

North Byron Parklands Noise Management Plan

Prepared by
Air Noise Environment Pty Ltd

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Glossary and Abbreviations

Term	Explanation
ABL	Acoustic background level – the 90 th percentile of 15 minute L_{A90} measurements for the period (Day/Evening/Night) of interest on a given day.
RBL	The median of the measured ABL's for the relevant period (Day/Evening/Night) for all relevant periods of in the overall measurement data set
Accredited Acoustical Consultant	An acoustical consultant who is a member of one or more of the following organisations: The Association of Australian Acoustical Consultants; the Australian Acoustical Society; or the Institution of Engineers Australia.
Acoustic Manager	An experienced Acoustical Consultant (typically 10 years or more relevant experience) with the responsibility for co-ordinating monitoring activity during the event, monitoring live stage noise levels, and communication and liaison with the Production Team and Parklands Management in relation to event noise management.
Acoustic Monitoring Program	The noise monitoring to be completed for each medium or large event at Parklands.
Event Control Centre	The response centre provided by Parklands to respond to telephone and email communications from the community during the event.
dB(A)	A measure of the overall noise level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
dB(lin)	A measure of the overall noise level of sound across the audible spectrum with a linear frequency weighting (i.e. 'lin' weighting).
Development Consent	State Significant Development SSD 8169
Event	An outdoor event whose primary purpose is entertainment involving continuous amplified musical performance taking place within the approved hours of operation.
Event Noise	Noise from amplified entertainment noise measured as $L_{Aeq,10\text{-minutes}}$.
Event Stage Manager	The person at the sound mixing console (or sound desk), who is in control of the volume of noise emanating from the speakers installed at a specific stage;

Term	Explanation
L_{Aeq}	The equivalent steady sound level in dB(A) containing the same acoustic energy as the actual fluctuating sound level over the given period. Noise levels often fluctuate over a wide range with time (as is often the case for concert noise). The L_{Aeq} is the equivalent continuous sound which would contain the same sound energy as the time varying sound. Many studies show that human reaction to level-varying sounds tends to relate closer to the L_{Aeq} noise level than any other descriptor.
$L_{eq,oct(63Hz)}$	The equivalent steady sound level in dB(lin) in the 63Hz 1/1 octave band containing the same acoustic energy as the actual fluctuating sound level over the given period.
Noise Control Co-ordination Centre (NCCC)	The noise monitoring and management centre, staffed by experienced professional acoustic personnel, during the operation of stages.
Noise Impact Report (NIA)	A report presenting an analysis of the noise performance of a specific event and details of all monitoring completed during the event. Prepared if directed by the Planning Secretary.
Noise Management Plan (NMP)	This report.
Sensitive Receiver	A location where people are likely to work, occupy or reside, including a dwelling, school, hospital, office or public recreation area.
Sound Check	Sound check for a concert that is carried on outdoors where sound amplification equipment is used as part of the sound check.
Stages	Stage with a performance floor space greater than 100 square metres.

1. Introduction

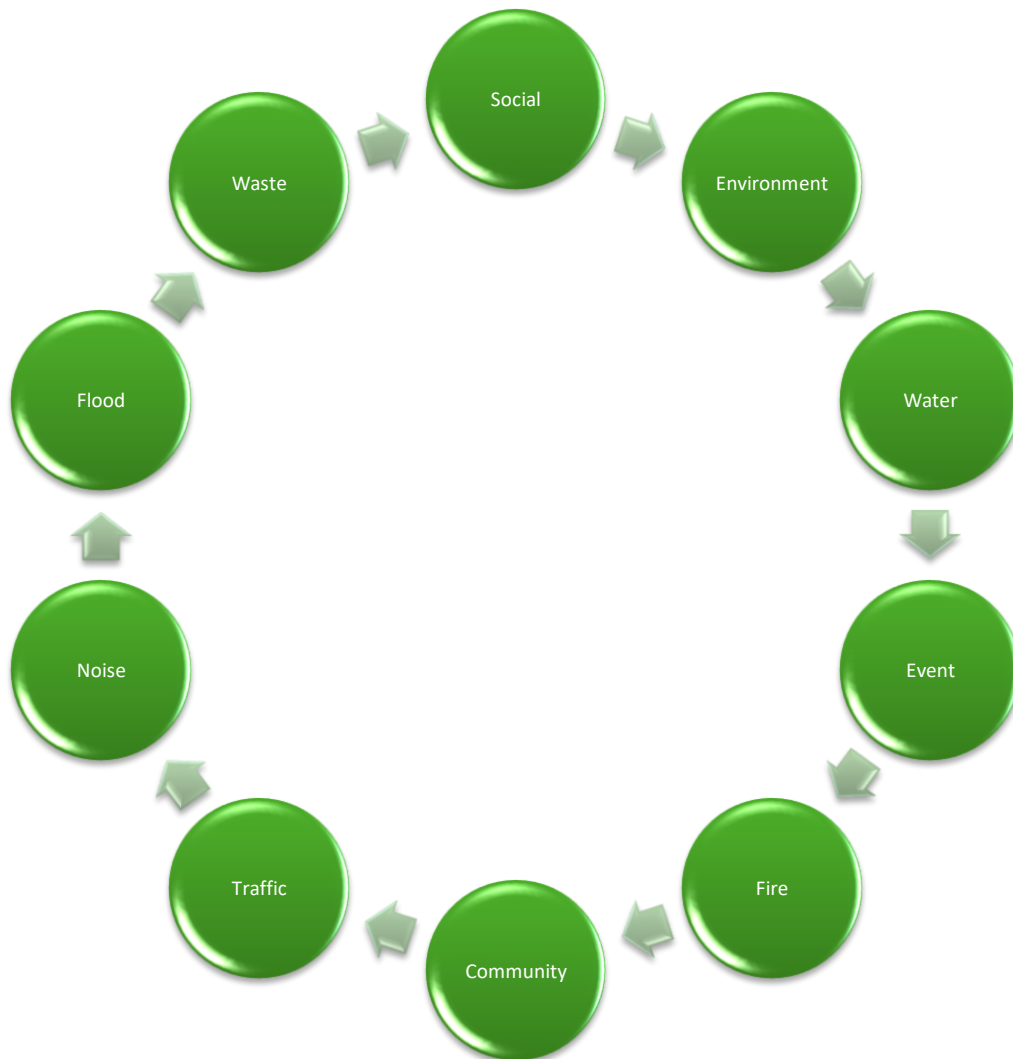
1.1 Overview

North Byron Parklands (Parklands) is a world-class cultural events facility located in the north of Byron Shire with permanent approval for the following activities:

- Splendour in the Grass with up to 50,000 patrons over 5 days;
- Falls Festival Byron with up to 35,000 patrons over 5 days;
- Medium events up to 25,000 patrons over 3 days (separate or combined);
- Small community events up to 5,000 patrons of 5 days (separate or combined); and
- Minor community events up to 1,500 patrons over 2 days (separate or combined).

To successfully operate events in a way that minimises potential or actual impacts and maximises benefits to the community and the environment, Parklands has developed a range of management plans as shown in Figure 1 below:

Figure 1. Parklands Management Plans



This document fulfils the requirements for Parklands' Noise Management Plan.

1.2 Background

The North Byron Parklands Cultural Events site (Parklands) obtained a Development Consent in March 2019. The conditions of approval impose a series of requirements in relation to management of noise from events at the venue.

This Noise Management Plan (NMP) has been prepared by Air Noise Environment Pty Ltd to address the requirements in Condition D34 of the approval, to provide a basis for achieving compliance with the noise limits defined in Condition D31. The NMP defines the appropriate measures for noise management, along with mechanisms for community consultation, acoustic monitoring, reporting, performance evaluation and for addressing non-compliances through improved management and mitigation.

The approval for the Cultural Events venue identifies specific areas on site that are permitted to be used for event related activities. This provides for a degree of flexibility in terms of location of stages and entertainment noise sources, as well as ancillary activities associated with large and medium events at Parklands.

To provide for differing noise risks associated with changes in the location and nature of performances within the areas approved for event related activities, an event specific Acoustic Management Plan (AMP) and audit is to be completed prior to commencement of each event. The AMP is supplementary to the requirements of the NMP, and considers specific noise management approaches tailored to an individual event.

