

SOMA MUSIC & ARTS ACOUSTIC REPORT Rp 001 20250260 | 1 May 2025



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EXECUTIVE SUMMARY

Soma Music & Arts (Soma Event) is a 3-day music, camping and arts event, proposed to be held at a property located approximately 16 km north-west of the township of Adelong and within the Snowy Valleys Council local government area (LGA).

The musical programming of the event is expected to cover a wide range of genres, in the form of live bands, DJ's and live electronic music.

A development application (DA) is planned to be lodged with Snowy Valleys Council (SVC), which proposes the use of the property at 3892 Snowy Mountains Highway, Mount Adrah, to stage the Soma Event.

Soma - the proponents of the Soma Event - have engaged Marshall Day Acoustics Pty Ltd (MDA) to prepare an acoustic report to be submitted in support of the Event Proposal, at the request of SVC.

This acoustic report includes:

- A review of relevant planning documents and best-practice industry guidance for outdoor music events in rural environments.
- The development of Event-specific noise objectives established based on the outcomes of the review.
- A method for the prediction of music noise related to the Soma Event.
- Predicted noise levels at nearby residential receiver locations.
- Discussion with respect to the predicted noise levels and noise objectives.

The report also details the implementation of a noise management strategy, which incorporates both the natural topography of the site and modern directional loudspeaker technology. The main stage has been positioned within a natural amphitheatre, allowing for significant acoustic shielding from surrounding landforms. These passive controls are paired with sound system design strategies to limit noise propagation to nearby sensitive receivers.

Noise modelling was carried out adopting generally conservative assumptions and an iterative modelling process, allowing for the progressive evaluation of noise management efficacy. The results show that noise levels at all assessed receiver locations are predicted to be below the Event-specific noise objectives.

These findings confirm that the Event can be conducted in a manner that allows for a satisfactory auditory experience for the audience, while minimising the noise levels at receiver locations. The Soma Event proponents have also committed to ongoing community consultation to ensure that potential concerns—particularly with respect to noise—are appropriately considered in the lead-up to the Soma Event.

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1.0 INTRODUCTION

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The musical programming of the event is expected to cover a wide range of genres, in the form of live bands, DJ's and live electronic music.

A development application (DA) is planned to be lodged with Snowy Valleys Council (SVC), which proposes the use of the property at 3892 Snowy Mountains Highway, Mount Adrah, to stage the Soma Event.

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This report includes:

- A review of relevant planning documents and best-practice industry guidance for outdoor music events in rural environments.
- The development of Event-specific noise objectives established based on the outcomes of the review.
- A method for the prediction of music noise related to the Event.
- Predicted noise levels at nearby residential receiver locations.
- Discussion with respect to the predicted noise levels and noise objectives.

The predicted noise levels included within this report are intended to assist SVC in determining the appropriateness of the Soma Event DA in the context of a short-term, temporary event. They are not intended to provide an assessment of compliance with regulatory limits, as such limits do not exist.

This acoustic report considers only the primary source of noise associated with the Soma Event, being music noise. Other sources of potential noise such as traffic or construction will be much lower in absolute terms and do not warrant specific consideration within this assessment.



2.0 EVENT DETAILS

2.1 Site and surrounds

The Soma Event will be held at 3892 Snowy Mountains Highway, Mount Adrah NSW (Event Property), approximately 16 km north-west of the township of Adelong and within the Snowy Valleys Council local government area (LGA).

The Event Property and neighbouring properties primarily consist of agricultural land used for livestock grazing and are zoned RU1 - Primary Production.

2.2 The Soma Event

The Soma Event is proposed to operate over 3 days and nights from 7 to 10 November 2025.

The Soma Event DA proposes for up to 1,100 people to attend the event, including patrons, staff, volunteers and performers.

Access to the Event Property for event traffic will be directly from the Snowy Mountains Highway.

Gates will open to ticket holders at 12:00 on Friday 7 November, with a requirement to vacate the Event Property by 17:00 on Monday 10 November.

There will be one stage operating during the Soma Event, featuring music across a wide range of genres, including live bands, live electronic music and DJs.

The event stage is located within the Event Property, approximately 1.6 km from the Snowy Mountains Highway, in an area free of permanent structures or agricultural infrastructure (Event Stage).

