acousticworks

Proposed Alterations and Additions
Kingscliff Beach Bowls Club
Marine Parade
Kingscliff

ACOUSTIC REPORT
TSC DA No. 18/0635




Client:
Kingscliff Beach Bowls Club

c/- Paynter Dixon
ATTN: Mark Lutowski

Reference:
2018026 R02C Kingscliff Beach Bowls Club Additions ENV.doc

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Document Information

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Report Register

Date	Revision	Author	Reviewer
23/11/18	R02A	Mark Enersen	Mark Enersen
29/11/18	R02B	Mark Enersen	Mark Enersen
29/11/18	R02C	Mark Enersen	Mark Enersen

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1. Introduction

This acoustic report is in response to a request by Paynter Dixon for an acoustic assessment of proposed additions to the Kingscliff Beach Bowls Club, Marine Parade Kingscliff.

An acoustic report (ref: 2018026 R01C Kingscliff Beach Bowls Club Pop Up Bar.ENV dated 8 March 2018) was prepared by Acoustic Works and submitted as part of a previous development application (TSC DA No. 18/0517) for the site.

However this acoustic report has been prepared in response to Tweed Shire Council's request for information dated 28 September 2018 in relation to DA18/0635.

This report is based on noise measurements, revised calculations and analysis by Acoustic Works.

2. Site Description

2.1 Site Location

The site is described by the following:

468/DP755701 Marine Parade Kingscliff

Refer to Figure 1 for site location.

Figure 1: Site location (not to scale)

Comprehensive site surveys were carried out on the 8th and 15th February 2018 and 17th September 2018 and identified the following;

a) The existing Bowls Club comprises bars, bistro, functions room, three bowling greens and other ancillary uses.
b) The proposed temporary development will be positioned at the southeast end of the existing permanent Club building.
c) The site to the southeast has been redeveloped as Kingscliff Beach Holiday Park, for tourist accommodation consisting of onsite cabins and caravan sites.

d) The nearest residential receivers are located to the southeast at Kingscliff Beach Holiday Park and on Marine Parade, to the southwest of the site.

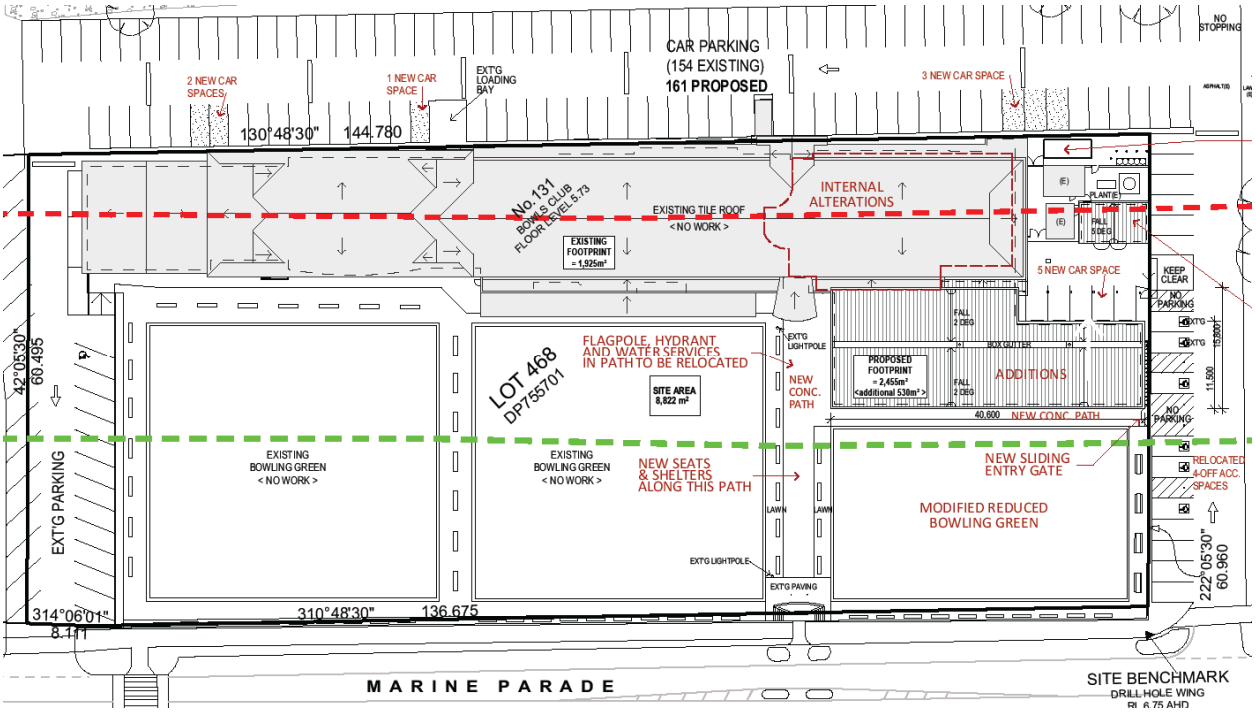
2.2 Proposal

The development proposal is for a temporary pop-up bar comprising;

- Demolition of internal walls and internal alterations including new kitchen design, fit out and new male, female and disabled toilets;
- New extended dining area (173m2);
- New alfresco dining area (243m2);
- New covered kids area (85m2);
- Modified reduced bowling green;
- New seats and shelters along the path between the bowling greens;
- Provision of a new waste room;
- Provision of 5 additional secured car spaces onsite;
- New sliding entry gate on southeast side of site;
- Proposed future Pop Up Bar/Café on the southeast corner of the site. A separate Development Application has been lodged for a Temporary Pop Up Bar and Café on the site. The temporary facility will be removed as part of the construction work and relocated to the new site.

Carparking will be via publicly available on and off-street parking areas. The typical approximate layout of the proposed use is shown on the following markup.

Figure 2: Proposed site layout



The hours of operation for Kingscliff Beach Bowls Club are;

Monday: 9:30am – 9:30pm
Tuesday: 10:00am – 10:00pm
Wednesday: 10:00am – 10:00pm
Thursday: 10:00am – 10:30pm
Friday: 9:30am – 11:30pm
Saturday: 9:00am – 11:30pm
Sunday: 8:00am – 9:30pm

2.3 Acoustic Environment

The residential area adjacent to the site is primarily affected by surf noise and traffic noise from Marine Parade.

3. Equipment

The following equipment was used to record noise levels:

Rion NL42 Environmental Noise Monitor
NTi XL2 Sound Level Meter
BSWA Technology Co. Ltd Sound Calibrator

The NL42 environmental noise monitor and XL2 sound level meter hold current NATA Laboratory Certification and was field calibrated before and after the monitoring period, with no significant drift from the reference signal recorded.

4. Receivers and Monitoring

4.1 Receiver Locations

The nearest residential receiver locations were identified as follows;

1. Residential apartment buildings along Marine Parade (nominal 130 Marine Parade)
2. Tourist accommodation at Kingscliff Beach Holiday Park

These locations were chosen as being representative of the nearest residential receivers to the proposed development. Refer to Figure 3 for these locations.

Figure 3: Receivers and noise monitoring location

4.2 Unattended Ambient Noise Monitoring Procedure

A Rion NL42 environmental noise monitor was placed at 150 Marine Parade to measure ambient noise levels. This location was chosen in order to avoid extraneous noise from the construction site located to the southeast, and to avoid capturing any noise from the Club within the ambient noise data. The microphone was approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between 8th and 15th February 2018.