1.3 About This NMP

This NMP has been prepared by Air Noise Environment Pty Ltd on behalf of Billinudgel Property Pty Ltd to fulfill the requirements of Conditions D33 and E1 of Development Consent SSD 8169 for the North Byron Parklands Cultural Event Site (Parklands).

The NMP is structured as follows:

Section 1 - Provides the introduction, report structure and background to the Noise Management plan;

Section 2 – Identifies the relevant noise limits, Statutory requirements, performance measures and performance indicators (Conditions D30, D31, E1b);

Section 3 – Describes the noise management measures to be adopted to achieve compliance with the identified noise limits and performance indicators, and to minimise noise from the site (Conditions D34(b) and E1(c));

Section 4 – Presents an Acoustic Monitoring Program for evaluation of the noise emissions during medium and large events at the Cultural Event site and community response (Conditions D34(d) and E1(d) and (e));

Section 5 – Discusses noise impact reporting to allow assessment of the on-going noise performance of the Cultural Event site (Conditions D46, D34(e), E1(d) and (g));

Section 6 – Defines a procedure for implementing noise mitigation measures, should this be required and ways to improve performance over time (Condition D34(f), E1(f));

Section 7 – Identified the process for review and update of the Noise Management Plan (Condition E1(h)).

1.4 The Cultural Events Site

Parklands is a Cultural Events site located at 126 Tweed Valley Way in the Yelgun Valley, within the Byron Shire Council local government area. The site covers an area of approximately 229 hectares. The general site locality is identified on **Figure 1.1**, the existing site features are identified on **Figure 1.2**, and the overall Land Use Structure Plan, as approved in March 2019, is presented on **Figure 1.3**. The Land Use Structure Plan identifies specific areas on the site that are permitted to be used for event related activities. This

provides for a degree of flexibility in terms of location of stages and entertainment noise sources, as well as ancillary activities associated with large and medium events at Parklands.

Parklands commenced operation as a Cultural Events site in April 2012. Since then, Parklands has held a total of twelve large and medium events. For each of these events, Parklands has undertaken detailed noise performance monitoring and analysis, resulting in ongoing noise management improvements across each event. The noise data and experience from noise management of these previous events has been relied upon in developing this NMP.

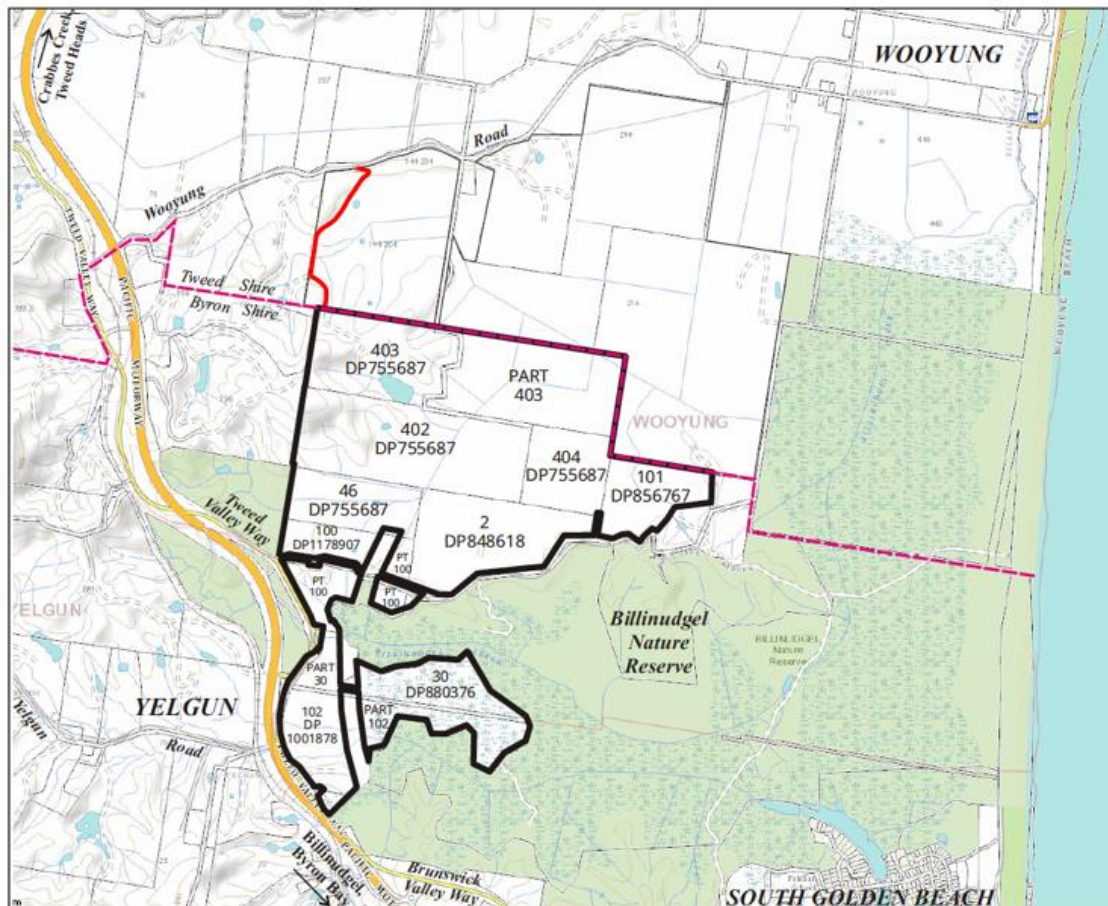
The Development Consent provides for outdoor events at Parklands for up to 20 event days a year as defined in Condition A8 of the Consent, and reproduced in **Table 1.1** below. The maximum number of patrons is to be increased progressively to the maximum limit in accordance with Condition D9 of the approval.

Event Type	Number of Attendees		Number of Event Days
	Maximum Number of Patrons	Other Attendees	
Large winter event	Up to 50,000 patrons	Up to 400 complimentary ticket holders, Up to 7,450 staff	Up to 5 event days per calendar year
Large summer event	Up to 35,000 patrons	Up to 400 complimentary ticket holders Up to 4,890 staff	Up to 5 event days per calendar year
Medium events	Up to 25,000 patrons	Up to 400 complimentary ticket holders Up to 3,850 staff	Up to 3 event days per calendar year
Small community events	Up to 5,000 patrons	Up to 250 staff	Up to 5 event days per calendar year
Minor community events	Up to 1,500 patrons	Up to 100 staff	Up to 2 event days per calendar year

Table 1.1: Size and Frequency of Outdoor Events

In addition, the Development Consent provides for development of a conference centre and associated accommodation. Condition A9 limits the number of guests to 180 guests per day in the conference centre and up to 120 guests per day in the associated accommodation.

This NMP relates to large and medium events, as defined in **Table 1.1**.



