



**Item No:** 2.1  
**Title:** DA/569/2016/B - Shop 37/2-6 Warrigal Street, The Entrance - Use of Shop 37 for Recreational Facility - Personal Fitness Studio (Amended Application)  
**Department:** Environment and Planning

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28 October 2019 Ordinary Council Meeting

Trim Reference: DA/569/2016/B - D13635467  
Author: Amanda Hill, Town Planner  
Manager: Andrew Roach, Unit Manager, Development Assessment  
Executive: Scott Cox, Director Environment and Planning

## Summary

Development consent was granted on 7 September 2016 (Development Application 569/2016) for an indoor recreation facility (gym) within an existing mixed-use development. The consent was time limited for a 12 month period (Condition 19) to enable Council to review the operation of the facility in relation to impact on the amenity of adjoining properties. In 2018, approval was granted for an additional 12 months. An application to modify development consent DA/569/2016 has been received to delete Condition 19 to allow the permanent use of the premises as an indoor recreation facility (gym).

There have been two notification periods for the application – the first resulted in a total of 17 submissions plus a noise survey completed by 17 residents. The second notification period resulted in 15 submissions. In accordance with Council's *Policy for Determining Development Applications subject to Public Objection*, a Councillor Business Update was provided on 9 August 2019 outlining the number of submissions received, the issues raised and indicated the officer's recommendation to refuse the application. Following the Councillor Business Update, the application was 'called up' to Council by Mayor Matthews and Councillor McLachlan.

The application has been examined having regard to the matters for consideration detailed in section 4.15 and 4.55 (1A) of the *Environmental Planning and Assessment Act 1979* and other statutory requirements with the issues requiring attention and consideration being addressed in the report.

<b>Applicant</b>	Mr T Butcher
<b>Owner</b>	Owners Corporation SP 77340
<b>Application No</b>	DA/569/2016/B
<b>Description of Land</b>	Lot 37 SP 77340 37/2-6 Warrigal Street, THE ENTRANCE
<b>Proposed Development</b>	Deletion of Condition 19 (remove time limited consent)
<b>Site Area</b>	1905m <sup>2</sup>
<b>Zoning</b>	B2 Local Centre
<b>Existing Use</b>	Recreational Facility (indoor) - Gym
<b>Employment Generation</b>	Yes

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Estimated Value N/A

**Recommendation**

- 1 That Council refuse development application 569/2016/B for the following reasons having regard to the matters detailed in Section 4.55 (1A) and 4.15 of the Environmental Planning and Assessment Act 1979 and other relevant issues:**
- a There is insufficient information to justify the proposed development is of minimal environmental impact in accordance with Section 4.55(1A)(a) of the Environmental Planning and Assessment Act 1979.**
  - b The proposed development is not considered to be substantially the same development to that which was originally approved in accordance with Section 4.55(1A)(b) of the Environmental Planning and Assessment Act 1979.**
  - c The proposed development does not comply with the objective of the B2 Local Centre zone under Wyong Local Environmental Plan 2013 which seeks to avoid land use conflicts within the zone.**
  - d There is insufficient information to determine the extent of impact on the amenity of residents within the development and other adjoining properties.**
  - e The site is not suitable for a continued and permanent use as an indoor recreation facility (gym) having regard for the matters for consideration in Section 4.15(1)(c) of the Environmental Planning and Assessment Act 1979.**
  - f The deletion of condition 19 under DA/569/2016 to allow a continued and permanent use as an indoor recreation facility (gym) is not in the public interest.**
- 2 That Council advise those who made written submissions of its decision.**

<b>Proposed Development</b>	Deletion of Condition 19 (to remove 12 month time limited consent)
<b>Permissibility and Zoning</b>	The site is zoned B2 Local Centre under <i>Wyong Local Environmental Plan 2013</i> . The proposal aims to modify the consent for the approved indoor recreation facility. The proposed development is permitted in the zone.
<b>Relevant Legislation</b>	<ul style="list-style-type: none"> <li>• <i>Environmental Planning and Assessment Act</i></li> </ul>