The Event Stage will operate with amplified music during the following periods:

- 16:00 Friday 7 November to 04:00 Saturday 8 November
- 11:00 Saturday 8 November to 05:00 Sunday 9 November
- 11:00 Sunday 9 November to 01:00 Monday 10 November

Intermittent periods of amplified music will also occur outside these hours to allow for sound system setup, tuning and soundchecks (at lower than performance levels). It is expected that this will be limited to:

- The afternoon of Thursday 6 November
- 09:00 to 11:00 on both Saturday 8 November and Sunday 9 November.

2.3 Residential receivers

Residential receivers located within 3 km of the Event Stage have been identified by Soma and provided to MDA in GIS format. The identified receivers are listed in Table 1 and presented graphically in Figure 1.

Receiver ID	Address	Approx. distance to Event Stage, km
R1	3624 Snowy Mountains Highway, Mount Adrah	1.6
R2 ª	3892 Snowy Mountains Highway, Mount Adrah	1.4
R3	N/A	1.9
R4	3998 Snowy Mountains Highway, Mount Adrah	2.4

Table 1: Residential receivers within 3 km of the Event Stage

a R2 has been identified by Soma as the Event Property owner and is therefore not considered further within this assessment.





Figure 1: Noise sensitive receivers in relation to the Event Stage

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3.0 ASSESSMENT CONSIDERATIONS

Outdoor music events typically result in the propagation of music noise into the surrounding area.

In rural settings, such as the Event Property and surrounding area, the potential for widespread noise impact is generally reduced due to the lower density of residential properties and typically greater separation distances.

In assessing noise from such events, it is necessary to balance the delivery of a satisfactory auditory experience for event stakeholders while minimising the risk of adverse noise impact to nearby receivers. Currently, there is no consistent or standardised approach in New South Wales, or more broadly in Australia, for establishing noise objectives for outdoor music events. It is typical for noise objectives to be determined on a case-by-case basis by the relevant consent authority, as the factors influencing noise impact are highly site and event-specific,

SVC has not provided any specific requirements or reference documents to Soma in relation to the requested noise assessment approach. In the absence of specific direction, MDA has reviewed a range of guidelines, policies, and industry research related to outdoor music event noise assessment. This review has been conducted to inform the development of an assessment method and noise objectives with reference to the specific circumstances of the Soma Event.

The findings of this review are outlined in the following sections.

3.1 Relevant documents

3.1.1 Snowy Valleys Council

The SVC DCP includes general provisions related to the management of noise associated with new developments. Specific guidance regarding the assessment or management of noise emissions from outdoor music events proposed within the LGA is not provided.¹

3.1.2 Noise Guide for Local Government

The NSW EPA NGLG includes guidance for the control of noise from outdoor entertainment activities to assist local councils to respond to noise complaints from the surrounding residential community.²

The guideline documents an approach to manage adverse noise impacts but does not suggest any quantitative criteria or noise objectives.

The NGLG recognises that:

It may not be possible to manage noise through a general noise limit for outdoor entertainment events in all circumstances. The appropriate noise limit (if indeed a noise limit is necessary) will depend on the particular circumstances of the venue and the type of entertainment event. Unless the venue is very remote, it is unlikely that a noise limits to prevent annoyance at every neighbouring residence is possible. However, setting a noise limit can prevent the noise levels emitted from an event from being any higher than necessary. Noise limits will need to be site-specific and reflect what is achievable in practice, without overly restricting the ability of an event to proceed. These considerations have to be balanced against the reasonable expectations of residents not to be subjected to 'offensive noise'.

In addition, the intrusive character of low frequency sound is highlighted and the need to apply a low frequency objective considered desirable.

¹ Snowy Valleys Council, *Snowy Valleys Development Control Plan 2024*, dated 2 January 2024 (SVC DCP)

² NSW EPA, Noise Guide for Local Government, dated January 2023 (NGLG)



3.1.3 Noise Policy for Industry

The NSW EPA NPfI provides a framework and process for deriving noise criteria for consents and licences that enable the EPA to regulate premises that are scheduled under the *Protection of the Environment Operations Act 1997*.³ This would typically comprise larger scale developments that are industrial in nature.

The NPfI is not intended to be applied in the assessment of smaller developments and noise sources regulated by local government. It also specifically states:

The policy does not apply to:

•••

• amplified music/patron noise from premises including those licensed by Liquor and Gaming NSW.

