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COLLINGWOOD ARTS PRECINCT

35 JOHNSTON STREET, COLLINGWOOD

NOISE MANAGEMENT PLAN

Prepared by:

Andrew Rogers B App Sci
Member Australian Acoustics Society
Acoustic Consultant
Noise Consulting & Management Pty Ltd

Ref 3079
21 Dec 2016

COLLINGWOOD ARTS PRECINCT - NOISE MANAGEMENT PLAN

Purpose

This Noise Management Plan provides guidance concerning the management of noise from the Collingwood Arts Precinct site, located at 35 Johnston Street, Collingwood (**Site**). At the date of preparation of this Noise Management Plan, the Site is currently used for circus, training and performance related activities (including music rehearsal and live music performance) and is intended to be used in the future for a range of arts and creative activities, public events and live music entertainment.

The aim of this Noise Management Plan is to protect existing noise sensitive areas from noise emissions from the Collingwood Arts Precinct, to protect the operations within the precinct for arts and creative industries (including live music entertainment) from the encroachment of noise sensitive residential use and to protect future residents in the vicinity of the site from noise.

Special Use Zone noise requirements

The schedule to the Special Use Zone (**SUZ**) applicable to the Site specifies land uses that can occur on the Site without first obtaining a planning permit. In this Noise Management Plan, these are referred to as 'Section 1 Uses'.

Under the SUZ, all activities must comply with the noise criteria summarised below. However, it is expected that uses on the Site which require a planning permit would be subject to more detailed assessment and controls via the permit application process and permit conditions. Accordingly, the mandatory noise criteria in the SUZ are primarily relevant to Section 1 Uses.

The mandatory noise criteria specified in the SUZ are as follows:

State Environment Protection Policy (Control of Noise from Industry, Commerce, and Trade) No. N-1 ("SEPP N-1").

This policy protects normal domestic and recreational uses and sleep in noise sensitive areas from commercial, industrial or trade noise. The policy sets quantitative noise limits in terms of decibels that vary depending on the time of the day. For example, the noise limits that apply during the evening and night period are generally higher than during the day time. Under SEPP N-1, there are no 'prohibited times' relating to land use, rather, uses of land must comply with the decibel noise limits set according to the Policy. Accordingly, SEPP N-1 will allow the Collingwood Arts Precinct to operate at any time throughout the day, evening and night, provided the relevant noise limits are met. As shown in Table 1 of this Noise Management Plan, there are various activities that can occur on the Site which are predicted to meet the relevant SEPP N-1 noise limits without any further acoustic assessment (referred to as 'Deemed to Satisfy' activities in this Noise Management Plan and Table 1). For activities that are not in accordance with the Deemed to Satisfy requirement in Table 1, a specific acoustic assessment may be required to assess whether the proposed activity can comply with the SEPP N-1 noise limits. Whether or not a specific acoustic assessment should be undertaken should be at the discretion of the Responsible Authority.

State Environment Protection Policy (Control of Music Noise from Public Premises) No. N-2 ("SEPP N-2").

This policy protects normal domestic and recreational uses and sleep in noise sensitive areas from music noise from indoor venues. Similarly to SEPP N-1, SEPP N-2 sets decibel noise limits that must be achieved at all times. SEPP N-2 does not restrict hours of operation, other than for noise from 'outdoor venues'.[1]

Compliance with SEPP N-2 will allow the Collingwood Arts Precinct to operate music in indoor venues at any time throughout the day, evening and night, with the noise limits and operational scenarios adjusted according to the different time periods.

In relation to noise from Outdoor Venues, SEPP N-2 protects normal conversation, and sleep after 11:00pm. The policy will allow the Collingwood Arts Precinct to operate music in outdoor venues between noon and 11:00pm, or later with the approval of EPA Victoria.[2]

Patron Noise Criteria.

The criteria adopted in the SUZ will provide an acceptable degree of amenity at noise sensitive areas at all times and protect sleep between 10:00pm and 7:00am. The Patron Noise Criteria will allow the Collingwood Arts Precinct to have patrons within the precinct at any time throughout the day, evening and night, with the noise limits and operational scenarios adjusted according to the different time periods. The criteria allows the precinct to utilize any sound proofing that is adopted for new residential premises that may be affected.

Different quantitative criteria are specified for the Patron Noise depending on whether the noise is assessed inside or external to a noise sensitive building. Compliance with the less stringent criteria is intended to provide an acceptable level of internal amenity for residents regardless of which criteria is use. To explain this, the noise limits that apply outside a noise sensitive building are higher in absolute terms because these don't take into account noise reduction provided by the noise receiving building. The noise limits applicable inside noise sensitive buildings are lower (in absolute terms), but are a direct indicator of what is considered an acceptable noise environment as experienced by a listener within a building according to relevant Australian Standards. For practical reasons (i.e. to simplify noise assessments) it is expected that compliance with the Patron Noise Criteria will ordinarily be assessed outside a noise sensitive building. However, where the circumstances indicate that an internal noise assessment is appropriate, for example, where a noise sensitive building has been acoustically designed to limit noise ingress, then compliance may be assessed internally. This is specifically allowed under the SUZ which provides that the 'less stringent' of the outdoor or indoor Patron Noise Criteria must be achieved.

However, it is noted that under the SUZ, compliance with the Sleep Disturbance Criteria is always assessed inside a bedroom. This will typically require the amount of noise reduction provided by a noise sensitive building to be predicted to assess the expected maximum internal noise level within bedrooms.

[1] Refer to clauses 26-29 of SEPP N-2 for restrictions on operating times applicable to Outdoor Venues. Typically, music from an Outdoor Venue must stop by 11pm, unless the EPA authorise later operation (see SEPP N-2 clause 27(b)).
[2] As to later operation, refer to SEPP N-2, clause 27(b).

Complying with the noise requirements

The Noise Management Plan demonstrates that the Collingwood Arts Precinct can comply with the SUZ noise requirements at existing noise sensitive areas and provides guidance on the actions needed for new Section 1 Uses to achieve the requirements. Based on previous noise assessments[3] and the existing building envelope, a series of 'Deemed to Satisfy' noise controls have been developed which will ensure compliance with the SUZ noise requirements and be appropriate for many of the future uses of the Site which are Section 1 Uses. It is acknowledged that there are some Section 1 Uses that have not been analysed in this report, as well as uses that will operate outside of the Deemed to Satisfy controls. These uses may comply with the noise emission criteria but further acoustical assessment will be required to demonstrate this.

Clause 52.43 of the Yarra Planning Scheme is applicable to the Collingwood Arts Precinct and surrounding areas. This clause is intended to protect live music entertainment venues from encroachment of noise sensitive residential use. In general, it requires that the "agent of change" is responsible to ensure that there are no adverse consequences due to new residential sites within 50m of a live music venue. The use that causes the change and its location within or outside the Collingwood Arts Precinct will determine what action is required and who is responsible. The requirements of Clause 52.43 are explained further below.

Achieving compliance with SUZ noise requirements at existing noise sensitive areas

The most affected existing noise sensitive areas have been identified as dwellings at 10 Perry Street, 4 Bedford Street and Johnston Street shop top dwellings including 38 Johnston Street and 60 Johnston Street. Compliance with the noise limits at these locations will ensure compliance at all other existing, less affected noise sensitive areas. Table 1, below, identifies the area within the precinct, the applicable Section 1 Use, the applicable SUZ noise requirement, and the corresponding Deemed to Satisfy controls required to achieve the noise limit at existing dwellings. Uses operating outside of the Deemed to Satisfy controls may comply with the SUZ requirements but will require additional acoustical assessment. The Deemed to Satisfy provisions are based on the existing building envelope, assessments undertaken by Noise Consulting and Management between July and November 2016 (Reports 2080, 3008, 3030) and ARUPs 2015 assessment (Attachment A).

Table 1

Area	Use	Noise Limit	Noise Source	Deemed to Satisfy Noise Controls do not required additional assessment
Circus Oz, all areas	All existing operations	Noise assessments show that the existing Circus Oz operations in all inside and outside areas comply with the existing noise requirements. Circus Oz has an existing noise management plan controlling the existing use of the Circus Oz site (Attachment B).		
Circus Oz, all areas	New Section 1 Uses that operate within the existing hours of operation and are acoustically similar in nature to the existing uses	SEPP N-1 SEPP N-2 Patron Noise	Plant Music Patrons	Complies, no controls required. (ARUP) Complies, no controls required. Complies, no controls required.

[3] Attached to this Noise Management Plan.

COLLINGWOOD ARTS PRECINCT - NOISE MANAGEMENT PLAN

Area	Use	Noise Limit	Noise Source	Deemed to Satisfy Noise Controls do not required additional assessment
Circus Oz indoors, including Spiegeltent	New Section 1 Uses that operate beyond the existing hours of operation or are acoustically different in nature to the existing uses	SEPP N-1 SEPP N-2 Patron Noise	Plant Music Patrons	Complies, no controls required. (ARUP) Data not available, further assessment required Data not available, further assessment required
Outdoor Amphitheatre	New Section 1 Uses that are acoustically different in nature to the existing uses	SEPP N-1 SEPP N-2 Patron Noise	Plant Music Patrons	Complies, no controls required. (ARUP) Outdoor venue time limit of noon to 10:00pm or 11:00pm for events no longer than 5 hours duration applies. Music levels to be limited to Leq 90 dB(A) @ 5m from stage unless event monitoring is undertaken by a qualified Acoustical Consultant. (based on previous "event" measurements) No more than 800 patrons in Amphitheatre between 10:00pm and 7:00am. (based on ARUP) No amplification between 10:00pm and 7:00am, apart from music based events with controls as per SEPP N-2 above.
Circus Oz outdoor areas	New Section 1 Uses that are acoustically different in nature to the existing uses	SEPP N-1 SEPP N-2 Patron Noise	Plant Music Patrons	Complies, no controls required. (ARUP) Data not available, further assessment required Data not available, further assessment required
Outdoor Western Courtyard	Section 1 Uses	SEPP N-1 SEPP N-2 Patron Noise	Plant Music Patrons	Complies, no controls required. (ARUP) Outdoor venue time limit of noon to 10:00pm or 11:00pm for events no longer than 5 hours duration applies. Music levels to be limited to Leq 90 dB(A) @ 5m from stage unless event monitoring is undertaken by a qualified Acoustical Consultant. (based on previous "event" measurements) No more than 800 patrons in Amphitheatre between 10:00pm and 7:00am. (based on ARUP) No amplification between 10:00pm and 7:00am, apart from music based events with controls as per SEPP N-2 above.
CAP - Building E	Section 1 Uses	SEPP N-1 SEPP N-2 Patron Noise	Plant Music Patrons	Complies, no controls required. (ARUP) All speakers inside, all doors and windows closed, Music level to be limited to Leq 90 dB(A), Music operation only during the SEPP N-2 "day/evening" period[i] (based on ARUP) No more than 50 patrons in patrons in Building E between 10:00pm and 7:00am without additional Patron Noise Sleep impact assessment. (ARUP).
CAP - Building F	Section 1 Uses	SEPP N-1 SEPP N-2 Patron Noise	Plant Music Patrons	Complies, no controls required. (ARUP) All speakers inside, all doors and windows closed, Music level to be limited to Leq 90 dB(A), Music operation only during the SEPP N-2 "day/evening" period[i] (based on ARUP) Complies, no controls required. (ARUP)

Area	Use	Noise Limit	Noise Source	Deemed to Satisfy Noise Controls do not required additional assessment
Other outdoor areas except the western courtyard, amphitheatre and circus oz outdoor areas	Section 1 Uses	SEPP N-1 SEPP N-2 Patron Noise	Plant Music Patrons	Complies, no controls required. (ARUP) Data not available, further assessment required Data not available, further assessment required

Yarra Planning Scheme Clause 52.43

Clause 52.43 of the Yarra Planning Scheme is intended to protect live music entertainment from encroachment of noise sensitive residential use. The clause requires that the "agent of change" is responsible for any controls that are required to satisfactorily protect noise sensitive residential use. A live music venue must provide acoustic attenuation measures to protect existing noise sensitive areas within 50m of the venue. New noise sensitive residential use must include acoustic measures to reduce noise from existing live music venues. Table 2 identifies anticipated uses within and around the Collingwood Arts Precinct that may require 52.43 considerations, the agent responsible for noise attenuation, and the controls needed to satisfy the requirements of the Clause 52.43.

Table 2 Agent of Change

Permitted Use	Agent Responsible	Clause 52.43 Noise Control Required
Accommodation within Collingwood Arts Precinct	New accommodation within precinct is likely to be "agent of change" and responsible for any controls.	Accommodation developer required to perform Noise Impact Assessment in accordance with SEPP N-2 and Clause 52.43 considering the existing noise sources (on and off site) and future acoustic environment due to proposed Collingwood Arts Precinct activities. This will ensure that accommodation is satisfactorily protected.
Live music, rehearsals in existing Circus Oz venues in relation to new noise sensitive development within 50m	Future accommodation likely to be "agent of change" and responsible for any controls.	Accommodation developer required to perform Noise Impact Assessment in accordance with SEPP N-2 and Clause 52.43 considering the existing noise sources (on and off site) and future acoustic environment due to proposed Collingwood Arts Precinct activities. This will ensure that accommodation is satisfactorily protected.
Live music, rehearsals in existing Circus Oz venues in relation to existing noise sensitive areas	Clause 52.43 not applicable as there is no change. Circus Oz complies with current requirements.	None
All new Section 1 Uses on Collingwood Arts Precinct site with live music in relation to new noise sensitive development within 50m	Future accommodation likely to be "agent of change" and responsible for any controls. See note below.	Accommodation developer required to perform Noise Impact Assessment in accordance with SEPP N-2 and Clause 52.43 considering the existing noise sources (on and off site) and future acoustic environment due to proposed Collingwood Arts Precinct activities. This will ensure that accommodation is satisfactorily protected.
All new Section 1 Uses on	Uses likely to be "agent of change" and	Adherence to the individual SEPP N-2 controls listed in Table 2 will ensure that that all existing

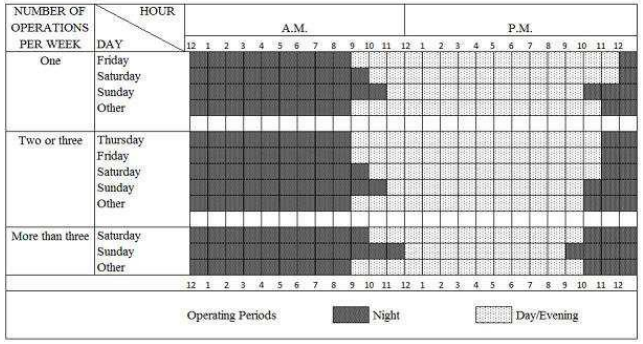
COLLINGWOOD ARTS PRECINCT - NOISE MANAGEMENT PLAN

Permitted Use	Agent Responsible	Clause 52.43 Noise Control Required
Collingwood Arts Precinct site with live music in relation to existing noise sensitive areas.	responsible for any controls.	dwellings in the vicinity are satisfactorily protected from music from Section 1 Uses. Thus any requirements of Clause 52.43, including the requirement to provide noise attenuation, will be met or exceeded.
All other Section 1 Uses without live music	Clause 52.43 not applicable.	None.