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	<p>1979</p> <ul style="list-style-type: none"> <li>• Wyong Local Environmental Plan 2013</li> <li>• Draft Central Coast Local Environmental Plan 2018</li> <li>• Wyong Development Control Plan 2013</li> </ul>
<b>Current Use</b>	Recreational Facility (indoor) - Gym
<b>Integrated Development</b>	No
<b>Submissions</b>	<p>First Notification Period (30 January 2019 – 12 February 2019) - 17 submissions plus a noise survey completed by 17 residents.</p> <p>Second Notification Period (26 June 2019 – 10 July 2019) – 15 Submissions.</p>

**Background**

The subject site contains an existing mixed-use development comprising three ground floor commercial tenancies and 35 residential units above. Development Consent was granted on 7 September 2016 (Development Application 569/2016) for the use of a ground floor tenancy as an indoor recreation facility (gym), including minor internal alterations and associated signage. A condition of consent (Condition 19) restricted the approval to an initial 12 month period so that Council could review the operation of the facility in relation to impact on the residents within the building and those in adjoining properties.

During the initial 12 month period Council received complaints in relation to noise and vibration impacts from the approved use. Council Compliance Officers deemed that the gym was being operated in accordance with the conditions of consent and no further action could be taken.

On 28 July 2017, an application was lodged to modify the development consent by changing the hours of operation and deleting the condition that limited the consent to a 12 month period. Given historical complaints, the applicant was requested to provide acoustic assessment and detail appropriate measures to mitigate noise and vibration impacts. The applicant provided details of acoustic assessments undertaken and measures instigated to deal with noise/amenity impacts, including: reducing trading hours, additional floor matting, signage to remind gym users of potential impacts on neighbours.

Based on the additional detail provided by the applicant, approval was granted for amendment to the hours of operation and to allow operation for an additional 12 months.

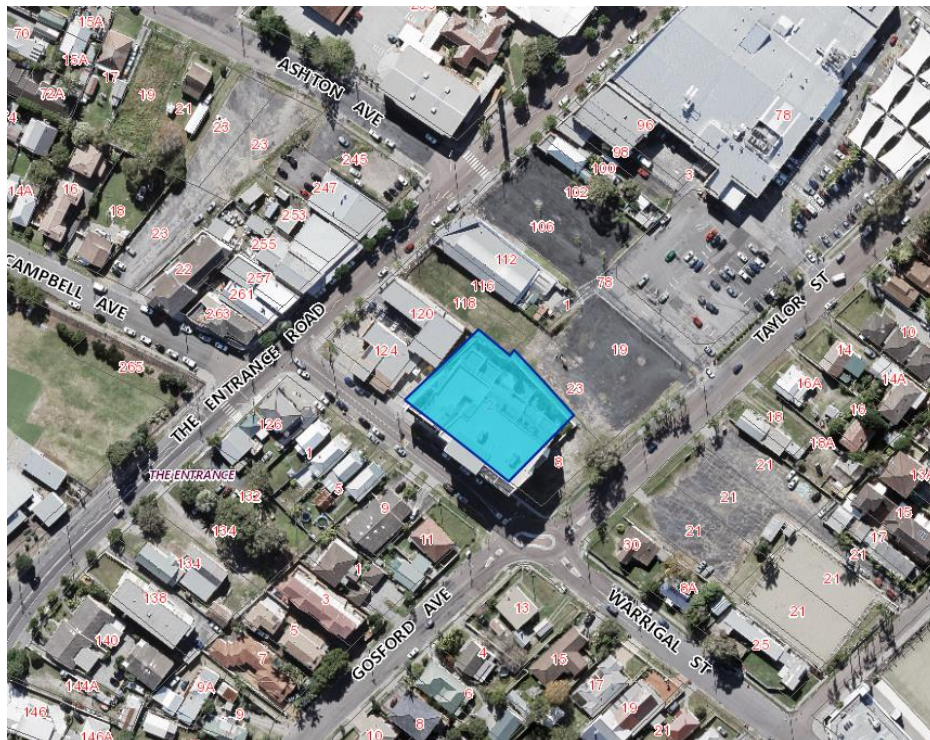
The applicant has requested the deletion of Condition 19, which would end the time limited consent arrangement.