On this basis, the NPfI is not considered relevant for the assessment of noise from the Soma Event.

3.2 Event-specific noise objectives

As discussed in Section 3.0, regulation of noise from outdoor music events in Australia has typically been developed on a case-by-case basis by local councils, in response to community expectations and without consistent standards across jurisdictions. Research conducted by Parnell & Sommer reviewed these regulatory practices, highlighting that while ad hoc approaches were common, more formalised noise objectives have now been developed for some major event venues.⁴

The Parnell & Sommer Paper summarises a variety of established approaches for the management of outdoor music event noise impact. For context, these have been reproduced below.

3.2.1 UK events

For the majority of venues in the UK and Ireland, an external noise limit of 75 dB L_{Aeq} applies at the receiver, without any limit on the low frequency content. The UK and Ireland noise objectives summarised in the Parnell & Sommer Paper are reproduced in Table 2.

³ NSW EPA, *Noise Policy for Industry*, dated October 2017 (NPfl)

⁴ Parnell, J & Sommer, R Setting noise objectives for outdoor music festivals in rural locations Australian Acoustical Society Conference Proceedings Acoustics 2018 (Parnell & Sommer Paper)



Venue	Internal criteria	External criteria	Low Frequency Limit
Lancashire County Cricket Club	None	80	No
Heaton Park, Manchester	None	80	No
Hyde Park, London	None	75	No
Victoria Park	None	75	No
RDS Showground, Dublin	None	75	No
Twickenham Stadium	None	75	No
Hampden Park, Glasgow	None	75	No
Don Valley, Sheffield	None	75	No
Portman Road, Ipswich	None	75	No
Madejski Stadium, Reading	None	75	No
St Marys, Southampton	None	75	No
Rosebowl, Southampton	None	75	No
Stadium of Light, Sunderland	None	75	No

Table 2: UK & Ireland stadia & event location noise objectives, dB LAeq (Source: Parnell & Sommer Paper)

3.2.2 NSW events

A summary of noise objectives for major venues in Sydney is reproduced in Table 3.

Table 3: Criteria for major NSW event venues (Source: Parnell & Sommer Paper)

Location and guiding policy	Noise objectives at receivers
Centennial Park and Moore Park	8 events pa. of up to 4 days between 10:00 and 22:30
(Prevention Notice No.1)	Must not exceed 65 dB L_{Amax} / 85 dB L_{Cmax}
Sydney Cricket Ground/Sydney Football Stadium	4 concerts pa. up to 3 hrs between 10:00 and 22:30
(Prevention Notice No.2)	For the SCG/SFS
	L _{Amax} must not exceed 70 dB (SCG)/80 dB (SFS)
	L _{Cmax} must not exceed 90 dB (SCG)/100 dB (SFS)
Sydney Olympic Park	85 dB L _{A10}
(Sydney Olympic Park Authority Act 2001)	



3.2.3 Other states

Elsewhere in Australia a variety of noise indices have been adopted. Generally, objectives ranging between 55 - 70 dB L_{Aeq} and/or 65 - 80 dB L_{Amax} apply, with specific objectives on low frequency in some instances. A summary of noise objectives is reproduced in Table 4.

State	Guiding policy	Event times	Noise objectives at receivers
Queensland	Environmental Protection Act	07:00 - 22:00	70 dB L _{Aeq}
		22:00-00:00	50 dB L_{Aeq} or background + 10 dB
Brisbane	BCC Local Law Policy (Entertainment Venues and Events)	On a case-by- case basis	55 dB L _{Aeq} / 70 dB L _{A10} FoH: 95 dB L _{Aeq} to 100 dB L _{Aeq} 105 dB L _{Aeq, 63 Hz}
Victoria	State Environment Protection Policy (Control of Music Noise from Public Premises) No. N-2	Til 23:00 22:00 if > 5 hrs Other hours	65 dB L _{Aeq} Council criteria applies
Western Australia	Environmental Protection (Noise) Regulations (Not applicable to approved non-conforming events)	07:00 – 19:00	65 dB L _{Aeq}

Table 4: Criteria for major Australian event venues (Source: Parnell & Sommer Paper)

3.2.4 North Byron Parklands Cultural Events Site

The focus of the Parnell & Sommer Paper is the established approach to noise management at a permanent event site located to the north of Byron Bay.