For the unattended noise monitoring location refer to Figure 3.

The noise monitor was set to record noise levels in "A" weighting, Fast response with 15 minute statistical intervals. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055 '*Acoustics – Description & Measurement of Environmental Noise'.* Weather conditions were fine for the majority of the monitoring period, with some periods of intermittent light rain which had no effect on the measured data.

5. Measured Noise Levels

The following tables present the measured ambient noise levels from the unattended noise surveys. Any periods of inclement weather or extraneous noise are omitted from the measured data prior to determining the results.

5.1 Ambient Background Noise Level

The measured rating background noise levels (RBL), in accordance with the NSW Noise Policy for Industry, are as follows;

Table 1: Background L_{A90} Noise Levels

Day	Date	Background Noise L90 dBA		
		Day	Evening	Night
Thursday	8/02/2018	x	46.8	47.5
Friday	9/02/2018	50.1	47.9	47.1
Saturday	10/02/2018	50.2	47.3	44.5
Sunday	11/02/2018	49.8	48.3	46.3
Monday	12/02/2018	51.4	50.7	45.7
Tuesday	13/02/2018	48.0	48.8	47.6
Wednesday	14/02/2018	49.1	53.5	53.8
Thursday	15/02/2018	x	x	X
RBL		50	48	47

5.2 Ambient LAeq noise level

The measured LAeq noise levels, in accordance with the Noise Policy for Industry, are as follows;

Table 2: Measured LAeq noise levels

Day	Date	Ambient Leq dBA		
		Day	Evening	Night
Thursday	8/02/2018	x	52.2	51.6
Friday	9/02/2018	56.3	53.6	51.3
Saturday	10/02/2018	55.8	52.6	50.2
Sunday	11/02/2018	56.9	55.1	52.2
Monday	12/02/2018	57.0	54.4	51.9
Tuesday	13/02/2018	56.9	53.6	52.0
Wednesday	14/02/2018	56.8	56.3	57.6
Thursday	15/02/2018	x	x	x
LAeq,T		57	53	52

Graphical presentation of the measured noise levels is presented in the Appendices.

5.3 Attended Noise Monitoring

Attended noise measurements were performed to determine the typical frequency spectrum of ambient noise during the proposed hours of operation. Measurements were conducted adjacent to the residential area in the vicinity of 130 Marine Parade Kingscliff between the hours of 7.30m and 8pm.

The results of the measurements are as follows;

Table 3: Measured octave band L90 sound pressure levels

Date	Time	Receiver	Octave band centre frequency sound pressure level L90 dB								
			31.5Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
10/2/18	7.30pm	1	58	58	54	50	49	46	43	38	33

6. Noise Criteria

The relevant noise criteria have been determined in consultation with Tweed Shire Council and State guidelines.

6.1 Guide For Local Government

The NSW Guide For Local Government recommends use of LAeq descriptor for assessment of the noise under investigation. The recommended method is for comparison of the total LAeq from the source(s) in question against the LA90 background noise level of the ambient environment. Noise limits and criteria are not directly specified in the document. Section 2.2.1 of the guideline presents a possible criterion of LAeq = Background + 5dBA, however this is only used as an example of a possible criterion.

6.2 Noise Policy for Industry

Noise from amplified music and patrons is specifically excluded from the NSW Noise Policy for Industry 2017 in Section 1.5 of the Policy. Therefore this policy is not used for assessment of the subject development.

6.3 Liquor & Gaming NSW

The proposed temporary use will be conducted under the existing liquor license held by Kingscliff Beach Bowls Club. Therefore, the noise criteria specified by Liquor and Gaming NSW (LAG) would be applicable to the development.

Liquor & Gaming NSW was contacted to confirm the current noise policies regarding licensed premises. Acoustic Works was informed that the existing policies are in the process of being amended, however the previous (existing) policy is still valid and subsequently is applied to the proposed development.

Section 1 of the noise policy currently outlines the following requirements for licensed premises;

> *"The LA10* noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz to 8kHz inclusive) by more than 5dB between 07:00 am and 12:00 midnight at the boundary of any affected residence.*
> *The LA10* noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz to 8kHz inclusive) between 12:00 midnight and 7:00 am at the boundary of any affected residence.*
> *Notwithstanding compliance with the above, the noise from the licensed premises shall not be audible within any habitable room in any residential premises between the hours of 12:00 midnight and 07:00am.*
> **LA10 is the average maximum deflection of noise emission from the licensed premises."*

We note that the current LAG NSW criteria are based on assessment of L10 parameter, whereas Tweed Shire Council regularly use Leq parameter with regard to octave band assessment of noise from commercial premises. We expect LAG NSW will be changing the policy to Leq assessment in the near future however currently, assessment of L10 noise levels would lead to a slightly more conservative assessment than would otherwise be the case using Leq parameter.

6.4 Project Specific Noise Limits

Based on the LAG NSW noise criteria and the measured noise levels as presented in Section 6.3, the project specific noise limits would be as follows;

Table 4: Project specific noise criteria

Time period	Criterion	Criteria $L_{10\,(T)}$ dB Octave band centre frequency Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
Day 7am to 6pm	L90+5dB	62	62	58	54	61	50	47	42	37
Evening 6pm to 10pm	L90+5dB	60	60	56	52	51	48	45	40	35
Night 12midnight to 7am	L90+0dB	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Night time criteria are not applicable, as the proposed development will not operate during these hours.

Although the criteria is nominated in terms of octave band limits, for information purposes the overall equivalent dBA noise limits would be 55dBA daytime, 53dBA evening and 52dBA night.

7. Assessment

Noise associated with the development has been assessed based on similar previous investigations.

7.1 Noise levels due to patrons

Noise associated with patrons is based on a technical paper '*Prediction of Noise from Small to Medium Sized Crowds*' (Hayne et al, 2011). The paper was based upon attended noise measurements conducted at a sample of premises to account for range of patron numbers. Based on the measured levels, the resulting analysis determined that the Sound Power Level of a small-medium crowd could be predicted by the following equations:

L_{WAeq} = 15 log (number of patrons) + 64 dBA
L_{WA10} = 15 log (number of patrons) + 67 dBA

We have been informed by Kingscliff Beach Bowls Club that the occupation of the pop-up bar at any one time is generally 100 people spread relatively evenly throughout the designated areas. Based on the equations above and the number of patrons, the source sound power levels are presented in Table 6.

The noise source levels for the children's play area is based on 'Technical Guideline Child Care Centre Noise Assessment' by the Association of Australian Acoustical Consultants dated May 2008. As described in the guideline, the noise level of children playing can vary widely depending on the age of the children and the activity being performed by the children. Sound power levels of children are presented in the guideline as follows;

Table 5: Sound power levels of children playing

Age group	Number of children	Sound power level dBA (Leq 30sec) of 10 children
0 to 2 years	10	77 to 80
2 to 3 years	10	83 to 87
3 to 6 years	10	84 to 90

For the purposes of assessment, the overall sound level is based on 15 children playing, with a resultant average total sound power level of 88dBA.

Sound pressure levels are taken to be 8dB lower than the sound power levels presented.

