanted breeding which often puts further pressure on local wildlife.

- Cats born after 1 July 2009 must be microchipped before three months old
- Cats born before 1 July 2009 need to be microchipped if they are being sold or given away
- De-sexing is encouraged, but not compulsory

It is possible that without a microchip to identify that it has an owner it may be considered to be a stray or feral cat.

#### Dogs

Any dog residing on urban residential, rural residential, rural properties must be registered annually.

Dogs must be kept in a sufficient enclosure that prevents them from interfering with local wildlife. There are minimum standards for keeping dogs;

- enclosures must be cleaned regularly and waste disposed of so as not to create a nuisance or health hazard
- adequate food and water must be provided
- adequate space must be provided for each dog
- not permitting any dog to be kept in such a manner as to be a nuisance, likely to cause an injury or health hazard.

Dogs are required to be leashed at all times when outside of private property, and must be under continuous supervision. This helps avoid distress and fatalities to wildlife such as wallabies and Cassowaries, which is a significant problem in the Mareeba Shire / Wet Tropics region. Several community groups are actively working to protect local rare and threatened fauna, as such compliance from landholders is a great service to both the community and its natural ecosystems.

## 7. Conclusion

In the context of Speewah Gardens diverse ecosystem, this proposal represents a pivotal juncture where responsible development and ecological preservation converge. It holds the potential to serve as a model for harmonizing celebratory activities with the integrity of a cherished natural habitat.

The repository of over 660 plant species, including palms, cycads, exotics, and tropical fruit trees, stands as an indicator of the site's exotic botanical richness, which even in non-remnant areas maintains the presence of key inhabitants like the Southern cassowary and the tapping green-eyed tree frog.

Guided by principles of environmental prudence, a suite of mitigation strategies comes forth as a pragmatic approach. The strategic utilization of seasonal site use and rotation, complemented by the placement of directional speakers, often indoors, demonstrates a deliberate effort to minimize potential disturbances. The consideration of incremental volume increases during events adds an additional layer of impact mitigation.

Central to the preservation ethos is the commitment to avoid any form of vegetation clearing, irrespective of its classification. In tandem, responsible vehicular practices and the promotion of alternative transportation options align with the overarching sustainability narrative and help minimise disturbance to neighbouring properties.

In working with the recommendations of an acoustic survey, whilst observing and adjusting to any changes in Cassowary behaviour, negligible long-term disturbance can be expected to all inhabitants of the Speewah region.

As this report concludes, it underscores the potential for a pragmatic alliance between celebratory pursuits and ecological sensitivity. The Speewah Gardens proposal, steered by a framework of vigilance and strategic intervention, offers a potential blueprint - one where festive activities coexist seamlessly with the rhythm of the natural world. This endeavor can serve as a template, not only for the local context but as a benchmark for endeavors that strive to balance human endeavors with the imperative of ecological preservation.

## 8. Errors

Error may exist in maps due to spatial reliability, please ensure all works are ground truthed and relevant authorities consulted prior to works.

Plant names may appear incorrect on timed meander map, however have been corrected within the species list.

Surveys were carried out within the best possible times regarding project requirements and seasonal characteristics displayed by significant flora. None the less, some plants may be incorrectly identified.

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## 10. Appendix

### Appendix 1: RE details

#### Regional ecosystem details for 7.11.7

<b>Regional ecosystem</b>	7.11.7
<b>Vegetation Management Act class</b>	Least concern
<b>Wetlands</b>	Not a Wetland
<b>Biodiversity status</b>	No concern at present
<b>Subregion</b>	8, 9, 7, (5), (3), (3.2), (9.3)
<b>Estimated extent1</b>	Pre-clearing 28000 ha; Remnant 2019 26000 ha
<b>Extent in reserves</b>	High
<b>Short description</b>	Complex notophyll vine forest with <i>Agathis robusta</i> emergents on foothills and uplands on metamorphics
<b>Structure category</b>	Dense
<b>Description</b>	Complex notophyll vine forest with <i>Agathis robusta</i> (kauri pine) emergents. Metamorphics foothills and uplands, of the moist rainfall zone. (BVG1M: 5c)
<b>Vegetation communities in this regional ecosystem include:</b>	7.11.7a: Complex notophyll vine forests (with emergent <i>Agathis robusta</i> ). Foothills and uplands of areas excluding the Seaview Range Subregion. Moist rainfall zone. Not a Wetland (BVG1M: 5c)
	7.11.7b: Complex notophyll vine forests (with emergent <i>Agathis robusta</i> ) recovering from disturbance, with <i>Acacia</i> spp. canopy or emergents. Foothills and uplands on metamorphics, of the moist rainfall zone. Not a Wetland (BVG1M: 5c)
	7.11.7c: Complex notophyll vine forests (with emergent <i>Agathis robusta</i> ). Foothills and uplands on greenstone, of the moist rainfall zone. Not a Wetland (BVG1M: 5c)
	7.11.7d: Complex notophyll vine forests. Foothills and uplands of the Seaview Range subregion. Moist rainfall zone. Not a Wetland (BVG1M: 5c)
	7.11.7e: Low closed forest of mixed sclerophyll and vine forest species. Rocky metamorphic slopes. Not a Wetland (BVG1M: 5c)
<b>Supplementary description</b>	Stanton and Stanton (2005), Q6, M6, (and Qld Herbarium and WTMA (2005) M6a), M6(a), M6(b), Z6, M183; Tracey and Webb (1975), 6
<b>Protected areas</b>	Kuranda NP, Ngalba Bulal NP, Daintree NP, Little Mulgrave NP, Mowbray NP, Dinden NP, Macalister Range NP, Barron Gorge NP, Paluma Range NP, Kuranda West FR, Mount Whitfield CP, Smithfield CP, Mount Windsor NP, Barron Gorge FR, Danbulla South FR, Gadgarra NP, Dinden CP, Wooroonooran NP, Kuranda FR, Mount Lewis NP, Macalister Range FR, Mount Peter CP, Earl Hill CP, Mowbray CP, Dinden West FR
<b>Special values</b>	Potential habitat for NCA listed species: <i>Acalypha lyonsii</i> , <i>Alloxylon flammeum</i> , <i>Alpinia hylandii</i> , <i>Bryobium dischorensis</i> , <i>Mischocarpus albescens</i> , <i>Phyllanthera grayi</i> , <i>Coleus gratus</i> , <i>Senegalia albizioides</i> , <i>Sphaerantia discolor</i> , <i>Toechima pterocarpum</i> , <i>Wetria australiensis</i>
<b>Fire management guidelines</b>	<b>STRATEGY:</b> Do not burn deliberately. Mosaic burning in surrounding fire-adapted ecosystems will minimise spread and severity of wildfire during severe weather events. <b>ISSUES:</b> Occasional hot fires in adjoining communities may be required to prevent expansion of rainforest elements. Edges are generally self-protecting but back burning from rainforest edges may be desirable. The occurrence of high biomass grasses in or adjacent to rainforest may detrimentally affect rainforest during fire events associated with dry weather.