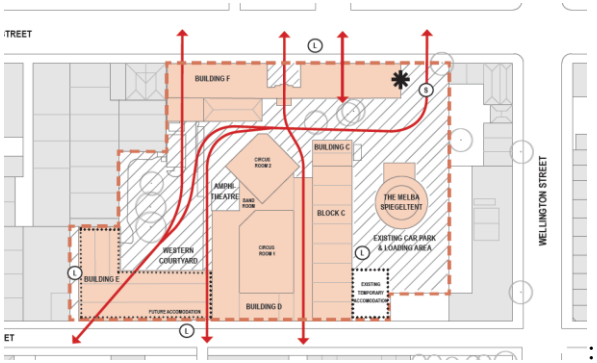
The establishment of the Collingwood Arts Precinct as a specified live music venue in Clause 2 of the schedule to 52.43 requires all nearby future residential development to provide the noise controls necessary to protect the proposed noise sensitive residential use in accordance with Clause 52.43. Although outside Collingwood Arts Precinct's control, this will require that nearby future residential development outside the precinct performs a noise impact assessment in accordance with SEPP N-2 and Clause 52.43 considering the existing or likely music noise sources and future acoustic environment due to Collingwood Arts Precinct's Section 1 Uses. Data establishing the existing music noise sources in the vicinity of the Site (as at the date of preparation of this Noise Management Plan) is available in Noise Consulting and Management report 3030, Nov 2016.

Notes:

[i]Table of SEPP N-2 operational periods



[ii] Sketch of Collingwood Arts Precinct


BUILDING F
BUILDING C
BLOCK C
THE MELBA SPIEGELTENT
EXISTING CAR PARK & LOADING AREA
WESTERN COURTYARD
BUILDING E
BUILDING D
WELLINGTON STREET

Attachment A Previous Noise measurements and impact analysis used as the basis for recommendations

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SEPP – N2 NOISE MONITORING AND PLANNING SCHEME AMENDMENT VC120 RECOMMENDATIONS

OPEN HOUSE EVENT

35 JOHNSTON STREET, COLLINGWOOD

31 JUL 2016

COMMISSIONED BY

CREATIVE VICTORIA, DEPARTMENT OF ECONOMIC DEVELOPMENT, JOBS, TRANSPORT & RESOURCES

LEVEL 31, 121 EXHIBITION ST, MELBOURNE VIC 3000

Prepared by:

Andrew Rogers B App Sci
Member Australian Acoustics Society
Acoustic Consultant
Noise Consulting & Management Pty Ltd

Ref 2061
7 Oct 2016

Summary

An outdoor music concert was held on 31 Jul 2016 at Circus Oz Amphitheatre accessed via 35 Johnston Street, Collingwood between noon and approximately 16:00.

Noise Consulting & Management was contracted by Creative Victoria to monitor, control and report on noise levels in the vicinity of the event and prepare recommendation regarding Planning Scheme Amendment VC120 Clause 52.43 (Agent of Change).

Measurements were performed in accordance with the EPA SEPP N-2 Policy outdoor venue noise limits.

The event was found to comply with the mandatory limits at all existing dwellings. However, if new dwellings are built directly to the west of the site the Planning Scheme Amendment VC120 Clause 52.43 will require the agent of change to take additional actions.

General Information

Measurements were performed in accordance with the EPA SEPP N-2 Policy, which specifies the Government's objectives for the control of music noise from public premises.

This EPA policy states the noise measurement and calculation techniques to be applied for different venue types and operating times. Basically, an “effective noise level” is measured at a “noise sensitive area” while the venue is operating. The effective noise level is then compared with the “noise limits”, which have been determined at the same location without the venue operating. Compliance with the policy is achieved if the effective noise level is below the noise limit.

The policy only applies at noise sensitive areas (generally dwellings) and generally does not apply at commercial and industrial sites.

Music from the site must comply with the EPA SEPP N-2 Policy. This policy requires the venue to control music to compliant levels at all dwellings. However, the Planning Scheme Amendment VC120 Clause 52.43 requires that the “agent of change” is responsible to ensure that there are no adverse consequences due to a new residential site within 50m of a music venue.

Due to the relatively high noise limit allowed at outdoor venues, residential amenity is also controlled by limiting the operating hours and frequency of events.

The policy automatically allows operation between noon and 10:00pm for outdoor events (or 11:00pm for events of five hours or less duration). A venue may hold no more than six concerts per year.

Music complying with the policy limit can be expected to be audible inside and outside affected dwellings and may affect normal domestic and recreational activities, however normal conversation should be possible.

Measurements were performed near the closest existing residences in each direction and at the potential development site to the west of the venue.

Measurements were taken outside building at least 2m away from any reflecting surfaces such as walls or fences. The locations that were determined to be the most affected were:

1 10 Perry Street (noise sensitive area)
2 38 Johnston St (noise sensitive area)
3 29 Johnston St, rear of 1st floor office/dwelling? (may not be a noise sensitive area)
4 Rear of 27 Johnston St, boundary with Creative Victoria towards Perry St (Bike repair shop, not a noise sensitive area)
5 29 Johnston St, boundary with Creative Victoria F Building (Artist studio, not a noise sensitive area)
6 Rear of lane near 23 Johnston St (noise sensitive area)
7 Stage

These locations include existing dwellings (noise sensitive area) and other commercial areas where the SEPP N-2 policy does not apply.

Music was playing at a level of approximately Leq 92 dB(A) at a distance of 5m in front of the stage. The stage was located near the Circus Oz building facing west.

The locations chosen and the stage location are shown below.

Sound System

2x12” DSC self powered
1x18” Sub
1 stage monitor

Music was playing at a level of approximately Leq 92 dB(A) at a distance of 5m in front of the stage. The stage was located in the Circus Oz amphitheatre (35 Johnston St) facing west,

Metrological Conditions:

Wind - Still
Temperature - 14 degrees Celsius

Personnel Present:

Andrew Rogers
Noise Consulting & Management
Member of the Australian Acoustical Society (Vic)

Sasha Hadjimouratis
Creative Victoria, Department of Economic Development,

Instrumentation:

Svantek 947 Type 1 precision octave band sound and vibration analyzer Serial No. 4277.

Bruel & Kjaer 4220 Pistophone Serial No. 169898.

A field calibration is performed before and after the analyzer is used. Full calibration traceable to the national standard is completed annually for all instrumentation.

Results

Noise Limits

The noise limits for “concerts” at noise sensitive areas specified by the mandatory SEPP N-2 policy are given below:

Time period	Noise Limit (L_{eq} dB(A)
12:00-23:00	65

For concerts scheduled for more than 5 hours duration the finish time must be no later than 22:00.

According to the policy, this venue can operate no more than 6 concerts per financial year. It is understood that this was the first concert.

The policy does not limit the number of “events” per year where the effective noise level at noise sensitive areas is no higher than Leq 15 min 55 dB(A) during the event i.e. 10 decibels lower than a concert. The time limits for events are the same as for concerts,

Noise Levels

The effective noise level measurements taken throughout the concert are given below.

Measurement start time	Leq 15 min dB(A)	Location	Complies/ Comments
12:15	92	5m infront of stage	DJ starts
12:30	79	5) 29 Johnston artist studio/ F building	NA, not currently a noise sensitive area
12:45	75	4) rear 27 Johnston/ Bike repair	NA, not currently a noise sensitive area
13:00	49	6) Dwelling in lane near 23 Johnston	Yes
13:15	59	2) 38 Johnston dwelling	Yes, traffic noise only, music not audible
13:35	46	1) Dwelling 10 Perry	Yes
13:55	60 (adj)	3) Rear of 1st floor room 29 Johnston	Yes, measurement taken at top of stairs F building and adjusted by -10 dB to allow for distance and barrier due to F building and roof of the rear of 29 Johnston.

The outdoor music concert complied with the noise limit at all times and all noise sensitive locations.

Effect of Planning Scheme Amendment VC120 on future residential development at 27-29 Johnston Street

Planning Scheme Amendment VC120 Clause 52.43 requires that the "agent of change" is responsible to ensure that there are no adverse consequences due to a new residential site within 50m of an existing music venue. To do this the amendment seeks to modify the SEPP N-2 by requiring any assessment of noise to be performed inside new apartments with doors and windows closed, thus allowing noise to be attenuated by a well designed residential building.

The noise levels due to a Circus Oz concert at the façade of any future residential development at 27-29 Johnston Street would be up to 10 decibels above the SEPP N-2 noise limit. In this case, the planning scheme amendment requires that a noise sensitive residential use must be designed and constructed to achieve noise levels below Leq 15 min 45 dB(A) inside all habitable rooms. The wall, window, door, and roof structure of the most affected apartments will have to provide 30 decibels sound reduction. Acoustic analysis of any future residential development at 27-29 Johnston Street, including detailed specification of the building structure, will be needed to ensure that the requirements of Clause 52.43 are met.

Conclusion

The music event held at 35 Johnston Street, Collingwood on 31 Jul 2016 was in compliance with SEPP N-2 outdoor venue noise limits. Any residential development of 27-28 Johnston Street will require further acoustic design consideration.

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SEPP – N2 NOISE MONITORING AND PLANNING SCHEME AMENDMENT VC120 RECOMMENDATIONS

MELBA SPIEGLETENT EVENT

35 JOHNSTON STREET, COLLINGWOOD

7 OCT 2016

COMMISSIONED BY

CREATIVE VICTORIA, DEPARTMENT OF ECONOMIC DEVELOPMENT, JOBS, TRANSPORT & RESOURCES

LEVEL 31, 121 EXHIBITION ST, MELBOURNE VIC 3000

Prepared by:

Andrew Rogers B App Sci
Member Australian Acoustics Society
Acoustic Consultant
Noise Consulting & Management Pty Ltd

Ref 3008
14 Oct 2016

Summary

An indoor music event was held on 7 October 2016 at Circus Oz Melba Spiegletent accessed via 35 Johnston Street, Collingwood between 7:00pm and midnight.

Noise Consulting & Management was contracted by Creative Victoria to monitor and report on noise levels in the vicinity of the event and to prepare recommendations regarding that application of Planning Scheme Amendment VC120 Clause 52.43 (Agent of Change) to a potential residential development to the west at 29 Johnston Street.

Measurements were performed in accordance with the EPA SEPP N-2 Policy for an indoor venue. It was beyond the scope of this report to calculate and measure noise levels at existing dwellings.

If new dwellings are built directly to the west of the site the Planning Scheme Amendment VC120 Clause 52.43 will require the agent of change to take additional actions.

General Information

Measurements were performed in accordance with the EPA SEPP N-2 Policy, which specifies the Government's objectives for the control of music noise from public premises.

This EPA policy states the noise measurement and calculation techniques to be applied for different venue types and operating times. Basically, an “effective noise level” is measured at a “noise sensitive area” while the venue is operating. The effective noise level is then compared with the “noise limits”, which have been determined at the same location without the venue operating. Compliance with the policy is achieved if the effective noise level is below the noise limit.

The policy only applies at noise sensitive areas (generally dwellings) and generally does not apply at commercial and industrial sites.

Music from the site must comply with the EPA SEPP N-2 Policy. This policy requires the venue to control music to compliant levels at all dwellings. However, the Planning Scheme Amendment VC120 Clause 52.43 requires that the “agent of change” is responsible to ensure that there are no adverse consequences due to a new residential site within 50m of a music venue.

The potential residential development site at 29 Johnston Street is 15m from the boundary of the Circus Oz site. The Circus Oz Spiegletent is 70m from the potential development. The Circus Oz indoor band room is 18m from the potential development.

Measurements were performed near the potential development site to the west of the venue.

Measurements were taken outside building at least 2m away from any reflecting surfaces such as walls or fences. The locations that were determined to be the most affected were:

1 29 Johnston St, boundary with Creative Victoria F Building (Artist studio, not currently a noise sensitive area)

Band music playing inside the Spiegletent consisted of drums, guitars, keyboard and vocals through an amplified sound system. The stage was located inside the tent facing north.

The venue may operate until midnight on Thur, Fri, Sat and Sun. Some of the operating times occur during the most stringent SEPP N-2 “night” period for indoor venues.

The location chosen and the stage location are shown below:

Metrological Conditions:

Wind – 10kmh East
Temperature - 12 degrees Celsius

Personnel Present:

Andrew Rogers
Noise Consulting & Management

Member of the Australian Acoustical Society (Vic)

Instrumentation:

Svantek 947 Type 1 precision octave band sound and vibration analyzer Serial No. 4277.

Bruel & Kjaer 4220 Pistophone Serial No. 169898.

A field calibration is performed before and after the analyzer is used. Full calibration traceable to the national standard is completed annually for all instrumentation.

Results

Noise Limits

Based on Mylonas v Darebin CC [2016] VCAT 1583 (19 September 2016) and Practice Note 81, the agent of change has the obligation to mitigate noise. It is unnecessary to consider whether existing noise emissions from a live music venue complies with SEPP N-2. It is therefore beyond the scope of this report to calculate the noise limits at existing dwellings.

However, for any potential new dwellings to comply with the Planning Scheme Amendment VC120 Clause 52.43 and SEPP N-2, it is likely that dwellings would have to be constructed achieve the SEPP N-1 base noise limits given below:

Location	**Time**	**Octave Band Centre Frequency (Hz)**						
		63	**125**	**250**	**500**	**1000**	**2000**	**4000**
		Base Night Noise Limit						
In bedrooms of potential new dwellings	Night period	40	30	20	20	15	10	10

Noise Levels

The effective noise level measurements taken throughout the event are given below:

Location, Comments	**Time**	**Octave Band Centre Frequency (Hz)**						
		63	**125**	**250**	**500**	**1000**	**2000**	**4000**
		Music Level ($L_{eq\ 10}$ dB)						
1. 29 Johnston St/ Building F, Full band playing in Spiegletent	20:20 Fri 7/10/16	60	60	54	49	47	41	36
1. 29 Johnston St/ Building F, Full band playing in Spiegletent but not measurable due to music from other nearby venue	21:15 Fri 7/10/16	62	68	57	47	44	42	40

Effect of Planning Scheme Amendment VC120 on future residential development at 27-29 Johnston Street

Planning Scheme Amendment VC120 Clause 52.43 requires that the "agent of change" is responsible to ensure that there are no adverse consequences due to a new residential site within 50m of an existing music venue. To do this the amendment seeks to modify the SEPP N-2 by requiring any assessment of noise to be performed inside new apartments with doors and windows closed, thus allowing noise to be attenuated by a well designed residential building. A recent VCAT decision and Practice Note 81 states that the agent of change has the obligation to mitigate noise and that it is unnecessary to consider whether existing noise emissions from a live music venue complies with SEPP N-2.

The wall, window, door, and roof structures at the façade of any future residential development at 29 Johnston Street will have to provide 30 decibels sound reduction at the 125Hz Centre Octave Band to ensure that the requirements of Clause 52.43 are met for Circus Oz Spiegletent operations. 38 decibels sound reduction at the 125Hz Centre Octave Band will be required if the operations of other venues in the vicinity are also considered.

Conclusion

The music event held at Circus Oz Spiegletent 35 Johnston Street, Collingwood on 7 October 2016 was considered in relation to Planning Scheme Amendment VC120 Clause 52.43. Any residential development at 29 Johnston Street will require further acoustic design consideration.