Legend

- Subject site
- North connection road
- Shire boundary

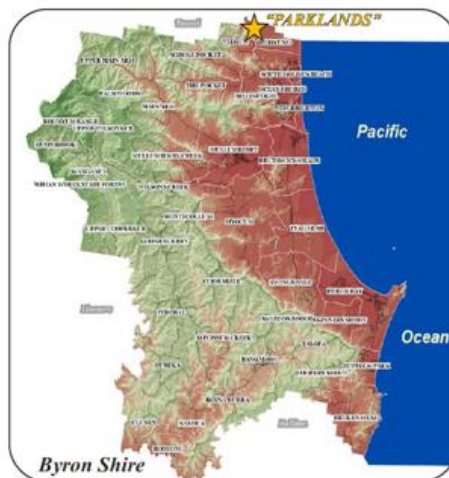


Figure 1.1: General Site Locality – Parklands

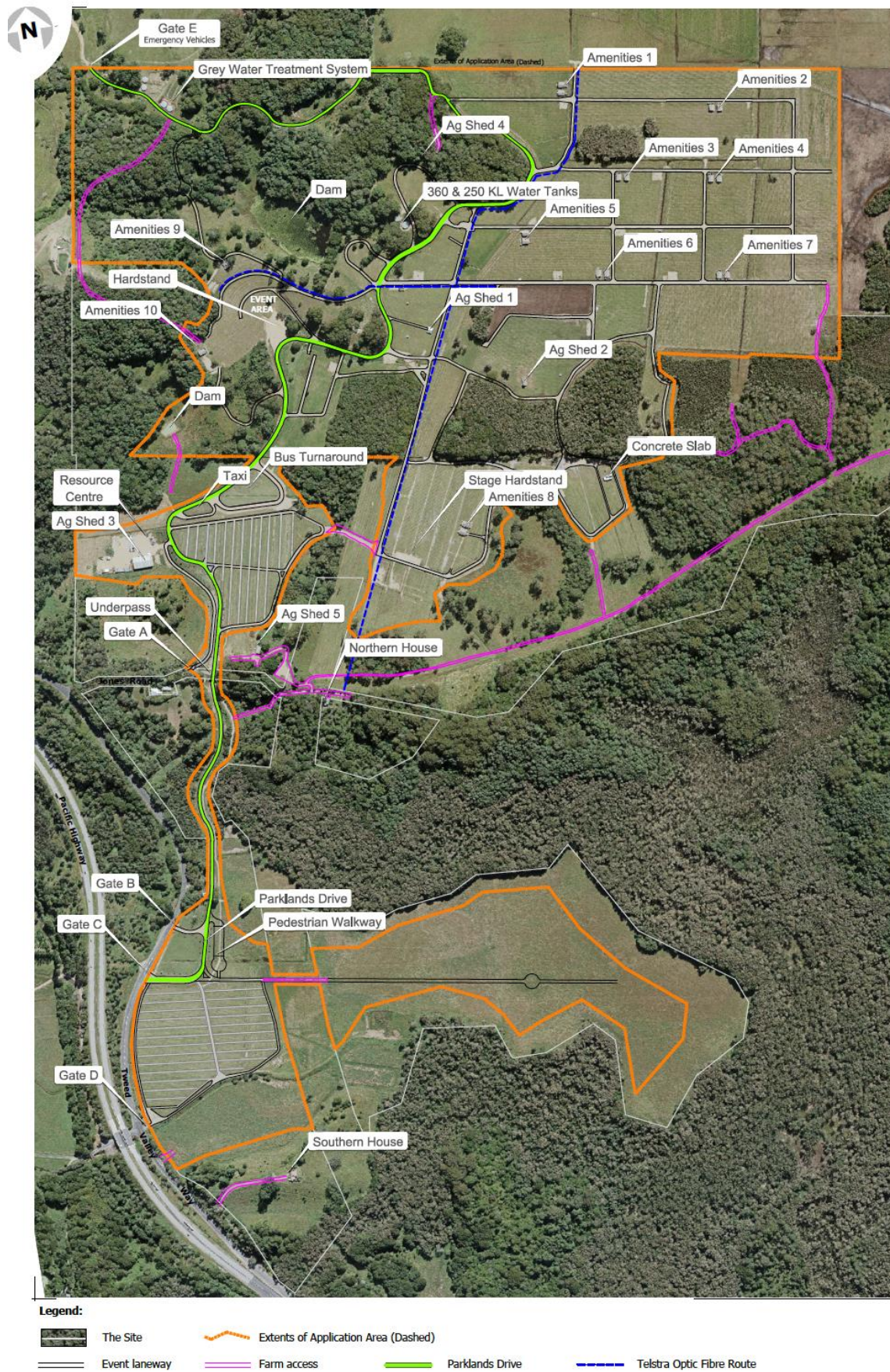


Figure 1.2: Existing Site Features

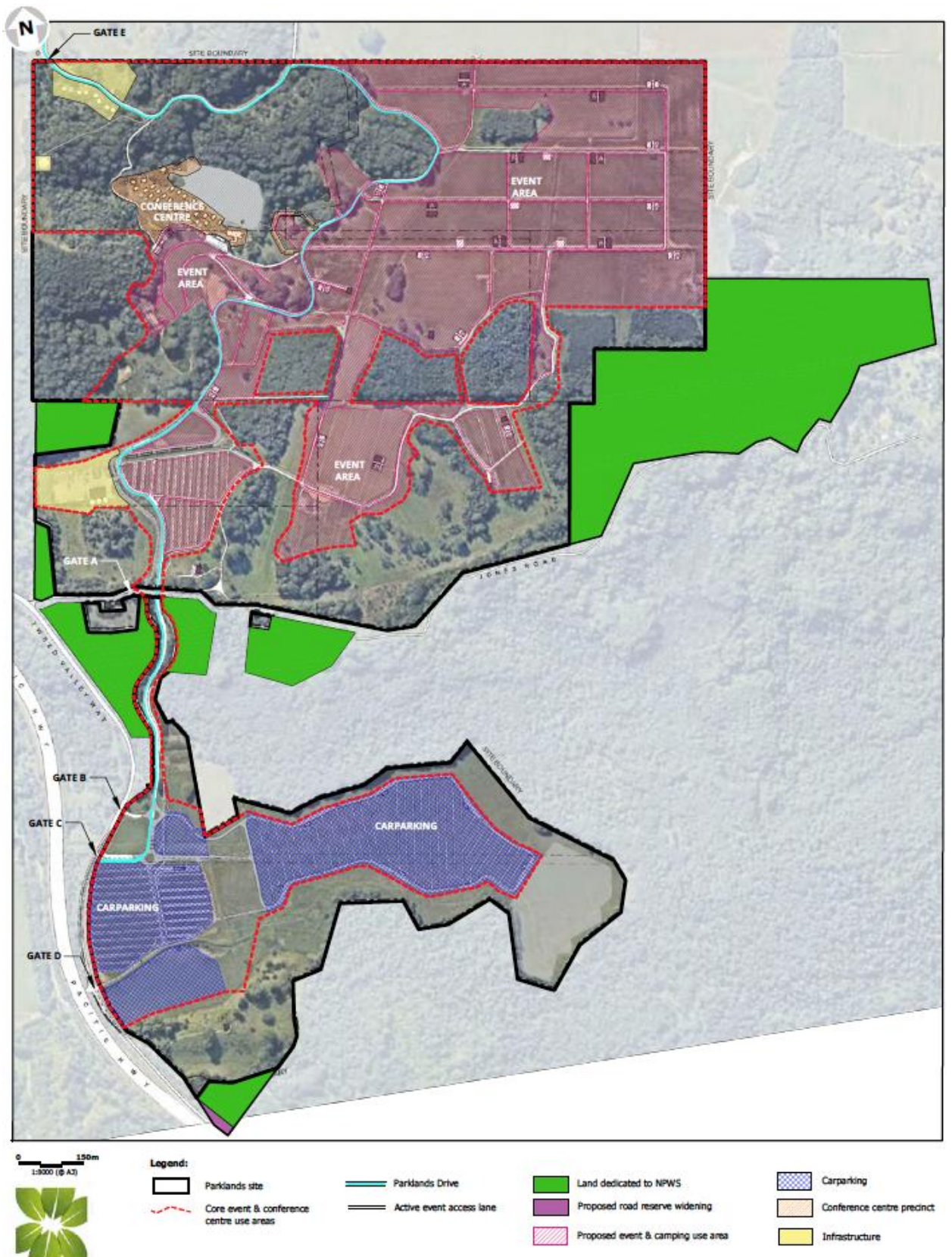


Figure 1.3: Land Use Structure Plan

2 Assessment Criteria

The noise limits defined in the Development Consent Conditions are identified in this Section. These are the limits that apply to all large and medium sized events held at Parklands.

2.1 Noise Limits

Condition D31 specifies the noise limits for Outdoor Events as detailed in Table 2.1. Event noise from the activities defined in Table 2.1 is not permitted outside of the approved hours of operation. The noise zones referenced in the Operational Noise Limits are identified in Figure 2.1.

Location	11 am to midnight		Midnight to 2 am	
	L _{Aeq} (10 minute)	L _{eq} (10 minute) in the 63 Hz 1/1 octave band	L _{Aeq} (10 minute)	L _{eq} (10 minute) in the 63 Hz 1/1 octave band
Zone 1	60	70	45	60
Zone 2	55	65	45	55

Table 2.2 Operational Noise Limits

The noise criteria in Table 2.2 do not apply where Parklands has an agreement with the relevant landowner to exceed the noise criteria, and has advised the Department of Planning and Environment that the agreement is in place. This is confirmed in Condition D31 of the Development Consent.

Development Consent Condition D31 identifies that noise generated by the development is to be measured in accordance with the relevant procedures and exemptions (including meteorological conditions) defined in the Noise Policy for Industry¹.

2.2 Approved Hours

Condition D30 of the Development Consent defines the approved hours of operation for Parklands as detailed in Table 2.2. Event noise from the activities defined in Table 2.2 is not permitted to occur outside of the approved hours of operation.

