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DA Noise Impact Assessment

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DOCUMENT CONTROL REGISTER

Project Number	20181461.1
Project Name	Leisure and Entertainment Facility, Port Macquarie
Document Title	DA Noise Impact Assessment
Document Reference	20181461.1/0312A/R1/GC
Issue Type	Email
Attention To	United Cinemas Australia Pty Ltd

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	29/11/2018	20181461.1/2911A/R0/GC	GC	GW	
1	3/12/2018	20181461.1/0312A/R1/GC	GC		GW

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1 INTRODUCTION

The report presents our DA acoustic assessment associated with the proposed Leisure and Entertainment Facility located at the corner of Park St and Warlters Street, Port Macquarie.

In the report we have:

- Identified existing background noise levels.
- Identified appropriate noise emission assessment criteria.
- Identified potential noise sources caused by proposed development.
- Assessed the impacts on nearby sensitive receivers.
- Provided appropriate management and noise control measures.

The report is based on the following architectural drawings provided to this office.

Table 1 – Architectural Drawings used for Assessment

Sheet No	Issue	Date
DA 01	A	3/12/18
DA 10	A	3/12/18
DA 11	A	3/12/18
DA 12	A	3/12/18
DA 13	A	3/12/18
DA 14	A	3/12/18
DA 15	A	3/12/18
DA 20	A	3/12/18
DA 30	A	3/12/18
DA 31	A	3/12/18
DA 40	A	3/12/18
DA 41	A	3/12/18

2 SITE DESCRIPTION

The project site is located at Park St and Warlters Street, Port Macquarie. The site is surrounded by existing commercial/industrial development with an existing Kmart retail store approximately 70 metres to the west of the project site. The nearest affected receivers are below:

- Receiver 1- Houses/Apartment buildings located immediately across Warlters Street to the south which is approximate 40m distance from project site.
- Receiver 2- Commercial/Retail building located immediately to the west which is approximate 70m distance from project site.

Figure 1 below shows the site map and location.

Table 2 below presents the proposed hours of operation.

Figure 1 Site Map and Receiver Locations

Table 2 – Port Macquarie - Hours of Operation

Tenancy No.	Use	Opening Time	Closing Time	Days
Ground Floor				
1	Drive-through restaurant	5am	Midnight	7 days
2	Restaurant	6am	Midnight	7 days
3	Restaurant	6am	Midnight	7 days
4	Restaurant	6am	Midnight	7 days
5	Restaurant	6am	Midnight	7 days
6	Restaurant	6am	Midnight	7 days
7	Restaurant	6am	Midnight	7 days
8	Restaurant	6am	Midnight	7 days
9	Restaurant	6am	Midnight	7 days
10	Restaurant	6am	Midnight	7 days
11	Retail	9am	11pm	7 days
12	Retail	9am	11pm	7 days
13	Retail	9am	11pm	7 days
14	Retail	9am	11pm	7 days
15	Drive-through restaurant	5am	Midnight	7 days
	Loading Dock	5am	5pm	7 days

Table 2 cont. – Port Macquarie - Hours of Operation

Tenancy No.	Use	Opening Time	Closing Time	Days
Level 1				
21	Indoor Recreation	9am	Midnight	7 days
22	Gymnasium	5am	10pm	Monday to Saturday
		8am	5pm	Sunday
Level 2				
31	Cinema*	9am	3am*	
Level 3				
41	Function Centre	9am	Midnight	7 days

* Standard Cinema trading hours will include a closing time of midnight. The 3am closing time is to allow for midnight screenings and blockbuster releases which will occur on average 12 times per year.

3 NOISE DESCRIPTORS

Environmental noise constantly varies in level, due to fluctuations in local noise sources including road traffic. Accordingly, a 15 minute measurement interval is normally utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters.

In the case of environmental noise three principle measurement parameters are used, namely L_{10}, L_{90} and L_{eq}.

The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced by the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source depends on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. L_{eq} is important in the assessment of traffic noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of industrial noise.

4 NOISE EMISSION ASSESSMENT

The main noise emitted from the project site will be those from the following:

- Mechanical plant servicing the site*.
- Restaurant Patron Noise
- Cinema Noise Emission
- Loading Dock Noise
- Function Room
- Gym

*Detailed mechanical equipment selection and layouts are not available at this stage, detailed acoustic assessment will be conducted at construction certificate stage. The external noise emission criteria are set up in this section of the report to ensure that the acoustic amenity of nearby residents is not adversely affected.