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SEPP – N2 AND PLANNING SCHEME AMENDMENT VC120 RECOMMENDATIONS

MELBA SPIEGLETENT EVENT, MUSIC ROOM OPERATIONS, OUTDOOR COURTYARD

35 JOHNSTON STREET, COLLINGWOOD

JUL- NOV 2016

COMMISSIONED BY

CREATIVE VICTORIA, DEPARTMENT OF ECONOMIC DEVELOPMENT, JOBS, TRANSPORT & RESOURCES

LEVEL 31, 121 EXHIBITION ST, MELBOURNE VIC 3000

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Ref 3030
16 Nov 2016

Summary

Noise Consulting & Management was contracted by Creative Victoria to monitor and report on noise levels in the vicinity of Circus Oz and to prepare recommendations regarding the application of Planning Scheme Amendment VC120 Clause 52.43 (Agent of Change) to a potential residential development to the west at 29 Johnston Street.

A number of different operations that are currently undertaken by Circus Oz, 35 Johnston St, were measured. The events include; an outdoor music concert 31 Jul 2016 noon - 16:00 at Circus Oz Amphitheatre, an indoor music event on 7 October 2016 7:00pm - midnight at Circus Oz Melba Spiegletent, and a Music Room practice on 15 Nov 2016 14:00 - 14:25.

Measurements were performed in accordance with the EPA SEPP N-2 Policy. It was beyond the scope of this report to calculate and measure noise levels at existing dwellings.

If new dwellings are built directly to the west of the site the Planning Scheme Amendment VC120 Clause 52.43 will require the agent of change to take additional actions.

General Information

Measurements were performed in accordance with the EPA SEPP N-2 Policy, which specifies the Government's objectives for the control of music noise from public premises.

This EPA policy states the noise measurement and calculation techniques to be applied for different venue types and operating times. Basically, an “effective noise level” is measured at a “noise sensitive area” while the venue is operating. The effective noise level is then compared with the “noise limits”, which have been determined at the same location without the venue operating. Compliance with the policy is achieved if the effective noise level is below the noise limit.

The policy only applies at noise sensitive areas (generally dwellings) and usually does not apply at commercial and industrial sites.

Indoor venues may operate during the SEPP N-2 “day” and “night” period. The noise limits are more stringent during the “night” period.

Due to the higher noise limit allowed at Outdoor venues, residential amenity is also controlled by limiting the operating hours and frequency of events.

Music from the site must comply with the EPA SEPP N-2 Policy. This policy requires the venue to control music to compliant levels at all dwellings. However, the Planning Scheme Amendment VC120 Clause 52.43 requires that the “agent of change” is responsible to ensure that there are no adverse consequences due to a new residential site within 50m of a music venue.

The potential residential development site at 29 Johnston Street is approximately 15m from the boundary of the Circus Oz site.

Measurements were performed near the potential development site to the west of the venue.

Measurements were taken outside building at least 2m away from any reflecting surfaces such as walls or fences. The locations that were determined to be the most affected were:

1 29 Johnston St, boundary with Creative Victoria F Building (Artist studio, not currently a noise sensitive area)

Amphitheatre Operations

Outdoor music may operate in the amphitheatre 6-10 times per year. Typically this venue is used for open days, parties and community events. The Circus Oz house PA is normally used but outside suppliers can also provide equipment. This area operates during the day and occasionally as late as 11:00pm.

Typically the stage will face west as shown in Fig 1. The PA used by the band and DJ during the measurement on 31 Jul was 2x12” DSC self powered speakers, 1x18” Sub, 1 stage monitor.

The Circus Oz outdoor amphitheatre is 17m from the development site.

Spiegletent Operations

Band music playing inside the Spiegletent consisted of drums, guitars, keyboard and vocals through an amplified sound system. The stage was located inside the tent facing north.

The venue may operate between 9:00am and 9:00pm everyday and until midnight on Thur, Fri, Sat and Sun. Some of the operating times occur during the most stringent SEPP N-2 “night” period for indoor venues.

The Circus Oz Spiegletent is 70m from the potential development site.

Music Room Operations

The Circus Oz band may rehearse and perform in the Music Room at anytime. The number of musicians and PA system varies. However, operations are normally during the day and evening. The external door to the music room is often left open during warmer weather. The door to the Circus Oz practice area is open during performances.

The Circus Oz indoor band room is 25m from the development site.

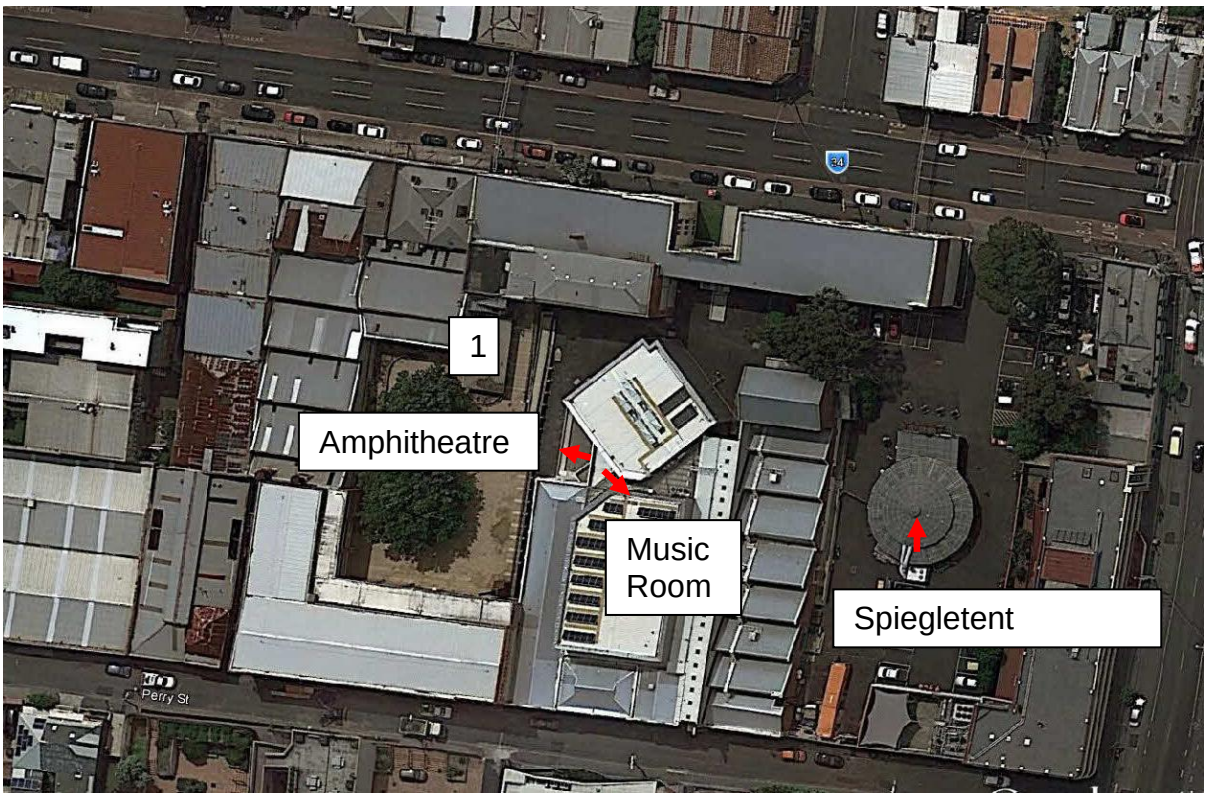

Figure 1 Proposed development site measurement point, 1, and Circus Oz operations and measured PA location and direction

Personnel Present:

Andrew Rogers
Noise Consulting & Management
Member of the Australian Acoustical Society (Vic)

Instrumentation:

Svantek 947 Type 1 precision octave band sound and vibration analyser Serial No. 4277.

Bruel & Kjaer 4220 Pistophone Serial No. 169898.

A field calibration is performed before and after the analyser is used. Full calibration traceable to the national standard is completed annually for all instrumentation.

Results

Noise Limits

Based on Mylonas v Darebin CC [2016] VCAT 1583 (19 September 2016) and Practice Note 81, the agent of change has the obligation to mitigate noise. It is unnecessary to consider whether existing noise emissions from a live music venue complies with SEPP N-2. It is therefore beyond the scope of this report to calculate the noise limits at existing dwellings.

However, for any potential new dwellings to comply with the Planning Scheme Amendment VC120 Clause 52.43 and SEPP N-2, it is likely that dwellings would have to be constructed to achieve the SEPP N-2 base noise limits for Indoor venues given below:

Location	**Time**	**Octave Band Centre Frequency (Hz)**						
		63	**125**	**250**	**500**	**1000**	**2000**	**4000**
		Base Night Noise Limit						
In bedrooms of potential new dwellings	Night period	40	30	20	20	15	10	10

In addition, noise sensitive residential use must be designed and constructed to achieve noise levels below Leq 15 min 45 dB(A) inside all habitable rooms for Outdoor venue noise.

Noise Levels

Measurements were performed under locally neutral conditions. The effective noise level measurements taken throughout the various events at the boundary are given below:

Amphitheatre Measurements		
Location	**Measurement start time**	**Leq 15 min dB(A)**
29 Johnston artist studio/ F building	12:30 31 Jul	79

Spiegletent Measurements	**Time**	**Octave Band Centre Frequency (Hz)**							**Leq dB(A)**
		63	**125**	**250**	**500**	**1000**	**2000**	**4000**	
Location, Comments		**Music Level ($L_{eq\ 10}$ dB)**							
29 Johnston St/ Building F, Full band playing in Spiegletent	20:20 Fri 7/10/16	60	60	54	49	47	41	36	50
29 Johnston St/ Building F, Full band playing in Spiegletent but not measurable due to music from other nearby venue	21:15 Fri 7/10/16	62	68	57	47	44	42	40	52

Note: It was not possible to measure the Spiegletent effective noise levels during the “night” period due to dominant music from another venue. The operations of the Spiegletent are identical during the “day” and “night” period.

Music Room Measurements	Time	Octave Band Centre Frequency (Hz)							Leq dB(A)
		63	125	250	500	1000	2000	4000	
Location, Comments		**Music Level ($L_{eq\ 10}$ dB)**							
29 Johnston St/ Building F, band (drums, keyboard, guitar) playing with external door open	14:10, 15/11/16	64	70	69	71	66	61	58	69
29 Johnston St/ Building F, band playing with external door closed	14:20, 15/11/16	65	58	54	49	44	44	41	50

Effect of Planning Scheme Amendment VC120 on future residential development at 27-29 Johnston Street

Planning Scheme Amendment VC120 Clause 52.43 requires that the "agent of change" is responsible to ensure that there are no adverse consequences due to a new residential site within 50m of an existing music venue. To do this the amendment seeks to modify the SEPP N-2 by requiring any assessment of noise to be performed inside new apartments with doors and windows closed, thus allowing noise to be attenuated by a well designed residential building. A recent VCAT decision and Practice Note 81 states that the agent of change has the obligation to mitigate noise and that it is unnecessary to consider whether existing noise emissions from a live music venue complies with SEPP N-2.

The wall, window, door, and roof structures at the façade of any future residential development at 29 Johnston Street will have to provide significant noise reduction of approximately 40 decibels at low frequencies to ensure that the developer's requirements under Clause 52.43 are met for Circus Oz operations.

Conclusion

The music noise emissions from a series of musical events held at Circus Oz, 35 Johnston Street, Collingwood was considered in relation to Planning Scheme Amendment VC120 Clause 52.43. Any residential development at 29 Johnston Street will require further acoustic design consideration.

Breathe Architecture

35 Johnston Street, Collingwood

Noise Impact Assessment

AAc/R001.0

Issue | 10 August 2015

Job number 244784-00

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Document Verification

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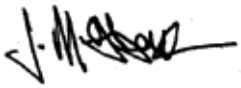
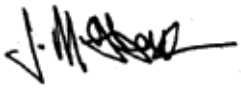
		Signature			
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Contents

Appendices

1 Introduction

Breathe Architecture is working on a Town Planning application for 35 Johnston Street, Collingwood. The development is to be used by Creative Victoria, as part of the Collingwood Contemporary Arts Precinct. It includes a change of ground floor usage (to a 'Place of Assembly') for Buildings C, E and F as indicated in Figure 1, as well as the outdoor courtyard area.

The exact usage is not confirmed at this stage; however, we understand that events to be held within the building are likely to include:

- Dance events with audience of a maximum of 200 people
- Live music events (amplified and unamplified)
- Theatrical performances
- Markets and other community events held in the outdoor courtyard

Arup has been engaged by Breathe Architecture to undertake an acoustic assessment to investigate potential noise emissions from the development and the impact on the surrounding community as part of the planning application.

Noise from the proposed development has the potential to impact the existing residential dwellings in the vicinity of the subject site. Potential noise sources associated with the operation of the venue includes mechanical services, food trucks, music and patron noise.

Arup has reviewed and undertaken the assessment based on

- Breathe Architecture construction drawing set dated 23 March 2015,
- Circus Oz planning documentation and
- Operational information provided by Creative Victoria and Breathe Architecture.

A glossary of acoustic terminology is provided in Appendix A.

2 Site Description

2.1 Surrounding Area

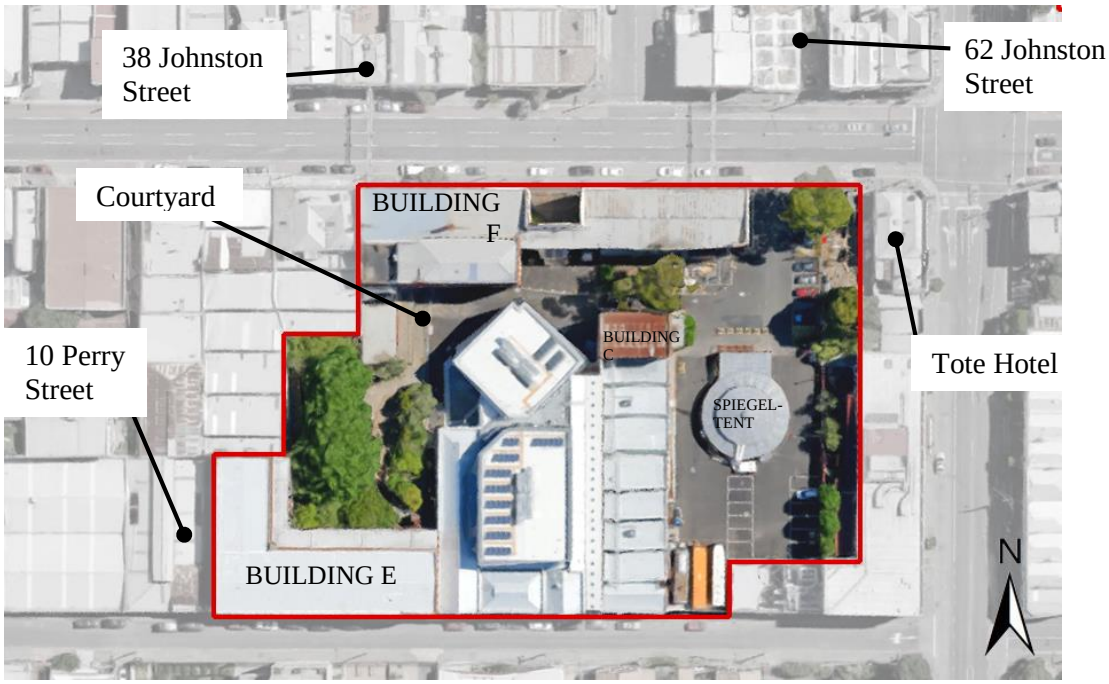
The subject site is located at 35 Johnston Street, Collingwood and is currently zoned as Commercial Zone 1 (C1Z). The subject site is bounded by the following:

- Johnston Street and commercial buildings to the north, with residences located at first floor level at 38 Johnston Street, and at 62 Johnston Street, Collingwood.
- The Tote Hotel to the east
- Melbourne Polytechnic and St Joseph's Primary School to the south
- 10 Perry Street residences (warehouse conversion) to the west

The nearest noise-sensitive receiver to Building E is located adjacent to the building at 10 Perry Street. The nearest noise sensitive receivers to Building F are 48 and 62 Johnston Street, located opposite Building F.