Activity	Day	Time
Stage operations	New Year's Eve	11.00 am – 1.00 am
	All other event days	11.00 am – 12.00 am
Bars, cafes and dance floors	All event days	11.00 am – 2.00 am
Minor community events	All event days	7.00 am – 10.30 pm
Bump in and Bump out periods (where audible at sensitive receivers)	Monday to Saturday	7.00 am – 6.00 pm
	Sunday	8.00 am – 6.00 pm

Table 2.2 – Approved Hours of Operation

¹ Noise Policy for Industry, NSW EPA, 2017.

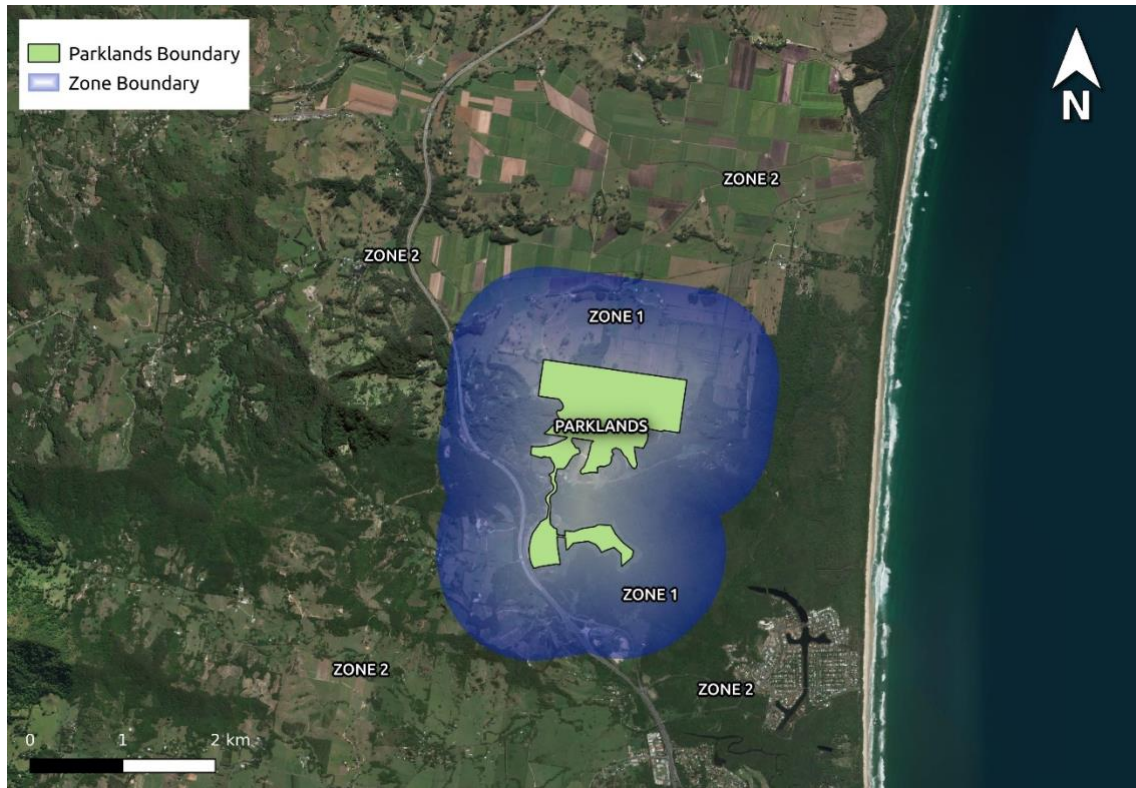


Figure 2.1: Compliance Criteria Zones

3 Noise Management Measures

The noise management measures and processes to be adopted for the minimisation of noise emissions from the Cultural Events venue during medium and large events are presented in this section. This responds to Conditions D34(b) and E(iii)(c).

3.1 Noise Sources

The key noise sources at large and medium events held at Parklands include sound amplification equipment, power generation equipment, lighting equipment and event patrons. For the performance stages at the event, key noise sources are likely to include front of house speaker arrays and stage monitors. Of these, noise from the sound amplification equipment (front of house speaker arrays and stage monitors) are typically the most significant in terms of noise emissions and are the focus of this NMP.

Other sources of noise include music amplification equipment at bars, cafes and food hall areas. Key noise sources at these areas are likely to be similar to those for the event stages however source noise emissions are typically significantly lower.

3.2 Noise Management Overview

The Development Consent provides for designated areas at Parklands to be used for Event activities (refer to **Figure 1.3**). This provides flexibility in terms of the location of stages and other event related infrastructure, hence changes in the location and potential impact of noise emissions may occur from event to event. On this basis, the NMP defines a series of design and operational measures to provide an overarching noise management framework for future large and medium events. These are to be considered in developing the design for each event.

Prior to each event, a review of the specific aspects of the proposed layout and infrastructure will be necessary to determine the most effective suite of noise management measures for that event. The event specific noise management requirements will be defined in an Acoustic Management Plan (AMP) for each event. The scope to be addressed in each AMP is discussed in more detail in **Section 4.6**.

3.3 Design Measures

Specific design measures for management and minimisation of noise emissions from Parklands that are to be implemented, where reasonable and feasible for large and medium events, are as follows:

- public address speakers, event stages and speakers shall generally be directed away from sensitive receivers;
- speaker directivity shall be considered during design and selection of arrays to minimise spillage of noise beyond the venue area;
- where speakers are mounted on poles or otherwise elevated above ground, they are to be inclined downwards from the horizontal or otherwise designed to reduce noise spillage to the surrounding environment;
- event stages and speakers shall be positioned to utilise any noise attenuation to sensitive receivers provided by the natural topography of the site and surrounding area;
- minimise off-site propagation of low frequency amplified sound by adopting state of the art management approaches such as end-fire sub arrays or cardioid sub arrangements;
- install fixed or portable barriers (e.g. shipping containers) to construct acoustic barriers where necessary to limit noise emissions from event activities (e.g. behind stages);

- use double tent wall sheets to contain noise emissions;
- where space and logistics allow, place trucks between, and trailers behind stages to act as an acoustic barrier;
- work with stage and production staff to design and install optimised sub-arrays and optimised speaker arrays;
- employ delay tower speaker systems at appropriate locations.

Details of specific acoustic management techniques incorporated to reduce noise emissions from events (including speaker directivity and setup, stage placement acoustic barriers) are to be provided in the event acoustic monitoring program for each individual event.

3.4 Operational Controls

3.4.1 Sound Propagation Tests

Prior to each large or medium event, sound propagation tests will be completed to permit target noise limits to be identified for each stage and venue. Specifically, the sound propagation tests provide information about the sound propagation characteristics for the event design and layout under the prevailing meteorological conditions. These data will be used to define event specific internal volume settings (event noise level) that reflect the event design, sound system and the prevailing meteorological conditions.

The sound propagation tests will take place prior to commencement of acts for the main stages. The tests will be completed as follows:

- the sound systems for each of the main stages are to be operated simultaneously and individually if necessary;
- attended noise monitoring will be completed during the sound propagation tests at two positions external to Parklands, one of which should approximately represent the nearest receptor downwind for the prevailing meteorology at the time of the sound propagation test;
- monitoring of the front of house noise levels should be completed simultaneously with the external noise monitoring during the sound propagation test;
- each sound system shall be operated at a sound level similar to that typically operated for Large or Medium events at Parklands;
- two sound tests shall be completed, sequentially;
- the sound source for the two tests shall be (i) pink noise and (ii) a music genre representative of the event.

The following noise data are to be recorded for the sound propagation tests:

- $L_{Aeq,10\text{-minutes}}$;
- $L_{eq,10\text{-minutes}}$, 63 Hz 1/1 octave band; and
- prevailing weather conditions (e.g. wind speed and direction).

Based on the outcomes of the sound propagation tests, target noise limits are to be defined by the Acoustic Manager for all main stages and minor venues at the event. These target noise limits are to be communicated to Sound Engineers and Production Staff for each stage and minor venue prior to commencement of live performances on the main stages.

3.4.2 Adaptive Noise Management

Active adaptive noise management is to be completed during periods of live entertainment at Large and Medium sized events at Parklands via a Noise Control Co-ordination Centre (NCCC).

The objectives of the NCCC is to provide:

- continuous monitoring of live noise levels from the main stages to allow pro-active management of noise levels and provision of rapid communication to Parkland Management, event Stage and Production personnel where noise level adjustments are considered appropriate; and
- close interaction with Parklands Management and Event Managers, and the personnel responding to calls made to the Community Hotline.