The North Byron Parklands Cultural Events Site (North Byron Parklands) is located in the Yelgun Valley within the Byron Shire Council LGA. The site hosts events on up to 20 days a year. In addition to the two major annual events (Splendour in the Grass and Falls Festival – each held over 5 days and catering for up to 50,000 and 35,000 patrons per day, respectively), it is the venue for several additional outdoor events including:

- Three medium event days annually for other music concerts or cultural events, catering for up to 25,000 patrons per event day.
- Five small community event days, catering for up to 5,000 patrons per event day.
- Two minor community event days, catering for up to 1,500 patrons per event day.

The surrounding area features a significant number of residential receivers, with the townships of Crabbes Creek, Yelgun, Wooyung and South Golden Beach all within 3 km of the North Byron Parklands boundary.

The initial criteria applied to the site was based around the procedures documented in the NSW INP and involved limiting emissions relative to background noise levels. A modification was applied to the standard 'background + 5 dB' approach documented within the INP to account for the short-term duration of the event, with a 'background + 10 dB' adjustment adopted to determine the applicable noise criteria.⁵

⁵ NSW EPA, Industrial Noise Policy, dated January 2000 (INP)



Background noise levels in rural environments can vary significantly between assessment locations and will regularly fall below 30 dB during low-noise environmental conditions. This means that the on-site noise objective required to meet the 'background + 10 dB' criterion would be unreasonably low and impracticable for an outdoor music event that seeks to provide a quality experience for event stakeholders.

In addition, by adopting a noise objective based solely on A-weighted overall levels, no specific consideration of low-frequency noise levels was included.

To better manage noise impacts from the site, alternative noise objectives were developed following a detailed acoustic monitoring program and assessment of data and site observations. The alternative and realistic noise objectives were based on the following three key considerations:

- The noise impact that would be acceptable to residents for a temporary music event.
- The noise level of music required to ensure a satisfactory patron experience.
- The opportunities and constraints of the site including resident locations.

The noise limits – corresponding with the approved hours of operation specified in the Parklands Development Consent - developed for North Byron Parklands and approved by the NSW Department of Planning & Environment for the assessment of outdoor music noise are documented in Table 2.2 of the Parklands NMP and have been reproduced in Table 5.⁶

Location	11:00 to 00:00		00:00 to 02:00	
_	LAeq 10 min	Leq 63 Hz 10 min	LAeq 10 min	Leq 63 Hz 10 min
Zone 1	60	70	45	60
Zone 2	55	65	45	55

Table 5: Parklands NMP noise limits, dB

The $L_{eq. 10 min}$ was considered the most reliable metric for noise assessment since it is less prone to influence by nearby extraneous noise and allows for a quick response (where required).

It should be noted that prior to the development of the alternative noise objectives, events at North Byron Parklands were subject to noise complaints. Following a trial of the alternate noise objectives for a 2016 event, noise complaints were reduced by more than 80% compared to previous years. According to Parnell & Sommer, some of the residual complaints were found to be unsubstantiated or hoax and achieving zero complaints could not be expected.

3.3 Soma Event noise objectives

The noise limits outlined in the Parklands NMP were developed with the aim of minimising noise impacts on the surrounding community, while still ensuring an acceptable auditory experience for event stakeholders. This same balance must be struck when determining noise objectives for the Soma Event, however, there are significant differences between North Byron Parklands and the Soma Event that should be considered.

A comparison of the key differences between North Byron Parklands and the Soma Event is presented in Table 6. These include fundamental differences in capacity (with the Soma Event accommodating less than 2% of the capacity of Parklands – corresponding with a minor event day under the North Byron Parklands event categories), a significantly smaller stage configuration, single

⁶ Air Noise Environment, North Byron Parklands Noise Management Plan dated March 2023 (Parklands NMP) State Significant Development SSD 8169 Development Consent dated 13 March 2019 (Parklands Development Consent)



event frequency, and a significantly lower number of surrounding residential receivers. In totality, these factors are expected to reduce the likelihood and extent of noise impacts at the Soma Event compared to events at North Byron Parklands.