The subject site, Contemporary Arts Precinct and noise sensitive receivers are shown in Figure 1.

Figure 1: Site Plan Showing 35 Johnston Street site and local noise-sensitive receivers



2.2 Existing Site

The subject site was previously used as for educational use. It is currently unused.

The acoustic environment of the subject site is dominated by vehicle traffic noise from Johnston Street, and noise from the Tote music venue when operational. The site is shared with Circus Oz offices and Spiegeltent (performance space). Spiegeltent events include rehearsals, circus skill classes and circus shows.

2.3 Proposed Usage

No additional significant fixed mechanical plant is proposed at this stage of the development.

The indoor and outdoor areas are proposed to accommodate a total of 400 patrons, with a maximum of 200 patrons in each of Building E, Building F, and the courtyard.

Events at 35 Johnston Street are expected to include:

- Dance events with audience of a maximum of 200 people
- Live music events (amplified and unamplified)
- Theatrical performances
- Market events eg craft markets, which will operate at weekends only
- Other outdoor events in the courtyard such as community gardening events and outdoor theatrical performances
- Up to two food trucks will use the site a maximum of once per week

In addition:

- Licensed events are expected to occur both indoors and outdoors.
- There are no current plans to install a permanent sound system in the courtyard.
- Sound systems are likely to be installed in one or both of Building E and Building F.
- Maximum venue capacity ie simultaneous occupation of all buildings will not exceed 400 people.

It is understood that music and theatrical events held at 35 Johnston Street are expected to be low budget, small scale productions. As a result, it is understood that future events will not involve significant theatrical equipment, or regular bump in/out operations.

No additional mechanical services equipment is planned for installation at this stage.

3 Noise Criteria

The relevant legislation or guidelines applicable for the assessment of each of the identified potential noise impacts are summarised in Table 1 below.

Table 1: Relevant noise legislation and guidance

Potential Noise Impact	Source of assessment criteria	Status
Mechanical Services Noise Delivery movements	SEPP N-1	Legislation
Music Noise	SEPP N-2	Legislation
Patron Noise	VCAT precedence	Guideline

3.1 Commercial Noise (SEPP N-1)

Within the Melbourne metropolitan area, noise from air-conditioning, ventilation, exhaust and refrigeration equipment and deliveries from commercial premises is governed by *State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1* (SEPP N-1).

The objective of SEPP N-1 is to protect residential areas from noise generated by commercial, industrial or trade premises.

The assessment of noise emissions under SEPP N-1 is based on the calculation of a noise limit at a receiver position, taking into account the land use in the surrounding area and the ambient noise level. Under SEPP N-1 the noise limit is the maximum allowable "level of noise emitted from the commercial, industrial or trade premise", in a "noise sensitive area" as defined by the Policy.

The noise emission from the site, when corrected for duration and character, is referred to as the 'effective noise level' (L_{eff}). The predicted effective noise level is compared to the noise limit to determine if noise controls are required to comply with SEPP N-1. The effective noise level is the adjusted L_{eq} of the noise source or sources measured over a 30-minute period.

The calculation of noise limits requires the calculation of a zoning level that is based on land use in the surrounding area. The zoning level is then adjusted appropriately, depending on the measured background noise level. SEPP N-1 separates the day into three different time periods - day, evening and night as shown in Table 2.

Table 2: SEPP N-1 time periods

Period	Time period
Day	07.00 – 18.00 hrs
Evening	18.00 – 22.00 hrs
Night	22.00 – 07.00 hrs

3.2 Music Noise (SEPP N-2)

Music noise emissions are controlled in the State of Victoria by *State Environment Protection Policy (Control of Music Noise from Public Premises) N-2* (SEPP N-2). Compliance with SEPP N-2 is mandatory in the State of Victoria.

SEPP N-2 prescribes separate day / evening and night-time noise limits for music noise emission based on measured background levels. SEPP N-2 defines the music noise limit for the subject site are as follows:

- Day / evening period as the current measured background L_{A90} + 5 dB
- Night period (after 10.00 pm weekdays and Saturday, 9.00 pm Sundays) as L_{OCT90} + 8 dB

Day, evening and night periods are defined as follows:

Table 3: SEPP N-1 time periods

Period	Day of week	Time period
Day	Monday – Friday	07.00 – 18.00 hrs
	Saturday	07.00 – 13.00 hrs
Evening	Monday – Friday	18.00 – 22.00 hrs
	Saturday	13.00 – 22.00 hrs
	Sunday, Public Holidays	07.00 – 21.00 hrs
Night	Monday – Saturday	22.00 – 07.00 hrs
	Sunday	21.00 – 07.00 hrs

3.3 Patron Noise

Patron activity noise from the development may be audible from the nearby residential properties.

Victoria does not have specific regulatory requirements for assessing patron noise. In the absence of legislation, it is proposed that patron noise be based on recent Victorian Civil and Administrative Tribunal (VCAT) decisions related to outdoor patron noise.

Noise limits recommended for this project are based on a recent VCAT decision for developments located in the metropolitan Melbourne area. The patron noise limits a quasi-steady state or *average* patron noise limit based on existing background noise levels.

The patron noise criteria are summarised in Table 4 and it is proposed the time periods are based on the SEPP N-1 time periods outlined in Table 2.

Table 4: Proposed Patron Noise Limits at residential receiver

Time Period	Patron Noise Criteria, dBL_{Aeq}
Day	The higher of L_{Aeq} 50 or $L_{A90,BG}$ +15
Evening	The higher of L_{Aeq} 45 or $L_{A90,BG}$ +10
Night	The higher of L_{Aeq} 40 or $L_{A90,BG}$ +5

4 Noise Survey

Arup undertook a noise assessment between 26 March and 1 April 2015 which comprised a site survey, attended noise measurements and continuous noise logging over 5 days.

All equipment held current NATA certification and calibration was checked on-site before and after measurements with no significant drift detected.

Locations of noise monitoring devices are shown in Figure 2.

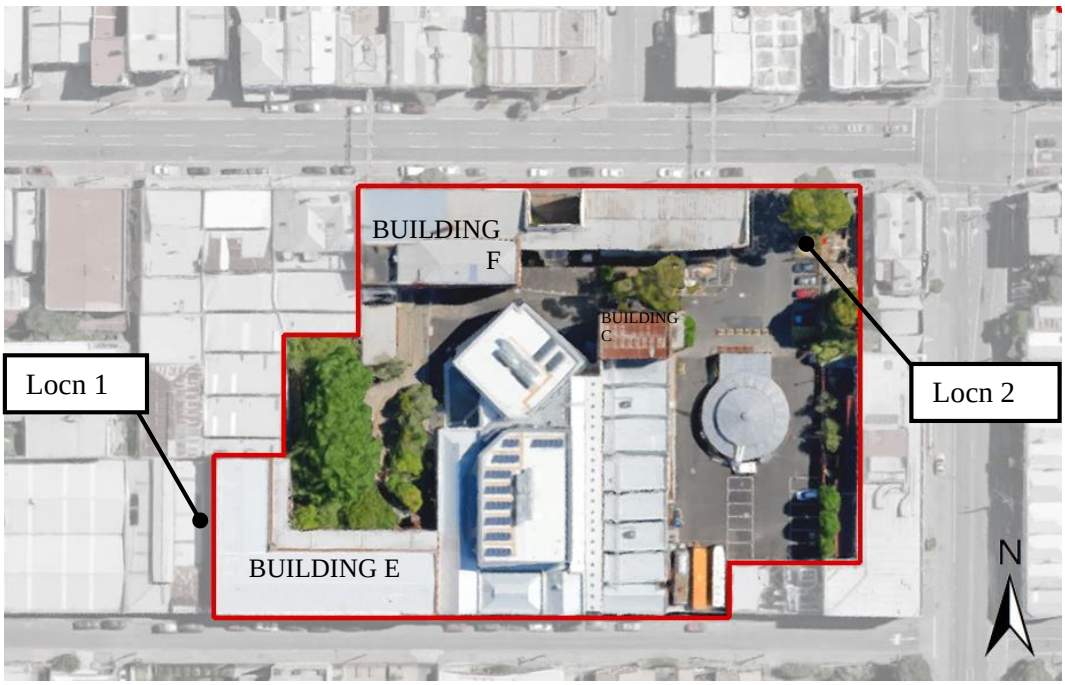
One noise monitoring device was located approximately 5 m above ground level, in the private laneway between the subject site and the 10 Perry Street residential development. This location was selected to be representative of the background noise levels at the nearest affected noise sensitive receiver to Building E.

The second noise monitoring device was located 1.5m above ground level at the corner of the subject site, approximately 5m south of Johnston Street and approximately 10m from the Tote Hotel to the East. This location was representative of the nearest residential receiver on Johnston Street to Building F.

Based on site observations, road traffic noise on Johnston Street was the dominant noise source in the vicinity of the subject site for weekdays and music noise from The Tote was mostly dominant on weekends.

The measured noise levels were used to inform the noise limits discussed in Section 5.

Figure 2: Site map showing noise monitoring device locations



5 Derived Noise Limits

5.1 Commercial Noise (SEPP N-1) Noise Limits

The SEPP N-1 noise limits have been determined for the day, evening and night-time periods based on the average measured background noise levels. The noise limits at the nearest affected residential properties are presented in Table 5 and Table 6.

Table 5: SEPP N-1 noise limits at 10 Perry Street, dB re 20µPa.

Period	Zoning Level, dBL_{Aeq}	Background Noise Level, dBL_{A90}	SEPP N-1 Background Noise Level Designation (High/Neutral/Low)	Noise Limit, dBL_{Aeq}
Day	51	42	Neutral	51
Evening	45	38	Neutral	45
Night	40	37	Neutral	40

Table 6: SEPP N-1 noise limits at 35 Johnston Street, dB re 20µPa.

Period	Zoning Level, dBL_{Aeq}	Background Noise Level, dBL_{A90}	SEPP N-1 Background Noise Level Designation (High/Neutral/Low)	Noise Limit, dBL_{Aeq}
Day	54	52	High	58
Evening	47	52	High	55
Night	42	44	High	47

5.2 Music Noise (SEPP N-2) Noise Limits

The SEPP N-2 day/evening and night-time limits at the nearest noise sensitive properties to the subject site based on measured background noise levels are presented in Table 7 and Table 8 respectively.

Table 7: SEPP N-2 day and evening noise limit at residential locations, dB re 20µPa.

Location	Period	Background noise level, dBL_{A90}	+ 5 dB adjustment	Noise Limit, dBL_{Aeq}
1 (10 Perry St)	Day	52	5	57
1 (10 Perry St)	Evening	52	5	57
2 (35 Johnston St)	Day	43	5	48
2 (35 Johnston St)	Evening	38	5	43

Table 8: SEPP N-2 night-time noise limit at residential locations, dB re 20μPa.

Description	Sound Pressure Level, dB Octave Band Centre Frequency, Hz						
	63	**125**	**250**	**500**	**1k**	**2k**	**4k**
10 Perry Street Background noise level, L_{90}	54	49	44	41	40	32	21
Plus 8 dB adjustment	+ 8	+ 8	+ 8	+ 8	+ 8	+ 8	+ 8
10 Perry Street noise limit, L_{10}	**52**	**57**	**52**	**49**	**48**	**40**	**29**
35 Johnston Street Background noise level, L_{90}	41	38	35	30	34	29	20
Plus 8 dB adjustment	+ 8	+ 8	+ 8	+ 8	+ 8	+ 8	+ 8
62 - 70 Johnston Street noise limit, L_{10}	**49**	**46**	**43**	**38**	**42**	**37**	**28**

Night-time SEPP N-2 noise limits have been based on attended background octave-band noise levels measured at 15 Perry Street and 141 Johnston Street on Thursday 6 August, 2015 between 22.00 hrs – 23.00 hrs (10.00 pm – 11.00 pm) to reflect the background noise levels during the night-time period. The Johnston Street location was considered to assess music noise levels from the operation of the Tote Hotel.

5.3 External Patron Noise

External patron noise limits have been based on the measured background noise levels. Patron noise limits have been based on lowest measured background noise levels for the day, evening and night-time periods, averaged over the entire period per day. The patron noise limits are summarised in

Table 9.

Table 9: External Patron Noise Limits, dB re 20μPa.

Time Period	Average Measured Background Noise Level, dBL_{A90}	Patron Noise Limit Adjustment	Patron Noise Criteria, dBL_{Aeq}
10 Perry Street			
Day period	43	+15	58
Evening period	38	+10	48
Night period	37	+5	42
35 Johnston Street			
Day period	52	+15	67
Evening period	52	+10	62
Night period	44	+5	49

6 Assessment Methodology

6.1 Commercial Noise (SEPP N-1)

The cumulative noise emissions from the fixed mechanical plant, food trucks and deliveries must comply with the SEPP N-1 noise limits are discussed in Sections 6.1.1 to 0 below.

6.1.1 Mechanical Plant

We understand that there are no current plans for significant mechanical services to be installed as part of this development.

Should this change in the future, mechanical services noise shall be assessed against and shall comply with the SEPP N-1 limits provided in this document.

6.1.2 Food Trucks

Mechanical ventilation noise from food trucks is assessable under SEPP N-1.

Noise from food trucks has been assessed for the potentially nearest affected residential properties located at 38 and 62 Johnston Street, and at 10 Perry Street, Collingwood

The predicted noise level of food trucks has been based on Arup noise measurements of food trucks from similar projects. This noise source has been used based on the following assumptions:

- The primary source of noise emission is the exhaust fan
- The food truck is powered by connection to mains (i.e. the vehicle engine was not operating)

The noise prediction considers two trucks operating simultaneously and noise attenuation due to distance and shielding provided by existing buildings.

The food truck sound power level used for the noise prediction is provided in Table 10.Table 10: Sound power level used for food truck noise prediction, dB re 1 pW

Description	Sound Power Level, dB re 1 pW Octave Band Centre Frequency, Hz							
	dB(A)	63	125	250	500	1k	2k	4k
Typical food truck source sound power level	82	80	78	77	79	77	76	71

The predicted noise levels and noise limit compliance are discussed in Section 7.1.

6.2 Music Noise (SEPP N-2)

Installed sound systems are understood to be likely as part of the development.

- Noise predictions have been undertaken to assess compliance with the SEPP N-2 for the day, evening and night time under the conditions provided in Loudspeakers located inside have been assessed based on the existing structure with windows and doors closed.

Maximum allowable noise limits are provided below :

- Loudspeakers located inside have been assessed based on the existing structure with windows and doors closed.
- Maximum allowable noise limits are provided below in Section 7.2.

6.3 Patron Noise

Noise modelling was undertaken to investigate patron noise emissions to the nearby noise sensitive receivers from the subject site.