The sound power levels used for the assessment are based on typical expected usage of 100 patrons using the alfresco area and 15 children playing.

Table 6: Sound power levels of patrons

Description	Approx patrons	Estimated patron sound power dBA	
		LAeq	LA10
Patrons in alfresco area	100	94	98
Children's play area	15	88	92

7.2 Resulting noise levels

7.2.1 Without acoustic treatments

The resulting predicted noise levels at the receiver locations are determined for each of the nominal areas and patron numbers as follows;

Table 7: Predicted sound levels at receivers – no acoustic treatments

Description	Calculated patron sound pressure level dBA			
	Rec 1 Marine Pde		Rec 2 Holiday Park	
	LAeq	LA10	LAeq	LA10
Patrons in alfresco area	46	50	47	51
Childrens play area	43	47	48	52
Overall maximum patron noise	49	52	52	55

7.2.2 With acoustic treatments

With the acoustic recommendations in Section 8, the resulting predicted noise levels at the receiver locations are as follows;

Table 8: Predicted sound levels at receivers – with acoustic treatments

Description	Calculated patron sound pressure level dBA			
	Rec 1 Marine Pde		Rec 2 Holiday Park	
	LAeq	LA10	LAeq	LA10
Patrons in alfresco area	46	50	42	46
Childrens play area	43	47	41	45
Overall maximum patron noise	48	52	45	49

The noise levels are predicted to comply with the criteria, however are then assessed cumulatively with the noise emissions due to other sources in the following section.

7.3 Audio-visual noise levels

Following from the determination of expected maximum patron noise levels, it is possible to calculate the allowable remaining component level due to noise from other sources such as audio-visual systems (televisions, background music).

7.3.1 Receiver 1 – Marine Parade

Based on the predicted maximum patron noise levels, the following component levels due to AV systems are calculated at Receiver 1.

Table 9: Predicted allowable AV noise level at Receiver 1

Time period	Overall SPL dBA	Component L_{10} dB Octave band centre frequency Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
Day to 6pm	52	58	58	54	50	49	46	43	38	33
Evening 6pm to 10pm	47	54	54	50	46	45	42	39	34	29
Night 10pm to closing	46	53	53	49	45	44	41	38	33	28

7.3.2 Receiver 2 – Kingscliff Beach Holiday Park

Based on the predicted maximum patron noise levels, the following component levels due to AV systems are calculated at Receiver 2.

Table 10: Predicted allowable AV noise level at Receiver 2

Time period	Overall SPL dBA	Component L_{10} dB Octave band centre frequency Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
Day to 6pm	54	61	61	57	53	52	49	46	41	36
Evening 6pm to 10pm	50	57	57	53	49	48	45	42	37	32
Night 10pm to closing	49	56	56	52	48	47	44	41	36	31

7.3.3 Predicted allowable source levels – Receiver 1

The predicted allowable source sound power levels, based on the noise component at Receiver 1, are determined as follows;

Table 11: Predicted allowable AV source sound power level based on Rec 1

Time period	Overall SWL dBA	AV source Lw_{10} dB Octave band centre frequency Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
Day to 6pm	96	102	102	98	94	93	90	87	82	77
Evening 6pm to 10pm	91	98	98	94	90	89	86	83	78	73
Night 10pm to closing	90	97	97	93	89	88	85	82	77	72

7.3.4 Predicted allowable source levels – Receiver 2

The predicted allowable source sound power levels, based on the noise component at Receiver 2, are determined as follows;

Table 12: Predicted allowable AV source sound power level based on Rec 2

Time period	Overall SWL dBA	AV source Lw_{10} dB Octave band centre frequency Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
Day to 6pm	99	105	105	101	97	96	93	90	85	80
Evening 6pm to 10pm	94	101	101	97	93	92	89	86	81	76
Night 10pm to closing	93	100	100	96	92	91	88	85	80	75

8. Recommendations

8.1 Acoustic screen to southeast

Acoustic screening at the southeast end of the new addition would be required in order to reduce noise levels. The wall should have no significant gaps or holes and have an overall surface density of at least 11kg/m2. Suitable materials may include fibre cement sheet, plywood, perspex, glass or other material.

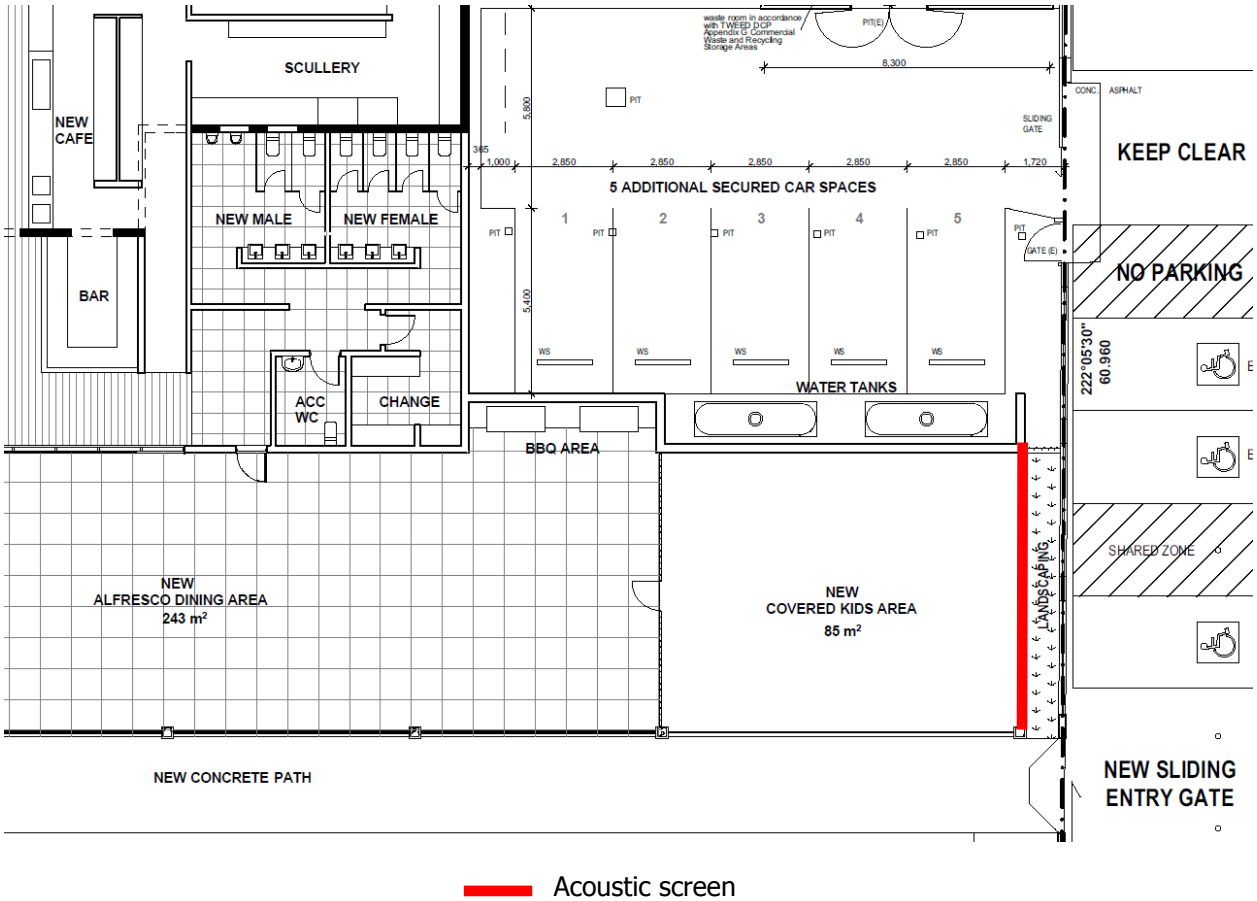
The position of the wall is shown in Figure 4 below.