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**The Site**

The subject site is 37/2-6 Warrigal Street, The Entrance (legally described as Lot 37 in SP 77340). The site is on the corner of Warrigal and Taylor Streets and contains an existing mixed-use development comprising three ground floor tenancies and 35 residential units above. The site location is shown in **Figure 1**.



**Figure 1 – Site location (in blue)**

The recreation facility (operated as a 'F45 gym') is situated in shop 37 and has an area of 160m<sup>2</sup>. Pedestrian access is via Warrigal Street. The frontage of Shop 37 is shown in **Figure 2**.

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**Figure 2 – Frontage of Shop 37**

### **Surrounding Development**

Located above and to the rear of shop 37 are 35 residential units. Below shop 37 is a basement car park for use by the tenants and residents of the mixed-use development. To the south (opposite side of Warrigal Street) and further to the east there are existing residential dwelling houses. To the west of the subject site there are other commercial premises. These can be seen in Figure 1.

### **The Proposed Development**

Under the provisions of Section 4.55 (1A) of the *Environmental Planning and Assessment Act 1979*, consent is sought to delete condition 19 to allow the permanent use of the premises as an indoor recreation facility (gym) as follows:

Condition 19 currently reads:

- 19 *This consent is for an additional twelve (12) month period only and accordingly must cease at the expiration of twelve (12) months from the date of the modified consent. Any extension of the approved use beyond twelve (12) months will require the prior submission and approval of an application under Section 96 of the Environmental Planning and Assessment Act 1979. In considering any application for the extension of this consent, Council would have regard for relevant matters under the Environmental Planning and Assessment Act 1979, including any submission received during the period.*

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The deletion of Condition 19 would allow for the permanent use of shop 37 as an indoor recreation facility which is not supported for the reasons outlined within the report. The continuation of the use for an additional period is also not supported.

### **History**

The following approvals relate to the subject site:

- DA/569/2016 – Use of Shop 37 for recreational facility (indoor) – Personal Fitness Studio approved on 7 September 2016.

During the initial 12 month period Council received complaints in relation to noise and vibration impacts from the approved use. Council Compliance Officers deemed that the gym was being operated in accordance with the conditions of consent and no further action could be taken.

- DA/569/2016/A – Amended application which approved a modification to the hours of operation and extended the 12 month trial period under Condition 19.

Given historical complaints in relation to noise/vibration the applicant provided details of acoustic assessments undertaken and measures instigated to deal with noise/amenity impacts (including reducing trading hours, additional floor matting, signage to remind gym users of potential impacts on neighbours).

Based, in part, on the mitigation measures proposed by the applicant, the application was approved on 5 January 2018, providing an additional 12 month approval for the use.

### **Submissions**

The modified application was notified in accordance with Wyong Development Control Plan 2013, Chapter 1.2 Notification of Development Proposals.

- The first notification period (30 January 2019 to 12 February 2019) resulted in a total of 17 submissions and a noise survey completed by 17 residents.
- The modified application was re-notified (26 June 2019 to 10 July 2019) providing objectors an opportunity to review and make comment on an acoustic report and noise mitigation measures detailed by the applicant. During the second notification period a total of 15 submissions were received.

The issues raised in the submissions and the noise survey are summarised as follows:

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- *The gym opens before 6am and operates on Sunday which is not in accordance with the approved hours of operation.*

*Comment:*

Council contacted the operator to request compliance with the approved hours of operation. Council compliance staff continue to monitor operational matters, including compliance with approved operating hours.

- *Noise and vibration from the gym can be heard throughout building and within residential units.*

*Comment:*

The Acoustic Assessment report prepared by Reverb Acoustics has not provided noise measuring data that is reflective of the current operations of the gym. A vibration assessment has not been provided. Noise and vibration from the operation of the gym is an issue for residents within the building and in adjoining properties. The information submitted with the application has not demonstrated there is minimal environmental impact as a result of the operation of the gym.