The following acoustic resources are to be provided at the NCCC:

- Acoustic Manager, with direct access to key event personnel throughout the event to facilitate rapid response to changes in the risk of off-site noise impacts;
- live noise feed (instantaneous noise levels) from sound level meters installed at the main stages;
- access to the log of community hotline calls identified as potentially impacted by elevated noise levels, as well as other event related data;
- web access to Bureau of Meteorology monitoring data and Parklands' weather stations.

Throughout the event, stage noise levels are to be reviewed to confirm that the measured noise levels are within the pre-agreed target noise levels based on sound propagation tests for the event.

Where the Acoustic Manager identifies that noise levels are approaching, or exceeding target noise levels based on the observed instantaneous noise levels, the event production team are to be notified and, if considered necessary, the Acoustic Manager may request a specific reduction in noise levels. The request must identify:

- The overall noise level reduction required;
- The requested noise level reduction at specific frequency bands (1/1 octave or 1/3rd octave);
- The specific stage(s) or noise source(s) that the reduction applies to.

In determining whether a request to reduce noise levels is appropriate, the Acoustic Manager is to consider key factors including, but not necessarily limited to, the following:

- noise levels from each of the stages or minor venues;
- prevailing weather conditions, and whether the wind direction has potential to propagate noise toward key groups of receptors;
- measured community noise levels, as reported by noise monitoring personnel;
- type of performance occurring on each stage, and the expected duration of each performance; and
- information provided by the Community Hotline relating to calls received from the community.

3.4.3 Authority to Act

At all times North Byron Parklands will maintain the right to enforce the noise management requirements defined in the NMP. This includes exercising a right to cease operations of a stage/entertainment area in the event where noise levels are not complying with the recommended noise limits due to the contributing stage/entertainment area and appropriate actions have not been enacted.

At all times throughout the event, an event stage manager shall be onsite and in direct contact with the acoustic consultant in case the noise level is required to be reduced. Event stage managers shall be authorised to override mixing desks if sound exceeds the noise limits (including removal of power if the music act's own sound engineer refuses to comply with direction from stage management).

The event stage manager if directed by, an authorised officer, the venue manager, event manager onsite, the acoustic consultant or the NSW Police Force, must have the authority to order the reduction of noise level, and shall comply with any such directions.

Controls implemented by event stage managers could include:

- reduction of overall stage noise levels;
- reduction of stage noise levels in specific frequencies (e.g. to limit the impacts of low frequency noise on sensitive receptors); or
- changes to the amplification equipment to allow reduction of noise emissions from specific speakers or groups of speakers.

3.5 Responding to Adverse Meteorology

Under specific adverse meteorological conditions, enhanced propagation of noise from the venue may arise. To address this issue, live weather data is to be monitored at the NCCC. When changes in meteorological conditions arise that have the potential to adversely affect sound propagation, the Acoustic Manager is to notify the event production team.

In addition, at the commencement of each day of the event the weather forecast for the day is reviewed by the Acoustic Manager, and the production team and acoustic monitoring personnel briefed in relation to:

- expected weather conditions for the day, for morning, evening and night;
- the receptor groups most likely to be affected for each period, hence the locations to be the focus of attended compliance monitoring (in lieu of valid complaint investigations);
- any potentially adverse conditions that are expected to result in enhanced sound propagation;
- recommended changes in stage sound levels that are expected to be applicable where adverse meteorological conditions are anticipated.

The Acoustic Manager will email the venue manager, event manager and stage managers a summary of likely weather conditions (and any implications of same) for each event day where stages are scheduled to operate.

3.6 Acoustic Management Plan

To provide for event specific noise management tailored to each event, an acoustic management plan (AMP) documenting an acoustic review of the proposed event layout, artists, program and sound system is to be completed prior to the large or medium event. The purpose of the acoustic review is to determine event specific noise risks, and to identify the optimum noise management and mitigation measures to adopt at the event, over and above those identified in the approved Noise Management Plan. The event specific noise management measures are to be documented in an Acoustic Management Plan (AMP) for the event. The AMP is to be distributed to the event Production Team prior to the commencement of bump-in, to provide for the incorporation of event specific noise control measures in the event.

Prior to commencement of the live entertainment at the event, the implementation of on-site noise management measures outlined in the event's AMP are to be audited and signed off by an accredited acoustic consultant. Any further modifications to the noise attenuation measures that are identified by the accredited acoustic consultant prior to the event are to be implemented subject to consultation with event organisers as necessary to ensure that the implications for the security and safety (of event staff, performers and patrons), emergency personnel access, fire and traffic have been effectively considered.

4 Acoustic Monitoring Program

This section provides details of the acoustic monitoring that is to be completed for each event, to accordance with Approval Condition D34(d). The approaches to be adopted for responding to community noise complaints during an event are also presented, in response to Approval Conditions D34(c).

4.1 Overview

Condition D34(d) of the approval requires that the NMP contains an acoustic monitoring programme that is:

- (i) Capable of evaluating the performance of the development; and
- (ii) includes a program for monitoring noise at each monitoring location.

To allow evaluation of the performance of the development, it is necessary to monitor at locations external to Parklands where compliance with the operational noise criteria defined in approval condition D31 apply.

4.2 Attended Noise Monitoring

Table 4.1 and Figure 4.1 identify the nearest sensitive receptors in the area surrounding Parklands. All existing sensitive residential receivers within Zone 1 have been identified, and a representative selection of residential receptors most likely to be affected by noise from large events at Parklands for the surrounding Zone 2. The selection of representative receptors for Zone 2 was based on:

- site inspections and monitoring during events by ANE personnel;
- community hotline calls for previous events; and
- prediction of receptor noise levels for the event design.

For the receivers identified in Table 4.1 as having agreements, Parklands have advised that an agreement has been entered into with the owner of each property relating to management of impacts from the event, and in some cases compensation has been agreed. On the basis of these agreements, the property owner has formally agreed not to lodge complaints relating to future events at Parklands. Approval Condition D31 confirms that the noise criteria defined in the approval do not apply where agreements are in place. On this basis, noise monitoring is not required at these receptor locations.

Active noise management during the event will focus on monitoring results at these key receptor locations identified in Table 4.1 that do not have agreements in place. This will provide a means of benchmarking community noise impacts and will be used for the purposes of determining compliance. Attended noise monitoring will be completed at these locations during the event. More frequent monitoring will be completed at those receptors most likely to receive audible noise from the venue during the event, based on the predicted noise levels for forecast weather conditions and the meteorological conditions occurring during the event.

The locations for attended noise monitoring will be selected on the following basis:

- where no noise related calls to the Community Hotline have been received noise monitoring will be undertaken at the sensitive receptor locations identified in Table 4.2;
- where noise related calls to the Community Hotline are received, attended noise monitoring will be undertaken at that sensitive receptor subject to availability of the acoustic engineer (who may be undertaking monitoring at another location); and
- where noise related Community Hotline calls are received from multiple sensitive receptors over a short period of time, attended monitoring may be undertaken at each receptor premises (subject to availability of the acoustic engineer) or a location representative of these premises (in instances where premises are in reasonable proximity to each other).

In the absence of any noise related Community Hotline calls, monitoring will be completed at the representative receptors identified in Table 4.1. Based on the prevailing and forecast meteorological conditions, monitoring will be completed with the aim of determining the receptors most likely to be impacted during evening and night periods. This will allow noise monitoring during evening and night periods, in the absence of calls to the Community Hotline, to focus on those receptors identified as most likely to be adversely impacted by noise from the event.

Routine noise measurements (i.e. not in relation to a call to the Community Hotline) will be completed at the property boundary. For rural properties (> 1,000 m² lot size), where the residence is located in excess of 30m from the property boundary, the potential for the measurement position to under- or over-estimate noise impacts from the event will be considered by the acoustic consultant. Where appropriate, noise monitoring personnel will estimate an adjustment to the measured noise level to assess whether the measured noise level approaches the assessment criteria, and whether action is necessary to address the potential for non-compliance to occur.