Details of noise predictions are as follows:

- Noise emissions from the subject site have been predicted for the subject site for 200 patrons located outdoors, and 200 patrons located in either of Building E or Building F based on the expected worst case operational conditions.
- Patron source noise levels have been calculated using by applying methodology provided in *Prediction of Noise from Small to Medium Sized Crowds*[1]. Application of this paper is considered best practice for prediction of patron noise in beer gardens and is accepted by VCAT.

  The patron sound power level frequency spectrum used for L_{Aeq} prediction is based on a typical voice spectrum and is provided Table 11 below.

  Table 11: Sound power level used for patron noise prediction, dB re 1 pW

Description	Sound Power Level, dB re 1 pW Octave Band Centre Frequency, Hz							
	dB(A)	63	125	250	500	1k	2k	4k
Average 200 patron area source sound power level	99	72	80	89	97	95	91	84

  The patron source noise levels were verified using Association of Australian Acoustical Consultants (AAAC) patron noise data and patron noise measurements from other Arup projects.

[1] *Prediction of Noise from Small to Medium Sized Crowds*- MJ Hayne, November 2011.

7 Results and Assessment

7.1 Commercial Noise (SEPP N-1)

Noise from existing fixed mechanical plant is not anticipated to be a significant noise source at this stage of the project, since no new mechanical services equipment is proposed.

Food trucks therefore comprise the dominant noise source assessable under SEPP N-1. Noise levels from food trucks have been predicted to noise-sensitive residential receivers at 10 Perry Street, 48 and 62 Johnston Street for two trucks operating simultaneously. The predicted noise levels for all time periods are summarised in

Table 9.

Table 12: Food Truck Noise, dB re 20µPa.

Time Period	SEPP N-1 Noise Limit, dBL_{Aeq}	Predicted Noise Level, dBL_{Aeq}	Complies with SEPP N-1 Noise Limit?
Day period	58	46	✓
Evening period	55		✓
Night period	47		✓

Noise from deliveries is expected to occur during daytime hours and is not expected to exceed noise from food trucks.

In summary, the cumulative commercial noise emissions assessable under SEPP N-1 are predicted to comply with the SEPP N-1 noise limits.

7.2 Music Noise (SEPP N-2)

Music noise emitted from the subject site must comply with SEPP N-2 noise limits at the nearby noise sensitive receivers. The subject site must control the emission of noise through the selection, location, and orientation of loudspeakers, internal finishes and resulting music noise levels from internal and external loudspeakers.

In order to comply with SEPP N-2 music noise limits, music noise shall not exceed the levels provided in Table 13.

Table 13: Maximum permissible music noise levels to comply with SEPP N-2

Location	Sound Power Level, dB re 1 pW Octave Band Centre Frequency, Hz							
	dB(A)	63	125	250	500	1k	2k	4k
Building E - Limiting music noise spectrum	100	83	93	92	95	99	84	80
Building F - Limiting music noise spectrum	110	96	98	99	101	109	98	96
Courtyard - Limiting music noise spectrum	45	49	46	43	38	42	37	28

It is recommended that compliance with the music noise limits be achieved by conducting noise commissioning measurements to control the maximum output levels.

If music noise levels are found to exceed the criteria, a noise limiter that reduces the sound level output of the external loudspeakers may be considered.

7.2.1 Indoor Music Noise - Existing Building Construction

The maximum allowable noise levels for music include consideration of the existing Building E and Building F constructions. The assessment has been completed with all external windows and doors closed.

Based on this, no further acoustic mitigation is recommended at this stage.

7.3 Patron Noise

The predicted patron noise level at the most exposed receiver locations are presented in Table 14.

Table 14: Patron Noise, dB re 20µPa.

Location	**Patron Noise Limit, dBL_{Aeq}**			**Predicted Noise Level, dBL_{Aeq}**	**Complies with Patron Noise Limit?**		
	Day	Evening	Night		Day	Evening	Night
Courtyard	58	48	42	36	✓	✓	✓
Building E	58	48	42	47	✓	✓	x
Building F	67	62	49	30	✓	✓	✓

Patron noise is predicted to meet the most onerous (night-time) noise limit under the proposed worst case (ie maximum capacity) operational conditions for Building F and the courtyard.

Patron noise is predicted to exceed the most onerous (night-time) noise limit under the worst case (ie maximum capacity) operational conditions for Building E and as result it is recommended that events do not operate during this period.

8 Summary

8.1 Summary of Recommendations for City of Yarra to Consider

All commercial noise emitted from food trucks and mechanical services shall comply with SEPP N-1 noise limits at the nearest residential receivers.

All music noise including internal and external music noise shall comply with SEPP N-2 at the nearest residential receivers.

All external patron noise, including from buildings and external areas, shall meet patron noise limits at the nearest noise-sensitive receivers as provided in Table 15.

Table 15: External Patron Noise Limits, dB re 20μPa.

Time Period	**Patron Noise Criteria, dBL$_{Aeq}$**
10 Perry Street	
Day period	58
Evening period	48
Night period	42
35 Johnston Street	
Day period	67
Evening period	62
Night period	49

8.2 Summary of Study

Arup has undertaken an acoustic impact assessment of the noise emissions from the proposed change of use to ground floor Buildings C, E and F at 35 Johnston Street, Collingwood in response to the requirements of SEPP N-1 and SEPP N-2.

The noise assessment has considered commercial, music and patron noise emissions from the subject site to nearby noise sensitive receivers. Noise modelling has been undertaken to assess noise emissions against the relevant legislation.

The noise assessment outcomes are as follows:

- Commercial noise emitted from the subject site is predicted to comply with the SEPP N-1 limits at the nearest noise sensitive receiver; mechanical services noise is not predicted to exceed noise limits.
- Music noise emitted from the subject site shall comply with SEPP N-2 limits at the nearest noise sensitive receiver through compliance with limiting maximum noise levels. Commissioning measurements and the consideration of a noise limiter are required to ensure that these are met.
- Patron noise complies with established noise limits for patron noise to local noise-sensitive receivers based on recent VCAT decisions, with the exception of maximum occupancy patron noise from Building E to 10 Perry Street, which complies for day and evening periods only.
- Prior to commencing use at the subject site a Noise Management Plan shall be submitted to demonstrate compliance with appropriate noise policies.

On this basis the proposed development is predicted to meet the proposed noise criteria based on the existing building construction with windows and doors closed, with the exception of patron noise during the night-time period from Building E to 10 Perry Street.

Should events be operated in Building E during the night-time period, the building construction and internal finishes would require acoustic improvement.

Appendix A

Acoustic Terminology

Background Noise Level

The background noise level is the noise level that is generally present at a location at all or most times. Although the background noise may change over the course of a day, over shorter time periods (e.g. 15 minutes) the background noise is almost-constant. Examples of background noise sources include steady traffic (e.g. motorways or arterial roads), constant mechanical or electrical plant and some natural noise sources such as wind, foliage, water and insects.

Decibel

The decibel scale is a logarithmic scale which is used to measure sound and vibration levels. Human hearing is not linear and involves hearing over a large range of sound pressure levels, which would be unwieldy if presented on a linear scale. Therefore a logarithmic scale, the decibel (dB) scale, is used to describe sound levels.

An increase of approximately 10 dB corresponds to a subjective doubling of the loudness of a noise. The minimum increase or decrease in noise level that can be noticed is typically 2 to 3 dB.

dB(A)

dB(A) denotes a single-number sound pressure level that includes a frequency weighting ("A-weighting") to reflect the subjective loudness of the sound level.

The frequency of a sound affects its perceived loudness. Human hearing is less sensitive at low and very high frequencies, and so the A-weighting is used to account for this effect. An A-weighted decibel level is written as dB(A).

Some typical dB(A) levels are shown below.

Sound Pressure Level dB(A)	Example
130	Human threshold of pain
120	Jet aircraft take-off at 100 m
110	Chain saw at 1 m
100	Inside nightclub
90	Heavy trucks at 5 m
80	Kerbside of busy street
70	Loud stereo in living room
60	Office or restaurant with people present
50	Domestic fan heater at 1m
40	Living room (without TV, stereo, etc)
30	Background noise in a theatre
20	Remote rural area on still night
10	Acoustic laboratory test chamber
0	Threshold of hearing

L_{90}

The L_{90} statistical level is often used as the "average minimum" or "background" level of a sound level that varies with time.

Mathematically, L_{90} is the sound level exceeded for 90% of the measurement duration. As an example, 45 dB $L_{A90,15min}$ is a sound level of 45 dB(A) or higher for 90% of the 15 minute measurement period.

L_{eq}

The 'equivalent continuous sound level', L_{eq}, is used to describe the level of a time-varying sound or vibration measurement.

L_{eq} is often used as the "average" level for a measurement where the level is fluctuating over time. Mathematically, it is the energy-average level over a period of time (i.e. the constant sound level that contains the same sound energy as the measured level). When the dB(A) weighting is applied, the level is denoted dB $L_{Aeq.}$ Often the measurement duration is quoted, thus $L_{Aeq,15\ min}$ represents the dB(A) weighted energy-average level of a 15 minute measurement.

Frequency

Frequency is the number of cycles per second of a sound or vibration wave. In musical terms, frequency is described as "pitch". Sounds towards the lower end of the human hearing frequency range are perceived as "bass" or "low-pitched" and sounds with a higher frequency are perceived as "treble" or "high pitched".

Sound Power and Sound Pressure

The sound power level (L_w) of a source is a measure of the total acoustic power radiated by a source. The sound pressure level (L_p) varies as a function of distance from a source. However, the sound power level is an intrinsic characteristic of a source (analogous to its mass), which is not affected by the environment within which the source is located.

Attachment B Existing Spiegeltent Noise impact analysis and management plan

CIRCUS OZ
NOISE and AMENITY ACTION PLAN

Relating to new occupancy at 35 Johnston St., Collingwood, aka 20 Perry St Collingwood.

2 October 2013 – Anni Davey

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1. Introduction

Circus Oz, with the support of the State Government, will be moving into a new purpose built rehearsal and training facility at the old TAFE site on Johnston St in Collingwood in early 2014. The new facility will also host all of Circus Oz's administration, set and costume workshops, as well as its public classes program and corporate engagement (sponsor functions and leadership workshops). While the facility is not designed as a performance venue for the company, the Circus Oz Spiegeltent will be housed at this location and will be programmed with community events, circus performances and physical theatre from independent artists for 25 weeks every year.

This Noise and Amenity Action Plan (NAAP) is submitted as a requirement of the Planning Permit (Number PLN11/0600) prior to use commencing (current estimate of use commencing 28 January 2014). The NAAP has been prepared in accordance with the Yarra Planning Scheme, Clause 22.09 – 4.3

Prior to occupancy Circus Oz will established an existing base noise level chart defining existing noise levels at various positions on and around the proposed site of the Spiegeltent at various times of the day and week using properly calibrated noise measurement instrumentation. This chart will be kept on record.

After Circus Oz has moved into the new premises, noise levels at the various positions around the site will be measured and compared to the existing background noise levels measured. It is proposed to perform the noise level measurements at similar times to the existing base level times to determine the acoustic impact of the Spiegeltent during a performance and allow a direct comparison of the noise emissions from the Spiegeltent to the typical existing background noise levels being experienced at the present.
Noise measurements will be performed regularly in the first year of tenancy to inform strategies of compliance with planning permit restrictions.

Noise emissions testing will continue to be regularly conducted by the Circus Oz sound engineer and/or desk operator during sound checks and performances in the Spiegeltent to test and demonstrate ongoing compliance with specified noise emissions levels.

2. Outline of proposed activities within premises

Circus Oz's activities in the new building will include Public Classes providing circus training to children and adults, schools and community groups, the High Flying Teams program providing leadership and team building workshops using circus skills for corporate clients, functions or events for sponsors, rehearsals for the touring Circus Oz show (including some audience attended final rehearsals) and training for the core ensemble of 12 performers and the independent circus sector. It will also house set building and costume construction workshops, and administrative offices for 35 permanent staff.

In the open external area adjoining Tote Hotel and the Neighbourhood Justice Centre, Circus Oz will erect their Spiegeltent. This is proposed as a 200 seat bar and performance venue that will operate as such for 25 weeks of the year (not necessarily

concurrent). It is proposed to program performances in the Spiegeltent by Circus Oz, independent groups and artists, and community groups. It is also envisaged to occasionally host festivals and community celebrations in and around the rest of the building. Most of these various functions will involve live or amplified music. During Spiegeltent performances or functions only the Johnston St entrance will enable public access to the whole site.

An onsite premises liquor license is currently being prepared to cover the area including and surrounding the Spiegeltent during functions and events, and also public areas inside the building to enable the serving of alcohol for consumption on–site during 'final rehearsals' (attended by up to 100 invited audience) and other corporate or community functions held on the premises or in the Spiegeltent.

Circus Oz is also keen to encourage the community to visit and use the facilities by providing some landscaped areas and equipment (eg. two outdoor ping pong tables).

3. Identification of closest neighbours to property

The closest noise sensitive receivers to the proposed new Circus Oz facility are the Neighbourhood Justice Centre (NJC), who have courtrooms adjoining the boundary of the Circus Oz site at the Eastern boundary, and the Tote Hotel who also share a boundary at the north eastern corner of the site. The nearest residential properties to the proposed site include 15A Perry St (70 -80 metres from the site boundary) and on Johnston Street approximately 60 – 70 metres from the proposed Spiegeltent location)….

Neighbourhood Justice Centre: The NJC court-rooms are approximately 25 metres from the planned site for the Spiegeltent. Circus Oz has made an undertaking with the NJC that sound checks or performances in the Spiegeltent will be scheduled to avoid coinciding with NJC court sessions (see schedule below). Compliance will be monitored through regular noise level surveys conducted by the Circus Oz sound engineer and/or desk operator during sound checks and performances (this is consistent with current practice; noise level output is regularly recorded and included on show reports of performances).

NEIGHBOURHOOD JUSTICE CENTRE COURT SESSIONS (at 9 July 2013)

MONDAY	9.30am– 4pm	Magistrates Court
TUESDAY	9.30am– 4pm	Victorian Civil and Administrative Tribunal (VCAT)
WEDNESDAY	9.30am– 4pm	Magistrates Court
THURSDAY	9.30am– 4pm 4pm – 7pm	- Magistrates Court - VCAT twilight sittings (every second Thursday*)
FRIDAY	9.30am– 4pm	VCAT

* NJC has indicated that there are currently plans that could shift the fortnightly VCAT twilight sittings to Tuesday evenings.

The Tote Hotel: The Tote's band room is approximately 25 – 28 metres from the Spiegeltent. Circus Oz and The Tote's proprietors (Jon Perring and Andrew Portokallis) have drafted an agreement around the scheduling of sound checks and performances in order to mitigate any potential conflict over noise levels.

Circus Oz will conduct ambient noise tests prior to our tenancy in order to establish a base level from which to compare the effect of our tenancy on ambient noise levels at various times of the day and week.

4. Procedures to be undertaken by staff in the event of complaints by a member of the public, the Victoria Police, an 'authorised officer' of Council or an officer of Liquor Licensing Victoria.

Circus Oz has been responsibly managing major public events for its 35 years of operation. Circus Oz's events staff regularly produce public performance seasons (annually at Birrarung Marr, bi-annually in Sydney and regularly in other capital cities) drawing crowds of up to 1400 people in temporarily licensed premises. The organisation has an excellent record of adherence to regulations and compliances.