- *Weights being dropped causes the building to shake.*

*Comment:*

The Acoustic Assessment report prepared by Reverb Acoustics has not provided a vibration assessment to verify that the dropping of weights is not causing an impact.

- *The initial DA was approved for cardio exercises which acoustic matting would be adequate. Weights have now been introduced to these exercise classes causing a disturbance.*

*Comment:*

The original approval under DA/569/2016 was for shop 37 to be used as a recreational facility (indoor) – Personal Fitness Studio. The acoustic report approved as part of the original development consent was prepared based on gym activities where no heavy weights are used or any unsupervised activities involving the use of free weights.

Weights have now been introduced to exercises. The dropping of weights is disturbing residents and this impact has not been addressed within the Acoustic Assessment report prepared by Reverb Acoustics.

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- *There are cracks in the building that were not there before the gym started operation. A Structural Engineers report should be submitted by the Applicant.*

*Comment:*

It is unclear whether any cracks or other issues with the building are related to the current use of the gym.

- *The acoustic report did not provide any noise testing results taken from within residential units.*

*Comment:*

Agreed.

- *The acoustic report states that dropping of weights was not audible during visits. The worst case scenario has not been tested within the acoustic report.*

*Comment:*

Agreed.

### **Internal Consultation**

The development application was referred to Council's Environmental Health Officer to assess the impact of noise and vibration from the gym including the sampling data, methodology and findings of the Acoustic Assessment report prepared by Reverb Acoustics. The assessment found the acoustic assessment deficient having regard for the consideration of noise and vibration impacts within the development and to adjoining properties and does not support the proposed modification.

### **Ecologically Sustainable Principles:**

The original application addressed ecological sustainable principles. The proposed modified development does not change the original assessment findings.

### **Climate Change**

The original application addressed potential impacts of climate change. The proposed modified development does not change the original assessment findings.



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**Assessment:**

***Environmental Planning and Assessment Act, 1979***

**Section 4.55 (1A) – Modification of Consents**

In accordance with Section 4.55(1A) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), Council may consider a modification of development consent provided that:

- a) *It is satisfied that the proposed modification is of minimal environmental impact, and*
- b) *It is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which the consent was originally granted and before that consent as originally granted was modified (if at all), and*
- c) *It has notified the application with:*
  - (i) *The regulations, if the regulations so require, or*
  - (ii) *A development control plan, if the consent authority is a Council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and*
- d) *It has considered any submissions made concerning the proposed modification within any period prescribed by the regulations or provided by the development control plan, as the case may be.*

In order to satisfy s.455(1A)(a) and determine whether the proposed modification is of minimal environmental impact, the applicant was requested to submit an acoustic report to address issues raised in submissions in relation to noise and vibration from current operations. The acoustic report was to include an acoustic and vibration assessment that included consultation with the neighboring residents.

The applicant submitted an Acoustic Assessment Report prepared by Reverb Acoustics. Following assessment of the acoustic report was considered unsatisfactory as it did not adequately address the following:

- Noise and vibration associated with the dropping of weights;
- Impacts outside of the approved hours, including impact of the arrival and departure of patrons on the amenity of the surrounding area; and
- The impact of music associated with the gym.

The report provided limited information that does not reflect the current operations of the gym and subsequently does not satisfy council that there will be minimal environmental impact if the gym continues to operate.

In addition to assessment of the acoustic report by Council officers, the application was re-notified to the objectors providing them an opportunity to review and make comment on the

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report. The submissions received indicate that the use of the premises as a gym is creating an ongoing amenity impact to residents (both within the mixed use development on the site, and also to dwelling houses opposite side of Warrigal Street).

The consistent concern is that the gym, previously primarily operated as a fitness studio with limited heavy weight facilities, is now predominately focused on weight-based exercises which contribute to noise and vibration both within and external to the building.

The acoustic report has not provided sufficient information to demonstrate that the continued and permanent use of the gym is of minimal environmental impact therefore the proposed modification does not satisfy Section 4.55(1A)(a) of the EP&A Act.