Item	North Byron Parklands	Soma Event
Capacity	Up to 57,850 including staff	Up to 1,100 including staff
Stage configuration	Up to 18 stages or other areas with amplified music	One stage
Event frequency	Up to 20 event days per year	3 event days in a year
Event duration	Up to 5 event days	3 event days in a year
Surrounding environment	Significant number of residential receivers including several townships within 3 km	3 residential receivers within 3 km
Operating hours	11:00 to 02:00	09:00 to 05:00

Table 6: Comparison of key differences between North Byron Parklands and the Soma Event

As detailed in the Parnell & Sommer Paper, the adoption of the Parklands NMP noise limits has led to a significant reduction in noise complaints, without limiting the event's ability to meet stakeholder expectations. This indicates that the noise limits have generally been successful. On this basis consideration of the Parklands NMP noise limits as potential noise objectives for the Soma Event may be reasonable.

Such an approach would apply standards designed for a much larger and more extensive event environment (both in duration and frequency) to the significantly smaller scale Soma Event, located in a much less densely populated area. This approach attempts to protect amenity for the community, while also providing Soma, and other stakeholders, with technically robust, and practically achievable noise objectives.

Recognising the disparity between the operation of the Soma Event and the North Byron Parklands, it is initially proposed to consider Zone 1 noise limits as noise objectives.

It is noted that although the Parklands NMP noise objectives are limited to the approved hours of operation within the Parklands Development Consent, Soma's proposed hours of operation extend to 05:00. In the absence of specific guidance for events extending past 02:00, it is proposed to extend the 00:00-02:00 criteria to accommodate Soma's later hours. This extension provides practical management of potential noise impacts in the later hours of the night.

Similarly, the 11:00-00:00 criteria are extended 2 hours earlier to 09:00 to allow for sound system setup, tuning and soundchecks.

The noise objectives proposed for the Soma Event are documented in Table 7.

Time Period	LAeq, 10 minute	Leq 10 minute 63 Hz
09:00 to 00:00	60	70
00:00 to 05:00	45	60

Table 7: Soma Event noise objectives (applying at noise sensitive receivers), dB



4.0 NOISE ASSESSMENT

To assess the potential noise impact of the Soma Event on nearby sensitive receivers, MDA has undertaken predictive noise modelling based on the specific operational characteristics of the Event Stage, in the context of the proposed siting within the Event Property. The outcomes of the assessment are based on a comparison of the predicted noise levels with the noise objectives established in Section 3.3. This approach enables an evaluation of expected noise levels associated with the Soma Event under representative conditions and informs holistic design choices for minimising noise impact.

4.1 Predictive noise modelling

4.1.1 Method

A 3D computer model of the site and surrounds has been created in the environmental noise modelling program SoundPLANnoise v9.1 to predict noise levels from the Soma Event at the receivers identified in Table 1. The model has been prepared in accordance with ISO-9613-2.⁷ The noise model enables the calculation of noise levels over a wide area, and accounts for key considerations including site arrangement, terrain and atmospheric conditions.

The ISO 9613-2 standard specifies an engineering method for calculating noise at a known distance from a variety of sources and under meteorological conditions that are favourable to sound propagation. The standard defines favourable conditions as downwind propagation where the noise source propagates from the source to the receiver within an angle of +/-45 degrees from a line connecting the noise source to the receiver, at wind speeds between approximately 1 m/s and 5 m/s, measured at a height of 3 m to 11 m above the ground. The method also accounts for average propagation under a well-developed moderate ground-based thermal inversion.

Accordingly, predictions based on ISO 9613-2 account for the instances when local atmospheric conditions at the site favour the propagation of sound to surrounding receptor locations. Under alternative atmospheric conditions, such as when the wind is blowing from a receiver location towards the Soma Event, the noise levels would be lower than calculated.

To calculate far-field noise levels according to ISO 9613-2, the noise levels of each source are first characterised in the form of octave band acoustic data. A series of octave band attenuation factors are then calculated for a range of effects including but not limited to:

- Geometric divergence (attenuation due to distance)
- Air absorption
- Reflecting obstacles (including terrain)
- Ground reflections

The octave band attenuation factors are then applied to the source acoustic data to determine the corresponding octave band and total calculated noise level at pre-defined receiver locations.

⁷ ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors Part 2: General method of calculation (ISO 9613-2)



The following inputs have been included in the noise model to predict noise levels from the Soma Event:

- Receiver locations based on Soma spatial data and set to 1.5 m height.
- Topographical data with a cell size of 5 m sourced from the Geoscience Australia spatial data source, Elevation Information Service (ELVIS) (shown in Appendix B).8
- Event Stage location and dimensions based on Soma spatial data.
- Original equipment manufacturer (OEM) loudspeaker directivity data.
- Loudspeaker noise source inputs calibrated to a target sound pressure level within the audience area.