During general operations Circus Oz's General Manager will be responsible for ensuring noise from people movement from the premises is kept at a minimum to reduce any nuisance noise to adjoining occupiers or cause detriment to the amenity of the neighbourhood.

During the operation of performances (including Spiegeltent program), festivals, sponsor events and functions, either the Circus Oz event manager, or an authorised person on duty, will be on the premises to receive and deal with complaints.

The event manager will be responsible for ensuring that to their best endeavours no disturbance occurs or emanates from or during the event which would be likely to cause a nuisance to adjoining occupiers or cause detriment to the amenity of the neighbourhood.

Entry to the premises will be made freely available during all operating hours to a member of the Victoria Police, an 'authorised officer' of the Responsible Authority or an officer of Liquor Licensing Victoria, to carry out any investigations associated with the sale or consumption of alcohol on the site.

In the event of receiving a substantive complaint, a representative of Circus Oz will seek to speak personally with the complainant to determine the specific nature of the complaint and to negotiate mutually acceptable measures to mitigate the possibility of reoccurrence.

If complaints relate to a regular breach of conditions regarding noise emissions (ie noise regularly exceeds the noise levels specified by the planning permit) Circus Oz will consider initiating more stringent sound level controls, and/or more, or more effective sound barriers strategically placed.

Circus Oz management will retain a logbook of complaints or incidents for review.

5. Details of staffing arrangements including numbers and working hours of all security staff, bar staff, waiters, on-premises manager, and other staff.

DAILY OPERATIONS	Number of staff	Operating Hours
Office/Administrative	22 - 25	9am – 6pm Monday - Friday
Costume workshop	1 – 6 people depending on level of demand	10am – 6pm Monday – Friday Peak Period April/May/June annually
Set Workshop	1 – 4 people depending on demand	10am – 6pm Monday – Friday Peak Period April/May/June annually
Rehearsals	12 performers 8 technical support 3 artistic direction	Monday – Friday 10am – 6pm 14 - 20 weeks per year Peak period April/May/June
Public Classes	1 – 12 trainers ratio trainers to participants 1/8	Intended 8am – 10am and 4pm – 9.00pm Monday – Friday 9am – 5pm Saturday and Sunday
SPIEGELTENT EVENTS (CORPORATE FUNCTIONS, COMMUNITY EVENTS, PERFORMANCE PROGRAM)		PERMISSABLE OPERATING HOURS 10am – 9pm Monday – Wednesday 1pm – midnight Thursday - Sunday
Security Staff	2, audience < 100 3, audience100<200	1/2 hour prior to advertised start time until 1/2 hour after finish of performance
Event Manager	1	1 hour prior to advertised start time until doors close (ie event manager locks up)
Box Office	1	1 hour prior to performance until ½ hour after performance commence as required
Bar staff	1 - 2	1 hour prior to performance until 1 hour after performance finishes, or until close as required
Technical staff	1 - 4	2 hours prior to performance until ½ hour after performance finishes as required
Performers	As per event needs	2 hours prior to performance until ½ hour after performance finishes as required
PERFORMANCES, FESTIVALS, SPONSOR EVENTS AND FUNCTIONS		PERMISSABLE OPERATING HOURS 9am – Midnight Monday - Sunday
Security Staff	2, audience < 100 with additional 1 security staff per increase of 100	1 hour prior to advertised start time until 1/2 hour after finish of performance. 1 security staff

	people or part thereof	remains until close and lock up
Front of House Manager	1	1 hour prior to advertised start time until doors close (ie FOH manager locks up)
Box Office	1	1 hour prior to performance until ½ hour after performance commence, as required
Bar staff	1 - 2	1 hour prior to performance until 1 hour after performance finishes, or until close, as required
Technical staff	1 - 4	2 hours prior to performance until ½ hour after performance finishes, as required
Performers	As per event needs	2 hours prior to performance until ½ hour after performance finishes, as required

6. Details of training provided for bar staff in the responsible serving of alcohol.

All Circus Oz events staff engaged in the service of alcohol are required to have undertaken a 'Responsible Serving of Alcohol' course, as approved by the Director of Liquor Licensing.

The 'Responsible Serving of Alcohol' course includes training for staff on dealing with intoxicated persons. If necessary, management or another appropriately trained staff member would escort the intoxicated person/s from the premises

7. Lighting
(a) within the boundaries of the premises.

The external areas on the site are adequately lit and fitted with movement sensors. The area around the Spiegeltent will be floodlit during hours of operation with ambient lighting inside the tent including special performance lighting during performances.

(b) security lighting outside the premises.

The external areas on the site are adequately lit with movement sensor lights, and exit/entry points are monitored by CCTV cameras.

8. Details of the provision of music including the frequency and hours of entertainment provided by live bands and DJs.

Live music is an integral part of the Circus Oz show and the ensemble includes a three-piece band. The new build on site includes a properly equipped and sound proofed band rehearsal room and smaller practice rooms. Final rehearsals will be held in rehearsal room 1 which is acoustically treated and centrally located within the site. Noise emissions from the rehearsal rooms will not impact on neighbouring properties.

Live and/or recorded music will accompany most performances or functions held in the Spiegeltent which are permitted to be held between the hours of 10am to 9pm Monday to Wednesday and 1pm to Midnight Thursday to Sunday and for 25 weeks of the year. Circus

Oz has undertaken to restrict noise level emissions from the Spiegeltent to reduce the impact on amenity for neighbours in accordance with the Planning Permit conditions. Noise level emissions will be regularly monitored and adjusted if necessary to ensure compliance.

Live music and/or recorded music may also feature as part of occasional festivals or community events held on site. These events can cater to audience numbers of up to 250 people unless with prior written consent of the Responsible Authority.

9. Details of waste management plan including storage and hours of collection for general rubbish and bottles associated with the licensed premises.

The waste storage area on the new site is located at the Eastern border in the area just south of the car parking area. Circus Oz will employ a reputable Waste and Recycling Contractor for regular waste collection as outlined in the following table

- **Waste Bin Schedule (typical Circus Oz operations)**

Waste stream	Generation rate (L/mth)	Bin size / type	Bin Quantity	Collection frequency	Bin area* (m^2)
General waste	1,500	240L wheelie bin	2	Weekly	0.86
Commingled recyclables	3,000	240L wheelie bin	3	Weekly	1.29
Paper and cardboard	300	240L wheelie bin	2	Monthly	0.86
Workshop waste	1,500	1,500L skip	1	As required	2.63
				Bin Storage area	**5.7**

Additional waste and recycling bins will be sourced from the Waste and Recycling Contractor for events. At the time of planning the event, the Waste and Recycling Contractor can provide advice as to the number and type of bins best suited to the event. However, to provide an indication of bin storage area requirements, it is estimated that Circus Oz will need to source up to an additional six (6) waste bins (240 litre wheelie bins) and six (6) commingled recycling bins (240 litre wheelie bins) to cater for up to 250 people (pers. comm Lisa Coffa, City of Yarra).
All waste and recycling collections are to be undertaken between the hours of 7:00am and 7:00pm, Monday to Friday and 9:00am to 8:00pm Saturday and Sunday.

Please see Circus Oz Waste Management Plan for more detail, also submitted to Council as a Permit Condition.

10. Table identifying all noise sources associated with the premises likely to impact on nearby residential property.

AREA	NOISE TYPE	NOISE SOURCE	TIMES	MEASURES TO BE UNDERTAKEN TO ADDRESS ALL NOISE SOURCES IDENTIFIED, INCLUDING ON AND OFFSITE NOISE ATTENUATION MEASURES.
Spiegeltent	Amplified music noise	Noise survey performed before performances	Weekdays from 4pm except every second Thursday (or when VCAT evening sittings are scheduled at the NJC)	Noise Level measurements surveys / sound system adjusted to comply with noise emissions levels specified by Planning permit. Written documentation presenting results to be kept on file
Spiegeltent	Amplified music noise, crowd noise	performances, festivals, sponsor events and functions	Confined to hours as per planning permit. 10am – 9pm Monday to Wednesday 1pm – midnight Thursday to Sunday and may only be scheduled for a maximum of 25 weeks per calendar year.	Noise Level measurements surveys / sound system adjusted to comply with noise emissions levels specified by Planning permit. Results to be documented and kept on file.
Rehearsal rooms	Music noise	Rehearsals	Business hours 10 – 6 weekdays	Acoustic treatment of rooms should contain noise. Noise survey checks.
Perry St Entrance	Excited children	Participants arriving/leaving public classes	After school program 4 – 6.30pm weekdays, kids classes 10am - 4.30pm weekends	Monitor. Encourage consideration of neighbours via announcements at end of class
Perry St entrance	Smaller truck movements	Delivery vehicles loading and unloading	During business hours	Monitor
Johnston St entrance	Crowd noise	Audience arriving/leaving attended rehearsals	2 – 4 times per year. Between 1.30pm and 9pm Monday – Wednesday. Between 1.30pm and 11pm Thursday - Sunday	Monitor. Encourage consideration of neighbours via announcement at end of rehearsal
Johnston St entrance/ loading dock	Small truck movement	Spiegeltent functions, deliveries	Business hours	regular noise surveys to be performed
Johnston St entrance	Rowdy behaviour	Audience members leaving the Spiegeltent after night time performances	9pm Monday – Wednesday 11pm Thursday – Sunday maximum 25 weeks per year	Visible signage at tent egress points. Announcements from FOH staff asking for consideration of neighbours.
Johnston St entrance/ loading dock	Semi-trailer movement	Loading and unloading events are restricted to 8 per calendar year	Semi trailer accesses and leaves site between midnight and 7am (to avoid traffic on Johnston st)	Monitor
Workshop	Machinery noise	Air compressor driven tools	During business hours	Monitor

11. Any other measures to be undertaken to ensure minimal amenity impacts from the licensed use.

PRIOR TO OCCUPANCY	ASSESS CURRENT NOISE LEVELS AT SITE (PRE CIRCUS OZ TENANCY)		Emissions readings at various times of day and week at specific points on site with close proximity to the NJC, the Tote, the nearest neighbour.	Reputable Noise Consultant such as Marshall Day or Audiometric & Acoustic Services
	ASSESS ACOUSTIC PERFORMANCE OF SPIEGELTENT		Confirm construction materials. Engage acoustic Engineer to calculate sound leakage levels.	- as per Planning Permit conditions Construction has been reviewed
	COMMUNICATE WITH LOCAL COMMUNITY		Inform community about Circus Oz 's intended activities on site in particular Spiegeltent programming	- host information sessions inviting local community (City of Yarra, NJC, The Tote, local schools, NMIT, local traders) - Attend Smith St Traders Association meetings.
	NEGOTIATE WITH NEIGHBOURS		Agreements made with the Tote and with NJC regarding scheduling of noisy events, and emission levels.	- Draft agreement with The Tote (complete) - Agreement with NJC (avoid court session times as per schedule above)
TRANSITION	IDENTIFY BIG NOISE EMISSION EVENTS			- Spiegeltent performances - Spiegeltent rehearsals - Special festival events - Large truck movements - Waste collection - use of air compressor (workshop)
	IDENTIFY NOISE EMISSION POINTS AT NEW PREMISES		- Identify noisy areas - measure proximity from neighbours	- waste management plan - architecturals
	IDENTIFY TYPICAL NOISE EMISSION TIMES		Typical scheduling of noisy events	- waste management plan - Circus Oz scheduling – classes, rehearsals, rehearsals with audiences - Spiegeltent programming - Liquor licence
TENANCY	MONITOR NOISE EMISSIONS		Emissions readings during Spiegeltent operations at specific points on site with close proximity to the NJC, the Tote, the nearest neighbour.	- Sound Operator on duty using calibrated sound level instrumentation
			Emissions readings during workshop operations at specific points on site with close proximity to the NJC, the Tote, the nearest neighbour.	- Sound engineer using calibrated sound level instrumentation
			Emissions readings during workshop operations at specific points on site with close proximity to the NJC, the Tote, the nearest	Sound engineer using calibrated sound level instrumentation

			neighbour.	
	MANAGE NEIGHBOURS EXPECTIATIONS		Regular communication and engagement with neighbours	
	REVIEW COMPLIANCE STRATEGIES		- effectiveness of noise barriers - effectiveness of restrictions on noise emissions levels - effectiveness of waste management strategy	- Monitor waste management practice - keep records of noise emissions
	ADJUST COMPLIANCE STRATEGIES		If necessary	

Acoustic Assessment for the Proposed Circus Oz Site

ACOUSTIC ASSESSMENT FOR THE PROPOSED CIRCUS OZ SITE AT NO.35 JOHNSTON ST. COLLINGWOOD.

- Final for Planning Submission (Rev B)
- 18th July 2011

Acoustic Assessment for the Proposed Circus Oz Site

ACOUSTIC ASSESSMENT FOR THE PROPOSED CIRCUS OZ SITE AT NO.35 JOHNSTON ST. COLLINGWOOD

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SINCLAIR KNIGHT MERZ

Contents

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Distribution of copies

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B	1	3	Town Planning Submission (19 July 2011)
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SINCLAIR KNIGHT MERZ

Glossary

Term	Description
dB	Decibel – Sound Pressure Level expressed in decibels is 20 log of the ratio between the measured sound pressure level and the reference pressure. The reference pressure is 0.000002 Pascal (Newtons per square meter), the threshold of hearing.
dB(A)	A Sound Pressure Level where the sound is filtered in accordance with the A-weighting scale. The A weighting scale is a weighting scale which generally corresponds to the inverse of the 40 dB (at 1 kHz) equal-loudness curve. The A weighting parallels the sensitivity of the human ear when it is exposed to normal levels.
L_{A10}	The A weighted sound pressure level that is exceeded for 10% of the measurement period (approximately the average maximum noise level)
L_{A10oct}	Means the Linear Sound Pressure Level for a specified octave band that is exceeded for 10% of the time
L_{A90}	The A weighted sound pressure level that is exceeded for 90% of the measurement period (represents the background noise level)
L_{A90oct}	Means the Linear Sound Pressure Level for a specified octave band that is exceeded for 90% of the time
L_{Aeq}	The equivalent continuous sound level. The steady dB(A) level which would produce the same A weighted sound energy over a stated period of time as the specified time – varying sound.
Day Period	The time between 0700 and 1800 hours
Evening Period	The time between 1800 and 2200 hours
Night Period	The time between 2200 and 0700 hours

1. Introduction

The SKM acoustics team was requested to perform an acoustic assessment on behalf of Arts Victoria to determine the acoustic suitability of the proposed Circus Oz Site located at No. 35 Johnston St. Collingwood.

It is proposed to demolish two sections of the existing buildings on the site and replace them with new work areas, offices and training facilities.

It is also proposed to construct a Spiegel tent in a section of vacant land on the eastern side the property.

It is proposed to operate shows at this site which may continue through the night up to 1:00 am in the morning.

2. Background

2.1. Proposed Circus Oz Building Layout Site

Arts Victoria are intending to move the Circus Oz from the Port Melbourne site to a new site located at No. 35 Johnston St. Collingwood.

SKM was commissioned to perform an environmental acoustic assessment to define the likely impact of the Circus on the local community noise environment.

Buildings at the existing site are to be demolished (buildings titled Block D) and replaced with new buildings housing new training facilities, general offices areas and work areas to construct new props and to upgrade circus equipment. The construction works will also include a Spiegel tent on the proposed site.

The Circus Oz site is proposed operate to 1:00 AM.