4.1 ASSESSMENT CRITERIA

The following noise emission criteria have been adopted for this assessment:

- NSW EPA Noise Policy for Industry 2017

4.1.1 NSW EPA Industrial Noise Policy for Industry 2017

The NSW EPA Noise Policy for Industry 2017, has two criteria which need to be satisfied; namely the Intrusiveness noise level criteria and the Project amenity noise level criteria. The project noise trigger level is then established based on the lower of the intrusiveness and project amenity levels.

Noise levels are to be assessed at the property boundary or nearby dwelling, or at the balcony or façade of an apartment.

4.1.1.1 Intrusiveness Noise Level Criteria

The guideline is intended to limit the audibility of noise emissions at residential receivers and requires that noise emissions measured using the L_{eq} descriptor do not exceed the background noise level by more than 5dB(A). Where applicable, the intrusive noise level should be penalised (increased) to account for any annoying characteristics such as tonality.

As background noise levels have not been measured to the closest affected residential receiver, the minimum assumed RBL's will apply to this report. These have been presented in Table 2.1 of the Industrial Noise Policy for Industry and result in minimum intrusiveness noise levels. The minimum RBLs and the relevant intrusiveness noise levels are presented in the table below.

Table 3 - Minimum assumed RBLs and Project Intrusiveness Noise Levels

Time of Day	Recommended Minimum Rating Background Noise Level (dB(A)) by NPfI	Minimum Project Intrusiveness Noise Levels ($L_{Aeq, 15min}$ dB(A))
Day (7am-6pm)	35	40
Evening(6pm-10pm)	30	35
Night(10pm-7am)	30	35

4.1.1.2 Project Amenity Noise Level Criteria

The guideline is intended to limit the absolute noise level from all noise sources to a level that is consistent with the general environment.

The NSW EPA Industrial noise policy sets out acceptable noise levels for various localities. Table 2.2 on page 11 of the policy indicates 3 categories to distinguish different residential areas. They are rural, suburban, urban. This site is categorised by urban receivers.

For the purposes of this condition:

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
- Evening is defined as the period from 6pm to 10pm.
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and public holidays.

The project amenity noise level is calculated by taking the recommended amenity noise level (as presented in table 2.2 of the policy), subtracting 5dB(A) and then adding 3dB(A) to convert from $L_{Aeq, period}$ to a $L_{Aeq, 15 minute}$ descriptor. The project amenity noise level criteria are presented in the table below.

Table 4 – Project Amenity Noise Level Criteria

Location	Period/Time	Project Amenity Noise Level Criteria dB(A) $L_{eq(15min)}$
Nearby Residences – Suburban Receiver	Day (7am-6pm)	53
	Evening(6pm-10pm)	43
	Night(10pm-7am)	38
Commercial	When in use	63

4.1.1.3 Project Noise Emission Limit

The project noise emission limit (as outlined in section 2.1 of the policy) is the lower of the intrusiveness and project amenity noise levels. The project noise emission limits are presented in the table below.

Table 5 – Project Noise Emission Limit Criteria

Location	Period/Time	Project Noise Trigger Level Criteria dB(A) $L_{eq(15min)}$
All Residential Receivers	Day (7am-6pm)	40
	Evening(6pm-10pm)	35
	Night(10pm-7am)	35
Commercial	When in use	63

4.1.2 Sleep Arousal Criteria

Potential sleep arousal impacts should be considered for noise generated before 7am or after 10pm.

Short duration, intermittent noise events (such as cars driving by) are typically assessed for potential sleep disturbance.

Potential impacts are assessed using the recommended procedure in the NSW EPA Noise Policy for Industry.

- An assessment should be conducted to determine if noise levels at a residential location during the night time period (10pm-7am) exceed:
    - $L_{Aeq,\ 15min}$ 40dB(A) or the prevailing RBL (rating background noise level) plus 5 dB, whichever is greater, and/or
    - L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is greater.