There are two options for the screen, depending on the presence of other acoustic treatments.

Option 1 – If the ceilings of the covered alfresco and play areas incorporates acoustic absorptive treatment, then the height of the acoustic screen would be a minimum 2400mm.

Option 2 – If the ceilings of the covered alfresco and play areas do not include any acoustic absorptive treatment, then the acoustic screen would need to extend full height to the underside of the ceiling.

Figure 4: Location of acoustic screen



8.2 Acoustic absorptive treatments

It is recommended that acoustic absorptive treatment is incorporated into the ceilings of the external covered areas and the available wall areas. The treatment should cover all indicated areas where possible, while allowing for lighting, fans, HVAC and EWIS systems etc. The areas are shown on the following markups;

Figure 5: Recommended area for absorptive linings - ceiling

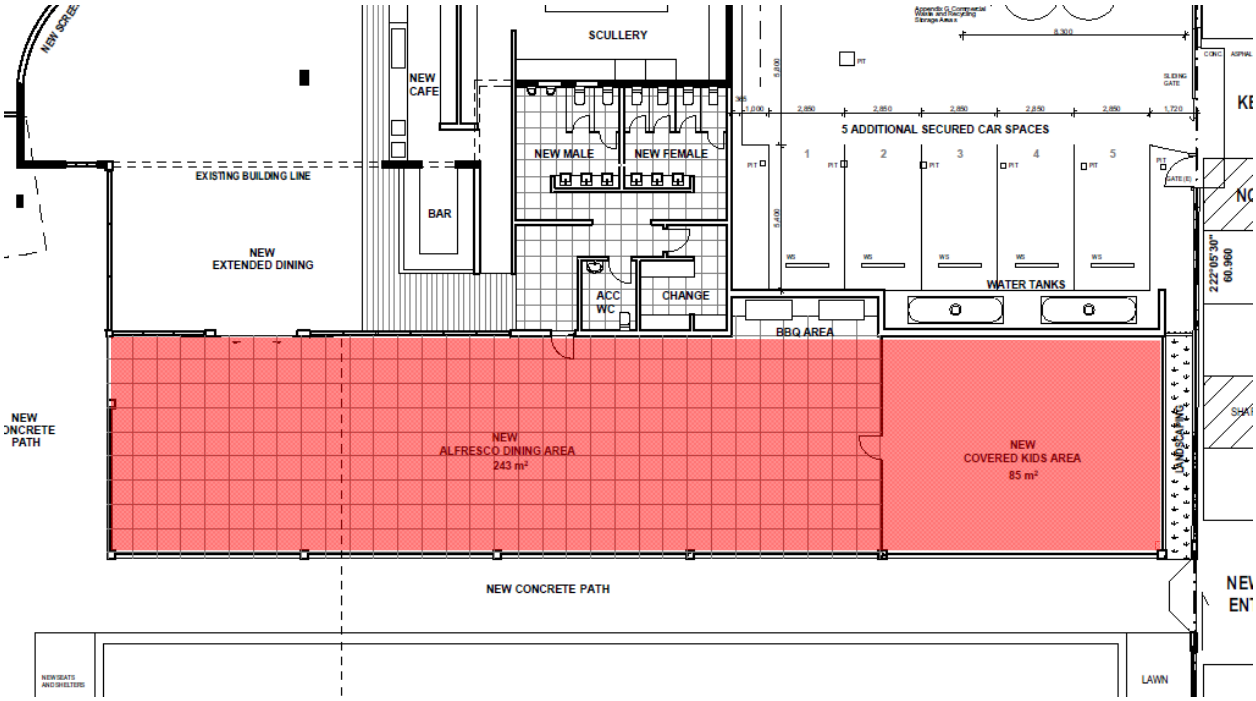
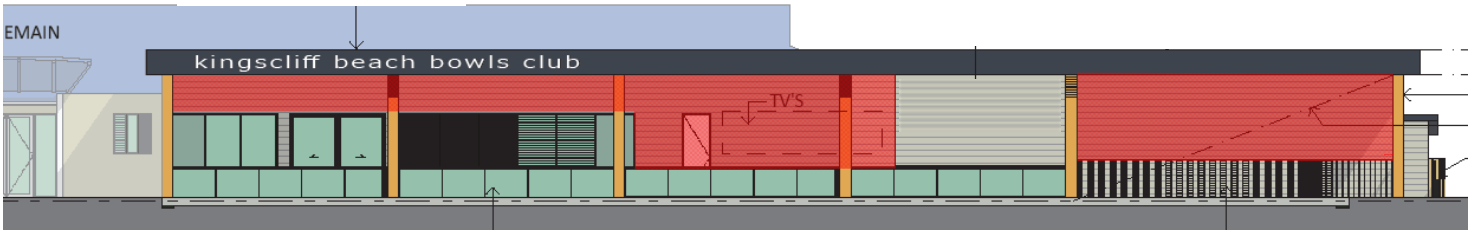


Figure 6: Recommended area for absorptive linings - walls



Areas for acoustic absorptive linings

The acoustic treatments for the walls should extend from a height of 1.4m above floor level to the underside of ceiling level. The BBQ area is not recommended for acoustic lining due to potential ongoing maintenance issues.

The acoustic treatment for the ceiling should ideally provide a minimum 0.8 NRC (Noise Reduction Coefficient) or greater. The walls would require minimum 0.7 NRC. In terms of individual frequency bands, the following minimum absorption per square metre would be required;

Table 13: Approximate absorptive treatment performance

Description	Octave Band Centre Frequency (Hz) Absorption per square metre (metric Sabins)						
	125	250	500	1k	2k	4k	8k
Ceiling	0.15	0.45	0.80	0.85	0.85	0.75	0.65
Wall	0.10	0.35	0.70	0.75	0.75	0.65	0.55

For composite systems, these figures are based on the total performance of the system (infill plus face material).

Recommended treatments may include commercial products, and-or 'in-principle' acoustic designs. Commercial options are those that are available off-the-shelf from acoustic companies. In-principle designs are acoustic treatments that can be constructed from scratch using widely available building products.

In-principle designs include (but not limited to);

- Slotted timber or slats with insulation behind.
- Perforated corrugated metal (such as Stramit Corrugated, Lysaght/ Bluescope, Renhurst Ripplesound, Renhurst Rippletone) with 50mm insulation behind. The nominal percentage of open area should be 11% or greater, assuming the required NRC value is satisfied.
- Perforated fibre cement sheet with 50mm insulation behind. The nominal percentage of open area should be 11% or greater, assuming the required NRC value is satisfied.