Figure 1 presents a plan view showing building s proposed for demolition at the proposed site while Figure 2 shows the proposed layout of new buildings on site.

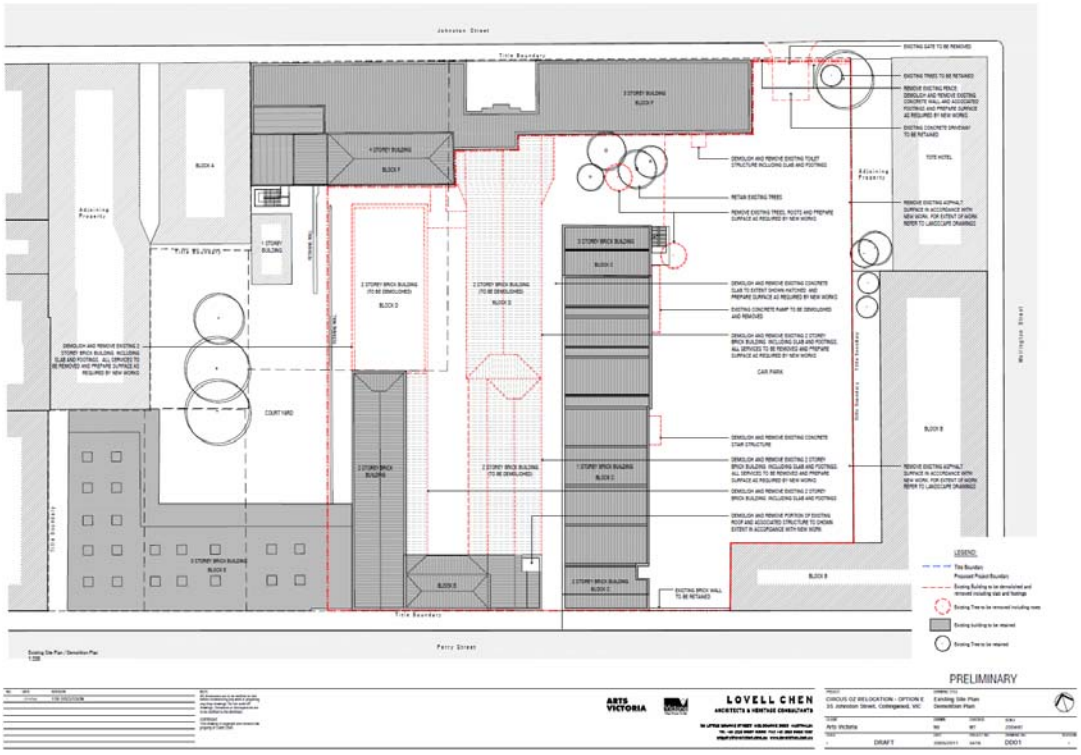

Figure 1 Buildings Proposed for demolition on the Existing Johnston St. Site

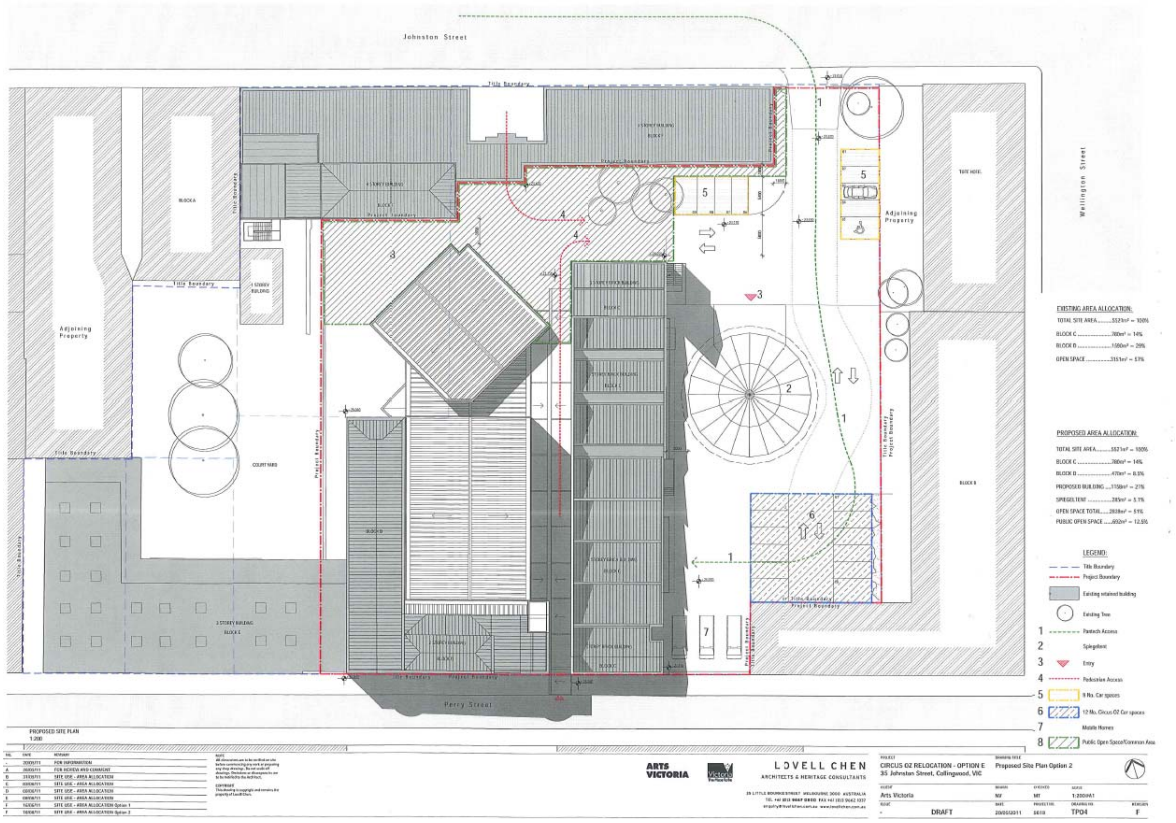

Figure 2 Proposed layout of the Circus Oz Site

2.2. Site Description

The immediate land use in the area surrounding the proposed site consists mainly of a mixture of commercial / industrial/ school, with some residential spread within the area.

Directly adjoining the proposed Circus Oz site are the:

- Tote Hotel located on the north – east corner boundary.

  The Tote Hotel has bands playing regularly at this site from Wednesday to Sunday with operating hours 4:00 pm – late (3:00 am Thursday – Saturday).

  Bands start playing from between 4 – 9 pm until late.

  It was noted that a band was clearly audible at the proposed site as early as 3:00 pm during an initial review of the site on Tuesday 22/6.

- Department of Justice Building on the eastern Boundary of the proposed site.

  The Department of Justice Building consists of a 3 storey brick building located on the adjoining eastern boundary. The building is located on Wellington St, Collingwood.

Residential and commercial (terrace style) buildings are located on the eastern side of Wellington St.

These properties are acoustically shielded by the Department of Justice building from the proposed Circus Oz site. It is believed that the noise emissions from the Circus Oz will have negligible impact at these sites due to the noise from road traffic noise and from the Tote Hotel.

- The southern boundary of the proposed Circus Oz site faces onto Perry Street.

  On the southern side of Perry facing the Circus Oz site is St Josephs Primary School and the Northern Melbourne Institute of TAFE.

  The NMIT building is a multi story building while the St Josephs primary school building is a single storey building.

  These buildings are partially acoustically shielded by a 2.5 – 3 metre high brick wall currently constructed on the southern boundary of the proposed Circus Oz site.

- Johnston Street forms the northern boundary of the proposed site.

  Commercial buildings and 1st floor commercial with possible 2nd storey residential living areas are located on the northern side of Johnston St.

  It must be noted that Johnston St. has considerable road traffic movement which has a significant impact on the ambient noise levels.

3. Noise Criteria

3.1. Music Noise

To determine the noise limit criteria for noise emissions from the Circus Oz site during a performance, the State Environment Protection Policy [SEPP] (Control of Music Noise From Public Premises) No.2 was used.

It is assumed that the main noise source during a Circus Oz performance at night will be from the 'backing band'.

Most of the acts of the Circus Oz would be of a relatively quiet nature.

The SEPP No. N-2 Noise Policy goal is to protect residents from noise levels of music noise that may affect the beneficial uses made of noise sensitive areas while recognising the community demand for a wide range of musical entertainment.

Beneficial uses of noise sensitive areas protected by this policy are:

For noise from indoor venues, the normal domestic and recreational activities and, in particular, sleep in the night period

and

for noise from outdoor venues, the normal conversation, and sleep after 11 p.m.

This policy applies to all public premises and protects beneficial uses of noise sensitive areas from music noise emitted from those premises.

In this policy, the music noise assessed may include, in addition to noise from music sources, noise from human voices and activities within the premises that are associated with the music sources.

The policy does not prescribe noise limits for noise associated with the arrival and departure of people attending the premises. Nor does it prescribe noise limits for hearing conservation purposes within indoor and outdoor venues.

3.2. Industrial Noise (maintenance workshop)

This section relates to the construction noise levels generated due to the manufacturing of 'props' and maintenance work for the 'on going' operation of Circus Oz.

To determine the noise limit criteria applicable to this type of noise generating operation, the State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No.N-1 has been used.

This policy prescribes noise limits for commercial, industrial or trade premises. The following types of noise emitted from commercial, industrial or trade premises are not assessed by this Policy:

- Music
- Voices
- Noise From crowds
- Noise from fire arms
- Noise from lawn mowing
- Noise from construction or demolition activities on building sites
- Noise from audible intruder, emergency or safety alarms
- Noise from aircraft except for ground maintenance activities
- Noise from mobile farm machinery
- Noise from scar guns and anti hail guns
- Noise from Livestock on a farm or in a saleyard
- Noise from a from a fire pump used in an emergency
- Noise from non commercial vehicles except for maintenance

4. Measurement Instrumentation

Noise level measurements were conducted using a Bruel and Kjaer 2250 Hand Held Analyser. This is a type 1 sound level meter as defined in IEC 61672:2003 and has been calibrated in a NATA accredited laboratory.

Calibration was checked before and after the noise level measurements using a Bruel and Kjaer Acoustic Calibrator Type 4231. The Acoustic Calibrator has been calibrated in an NATA accredited laboratory.

Noise data was analysed using BZ5503 and Noise Explorer software.

5. Existing Background Noise Environment

To provide an indication of the relevant EPA Noise Limits, a noise survey was performed on Monday 27th June (day time measurements) and on Wednesday 29th June 2011 (evening & night time measurements).

The attended background noise level measurements were performed in accordance with the methodology presented in the SEPP No N-1 Noise Policy Schedule C3.2.

5.1. Night Time Background Noise levels

To assess the potential acoustic impact due to rehearsals and shows presented by the Circus Oz, an attended night time noise survey was performed to determine the typical ambient noise levels around the proposed Circus Oz site. This attended noise survey was performed Wednesday 29th & 30th June, 2011.

A background noise level measurement was performed at a derived position away from the Tote Hotel to obtain a background noise level without the influence of band music noise.

A second noise measurement was performed at the front facade of the nearest residential building located at 54 Johnston Street. This location would be most likely to be acoustically impacted by noise from the Tote and from Circus Oz.

For the purpose of establishing the background noise level for the music assessment, an analysis of the ambient noise levels was performed to determine the background noise level Octave Band spectrum.

5.2. Day Time Noise levels

An attended day time measurement was also performed to obtain an indicative background noise level to allow for the determination of a Noise Limit for noise levels generated by maintenance operations being performed at the Circus Oz site.

The Noise Limits were determined in general accordance with the methodology presented in the SEPP No N-1 Noise policy.

The determination of the Noise Limits takes into account not only the background noise levels within the area of proposed site but also land usage using the Town Planning Zonings of the local area.

6. Measurement Results

6.1. Environmental Noise Measurements

6.1.1. Day Time Ambient Noise levels

Table 1 below presents the background noise level (LA90) results at the nearest residential property that may be directly impacted by noise generated by Circus Oz.

Two ten minute measurements were taken between 1300 and 1400 hours on the 26th June, 2011.

The weather condition at the time of the noise survey was calm with clear skies.

The dominant noise source was road traffic noise which was consistent throughout the noise survey. It was noted there was heavy traffic usage on both Johnston and Wellington Streets.

It was also noted no band noise was audible from the Tote Hotel.

Table 1 Environmental noise levels at 54 Johnston Street During the Daytime

Measurement Position & Time	L_{A90} Sound Pressure Level (dBA : re 2 x 10^{-5} Pa)									
	Octave Band Centre Frequency (Hz)									Overall SPL
	31.5	63	125	250	500	1K	2K	4K	8K	
Measurement 1	27	39	44	47.5	50.5	54.5	52.5	44.5	32	58.5
Measurement 2	25.5	37	43	46.5	49.5	53	51.5	43	30	58
Average	**26**	**38**	**43**	**47**	**50**	**54**	**52**	**44**	**31**	**58**

6.1.2. Evening Time Ambient Noise levels

Table 2 below presents the background noise level (LA90) results at 54 Johnston Street.

Two ten minute measurements were taken between 2100 and 2200 hours on the 29th June, 2011.

The weather condition at the time of the noise survey was calm with clear skies.

The dominant noise source was road traffic noise which was consistent throughout the noise survey. It was noted there was heavy traffic usage on both Johnston and Wellington Streets. Band noise from the Tote Hotel was not audible at the time of the noise survey.

Table 2Environmental noise level at 54 Johnston Street During the Evening

Measurement	L_{A90} Sound Pressure Level (dBA : re 2 x 10^{-5} Pa)									
	Octave Band Centre Frequency (Hz)									Overall A _ weighted SPL
	31.5	63	125	250	500	1K	2K	4K	8K	
Measurement 1	23	35	42	45	50	53.5	51	41	29	57.5
Measurement 2	25	36	41	43.5	50.5	55.5	52	40.5	32	58.5
Average	**24**	**35**	**41**	**44**	**50**	**54.5**	**51**	**41**	**31**	**58**

6.1.3. Night Time Ambient Noise Levels – Music Noise Limit Criteria

Noise measurements were performed at two measurement locations.

- At a Derived Point without the influence of Band Music from the Tote Hotel
- At 54 Johnston St. with band music from the Tote Hotel audible.

6.1.3.1. Derived Measurement Point

Background noise levels were taken at a derived point to measure the typical background noise levels without the influence of band noise from the Tote Hotel. The selected position was near the intersection of Johnston St. and Smith St. The traffic noise levels measured at this location would be similar to that at 54 Johnston Street.

Noise level measurements were performed between 10:50 p.m. & 12:30 a.m. on the 29th & 30th June, 2011over 2 periods of 10 minutes each. Table 3 shows the result obtained.

Table 3 Background noise level (LA90) measurements performed at the Derived Point

Measurement	L_{90} Sound Pressure Level (dB : re 2 x 10^{-5} Pa)									
	Octave Band Centre Frequency (Hz)									Overall A weighted SPL
	31.5	63	125	250	500	1K	2K	4K	8K	
Measurement 1	56	57.5	54.5	51	49	49.5	46	37.5	28	54
Measurement 2	56	59	54	57	48	50	45.5	35	25	53
Average	**56**	**58**	**54**	**54**	**48**	**50**	**46**	**36**	**37**	**54**

Table 4 below presents the noise level results at No. 54 Johnston St. with band music from the Tote Hotel and road traffic noise. These noise level measurements were performed between 11:05 p.m. & 12:00 a.m. on the 29th & 30th June, 2011over 2 periods of 10 minutes each.