The noise model inputs are further discussed in the following sub-sections.

4.1.2 Noise sensitive receivers

As described in Section 2.1, receiver positions have been provided to MDA by Soma in GIS format.

For assessment purposes, receiver positions have been located at the centre of the identified dwellings and set to a height of 1.5 m.

4.1.3 Topography

The topography of the Event Property and surrounds is characterized by steep elevation changes, with numerous ridges and valleys. In order to develop a representative noise model, a high-resolution digital elevation model was sourced from ELVIS.

The data available from ELVIS for the Event Property and surrounds has a 5 m cell size. This resolution allows for a 3-dimensional digital ground model to be developed within SoundPLANnoise to determine the effect of the local topography on the propagation of noise from the Event Stage.

A graphical representation of the topographical data used as an input to the noise model is shown in Appendix B.

4.1.4 Noise sources & sound system characteristics

The primary noise sources associated with the Soma Event are the loudspeakers that make up the front-of-house sound system. Modern loudspeakers exhibit directional characteristics enabling the design of systems that optimise sound coverage within the intended audience area while minimising off-axis sound propagation towards noise sensitive receivers (noise spill).

The proposed sound system configuration, as provided by Soma, includes both mid-high frequency loudspeakers and subwoofer elements. Each loudspeaker has been modelled as an individual point source within SoundPLANnoise, with directivity characteristics imported from OEM datasheets.

Source heights and positions have been incorporated based on information provided by Soma, with the mid-high frequency and subwoofer loudspeaker elements positioned at 4 m and 0.5 m above ground level, respectively.

To reflect the operational conditions of the event, each source has been calibrated to achieve a sound pressure level in the range of 95-100 dB $L_{Aeq, 10 \text{ min}}$ within a targeted audience area. The target audience area ranges from 3.5 m to 15 m from the Event Stage. The target sound pressure levels were established based on consultation with Soma and are consistent with the levels referred to in the Parnell & Sommer Paper as being typically acceptable for a broad range of music genres.

⁸ https://elevation.fsdf.org.au/



In recognition of the low-frequency characteristics of outdoor music events that feature electronic music, octave band spectral corrections have been applied to the source data. These corrections have been derived from measurement datasets obtained by MDA from comparable events and have been used to ensure that the enhanced low frequency content typical of the program material is represented.

Table 8: Representative program material octave band corrections to overall target sound pressure level, dB

Description	63	125	250	500	1000	2000	4000	8000
Spectral correction	+14.1	+2.6	+1.1	-4.9	-8.3	-10.5	-15.9	-21.9

4.2 Holistic acoustic design

Noise control for outdoor music events typically involves a combination of passive and active acoustic design strategies. Consideration of both component and total strategies provides a considered and holistic approach to the acoustic design of the Soma Event.

Collaborative development of the Soma Event design between MDA and Soma, has allowed passive acoustic design benefits offered by the local environment to be maximised, and active acoustic design choices, such as loudspeaker selection to be customised to the specific needs of the site. This approach considers patron satisfaction, i.e. reasonable audience sound levels, and alignment with Soma Event noise objectives.

A key element of the passive acoustic design strategy has been the use of local topography. The stage has been strategically located within a natural amphitheatre that features steep landforms to the north-west and south. These features provide significant physical acoustic shielding between the stage and the receiver locations.

Active design choices include the sound system, which has been designed to complement the natural attenuation of the local topography. The use of modern directional loudspeakers allows for the sound system to be positioned and oriented to focus the sound into the amphitheatre and audience area, minimising noise spill towards the receiver locations.

These design measures have been integrated into the noise model and assessed using iterative noise predictions. Scenario testing was used to demonstrate the relative benefit of each design control. While additional shielding may also be provided by stage infrastructure or temporary structures during the Soma Event, such elements have not been included in the model to allow for a more conservative assessment.