Commercial options may include (but not limited to) systems by;

- Autex
- Sontext
- Supawood
- Décor Systems
- Himmel
- CSR Martini

8.3 Audio-visual source noise levels

The calculated noise limits for external AV systems are expected to be conservative for the following reasons;

- The calculations assume crowd noise will continuously be at the theoretical maximum, which in itself tends to overestimate crowd noise levels for an outdoor gathering of small groups of people spread over a considerable area.
- The criteria at Receiver 2 Kingscliff Beach Holiday Park are based on the background noise levels assessed at Marine Parade. In practice the background noise levels at Receiver 2 will be higher than Receiver 1 due to the proximity of the holiday cabins to the surf noise. An increase of up to 3dB could be expected.

In order to avoid attracting additional penalties due to noise character, it is recommended to avoid full frequency range AV systems, or more specifically which include large low-frequency speaker drivers and/or subwoofers.

Taking into account the information above, the recommended allowable source sound power levels for external AV systems would be as follows;

Table 14: Recommended external AV source sound power levels

Time period	Overall SWL dBA	AV source Lw_{10} dB Octave band centre frequency Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
Day opening to 6pm	96	87	94	94	96	95	92	89	87	84
Evening 6pm to 10pm	91	82	89	89	91	90	87	84	82	79
Night 10pm to closing	90	81	88	88	90	89	86	83	81	78

If the location of the AV systems changes, or additional attenuation is provided, these noise limits may increase or decrease proportionally.

8.4 Mechanical plant

Any additional generators or other plant must be selected and positioned in order to minimise noise impacts to the residential receivers. All noise from mechanical plant must satisfy the relevant noise criteria when assessed at the receiver locations.

8.5 Noise management plan

A noise management plan has been prepared and is attached in the Appendices.

9. Conclusion

An environmental noise assessment was conducted for the proposed additions at Kingscliff Beach Bowls Club Marine Parade Kingscliff.

Providing that the recommendations are implemented, it is our opinion that the noise will be at a level expected to satisfy the relevant criteria and is not expected to significantly affect amenity at the residential receiver locations.

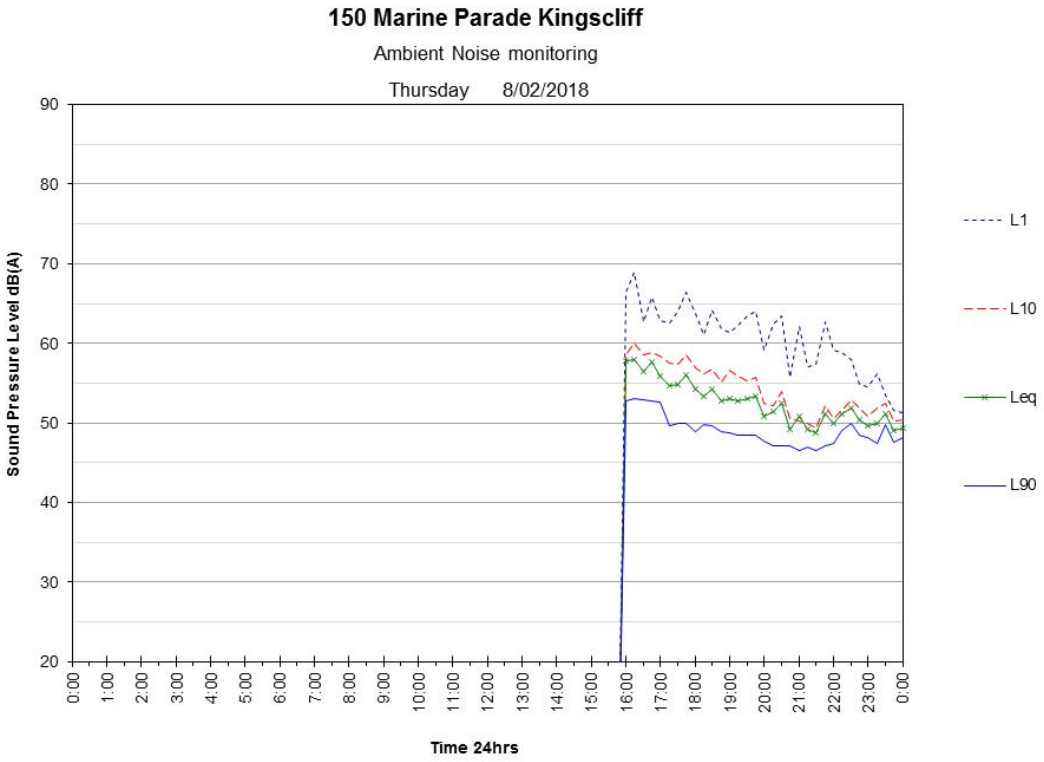
If you should have any queries please do not hesitate to contact us.

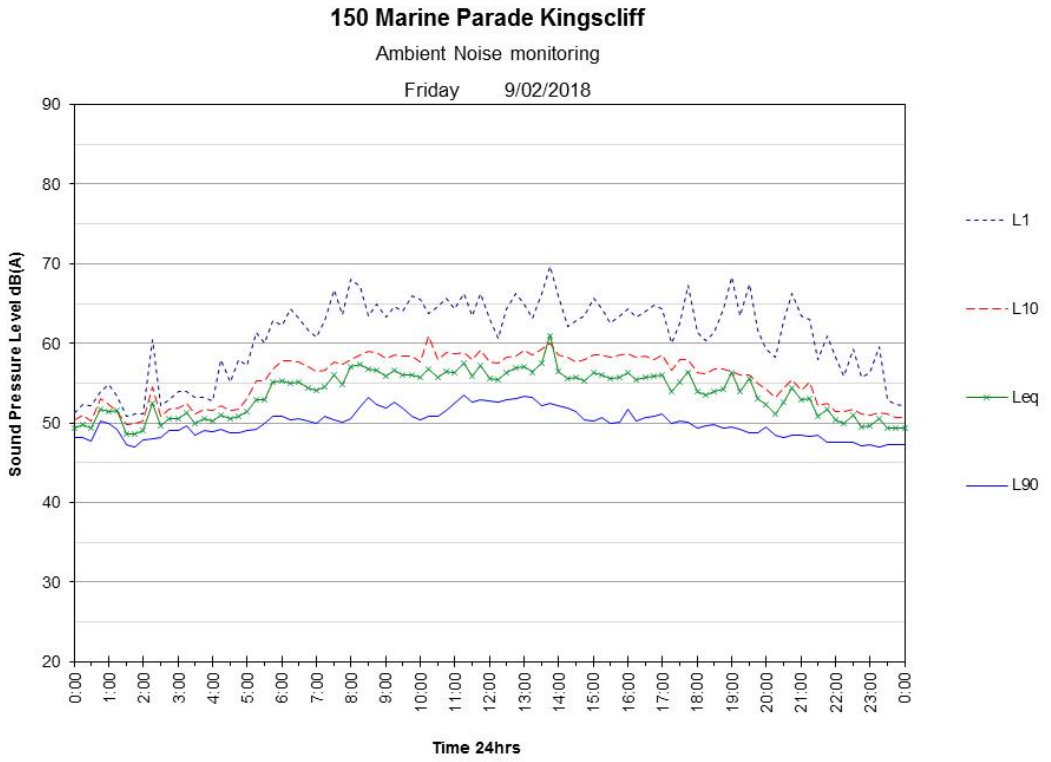
Report Compiled by:

Mark Enersen BSc MAAS
Director
acousticworks)))