The policy does not explicitly state where noise impacts should be assessed within the residential location. For the purposes of this assessment, noise impacts will be assessed at the location immediately outside a resident's bedroom window. If the noise events are compliant with this criteria, then sleep arousal impacts are unlikely and no further analysis is needed. This is consistent with the Noise Guide for Local Government. The criteria is set out below.

Table 6 – Sleep Arousal Criteria

Location	Background Noise Level (10pm-7am)	Sleep Arousal Criteria dB(A)
All Residential Receivers	30 dB(A)L_{90}	35dB(A)$L_{eq(15min)}$ 52 dB(A)$L_{Max,\ F}$

4.1.3 Protection of the Environmental Operation Act Regulation

Protection of the Environmental Operations regulation limits the noise levels associated within the operation of domestic air conditioning criteria during night time periods which is presented below:

Protection of the Environmental Operations (Noise Control) Regulation 2000-Sect 52

52 Air Conditioners

(1) A person must not cause or permit an air conditioner to be used on residential premises in such a manner that it emits noise that can be heard within a habitable room in any other residential premises (regardless of whether any door or window to that room is open):

(a) before 8 am or after 10 pm on any Saturday, Sunday or public holiday, or
(b) before 7 am or after 10 pm on any other day.

4.1.4 Summary of Noise Emission Objectives

Based on the requirements stated in the sections above, the Table 7 and 8 below provides a summary of the assessment criteria applicable to the future residential development at the project site.

Table 7 – Environmental Noise Emission Criteria (To Residential)

Time of day	Assumed Background Noise Level dB(A) $L_{90(15minutes)}$	Amenity Criteria dB(A) $L_{eq(period)}$	Intrusiveness Criteria Background + 5 dB(A) $L_{eq(15minutes)}$	EPA Criteria for Residential Condensers	EPA Criteria for Sleep Arousal – dB (A)
Day	35	40	40	N/A	N/A
Evening	30	35	35	N/A	N/A
Night	30	35	35	Inaudible within neighbouring premises	35 dB(A)$L_{eq(15min)}$ 52 dB(A)$L_{Max, F}$

Table 8 – Environmental Noise Emission Criteria (To Commercial)

Location	Period/Time	Project Noise Trigger Level Criteria dB(A) $L_{eq(15min)}$
Commercial	When in use	63

4.2 ASSESSMENT OF NOISE EMISSION OF MECHANICAL SERVICES

As mechanical plant has not yet been selected at this stage, a complete assessment of mechanical noise emissions can not be conducted at this time. Generally, this is undertaken at CC stage, once the plant selections have been undertaken. Notwithstanding, compliance with the mechanical noise emission criteria presented in section 4.1.4 and presented in table 6 and 7 is both practical and reasonable with the use of one or more of (but not limited to) the following:

- Acoustic Barriers/Screens;
- Internally lined ductwork;
- External Lagging;
- Silencers etc.

4.2.1 Noise – Air-conditioners

As air conditioning plant has not yet been selected, a complete assessment of air-conditioning noise emissions can not be conducted at this time. Generally, this is undertaken at CC stage, once the plant selections have been undertaken. Notwithstanding, compliance with the air conditioning noise emission criteria presented in section 4.1.3 and 4.1.4 and presented in table 6 is both practical and reasonable with the use of one or more of (but not limited to) the following acoustic treatments:

- Acoustic Barriers/Screens;
- Internally lined ductwork;
- External Lagging;
- Silencers etc.

4.3 RESTAURANT – SOUTHERN WESTERN BOUNDARIES (TENANCY 15)

The main noise emissions from the operation of the restaurant will be as follows:

- Vocal noise from patrons using the outdoor seating area.

Noise emitted from the outdoor seating area will be predicted at the nearby commercial property and residences then assessed against the criteria nominated in section 4.1.4.

Noise emissions from patrons using the outdoor seating area will be assessed at the façades of the closest residences (to the south of the site across Warlters St) and commercial property to the west as these are the most potentially affected locations. The predicted noise level will be based on the following assumptions:

- Up to 16 people will be using the outdoor seated area at the same time.
- Based on previous measurements by this office in similar outdoor spaces, the sound power level of a patron talking will be 72dB(A)L_{eq}.
- 1 in 2 people talking at any one time.
- A barrier wall of 1.8m height shall be constructed from an imperforate material between the subject restaurant and the closest residential receiver to the south.
- No music to be played in outside seated area.
- Outdoor seated area to be closed between 10pm to 7am
- Recommendations in Section 5 are implemented.