Section 4.55(1A)(b) requires the consent authority to determine whether the proposed modification is substantially the same development as the development for which consent was originally granted. The basis for which the original development consent was granted had regard for the description of development and outline of the proposed operation of the facility contained within the Statement of Environmental Effects which included a strict exercise environment with set classes of 45 minutes to an hour, where exercises were focused on functional, compound movements largely reliant on body weight and small apparatus. It was predominantly for cardio vascular exercise with little to no free weight-based exercises.

The assessment also relied upon the recommendations contained within the original acoustic report prepared by Rodney Stevens Acoustic Consultants. The nature of the gym activities described included no heavy weights being used, no unsupervised activities involving the use of free weights and a total of 25 people in the gym.

The current gym is operated by a new tenant who has established a revised gym operated as part of the 'F45' gym chain. The gym offers structured circuit classes that run for 45 minutes which are broadcast to the class via video. Some exercises use weights and kettle-bells. During a site inspection it became evident that the current exercise programs are predominately weight based. Heavy weights (up to 30Kg) and kettle-bells were seen on site. Vibration noise from the gym was heard within the basement car park. The consistent objection to this proposal being vibration caused by the dropping of weights is reliable and observed by Council officers on site.

The assessment of the modified application has considered the submissions received and the information provided within the Acoustic Assessment Report prepared by Reverb Acoustics. The intent of the original development consent granted was for a cardio vascular gym with little to no free weight based exercises. The operation of the gym has changed from that which was considered under the original granting of consent and it is therefore considered that the continuation and permanent use of this type of indoor recreational facility would not be substantially the same development as that was originally granted under the original development consent therefore failing one of the key tests under Section 4.55(1A) of the EP&A Act.

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In accordance with the provisions of s.455(1A)(c) and (d), the modified application was notified in accordance with Chapter 1.2 Notification of Development Proposals and the submissions received have been considered in the assessment of the modification.

For reasons stated above, it is considered that the modified development does not satisfy the test of being of minimal environmental impact or substantially the same development in accordance with Section 4.55(1A) of the EP&A Act.

*In accordance with Section 4.55(3) of the EP&A Act, in determining an application for modification of a consent under this section, the consent authority must take into consideration such of the matters referred to in section 4.15(1) as are of relevance to the development the subject of the application. The consent authority must also take into consideration the reasons given by the consent authority for the grant of the consent that is sought to be modified.*

The matters of consideration within Section 4.15 have been addressed further within the report. In addition, in determining an application for modification, the consent authority must also take into consideration the reasons given by the consent authority for the grant of the consent that is sought to be modified.

Formally specified reasons did not accompany the original granting of consent. However, the following reasons were identified in the assessment report for the determination and included (but were not limited to):

- 1 The proposal was considered satisfactory having regard for the relevant environmental planning instruments, plans and policies.
- 2 The proposal was considered against the objectives of the B2 Local Centre zone and was found to be satisfactory.
- 3 There were no significant issues or impacts identified with the proposal under section 4.15 of the *Environmental Planning and Assessment Act 1979*.

The reasons for the granting of the original development consent have been considered and having regard for those reasons, the modified application is considered to be contrary to the original consent given the nature of the use of the indoor recreation facility has changed such that additional noise is being generated at the premises therefore impacting on the amenity of residents which was not the case under the original application.

### **Wyong Local Environmental Plan 2013**

The subject site is zoned B2 Local Centre under the *Wyong Local Environmental Plan 2013* (WLEP 2013). The proposed modification to the approved indoor recreation facility remains permissible within the B2 zone.

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The granting of the original development consent was considered consistent with the objectives of the B2 Local Centre zone which are:

- *To provide a range of retail, business, entertainment, and community uses that serve the needs of people who live in, work in and visit the local area.*
- *To encourage employment opportunities in accessible locations.*
- *To maximise public transport patronage and encourage walking and cycling.*
- *To permit residential accommodation while maintaining active retail, business and other non-residential uses at street level.*
- *To minimise conflict between land uses within the zone and land uses within adjoining zones.*

In the absence of sufficient information to adequately assess the impact on the amenity of existing residents, the assessment of the modified application has found that the approved use is no longer in harmony with the objectives of the B2 Local Centre zone specifically in relation to minimising conflict between land uses within the zone. The subject site contains a mixed-use development where residential and business premises co-exist. The current operation of the gym is creating a conflict with the residential land use on the site and adjoining. This is evidenced through previous complaints to Council, previous complaints to the strata management body of the building, the submissions received as part of this application and the impacts as noted by Council officers during site inspection.