10. Appendices

10.1 Noise Monitoring Charts

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Ambient Noise monitoring
Friday 9/02/2018
Sound Pressure Level dB(A)
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
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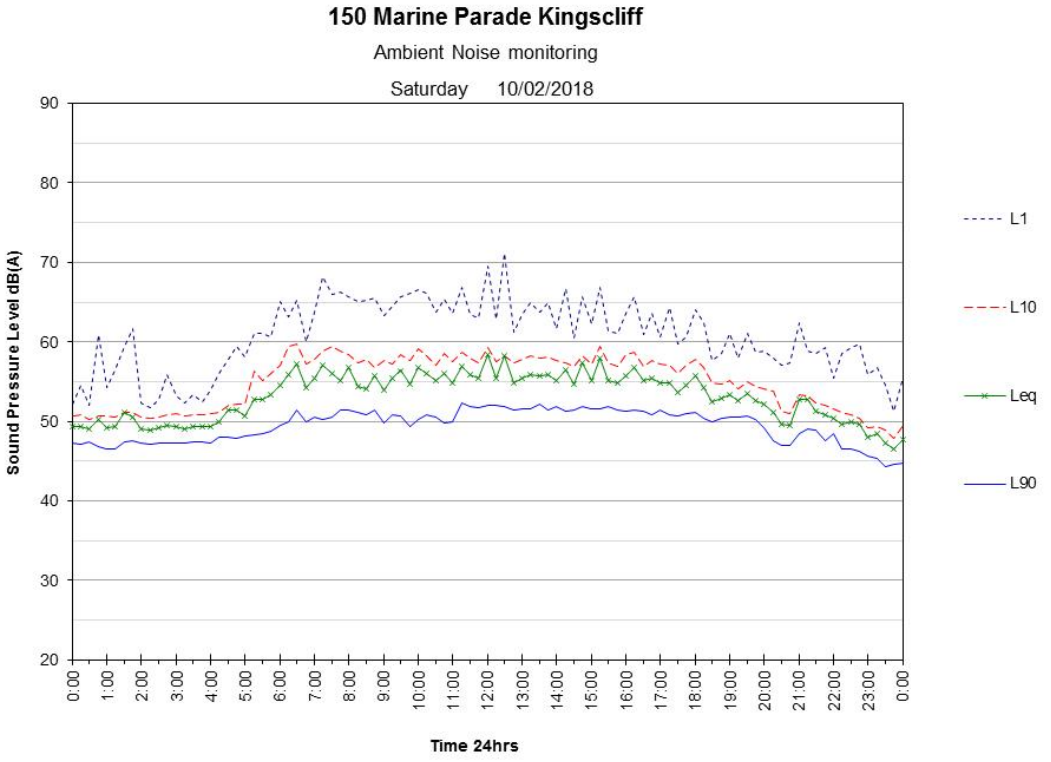
0:00
Time 24hrs
L1
L10
Leq
L90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Ambient Noise monitoring
Saturday 10/02/2018
Sound Pressure Level dB(A)
90
80
70
60
50
40
30
20
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2:00
3:00
4:00
5:00
6:00
7:00
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13:00
14:00
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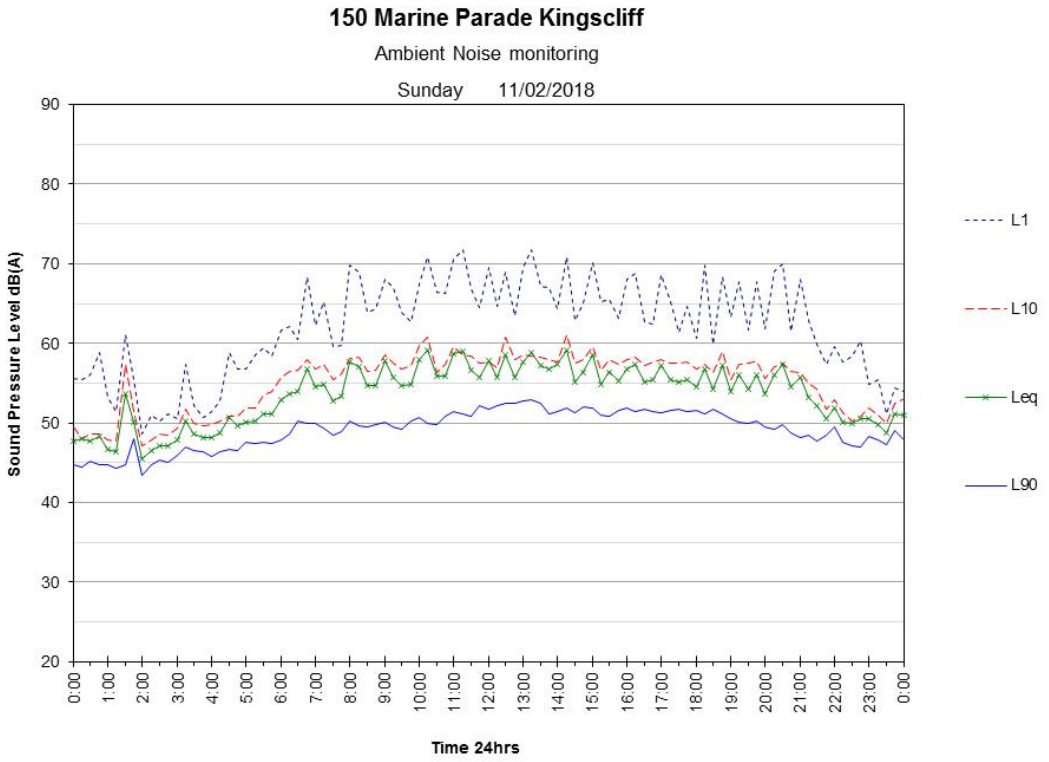
0:00
Time 24hrs
L1
L10
Leq
L90