Noise emissions will be predicted at the following locations:

- Residences at the southern side of Warlters Street.

Noise generation from the outdoor seating area is presented below:

With respect to noise transmissions from the outdoor seating area to the closest affected receivers, the noise levels in the Table below have been predicted.

Table 9 – Noise Emissions from the Restaurant along the Southern Western Boundary (Tenancy 15)

Space	Receiver	Predicted Noise Level (L_{Aeq})	Noise Emission Criteria (Day/Evening) (L_{Aeq})	Compliance?
External Seating Area	Residential Receiver to the South along Warlters St	<33	Day – 40 Evening – 35 Night - 35	Yes
	Commercial Receiver to the West	<50	65	Yes

Note: Refer to Figure 1 of this assessment for receiver locations and the relative levels.

4.4 RESTAURANT – SOUTH-EASTERN BOUNDARY (TENANCY 10)

The main noise emissions from the operation of the restaurant will be as follows:

- Vocal noise from patrons using the outdoor seating area.

Noise emitted from the outdoor seating area will be predicted at the nearby residences and assessed against the criteria nominated in section 4.1.4.

Noise emissions from patrons using the outdoor seating area will be assessed at the façades of the closest residences (to the south of the site across Warlters St) as these are the most potentially affected locations. The predicted noise level will be based on the following assumptions:

- Up to 32 people will be using the outdoor seated area at the same time.
- Based on previous measurements by this office in similar outdoor spaces, the sound power level of a patron talking will be 72dB(A)L_{eq}.
- 1 in 2 people talking at any one time.
- A barrier wall of 1.8m height shall be constructed from imperforate material between the subject restaurant and the closest residential receiver to the south.
- No music to be played in outside seated area.
- Outdoor seated area to be closed between 10pm to 7am
- Recommendations in Section 5 are implemented.

Noise emissions will be predicted at the following locations:

- Residences at the southern side of Warlters Street.

Noise generation from the outdoor seating area is presented below:

With respect to noise transmissions from the outdoor seating area to the closest residential receivers, the noise levels in the Table below have been predicted.

Table 10 – Noise Emissions from the Restaurant along the South-Eastern Boundary (Tenancy 10)

Space	Receiver	Predicted Noise Level (L_{Aeq})	Noise Emission Criteria (Day/Evening) (L_{Aeq})	Compliance?
External Seating Area	Residential Receiver to the South along Warlters St	<35	Day – 40 Evening – 35 Night - 35	Yes

Note: Refer to Figure 1 of this assessment for receiver locations and the relative levels.

4.5 RESTAURANT – EASTERN BOUNDARY (TENANCY 6 TO 9)

The main noise emissions from the operation of the restaurant will be as follows:

- Vocal noise from patrons using the outdoor seating area.

Noise emitted from the outdoor seating area will be predicted at the nearby residences and assessed against the criteria nominated in section 4.1.4.

Noise emissions from patrons using the outdoor seating area will be assessed at the façades of the closest residences (to the south of the site across Warlters St) as these are the most potentially affected locations. The predicted noise level will be based on the following assumptions:

- Up to 80 people will be using the outdoor seated area at the same time.
- Based on previous measurements by this office in similar outdoor spaces, the sound power level of a patron talking will be 72dB(A)L_{eq}.
- 1 in 2 people talking at any one time.
- No music to be played in outside seated area.
- Outdoor seated area to be closed between 10pm to 7am
- Recommendations in Section 5 are implemented.

With respect to noise transmissions from the outdoor seating area to the closest residential receivers, the noise levels in the Table below have been predicted.

Table 11 – Noise Emissions from the Restaurant along the Eastern Boundary (Tenancy 6 to 9)

Space	Receiver	Predicted Noise Level (L_{Aeq})	Noise Emission Criteria (Day/Evening) (L_{Aeq})	Compliance?
External Seating Area	Residential Receiver to the South along Warlters St	<35	Day – 40 Evening – 35 Night - 35	Yes

Note: Refer to Figure 1 of this assessment for receiver locations and the relative levels.

4.6 RESTAURANT – NORTHERN BOUNDARY (TENANCY 1 TO 4)

The main noise emissions from the operation of the restaurant will be as follows:

- Vocal noise from patrons using the outdoor seating area.