Table 4.1: Noise Sensitive Receptors Considered in Acoustic Modelling

Receptor Number	Address / Description	Zone	Agreement	Coordinates		Noise Limit 11pm - Midnight		Noise Limit Midnight - 2am	
				X	Y	dB(A)	dB(63Hz)	dB(A)	dB(63Hz)
1	Billinudgel Road, Billinudgel	1		56550466	6848271	60	70	45	60
2	Yelgun Road, Yelgun	1		56549841	6848737	60	70	45	60
3	Yelgun Road, Yelgun	2		56549272	6849152	55	65	45	55
4	Yelgun Road, Yelgun	1		56549890	6849356	60	70	45	60
5	Jones Road, Wooyung	1	Yes	56550475	6849851	60	70	45	60
6	Tweed Valley Way / Pacific Highway, Yelgun	2		56549278	6851074	55	65	45	55
7	Tweed Valley Way, Wooyung	1		56549782	6851201	60	70	45	60
8	Wooyung Road, Crabbes Creek	1		56549911	6851539	60	70	45	60
9	Wooyung Road, Wooyung	1		56550382	6851787	60	70	45	60
10	Wooyung Road, Wooyung	1	Yes	56550733	6851810	60	70	45	60
11	Wooyung Road, Wooyung	1	Yes	56551501	6851867	60	70	45	60
12	Jones Road, Wooyung	1		56552298	6849958	60	70	45	60
13	Jones Road, Wooyung	1	Yes	56552410	6850053	60	70	45	60
14	Mia Court, Ocean Shores	2		56553475	6848405	55	65	45	55
15	Flinders Way, Ocean Shores	2		56552578	6848002	55	65	45	55
16	Balemo Drive, Ocean Shores	2		56552197	6846959	55	65	45	55
17	Pacific Highway, Wooyung	1	Yes	56549897	6850497	60	70	45	60
18	Pacific Highway, Wooyung	1		56550212	6850739	60	70	45	60
19	Yelgun Road, Yelgun	1		56550103	6848687	60	70	45	60
20	Middle Pocker Road, Middle Pocket	2		56547389	6848120	55	65	45	55

21	The Pocket Road, The Pocket	2		56545003	6846851	55	65	45	55
22	Pimble Valley Road, Crabbes Creek	2		56545133	6851118	55	65	45	55
23	Bluegum Court, Crabbes Creek	2		56548244	6851563	55	65	45	55
24	Hulls Road, Crabbes Creek	2		56549443	6852637	55	65	45	55
25	Wooyung Road, Wooyung	1	Yes	56551275	6851844	60	70	45	60
26	Wooyung Road, Wooyung	2		56553046	6852236	55	65	45	55
27	Yelgun Road, Yelgun	2		56549266	6848944	55	65	45	55
28	Yelgun Road, Yelgun	2		56549179	6849099	55	65	45	55
29	The Pocket Road, Billinudgel	2		56550265	6847093	55	65	45	55
30	Hardy Avenue, Ocean Shores	2		56552970	6848562	55	65	45	55
31	The Tunnel Road, Billinudgel	2		56551603	6846410	55	65	45	55
32	Tweed Valley Way, Wooyung (Adjacent Venue Entry)	1		56550588	6848845	60	70	45	60
33	Brunswick Valley Way (Behind Yelgun Rest Stop)	1		56551204	6848092	60	70	45	60
34	Billinudgel Road, Billinudgel	1		56550380	6848394	60	70	45	60
35	Billinudgel Road, Billinudgel	1		56550324	6847879	60	70	45	60
36	Yelgun Road, Yelgun	1		56549445	6848764	60	70	45	60
37	Yelgun Road, Yelgun	1		56549366	6848979	60	70	45	60
38	Yelgun Road, Yelgun (Rental Unit fronting Yelgun Road)	1		56549387	6849021	60	70	45	60
39	Yelgun Road, Yelgun	1		56549516	6849087	60	70	45	60
40	Pacific Highway, Wooyung (Property before R17 on entry road)	1		56549736	6850583	60	70	45	60
41	Tweed Valley Way, Wooyung (Further up hill from R7)	1		56549752	6851142	60	70	45	60
42	Wooyung Road, Wooyung (Corner Wooyung / Pacific Motorway)	1		56549581	6851442	60	70	45	60

43	Jones Road, Wooyung	1	Yes	56552501	6850216	60	70	45	60
44	East of Jones Road, Wooyung (proposed development)	1		56552487	6849983	60	70	45	60
45	Tweed Valley Way, Yelgun	2		56549183	6851062	55	65	45	55
46	Yelgun Hill Road, Yelgun	2		56549200	6850879	55	65	45	55
47	Blue Gum Court, Crabbes Creek	2		56548030	6850988	55	65	45	55
48	Tweed Valley Way, Crabbes Creek	2		56548634	6852318	55	65	45	55
49	Hulls Road, Crabbes Creek	2		56549701	6852529	55	65	45	55
50	Hulls Road, Crabbes Creek	2		56549784	6852560	55	65	45	55
51	Hulls Road, Crabbes Creek	2		56550043	6852556	55	65	45	55
52	Hulls Road, Crabbes Creek	2		56550302	6852596	55	65	45	55
53	Hulls Road, Crabbes Creek	2		56550552	6852629	55	65	45	55
54	Hulls Road, Crabbes Creek	2		56550839	6852674	55	65	45	55
55	Hulls Road, Crabbes Creek (hill)	2		56551110	6852758	55	65	45	55
56	Hulls Road, Crabbes Creek (far end)	2		56551348	6852907	55	65	45	55
57	Wooyung Road, Wooyung	2		56552014	6852451	55	65	45	55
58	Wooyung Road, Wooyung	2		56552345	6852419	55	65	45	55
59	Wooyung Road, Wooyung	2		56552431	6852338	55	65	45	55
60	Wooyung Road, Wooyung	2		56552526	6852340	55	65	45	55

4.3 Unattended Noise Monitoring

Unattended noise monitoring is to be completed at two positions representative of the closest receptor groups to the north and north-west (R24) and south-east (R30) (refer to Figure 4.1).

Provision should also be made for remote access to live data at the two unattended noise monitoring positions by the Acoustic Manager at the NCCC where possible. It is recognised that mobile phone connectivity during an event is often limited. For this reason, remote access to the live noise monitoring data for the unattended monitoring positions may not be possible at all times.