150 Marine Parade Kingscliff
Ambient Noise monitoring
Sunday 11/02/2018
Sound Pressure Level dB(A)
90
80
70
60
50
40
30
20
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2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
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13:00
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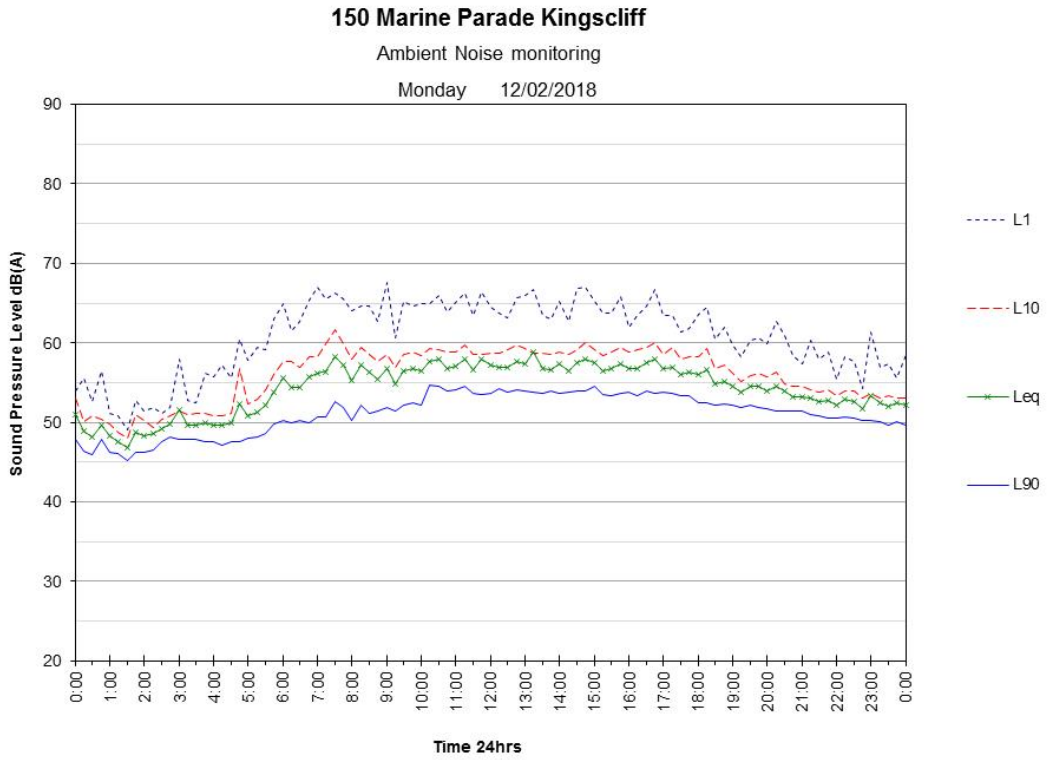
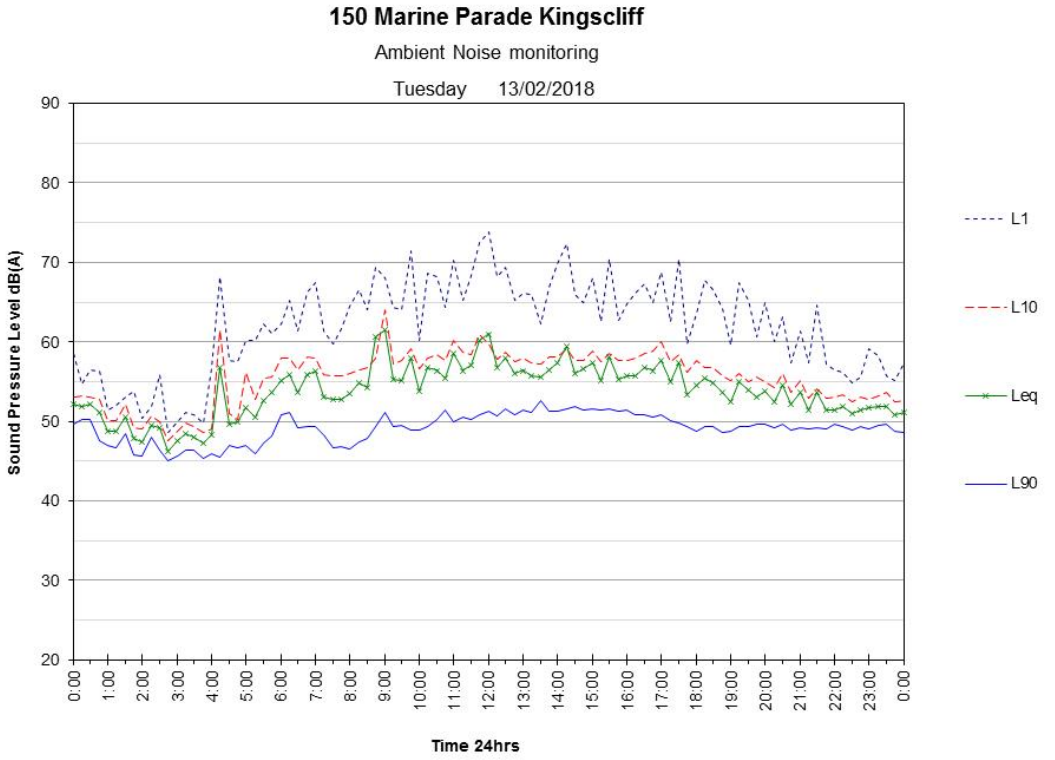
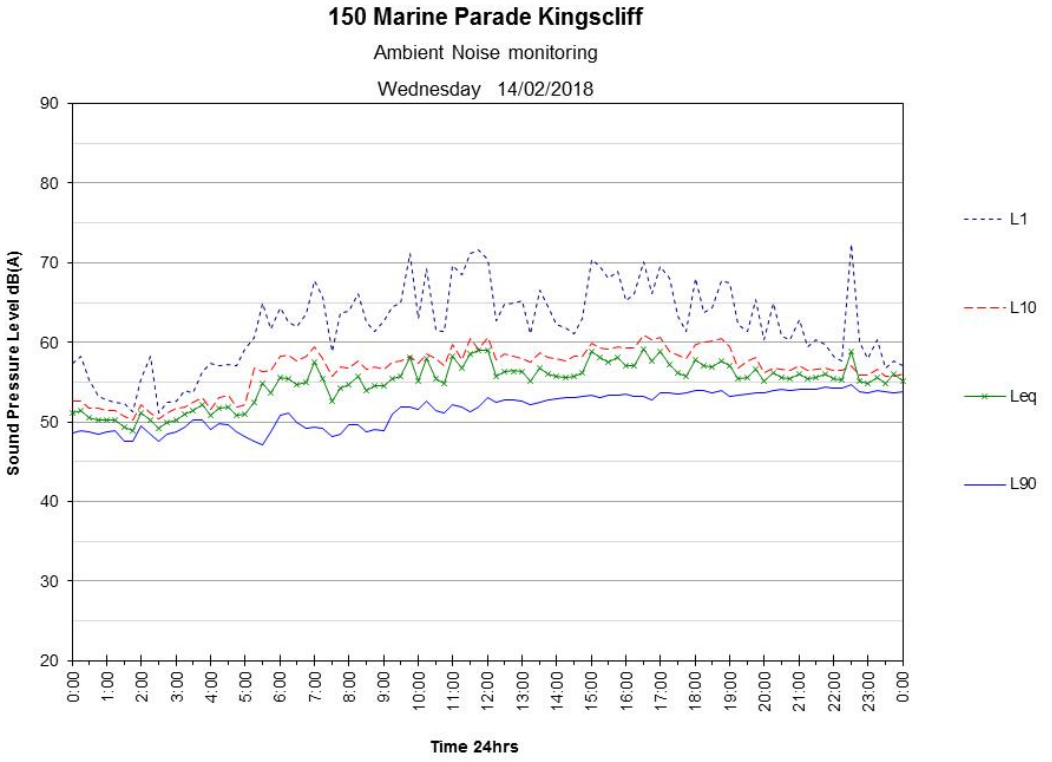
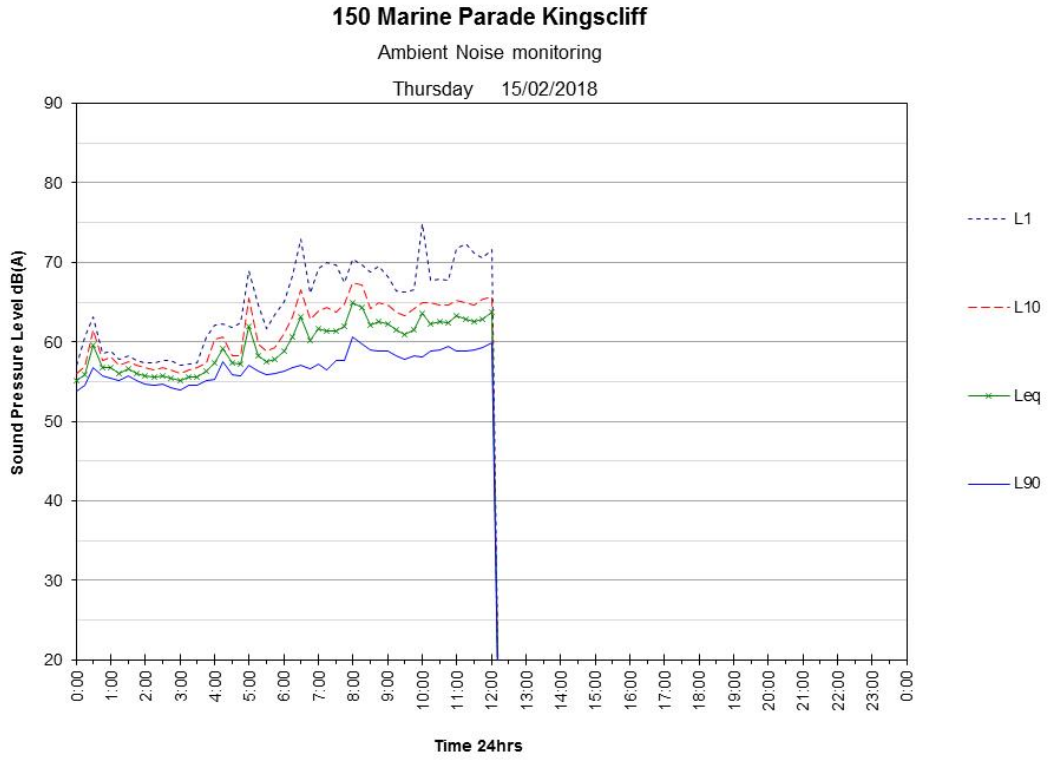
Time 24hrs
L1
L10
Leq
L90