Noise emitted from the outdoor seating area will be predicted at the nearby commercial and residences and assessed against the criteria nominated in section 4.1.4.

Noise emissions from patrons using the outdoor seating area will be assessed at the façades of the closest residences (to the south of the site across Warlters St) as these are the most potentially affected locations. The predicted noise level will be based on the following assumptions:

- Up to 96 people will be using the outdoor seated area at the same time.
- Based on previous measurements by this office in similar outdoor spaces, the sound power level of a patron talking will be 72dB(A)L_{eq}.
- 1 in 2 people talking at any one time.
- No music to be played in outside seated area.
- Outdoor seated area to be closed between 10pm to 7am
- Recommendations in Section 5 are implemented.

With respect to noise transmissions from the outdoor seating area to the closest residential receivers, the noise levels in the Table below have been predicted.

Table 12 – Noise Emissions from the Restaurant along the Northern Boundary (Tenancy 1 to 4)

Space	Receiver	Predicted Noise Level (L_{Aeq})	Noise Emission Criteria (L_{Aeq})	Compliance?
External Seating Area	Residential Receiver to the South along Warlters St	<25	Day – 40 Evening – 35 Night - 35	Yes
	Commercial Receiver to the West	<50	65	Yes

Note: Refer to Figure 1 of this assessment for receiver locations and the relative levels.

4.7 CINEMA NOISE EMISSION

Noise emissions from the use of the cinema on site are assessed against the corresponding acoustic guidelines presented in Section 4.1.4.

Noise from music /speech within the cinemas shall not be audible at any residential receivers with walls and roof/ceiling structure minimum R_w 50 ratings.

4.8 FUNCTION ROOM

4.8.1 Noise Sources

This section examines the potential noise impacts from the proposed function room. The main potential sources of noise are patron's talking and music within the project site.

4.8.2 Music Noise

The assessment has been based on noise levels that occur during the worst-case situation. This event would correspond to maximum use periods e.g. Friday, Saturday nights. The typical music noise levels are presented below.

Table 13 - Typical Worst Music Noise Levels

Music Type	Sound Pressure Level dB(A) L_{10}
Function Room	Up to 95

4.8.3 Patron Noise

The main noise source in the indoor/outdoor areas would be patron speech, with a sound power level of 77 dB(A) L_{10} per patron.

Maximum 500 patrons are permitted within the function room at any time.

Noise from patrons using the function room spaces has been predicted at the nearest residences. The noise level predicted at each receiver is based on proposed number of people that may access the function room with up to 1 in 3 people talking at any one time.

The L_{10} sound power level spectrum used in the calculations to predict the impact of patrons utilising the bar areas is presented below. Predicted noise levels have also taken into account the noise reduction results in Section 5.

With respect to noise transmissions from the outdoor communal area to the closest residential receivers, the noise levels in the Table below have been predicted.

Table 14 – Noise Emissions from the Function Room to Resident Receiver

Space	Receiver	Predicted Noise Level (L_{Aeq})	Noise Emission Criteria (L_{Aeq})	Compliance?
External Seating Area	Residential Receiver to the South along Warlters St	<35	Day – 40 Evening – 35 Night - 35	Yes

Note: Refer to Figure 1 of this assessment for receiver locations and the relative levels.

4.8.4 Patrons /Staff Leaving at Night

Management controls should be utilised to manage patron departure particularly at closing times to ensure that patrons leaving development in a prompt and orderly manner.

4.9 LOADING DOCK NOISE

This section of the report presents the assessment of noise associated with the operation of the loading dock associated with the development located off a future internal roadway. The assessment was conducted in conjunction with the EPA criteria presented in this report.

Loading dock deliveries will be limited to occur between 5:00 am and 5:00 pm.

We note that the loading dock will be restricted to no Heavy Rigid Vehicles i.e.12.5m long, to access the Loading Dock between 10am -5pm.

The allowable daytime and night-time noise levels based on criterion detailed in this report include the levels displayed in Section 4.1.4 of this report. Note that the noise level criteria for residential receivers to the south of the site will be used for this assessment.