<b>Comments</b>	<p>7.11.7: A number of canopy species are deciduous, and heavy leaf fall is characteristic in the dry season. At the drier extremes (western margin) of this community's range, species such as <i>Buchanania arborescens</i>, <i>Canarium australianum</i>, <i>Pleiogynium timorense</i>, <i>Strychnos psilosperma</i> and the grass <i>Leptaspis banksii</i> are typical. A feature of this regional ecosystem is the large number of tree species shared with the subtropical forests of the Southeast Queensland bioregion. Accordingly, there are very few regional endemics present. Floristically neither rich or poor and very similar structure, composition and assemblage to 7.12.7. Most accessible areas have been extensively logged in the past. Mainly from Gordonvale north, on eastern and central ranges. One small area northwest of Paluma.</p>
	<p>1 Estimated extent is from version 12.1 pre-clearing and 2019 remnant regional ecosystem mapping. Figures are rounded for simplicity. For more precise estimates, including breakdowns by tenure and other themes see remnant vegetation in Queensland.</p>

## Appendix 2: Acronyms

ADVCC – Accepted development clearing codes

ANPC – Australian Network for Plant Conservation

AVH – Australian Virtual Herbarium

BA – Biosecurity Act 2014

CIA – Clearance Impact Area

DCCEEW – Department of Climate Change, Energy, the Environment and Water

EPBC – Environmental Protection and Biodiversity Conservation Act 1999

CEEVNT – Critically Endangered, Endangered, Vulnerable, Near Threatened

DES – Department of Environment and Science

DR – Department of Resources

DSC – Douglas Shire Council

LG – Local Government

MSC – Mareeba Shire Council

NCA – Nature conservation Act 1992

RE – Regional Ecosystem

VMA – Vegetation Management Act 1999

Appendix 3: Feral pig control and Cassowary camera trap results from Speewah Gardens



## Appendix 4: About the Author

### Julian Pitcher (SQP)

Julian completed his Diploma in Conservation and Land Management in 2008 and has since been actively engaged in the environmental industry as both a professional and citizen scientist. As a result, he possesses a diverse range of skills in land management, film production, flying remote piloted aircraft, digital data collection, and writing development applications/ecological reports

He has developed resources and delivered accredited training under various RTO's which covered CLM units such as identify plants, develop a management plan, control weeds, and workplace health and safety. His DIY site management planner has been taken on by Land Care groups and assisted with the training of local land officers.

After spending several years in training and conducting restoration works, Julian commenced work for Biosecurity Queensland as an authorised officer surveying for invasive species in the National Tropical Weeds Eradication Program. During this time, he identified and collected additional data on various orchids and saprophytes (*Anoectochilus papuanus*, *Aphyllorchis anomala*, *Vrydagzynea albostrata*, *Sciaphilla sp.*, and *Gymnosyphon sp.*, among others) which assisted the Australian Tropical Herbarium, and also international botanists. He continues these relationships today by contributing data to ongoing projects. His training has also been furthered with short plant identification courses conducted by the ATH, along with venomous snake handling qualifications and remote sensing licences.

A keen orchid enthusiast, Julian has been successful in attaining funding from the Australian Orchid Foundation and producing a series of films promoting native orchids, their conservation issues and the stakeholders supporting them. In addition to this, Julian has been mapping native orchids for over ten years and recorded data on more than 2000 populations. This information is again assisting the ATH and other citizen science projects such as Wild Orchid Watch.

SQP evidence can be viewed via the link/attachments with original submission email, or provided upon request. Previously successful impact management plan submitted with evidence includes 271 Oak Forest road, Ecological report 2022.



#### **Disclaimer**

Whilst all care has been taken to present the necessary information to the most accurate degree it should be noted that the surveys conducted upon the property in question are not fully comprehensive and unidentified flora and fauna may exist. Spatial data is based upon the reliability of data sources and some error may exist as a result. Care should be taken by the landholders to ensure compliance is met with all relevant agencies and authorities. Approval of applications and alike cannot be guaranteed by Land Plan.