4.3 Predicted noise levels

To demonstrate the effectiveness of the noise control design, MDA has undertaken a series of predictive modelling scenarios that incrementally introduce the noise controls described in Section 4.2. These scenarios are outlined in Table 9

Table 9: Predicted noise level scenarios

	Scenario		
Design control	S1	S2	S3
Topographical shielding	×	×	\checkmark
Loudspeaker directivity	×	\checkmark	\checkmark

These scenarios allow for a comparative assessment of the contribution of each noise control to noise reduction at the receiver locations. Table 10 and Table 11 present the corresponding predicted overall and low-frequency noise levels at the relevant receiver locations. Predicted noise levels below the Soma Event-specific noise objectives shown in Table 7 have been highlighted in green.

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	Scenario				
Receiver ID	S1	S2	S3		
R1	48	40	31		
R3	47	39	29		
R4	44	37	28		

Table 10: Predicted noise levels, dB LAeq 10 min

Table 11:Predicted low-frequency noise levels, dB Leq 63 Hz 10 min

	Scenario		
Receiver ID	S1	S2	\$3
R1	71	66	55
R3	70	65	53
R4	68	62	51

The predicted noise levels shown in Table 10 and Table 11 demonstrate that the passive and active acoustic design strategies described in Section 4.2 provide effective management of music noise levels at the receiver locations.

Notably, the predicted overall and low-frequency noise levels associated with Scenario 3 (S3) of the Soma Event are below both the Zone 1 noise limits from the Parklands NMP (adopted as the proposed Soma Event noise objectives) and the more stringent Zone 2 Parklands NMP noise limits (refer Table 5).

For additional context, a graphical representation of the predicted noise levels associated with S3 is provided in Appendix C.

5.0 CONCLUSION

This report presents an assessment of music noise associated with the proposed Soma Event based on a review of reference documentation and best-practice industry guidance for outdoor music events in rural settings. Noise objectives specific to the Soma Event have been proposed with reference to this guidance and form the basis for evaluating potential noise impacts at nearby sensitive receivers.

Predictive noise modelling has been undertaken using representative assumptions regarding the operational characteristics of the Soma Event, including allowances for the enhanced low-frequency content typical of the anticipated music program.

The modelling demonstrates that the Soma Event has been designed to deliver a satisfactory auditory experience for attendees while maintaining noise levels lower i.e. better, than the proposed noise objectives at all assessed receiver locations. This outcome has been achieved through the integration of holistic passive and active acoustic design, including the strategic use of topography and deployment of modern directional loudspeaker technology.

As part of ongoing planning, Soma has also indicated that community consultation with nearby residents will be undertaken. This process will specifically address noise-related concerns and provides an opportunity to reinforce Soma's commitment to collaborative engagement with the local community and SVC.

APPENDIX A GLOSSARY OF TERMINOLOGY

The basic quantities used within this document to describe noise adopt the conventions outlined in ISO 1996-1:2016 Acoustics - Description measurement and assessment of environmental noise – Basic quantities and assessment procedures.

Accordingly, all frequency weighted sound pressure levels are expressed as decibels (dB) in this report.

For example, energy averaged sound pressure levels measured using an "A" frequency weighting are expressed as dB L_{Aeq}. Alternative ways of expressing A-weighted decibels such as dBA or dB(A) are therefore not used within this report.

Term	Definition	Abbreviation
A-weighting	A method of adjusting sound levels to reflect the human ear's varied sensitivity to different frequencies of sound.	See discussion above this table.
A-weighted equivalent level	The energy-averaged A-weighted equivalent sound pressure level.	L _{Aeq}
A-weighted maximum level	The A-weighted maximum sound level. The highest sound level which occurs during the measurement period. Usually measured with a fast time–weighting i.e. L _{AFmax}	L _{Amax}
C- weighting	A method of adjusting sound levels to account for non-linear frequency response of the human ear at high noise levels (typically greater than 100 decibels).	-
C-weighted equivalent level	The energy-averaged C-weighted equivalent sound pressure level.	L _{Ceq}
Decibel	The unit of sound level.	dB
Hertz	The unit for describing the frequency of a sound in terms of the number of cycles per second.	Hz
Low frequency	A sound with perceptible content in the audible frequency range typically below 200 Hz	-
Octave band	A range of frequencies. Octave bands are referred to by their logarithmic centre frequencies, these being 31.5 Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, and 16 kHz for the audible range of sound.	-
Sound pressure level	A measure of the level of sound expressed in decibels.	Lp



APPENDIX B SITE TOPOGRAPHY





APPENDIX C PREDICTED NOISE LEVEL MAP