Table 4 Background noise level (LA90) measurements at No.54 Johnston Street with band music from the Tote Hotel

Measurement	L_{90} Sound Pressure Level (dB : re 2 x 10^{-5} Pa)									
	Octave Band Centre Frequency (Hz)									Overall A weighted SPL
	31.5	63	125	250	500	1K	2K	4K	8K	
Measurement 1	64	71	69	70.5	67	63	60	54	46	69
Measurement 2	69.5	76	65.5	61	62	62	60	51	40.5	66.5
Average	**67**	**74**	**67**	**66**	**65**	**63**	**60**	**53**	**43**	**68**

6.2. Circus Operations Noise Levels

Arts Victoria has supplied noise data for various Circus OZ noise sources as measured at the 'Sausage Factory' site. The noise levels are representative of the typical noise levels that may be generated by various operations in the different work areas and operating areas at the proposed Circus Oz site. Table 5 presents these noise levels. It has been assumed that these noise level measurements were performed at a distance of 1 metre from the noise sources.

Table 5 Measured Sound pressure Levels taken During Various Operations at the 'Sausage Factory' Site

Measurement Location / Operation	**A Weighted Sound Pressure Level (dBA re: 2 x 10^{-5} Pa)**	
Workshop	**Free Running (Non contact Operation)**	**Work Operation (contact Operation)**
Drop saw	84	97
Compressor	83	102
Angle Grinder	86	103
Drill Hall	**Ambient**	**Rehearsal**
Internal Sound Pressure Level	65	83
Music Room (Band Practice)		**Rehearsal**
Vibro phones & 2 Saxophones	-	87
Drums, Keyboard & Guitar – Low Level	-	83
Drums, Keyboard & Guitar – High Level	-	88

7. Calculated Noise Limits

7.1. SEPP Noise Limit Criteria

7.1.1. Day / Night Time Noise Levels – Music Noise (No. N-2 Noise Policy)

The indicative Noise Limit criteria have been calculated in accordance with the methodology presented in Clause 14(a) of the SEPP No N-2 Noise Policy. These are only indicative because they are based on the short sample noise level measurements only.

- **Day Time**

The day / evening noise limit is determined using **Noise Limit = L_{A90} (Background Noise level) +5dBA.**

Table 6 below presents the calculated noise limits for the operational activities performed by the Circus Oz.

Table 6 Calculated Noise Limits for Music by Circus Oz

Nearest Noise Sensitive Receiver	**A Weighted Sound Pressure Level (dBA re 2 x 10^{-5} Pa)**	
	Day Time Noise Criterion (0700 – 1800 hrs)	**Evening Time Noise Criterion (1800 -2200 hrs)**
Johnston St. / Wellington	63 dBA	63 dBA

- **Night Time**

The night time noise limit is determined using **Noise Limit = $L_{OCT\ 90}$ +8 dB.**

Table 7 below presents the calculated noise limit for the music performed by the Circus Oz.

Table 7 Calculated Night time Noise Limit for Music by Circus Oz.

Measurement	**L_{90} Sound Pressure Level (dB : re 2 x 10^{-5} Pa)**									
	Octave Band Centre Frequency (Hz)									**Overall SPL**
	31.5	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	
Night Time Noise	64	66	63	59	57	58	54	46	36	70

Limit										

7.1.2. Noise Limit Criteria Levels – Maintenance Noise (No. N1 Noise Policy)

The Noise Limit criteria have been determined for the day time, evening and night time periods.

Table 7 below presents the calculated noise limits for the maintenance type work being performed on the Circus Oz site. The Noise Limits has been based on the attended noise survey and the relevant land zoning.

Table 8 Calculated Noise Limits for Maintenance Operations for the Circus Oz site

Nearest Noise Sensitive Receiver	**A Weighted Sound Pressure Level (dBA re 2 x 10^{-5} Pa)**		
	Day Time Noise Criterion (0700 – 1800 hrs)	**Evening Time Noise Criterion (1800 -2200 hrs)**	**Night Time Noise Criterion (22200 – 0700 hrs)**
Johnston St. / Wellington St.	64	61	57

8. Noise Level Predictions

The noise levels generated by the activities occurring at various locations at the proposed Circus Oz site have been calculated based on the noise levels presented by Arts Victoria.. The noise level calculations have been based on noise emissions from the proposed Circus Oz site only, and do not take into account band noise from the Tote Hotel.

8.1. Noise Emission Due to Activities in the Spiegel tent

The predicted noise levels at each of the noise sensitive receiver locations were determined based on a Sound Pressure Level of 92 dBA as the noise emission of the band.

Table 9 presents the predicted noise levels at three noise sensitive receiver locations due to noise from the Spiegel tent.

Table 9 Calculated Noise Levels Due To Band Noise From the Spiegel tent

Noise Sensitive Receiver Position	Predicted Sound Pressure Level (dBA)	Comment
Residential Building – Johnston St.	57	Noise level prediction at the front facade of No. 70 Johnston St. – clear line of sight (60 metres from Spiegel tent)
Department of Justice Building	69	Noise level prediction at rear facade of building -clear line of sight (15 metres from Spiegel tent)
St. Josephs Primary School	48	Noise level prediction at the front facade of the St. Josephs Primary School. – barrier in line of sight (40 metres from Spiegel tent)

8.2. Noise Emission from Rehearsal Rooms 1 & 2

Table 10 presents the predicted noise levels at the three noise sensitive receiver locations due to noise from the Rehearsal Rooms 1 & 2.

For this prediction, we have used the Transmission Loss of 15 dB which takes into account the possible low frequency character (bass / drums) of the band music.

Table 10 Calculated Noise Levels Due To Band Noise From the Rehearsal Rooms 1 &2

Noise Sensitive Receiver Position	Predicted Sound Pressure Level (dBA)	Comment
Residential Building – Johnston St.	43	Noise level prediction at the front facade of No. 54 Johnston St. – clear line of sight (50 metres from Rehearsal Room 2)
Department of Justice Building	42	Noise level prediction at rear facade of building -clear line of sight (52 metres from Rehearsal Room 1))
St. Josephs Primary School	46	Noise level prediction at the front facade of the St. Josephs Primary School. – Assume clear line of sight (25 metres from Rehearsal Room 1)

8.3. Noise Emissions from Set Workshop

In predicting the acoustic impact of equipment used for set making, the worst case scenario of the Drop Saw, Compressor and Angle Grinder all being in operation simultaneously within the Set Workshop was used. The overall Sound Pressure Level emission was determined to be 106 dBA.

It was assumed that the outer facade of the Set Workshop is a brick construction.

It was also assumed that the transmission loss of the brick wall would achieve a 30 dB noise reduction at the dominant frequencies generated by the equipment.

Table 11 presents the predicted noise levels at three noise sensitive receiver locations due to noise from the Set Workshop.

Table 11 Calculated Noise Levels Due To Equipment Noise from the Set Workshop

Noise Sensitive Receiver Position	Predicted Sound Pressure Level (dBA)	Comment
Residential Building – Johnston St.	37	Noise level prediction at the front facade of No. 70 Johnston St. – clear line of sight (75 metres from Set Workshop)
Department of Justice Building	44	Noise level prediction at rear facade of building -clear line of sight (38 metres from Set Workshop)
St. Josephs Primary School	29	Noise level prediction at the front facade of the St. Josephs Primary School. – barrier in line of sight (50 metres from Set Workshop)

9. Discussion

9.1. Circus Oz Operations

The acoustic impact due to the operation of Circus Oz at the proposed site has been determined and the influence of band noise from the Tote Hotel has not been considered.

9.1.1. Spiegel tent Activities

The Spiegel tent is to be located in the eastern section of the court yard of the proposed site opposite the entrance from Johnston Street.

It is proposed to construct the Spiegel tent from canvas and light weight timber to be used as an entertainment area where people will be able to socialize and watch the Circus Oz acts.

These construction materials will afford little, if at all, any noise attention due to transmission loss across the tent structure, especially at the lower acoustic frequencies.

Noise due to general people activities has not been taken into account into the acoustic calculations.

Table 12 below presents in tabulated form whether the noise emissions from activities in the Spiegel tent meet the SEPP No. N-2 Noise Policy.

Table 12 Matrix of the compliance with the SEPP Noise Policy No N-2 at the three noise sensitive locations

Measurement Location	**Compliance with EPA Noise Policy No N-2**		
	Day Time Noise Criterion (0700 – 1800 hrs)	**Evening Time Noise Criterion (1800 -2200 hrs)**	**Night Time Noise Criterion (22200 – 0700 hrs)**
No. 70 Johnston St.(nearest residence)	Complies	Complies	Complies
Department of Justice Building	May Comply*	May Comply*	May Comply*
St. Josephs Primary School	Complies	Complies	Complies

* If Circus Oz is to have a performance in the Spiegel tent during the day time period, the predicted noise levels at the building facade due to noise emission from the Spiegel tent will be approximately 69 dBA.

This is in the order of 6 dBA over the nominal noise limit of 63 dBA.

The calculations have been based on the assumption that the Spiegel tent is located approximately 15 metres from the Department of Justice Building facade.

Taking into account a 15 – 20 dBA transmission loss across the Department of Justice building facade, the predicted internal noise level within the Department of Justice building would be in the order of 50 – 55 dBA.

Australian Standard / New Zealand AS/NZS 2107 titled 'Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors' recommends internal noise levels for various occupancies and for noise that is reasonably steady in level. Music noise does not quite fit into this category but if assessed against the maximum recommended noise level of 45 dBA for a general office area, then the predicted internal music noise level would be in excess.

To reduce the acoustic impact of music noise on the internal noise levels of the Department of Justice building would likely require an upgrade of the glazing on the western face of the building.

9.1.2. Music in the Rehearsal Rooms 1 &2

The external walls of the proposed rehearsal rooms (D2 and D4) are to be constructed using Bondor 'Equitilt' composite panel. This panel consists of a 0.6 mm thick sheet metal facing / Expanded Polystyrene / 0.6 mm thick sheet metal facing. The total thickness of the panel is to be 150 mm thick.

The acoustic performance of such a panel is rated at only Rw 25.

Table 13 below presents in tabulated form whether the noise emissions from activities in the Rehearsal Rooms would meet the SEPP Noise Policy No. N-2.

Table 13 Matrix of the compliance with the SEPP Noise Policy No. N-2 at the three noise sensitive locations

Measurement Location	Compliance with SEPP Noise Policy No. N-2		
	Day Time Noise Criterion (0700 – 1800 hrs)	Evening Time Noise Criterion (1800 -2200 hrs)	Night Time Noise Criterion (22200 – 0700 hrs)
No. 54 Johnston St.	Complies	Complies	Complies
Department of Justice Building	Complies	Complies	Complies
St. Josephs Primary School	Complies	Complies	Complies

9.1.3. Set Workshop

Table 14 below presents in tabulated form whether the noise emissions from activities in the Set Workshop meet the SEPP Noise Policy No. N-1.

Table 14 Matrix of the compliance with the SEPP Noise Policy No. N-1 at the three noise sensitive locations

Measurement Location	Compliance with Noise Policy No.N-1		
	Day Time Noise Criterion (0700 – 1800 hrs)	Evening Time Noise Criterion (1800 -2200 hrs)	Night Time Noise Criterion (22200 – 0700 hrs)
No. 54 Johnston St.	Complies	Complies	Complies
Department of Justice Building	Complies	Complies	Complies
St. Josephs Primary School	Complies	Complies	Complies

9.2. Noise Emissions from the Tote Hotel

Night time noise level measurements were taken in accordance with the SEPP Noise Policy No. N-2 at No. 54 Johnston St. when a band was playing in the Tote Hotel.

The Effective Noise Level for this sample was determined by measuring the $L_{10\ OCT}$ Sound Pressure Levels in accordance with the SEPP Noise Policy No. N-2.

Table 15 below presents the measured $L_{10\ OCT}$ Sound Pressure Levels.

Table 15 L_{10A} Noise Level measurements at No.54 Johnston Street with band music from the Tote Hotel

Measurement	**L_{10} Sound Pressure Level (dB : re 2 x 10^{-5} Pa)**									
	Octave Band Centre Frequency (Hz)									**Overall A – weighted SPL**
	31.5	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	
Measurement 1	76.5	78	71.5	73.5	65	67.5	66	56	46	69
Measurement 2	76	80	70	72	66	67	64	57	47	66.5
Average	**76**	**79**	**71**	**73**	**66**	**67**	**65**	**57**	**47**	**68**

A comparison of the Effective Noise Level ($L_{10\ OCT}$) with the calculated Noise Limit as presented in Table 7 above shows that the music noise levels emitted from the Tote Hotel when the band was performing would have exceeded the music Noise Limit criterion for the Night time period. It can also be seen that the noise limit could also be exceeded for the evening time period.

The SEPP N-2 Noise Policy state in Schedule B2 paragraph 3(c):

‘***Where two or more premises contribute to the Effective Noise Level in a noise sensitive area, derived noise limits may be set so that the contribution from each of the premises when combined together will meet the noise limit at the noise sensitive area’.***

However, the predicted the noise emissions from the proposed Circus Oz site meets the calculated Noise Limits at all noise sensitive receiver locations except possibly at the Department of Justice building due to activities in the Spiegel tent.

All other noise emissions due to Circus Oz are predicted to comply with the SEPP Nos. N-1 and N-2 at all noise sensitive receiver locations.

9.3. Vehicle and Pedestrian Movement on the Proposed Site.

From the initial layout plans of the proposed Circus Oz site, there will be in the order of 22 vehicles located within the boundary of the site

The noise levels generated by the vehicle movements will be insignificant when compared with the noise levels generated by general road traffic noise along Johnston and Wellington Streets. This noise will be masked by the general road traffic noise at the noise sensitive receiver locations.

Pedestrian noise due to people talking and moving will also have a minimal acoustic impact on the overall noise levels within the site due the dominant noise from the ambient road traffic noise and music noise from the Tote Hotel.

9.4. Noise Intrusion into the Proposed Circus Oz Site

It was noticed that the band noise from the Tote Hotel could have an adverse impact on the acoustic environment within the Spiegel tent.

At the time of the night time noise survey, access to the Circus Oz site was not available. An indicative noise level measurement was performed at the main gate entrance to the Circus Oz site and the music noise level was determined to be approximately 70 – 73 dBA with a band playing at the Tote Hotel.

As the lounge bar in the Tote Hotel (where the bands perform) is almost directly opposite to the proposed location of the Spiegel tent, it can be expected that the noise level due to the bands could be in the order of 75 - 80 dBA at the Spiegel tent location. This is likely to have a significant impact on the ambient environment inside the Spiegel tent and should be noted.

10. Conclusion

Noise surveys have been performed at the proposed Circus Oz site to determine the existing acoustic environment and the likely acoustic impact of noise emissions from activities due to Circus Oz.

Attended noise level measurements were conducted to determine indicative Noise Limits in accordance with SEPP Noise Policies Nos. N-1 and N-2. Based on music noise levels and noise level data provided by Arts Victoria, it was determined that the noise emissions due to Circus Oz would meet the noise limits. Music noise emission from the Speigel tent might be considered non compliant at the Department of Justice Building.

The predicted noise emission into the local community due to Circus Oz are of the order of 10 dBA below the existing background noise levels. The existing background noise levels are dominated by road traffic noise along Johnston Street and band noise from the Tote Hotel.