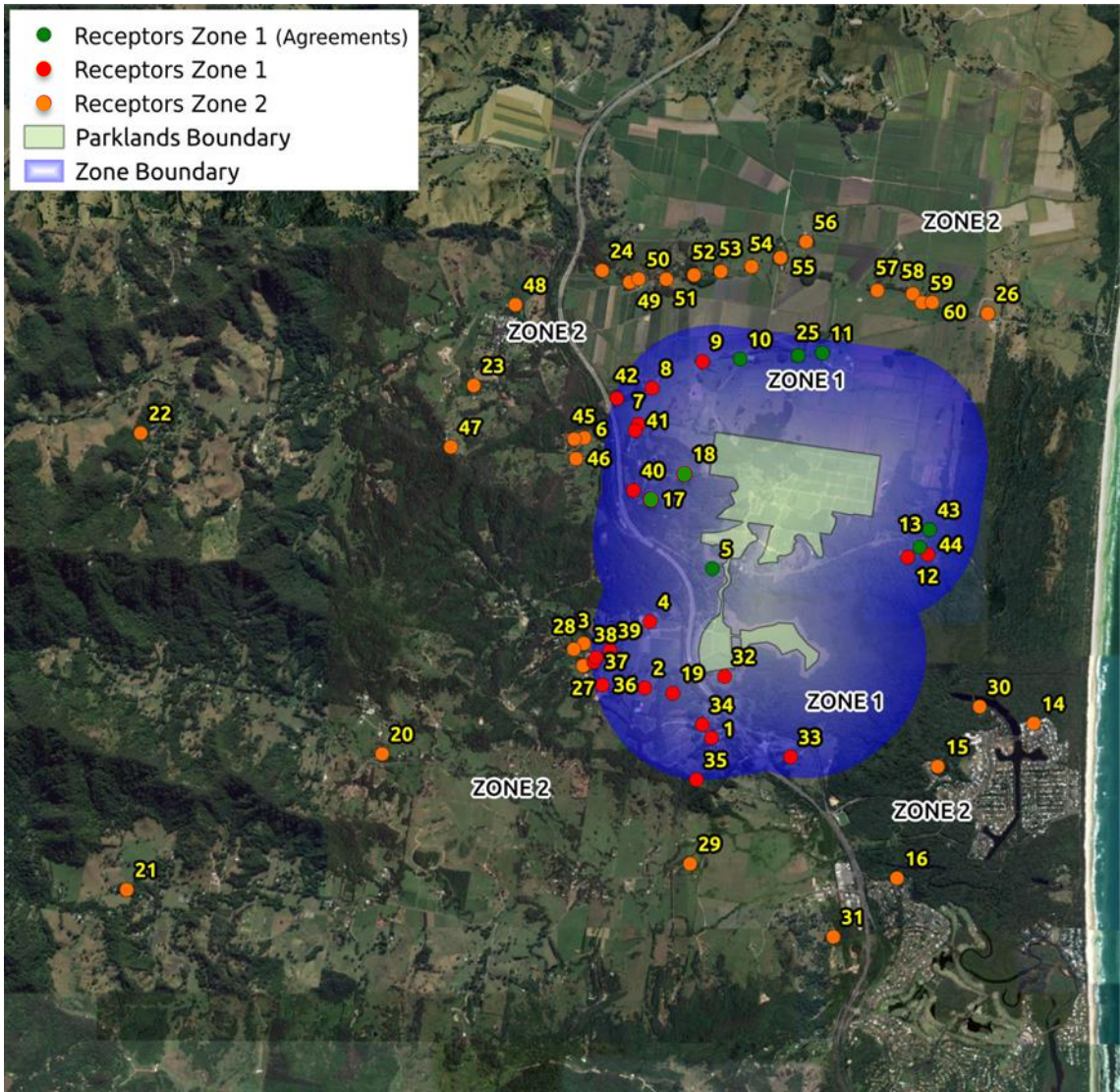


Figure 4.1: Site location and Noise Sensitive Receptors Considered in Acoustic Modelling

Receptor ID	Address
R24	44 Hulls Road, Crabbes Creek
R30	39 Hardy Avenue, Ocean Shores

Table 4.2: Continuous Unattended Noise Monitoring

4.4 Monitoring Methodology

All attended and unattended noise monitoring will be undertaken in accordance with the procedures and protocols as described in OEH's Noise Guide for Local Government 2010 and Australian Standard AS1055:2018 Acoustics - Description of measurement of environmental noise.

Noise levels will be recorded for each ten (10) minute period throughout the period from 11 am to 2 am of each day of the event. Observations recorded shall include as a minimum:

- for unattended noise monitoring data: $L_{Aeq,10\text{-minutes}}$ and $L_{eq,10\text{-minutes}}$ in the 63Hz 1/1 octave band noise levels;
- for attended noise monitoring data: $L_{Aeq,10\text{-minutes}}$ and $L_{eq,10\text{-minutes}}$ in the 63Hz 1/1 octave band noise levels and subjective observations of audible noise sources (including any extraneous (not event related) noise sources impacting on the measurements).

In addition, a detailed record of the meteorological conditions prevailing at the time of noise monitoring as recorded at the nearest representative meteorological station shall be kept and included in the noise impact report.

Meteorological data collected by the on-site monitoring station will be reviewed throughout the event to determine the requirement for further specific acoustic controls. The further controls, where required, would be adopted to mitigate, as far as practicable, the influence of the local meteorological conditions on the propagation of noise from the event.

4.5 Responding to Noise Complaints

4.5.1 Introduction

This section provides the procedure to be applied to record and respond to complaints received relating to large and medium events at Parklands.

Recording and responding to complaints received during events held at Parklands is the responsibility of North Byron Parklands. It is noted however that these responsibilities may be delegated to event management staff through the event Acoustic Monitoring Plan (AMP) providing the requirements of this procedure are complied with in full.

4.5.2 Community Hotline

A Community Hotline, postal address and email address shall be established for each large and medium event held at Parklands. Contact details for each of these shall be made available on Parklands' website for the duration of the events. In addition, the telephone number, postal address and email address shall be advertised in at least two (2) newspapers circulating in the locality on at least one occasion prior to the commencement of each event.

A member of event staff shall be available throughout the event and responsible for managing and recording all calls and emails received.

It is important that the event staff member responsible for managing calls to the hotline is provided sufficient resources to effectively respond including:

- access to noise monitoring personnel; and
- access to the event control centre.

4.5.3 Communication Record

All communication made with Parklands via the Community Hotline shall be recorded on a standard template document, including contact made via telephone, email or in writing.

Information recorded for each communication shall include as a minimum:

- date and time;
- the method (e.g. phone, email or mail) through which the call or correspondence was received;
- contact details for the individual contacting the Community Hotline including phone number, postal and email address if provided;
- location of the individual contacting the Community Hotline, noting that where the contact chooses not to give their exact address, a general indicative street location shall be recorded;
- event to which the communication relates;
- nature of the issue (e.g. noise, traffic etc.);
- any action undertaken in response to the communication including any follow-up contact made; and
- the reply/response given.

4.6 Community Hotline Response Procedure

Where an individual contacts the Community Hotline via telephone or email, and believes that noise from the event is adversely impacting their acoustic amenity, Community Hotline staff will ask the following questions to determine what actions (if any) are required:

Q1. Can the Caller describe the noise being experienced (i.e. is the noise amplified music? Can the noise be heard inside the dwelling? If so, what are its characteristics (bass, vocals?), have noise levels increased recently?). The Community Hotline staff shall then check with the Acoustic Manager to determine if noise monitoring has recently been undertaken in the caller's area. If so, details of the compliance status of the noise levels measured will be discussed with the caller.

After discussing the above matters, does the Caller require noise monitoring to determine amplified entertainment noise levels at their property?

Yes: Go to Q2; or

No: Record details of the call (including caller information) in the Community Hotline Register.

Q2. Is the property located in a rural area (i.e. lot size > 1,000 m²)?

Yes: Go to Q3;

No: The Acoustic Manager will issue the monitoring request to an Acoustic Consultant who will, as soon as practicable, undertake noise monitoring at the boundary of the property, on public land.

Q3. If the property is located in a rural area (i.e. lot size > 1,000 m²) does the caller require monitoring at the property boundary?

Yes: The Acoustic Manager will issue the monitoring request to an Acoustic Consultant who will, as soon as practicable, undertake noise monitoring at the boundary of the property, on public land;

No: If the monitoring is requested in proximity to the house, the caller must provide their name, full address and telephone contact number (landline and mobile). The caller must be available to meet with the Acoustic Engineer and provide safe access to the property for the purposes of completing the monitoring. The Acoustic Consultant will drive into the property and park as close to the house as possible. The Acoustic Engineer will knock on the door of the house, confirm the identity of the person that requested the monitoring and undertake noise monitoring within 30m of the home, subject to the Acoustic Engineer confirming the monitoring location as safe and appropriate. If safety issues are a concern, the Acoustic Engineer will complete the monitoring adjacent to the entrance to the property.

Following receipt of the monitoring request by the Acoustic Manager, the Acoustic Consultant will (as soon as practicable):

1. Undertake attended monitoring of amplified entertainment noise levels during periods of amplified entertainment (i.e. not during breaks between acts on the main stages), noting any extraneous noise sources impacting on the monitoring location.
2. Where the measured amplified entertainment noise level exceeds the set noise criteria during the initial ten-minute noise monitoring sample, the Acoustic Consultant shall contact the Acoustic Manager as soon as practicable and request appropriate adjustments to frequency and/or decibel levels as deemed necessary to bring noise levels to within the set noise criteria.
3. Once the Acoustic Manager has confirmed the requested adjustments have been made, and no later than 20 minutes after the initial 10-minute noise measurement, the Acoustic Consultant shall conduct a further ten-minute noise monitoring sample to determine compliance (or otherwise) with the set noise criteria. If this second sample exceeds the set noise criteria, then the reading shall be treated as a non-conformance and recorded as such in the Community Hotline Register.
4. In instances where there are several Community Hotline calls from residents in the same street or general location, the Acoustic Consultant will monitor the noise at a location deemed to be representative of those affected residents and undertake noise sampling, per the requirements of points 1 to 3 above.
5. Provide details to Community Hotline staff of the measured noise levels and action taken by the Acoustic Consultant (via the Acoustic Manager) for inclusion in the Community Hotline Register.