4.10 POTENTIAL LOADING DOCK NOISE SOURCES

The potentially significant loading dock noise sources are listed in Table 15 below long with noise emission levels. The emission levels in Table 15 have been obtained from noise monitoring carried out at similar warehouse and retail loading dock facilities. Noise measurements were obtained using a Norsonics SA 110 sound level meter, set to fast response. The sound level meter was calibrated before and after the measurements using a Rion NC-73 calibrator. No significant drift was recorded.

Table 15 - Noise Source Emission Levels

Noise Source	Sound Emission Level dB(A) at 7m	Type of Noise Source
Small Truck Reversing alarm	75(1)	Quasi-Steady, tonal
Trucks Manoeuvring/Reversing	75	Quasi-Steady
Truck Air Brakes	89	Transient
Forklifts	75(1)	Quasi-Steady, tonal
Truck Door Closing	75	Transient
Truck Starting	72	Transient

(1) A 5 dB(A) penalty has been applied to this source to account for the tonal characteristic of noise produced.

4.11 PREDICTED NOISE LEVELS AT MOST AFFECTED RECEIVERS

Noise levels at the residences were predicted based on the noise emission levels in table 15, which are typical for this type of development.

Noise levels have also taken into account the recommendations in Section 5 being implemented.

Table 16 summaries the predicted noise levels at the nearest residence on Warlters Street and within the proposed development. The noise levels below assume the acoustic treatments detailed in section 5 of this report are adopted.

Table 16 – Assessment of Loading Dock Noise Emissions

Location/Activity	Receiver	Predicted Noise Level at Residence $L_{eq,15min}$	Allowable Noise Level at Residence $L_{eq,15min}$
Truck Loading/Unloading(1) within Loading Dock	Residences on Warlters St	<35 dB(A) Day	35 dB(A) 5am to 7am 40 dB(A) 7am to 5pm

1 - These activities include activities such as the delivery truck being idle in the dock, movement of pallet trucks, operation of compactors, etc.

4.12 GYM

Typical noise emissions have been assessed against the noise emission objectives presented in Section 4.1.4. As the gym will potentially be used from 5am, an assessment against day, evening and night time acoustic criteria will be presented.

Noise levels generated in a gym have been measured previously by this office. The main source of noise is the music from the internal speakers and activity within the main gym floor area. Noise emissions will be predicted based on the following:

- A sound pressure level of up to 75dB(A) in gymnasium area when no music played over PA, and up to 80dB(A) when music is played.
- Building shell constructions including a 10.38mm laminated glass façade and concrete shell.
- Operations controls as per recommendations in Section 5.

The noise level at the nearest receivers was predicted using the above data and by taking into account any noise reduction provided by the building fabric, distance losses, directivity, and barrier effects, etc.

With respect to noise transmissions from the gym area to the closest residential receivers, the noise levels in the Table below have been predicted.

Table 17 – Noise Emissions from the Function Room to Resident Receiver

Space	Receiver	Predicted Noise Level (L_{Aeq})	Noise Emission Criteria (L_{Aeq})	Compliance?
Gym	Residential Receiver to the South along Warlters St	<35	Day – 40 Evening – 35 Night - 35	Yes

Note: Refer to Figure 1 of this assessment for receiver locations and the relative levels.

4.12.1 Gym Patrons /Staff Entering Before 7am and Leaving at Night

Management controls should be utilised to manage patron entering between 5am and 7am and departing particularly at closing times to ensure that patrons leaving the development in a prompt and orderly manner.

5 RECOMMENDATIONS

The following acoustic controls are recommended to ensure that the noise emissions fully comply with the criteria in this report.

5.1 MECHANICAL PLANT

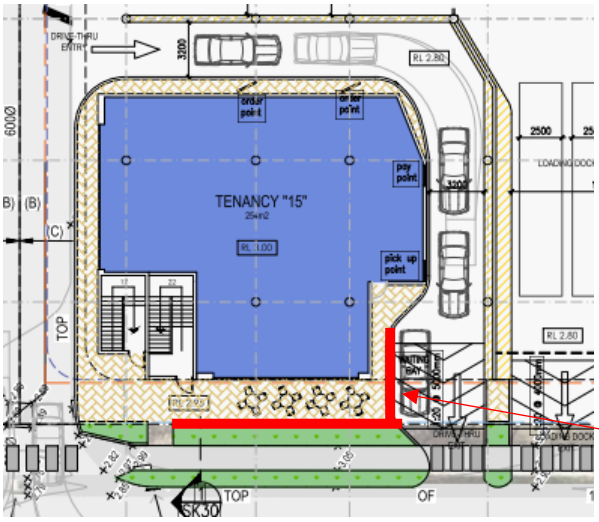
Plant noise emission assessment shall be carried out at CC stage to ensure that the overall noise emission satisfy the requirements of Section 4.1.4.