150 Marine Parade Kingscliff
Ambient Noise monitoring
Monday 12/02/2018
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90


150 Marine Parade Kingscliff
Ambient Noise monitoring
Tuesday 13/02/2018
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90


150 Marine Parade Kingscliff
Ambient Noise monitoring
Wednesday 14/02/2018
Sound Pressure Level dB(A)
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time 24hrs
L1
L10
Leq
L90


150 Marine Parade Kingscliff
Ambient Noise monitoring
Thursday 15/02/2018
Sound Pressure Level dB(A)
90
80
70
60
50
40
30
20
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Time 24hrs
L1
L10
Leq
L90

10.2 Noise Management Plan

The overall aim of the noise management plan is to provide a program of actions and practices to minimise potential noise annoyance associated with the operations.

Site management are to elect a "Responsible Person" who is responsible for implementation of the Noise Management Plan to ensure the aims and objectives are achieved. The "Responsible Person" should ensure actions are being carried out by management, staff and subcontractors and that it is reviewed as appropriate.

Where possible, performance indicators should be used to ensure noise annoyance from the presmises is minimised. The most apparent performance indicator is the number of complaints made with regards to noise annoyance.

The effectiveness and time spent to act and remediate noise issues, if complaints are made, is also considered a performance indicator.

The "Responsible Person" should also document any comments by others on the performance of the Noise Management Plan and provide his/her own performance overview during any future reviews of the plan.

The various elements, aims and actions of the noise management plan are as follows;

10.2.1 General activities

Element	Operation
Aim	To limit the times of potential noise emissions
Action	Hours of operation for Kingscliff Beach Bowls Club are as follows: Monday: 9:30am – 9:30pm Tuesday: 10:00am – 10:00pm Wednesday: 10:00am – 10:00pm Thursday: 10:00am – 10:30pm Friday: 9:30am – 11:30pm Saturday: 9:00am – 11:30pm Sunday: 8:00am – 9:30pm The children's area will operate until closing time of the Bistro, expected to be no later than 9pm on any given evening.

10.2.2 Implementation of Management Plan

Element	Responsible Person
Aim	Provide a personnel contact for the Noise Management Plan
Action	The co-ordinator is to elect a "Responsible Person" who is onsite during operating hours and who has sufficient time and authority to implement the management plan. The Responsible Person will be required to receive, document and respond in an appropriate manner to complaints made against the venue with regards to noise. The Responsible Person is to keep record of performance indicators and feedback from management, staff, subcontractors and adjacent noise receivers as appropriate. The person would also be responsible for documenting changes/modifications to the Noise Management Plan.

10.2.3 Active Involvement

Element	Consistency of implementation
Aim	All management, staff and sub-contractors actively support and implement the noise management plan.
Action	The management, staff and Responsible Person should show active support and implementation for the management plan so that all are aware of the importance of the plan. Notify staff and subcontractors of the importance of the management plan. Actions and practices of the management plan, where relevant, should also be placed in appropriate locations. The Responsible Person is to implement the notification of staff and subcontractors with respect to the Noise Management Plan.

10.2.4 Complaints

Element	Response to complaints
Aim	Provide a friendly and immediate response to complaints.
Action	Occupants of nearby dwellings in Marine Parade and the management of tourist accommodation in Kingscliff Beach Holiday Park should be provided with a telephone number for the "Responsible Person" in the event of a noise complaint. If a complaint is made, the "Responsible Person" responds in an appropriate and friendly manner and investigates the source of the complaint, and takes action to rectify, if it is reasonable complaint. The "Responsible Person" maintains a record of complaints, which records the following details (refer to the example noise complaint record sheet): -The time and date of lodgement of the complaint; -The name and telephone number of the complainant; -The nature of the complaint, including a description of the noise (e.g. likely noise source, duration of the noise - is the noise continuous, or of a short duration, or from one specific act); If a large number of complaints are received, further investigation by a qualified acoustical consultant may be necessary to determine if the complaint is bona-fide (i.e. noise is occurring beyond the limits set out in the approved acoustic assessment), and if so, recommend noise controls to achieve the approved noise limits. In cases where a compliant has been determined to be bona-fide, the "Responsible Person" should contact the complainant (if the complainant wishes) to advise on noise control measures, if any, adopted to reduce the noise impact. The noise control measures may include behavioural or physical, or a combination of the two.

10.2.5 Mechanical plant

Element	Equipment including generators
Aim	Ensure equipment does not cause annoyance to noise sensitive receivers.
Action	All onsite mechanical plant must be designed and installed to comply with Tweed Shire Council and state noise requirements. Portable generators must be chosen for low noise abilities and positioned as far away from residential properties as possible.

10.2.6 Review and modification of plan

Element	Schedule for the Review Process
Aim	To review the incidents/ complaints register and to ensure the Noise Management Plan remains relevant to the operations/activities of the festival.
Action	Management is to review the incident/complaints register at the completion of the first day of the festival and determine any common or recurring issues to be addressed. The plan should be reviewed if processes or activities onsite are changed/modified or new activities are introduced. The plan should also be reviewed if noise complaints are being made with regards to a single activity or type of noisy activity occurring onsite. Document all changes/modifications to the Noise Management Plan.