Subsequently, the following actions will be taken:

6. Where requested by the caller, Community Hotline staff will contact the caller after the monitoring to confirm the actions taken in response to their initial call. Where the Acoustic Consultant does not speak directly with the caller at the time of the monitoring, a business card or calling card will be placed in their mailbox following completion of the attended noise monitoring.
7. All attended monitoring exceedances and non-conformances will be recorded in any Noise Impact Report requested by the Department of Planning and Environment (per Condition C52) and in Parkland's annual Performance Report. Noise data from the unattended noise loggers at the two (2) fixed unattended sensitive receptor locations will be reviewed following completion of the event to determine specific receptor amplified entertainment noise levels and/or other non-event noise sources at the time of calls to the Community Hotline. Where possible this data would be reviewed live via modem connection at the time of the complaint, however this may not always be feasible due to the variability of remote digital signal transmissions during an event.

5 Noise Impact Reporting

Approval condition D46 relates to preparation of a Noise Impact Report for specific events at Parklands. This section considers the process, scope and contents for the Noise Impact Report.

5.1 Overview

At the direction of the Planning Secretary, and within two months of each bump-out period for a large or medium event (unless agreed otherwise by the Planning Secretary) Parklands will submit a Noise Impact Report (NIR) detailing the results of the noise monitoring required under Condition 34.

The specific requirements to be addressed in the Noise Impact Report are defined in Condition D46 as follows:

- Details demonstrating compliance with the conditions of consent relating to noise/acoustic management; and
- a summary of any complaints or requests received and actions taken, records of noise levels and data from acoustic monitoring, and any other information relevant to the consideration of noise impact on residents.

5.2 Report Contents

The report will include, as a minimum:

1. The name address and telephone number of the person who prepared the report;
2. The relevant date(s) and the commencement and completion times of the test(s), rehearsal(s) and concert(s) on each day;
3. The results of the pre-commencement audit of compliance with the event specific Acoustic Management Plan;
4. The times and location(s), including a site plan, at which the noise measurements were taken;
5. Details of the equipment and methods used to take measurements;
6. Records of noise levels and data from the acoustic monitoring;
7. Details of meteorological conditions during the period of noise measurement;
8. A statement of any time(s) at which the noise level limits Approval Condition D31 were exceeded and why, the level(s) and duration of any exceedence(s);
9. A summary of complaints and noise related calls to the Community Hotline or requests received and actions taken; and
10. Any other information relevant to the consideration of the noise impact from the event on residents or other sensitive receivers.

If the Noise Impact Report is requested by the Planning Secretary, it will be provided within 30 days of such a request.

6 Noise Mitigation Measures

If directed by the Planning Secretary, or where non-compliance has been recorded for a specific event, Approval Conditions D34(f) and E1(d) require development and implementation of additional noise mitigation measures. To respond to this requirement, this section presents a process for developing additional noise mitigation and management measures to achieve continuous improvement (condition E1(f)) and compliance with the approval conditions for future events.

6.1 Introduction

Implementation of additional noise mitigation measures may be requested by the Planning Secretary. In addition, where the Noise Impact Report prepared at the request of the Planning Secretary (Condition D46) identifies that non-compliance with the Operational Noise Limits defined in Condition D31 have not been achieved for a specific event, additional noise mitigation measures may be implemented.

6.2 Identification of Noise Mitigation Measures

The following points are to be considered to allow identification of reasonable and feasible mitigation measures for future events:

- Technological advances in sound system design and control;
- New receptors or changes in existing receptor types or sensitivity;
- Changes in source noise levels and/or the character of noise emissions from the event;
- Potential improvements in design controls and physical measures to manage noise propagation off-site;
- Improvements in noise management and adaptive noise control methodologies;
- Community feedback and concerns raised by callers to the Community Hotline;
- Regulatory Working Group feedback to improve noise management performance;
- Any other matter of relevance to achieving improved noise management performance for medium and large events at Parklands.

In considering the reasonableness of implementing additional mitigation measures, the following factors are relevant:

- Noise impacts:
 - existing and future levels, and projected changes in noise levels;
 - level of amenity before the development, for example, the number of people affected or annoyed; and
 - the amount by which the triggers are exceeded.
- Noise mitigation benefits:
 - the amount of noise reduction expected, including the cumulative effectiveness of proposed mitigation measures, for example, a noise wall/mound should be able to reduce noise levels by at least 5 decibels; and
 - the number of people protected.
- Cost effectiveness of noise mitigation:
 - the total cost of mitigation measures;
 - noise mitigation costs compared with total project costs, taking into account capital and maintenance costs; and

- on-going operational and maintenance cost borne by the community, for example, running air conditioners or mechanical ventilation.
- Community views:
 - engage with affected land users when deciding about aesthetic and other impacts of noise mitigation measures;
 - determine the views of all affected land users, not just those making representations, through early community consultation; and
 - consider noise mitigation measures that have majority support from the affected community.

6.3 Reporting and Approval

The identified noise mitigation measures should be incorporated in a revised Noise Management Plan and submitted to the Planning Secretary for approval prior to carrying out a large or medium event at Parklands.

7 Management Plan Requirements

Management plans required under the Development Consent must be prepared in accordance with relevant guidelines and include the requirements of Condition E1. This section addresses how this NMP will meet those requirements.

7.1 Detailed baseline Data

Parklands has captured significant noise sampling data (both attended and unattended) across six large events subject to the same noise limits set under Development Consent SSD 8169. This information will form the baseline data sets used to compare the performance of large and medium events moving forward.

7.2 Relevant Statutory Requirements

Relevant statutory requirements are defined in Development Consent SSD 8169. Any future changes in Statutory requirements will be incorporated into future amendments of this NMP.

7.3 Relevant Limits or Performance Measures

Development Consent Condition D31 provides details of the required operational noise limits while Table 6 of Condition D16 provides specific noise related KPIs for this development. No other limits or performance measures pertain to aspects covered in this NMP.

7.4 Relevant Risk Assessments

Event specific risk assessments are to be completed for large or medium events as described in Section 3.6. The risk assessment will focus on the likely effectiveness (or otherwise) of proposed mitigation measures being adopted for the event as outlined in S7.2 of this NMP.

7.5 Environmental Performance

The environmental performance of the NMP (including the effectiveness of management measures) will be monitored and reported on as follows;

1. For large events, via the performance evaluation report (per Development Consent Condition D9);
2. For all other event, an annual compliance report (per Development Consent Condition E8); and
3. An independent audit (per Development Consent Condition E10).

Where environmental performance of the NMP results in any unpredicted impacts, a contingency plan and/or changes to specific management measures will be documented and monitored for future events.

This management plan will be reviewed in accordance with the relevant triggers outlined in Development Consent Condition E2 which include within three months of:

- (a) the submission of a PER under Condition D17;
- (b) the submission of a Compliance Report under Condition E8;
- (c) the submission of an incident report under Condition E4;
- (d) the submission of an Independent Audit under Condition E10;
- (e) the approval of any modification of the conditions of this consent; or
- (f) the issue of a direction of the Planning Secretary under Condition A2(b) which requires a review.

The strategies, plans and programs required under this consent must be reviewed as described in Section 7.7, and the Department must be notified in writing that a review is being carried out.

7.6 Managing and Reporting Incidents and Non-Conformances

Non-conformances will be reported via the event Community Hotline Report and where requested, the Noise Impact Report.

7.7 Periodic Review

The Noise Management Plan processes and procedures should be subject to review and update on a three-yearly basis or as otherwise directed by the Planning Secretary. In addition, where a Noise Impact Report has been required by the Planning Secretary and the NIR identifies that overall compliance with the Operational Noise Limits defined in Approval Condition D31 have not been achieved, an interim review and update of the NMP should be completed. The interim review should focus on incorporation of noise control measures designed as preventative measures, to minimise the risk of future non-compliances.

In completing reviews and updates of the NMP, the following should be considered and responded to:

- location of sensitive receivers including consideration of locations where new agreements have been negotiated;
- results of noise monitoring at sensitive receivers, both attended and unattended, since completion of the previous NMP review;
- community feedback, including calls to the Community Hotline, formal and informal complaints since completion of the previous NMP review;
- changes in available sound system technologies and sound management methodologies, based on a literature review of current sound system design and operational technologies;
- input from Parklands production personnel in relation to additional measures that could be implemented to improve the success of noise management for future events; and
- any other information relevant to the consideration of the noise impact from the event on residents or other sensitive receivers.

Where a modification to the approved Noise Management Plan is proposed as a result of a periodic review, or in response to investigation of non-compliance through a Noise Impact Report, the amended Noise Management Plan shall be submitted to the Planning Secretary for approval prior to implementation.