5.2 RESTAURANTS

It is recommended that the following management and physical controls be implemented into the design and operation of the proposed restaurants along the southern, western and northern boundaries associated with the development:

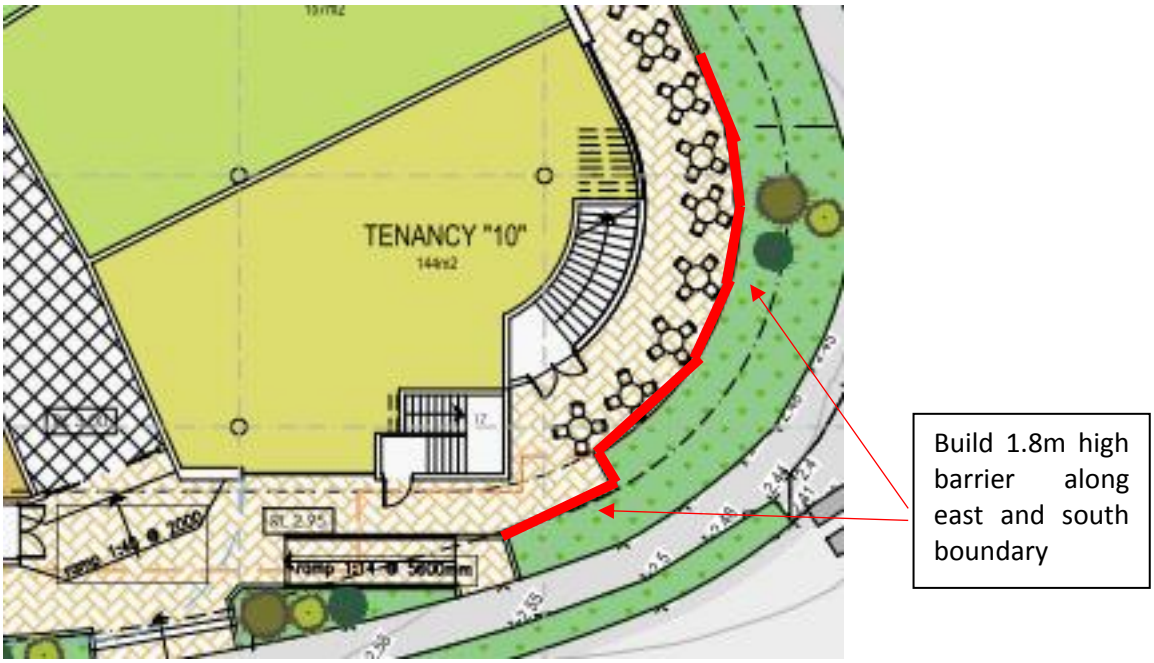
5.2.1.1 Tenancy 15 Restaurant

- Maximum patron number within southern outdoor of tenancy 15 area is 16 people and the outdoor area shall be shut down at 10pm.
- No music allowed in outdoor areas of the restaurant.
- A barrier wall of 1.8m height shall be constructed from solid material between the subject restaurant and the closest residential to the south. The barrier may be constructed of Perspex, glass, colorbond or a combination of these materials. See figure below of location of barrier.
- Prominent notice shall be placed within project site to remind patrons to minimise the noise levels at any time.
- No operation after the proposed operation hours.



5.2.1.2 Tenancy 10 Restaurant

- Maximum patron number within southern outdoor of tenancy 10 area is 32 people and the outdoor area shall be shut down at 10pm.
- No music allowed in outdoor areas of the restaurant.
- A barrier wall of 1.8m height shall be constructed from solid material between the subject restaurant and the closest residential to the south. The barrier may be constructed of Perspex, glass, colorbond or a combination of these materials. See figure below of location of barrier.
- Prominent notice shall be placed within project site to remind patrons to minimise the noise levels at any time.
- No operation after the proposed operation hours.



5.2.1.3 Tenancy 6 to 9

- Maximum patron number within southern outdoor of tenancy 6 to 9 area is 16 people and the outdoor area shall be shut down at 10pm.
- No music allowed in outdoor areas of the restaurant.
- Prominent notice shall be placed within project site to remind patrons to minimise the noise levels at any time.
- No operation after the proposed operation hours.

5.2.1.4 Tenancy 1 to 4

- Maximum patron number within southern outdoor of tenancy 1 to 4 area is 16 people and the outdoor area shall be shut down at 10pm.
- No music allowed in outdoor areas of the restaurant.
- Prominent notice shall be placed within project site to remind patrons to minimise the noise levels at any time.
- No operation after the proposed operation hours.

5.3 CINEMA NOISE EMISSION

Noise from music /speech within the cinemas shall not be audible at any residential receivers with walls and roof/ceiling structure minimum R_w 50 ratings.

5.4 RECOMMENDED LOADING DOCK DEVELOPMENT CONTROLS

It is recommended that the following management and physical controls be implemented into the design and operation of the proposed loading dock associated with the Development:

- Operating hours for the loading docks to trucks and deliveries to arrive and depart to be between 5am and 5pm.
- Bail and/or garbage compactors are to be used only within the loading dock areas.
- External door to be constructed from a solid imperforate material.
- To attenuate noise levels generated within the loading dock and loading dock entry, install an acoustically absorptive material to the ceiling/soffit above the loading dock and loading dock entry. This can consist of 50mm deep Envirospray (or equivalent) applied to the underside of the soffit/ceiling above the loading dock and loading dock entry.
- Neoprene rubber buffers should be installed on the vertical face of the loading dock where vehicles park to absorb impacts.
- A detailed assessment of noise emissions from plant and equipment associated with the loading dock is required to be conducted prior to installation in conjunction with EPA requirements.

5.4.1 Deliveries

Goods and materials deliveries for the development are to be conducted via the enclosed proposed loading docks with acoustic treatments as detailed in the section above.

5.5 FUNCTION ROOM

- Tamper proof sound level limiting devices should be installed within project site to limit the sound pressure level as below:

Table 18 –Music Noise Limit

Time	Music Noise Limit
Function Room	95 dB(A)L_{eq}

- Glazing of the function room shall be as below:

Table 19 -Glazing Thickness

Space	Glazing Thickness	R_w rating
Function Room	10.38mm Laminated	35

- Noise from music /speech within the function room shall comply at any residential receivers with walls and roof/ceiling structure minimum R_w 50 ratings.

5.6 GYM

To ensure compliance with all nominated assessment criteria the following management controls and acoustic treatments are recommended.

- Use of amplified music within the gym should not exceed 80dB(A)L_{eq} within the tenancy.
- Speakers are to be mounted to building structure using Embelton NRD mounts.
- Detailed review of any mechanical services (air-conditioning etc) should be conducted at CC stage, once plant items are selected, and acoustic treatments designed to ensure plant noise complies with the criteria set out in section 4.1.4.
- Glazing of the gym shall be as below:

Table 20 -Glazing Thickness

Space	Glazing Thickness	R_w rating
Function Room	10.38mm Laminated	35

- Noise from music within the gym room shall comply at any residential receivers with walls structure minimum R_w 50 ratings.

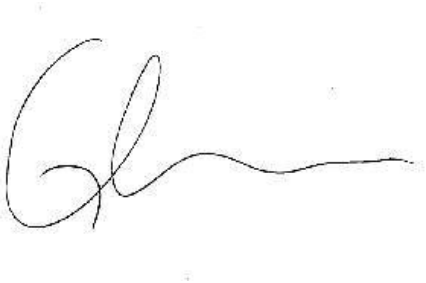
- Prominent notice shall be placed within project site to remind patrons to minimise the noise levels at any time.

6 CONCLUSION

This report presents our acoustic assessment for the proposed Leisure and Entertainment Facility located at the corner of Park St and Warlters Street, Port Macquarie. Noise emissions from the project site will comply with the requirements of the NSW EPA Industrial Noise Policy as presented in section 4.1.4 of this report if the recommendations presented in section 5 are implemented.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,



Glen Campbell

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