In accordance with Clause 2.3 of WLEP 2013, the consent authority must have regard to the objectives for development in a zone when determining an application. It is considered that the continued and permanent use of the gym within the subject premises is no longer consistent with the objectives of the zone.

### **Draft Central Coast Local Environmental Plan 2018**

The draft *Central Coast Local Environmental Plan 2018* (DCCLEP) exhibition period ended on 28 February 2019. The proposal has been considered against the provisions of the DCCLEP. The subject site is zoned B2 Local Centre and development for the purpose of an indoor recreation facility remains permissible with consent within the B2 Local Centre zone pursuant to the DCCLEP. However, as the objectives of the zone remain the same, the application would be inconsistent with the objective which relates to minimizing conflict between land uses within the zone.

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**Wyong Development Control Plan (WDCP) 2013**

The application was notified in accordance with Chapter 1.2 Notification of Development Proposals. There are no other specific requirements of a Chapter of the DCP which warrant further discussion in relation to the proposed modification.

**Likely Impacts of the Development**

The application has not adequately addressed the impact on amenity to surrounding residents. The acoustic assessment is deficient and does not provide the necessary information for council to adequately assess and determine whether there will be minimal environmental impact in terms of the amenity.

**Suitability of the Site for the Development**

The original assessment found the development suitable for the site and in keeping with the character of the area having regard for the way in which the recreation facility was to be operated which was supported by the findings of the original acoustic report and recommendations. There is insufficient information in the acoustic assessment that was submitted with the modification to satisfy council that there will be minimal environmental impact on the surrounding neighbourhood, particularly having regard for the matters raised previously and within the submissions. The site is not suitable for the continued and permanent use as an indoor recreation facility (gym).

**The Public Interest**

Having regard for the assessment contained in this report, it is considered that the deletion of condition 19 to allow the permanent use of the premises as an indoor recreation facility (gym) is not in the public interest.

**Conclusion**

After consideration of the proposed modification against Section 4.55(1A) and 4.15 of the *Environmental Planning and Assessment Act 1979* and other relevant statutory and policy provisions, the proposed modification is considered to result in an unacceptable environmental impact having regard for the amenity of surrounding residents and is not considered to be substantially the same development to that which was originally granted consent. As a result, the modification is recommended for refusal.

**Attachments**

- 1 Acoustic Report D13585745



**Noise Impact Assessment  
F45 Fitness Studio  
37 / 2-6 Warrigal Street  
The Entrance NSW**

**May 2019**

**Prepared for Mr Luke Greenwood  
Report No. 19-2316-R1**

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**Building Acoustics-Council/EPA Submissions - Modelling - Compliance - Certification**



Mr Luke Greenwood  
Noise Impact Assessment – F45 Fitness Studio  
37/2-6 Warrigal Street, The Entrance

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## 1 INTRODUCTION

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Reverb Acoustics has been commissioned to conduct a noise impact assessment for an F45 Fitness Studio at 37/2-6 Warrigal Street, The Entrance. This assessment considers music, dropping weights, trainer instruction. No additional mechanical plant is proposed as part of the proposal, therefore mechanical plant impacts have not been considered further.

The assessment was requested by Mr Luke Greenwood in support of and to accompany a Development Application to Central Coast Council (CCC) and to ensure any additional noise control measures are incorporated, where required.

## 2 TECHNICAL REFERENCE / DOCUMENTS

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NSW Environment Protection Authority (2017). *Noise Policy for Industry*

NSW Environment Protection Authority (1999). *Environmental Criteria for Road Traffic Noise*

NSW Roads and Traffic Authority (2001). *Environmental Noise Management Manual*

Office of Environment and Heritage (2011). *NSW Road Noise Policy*.

NSW Environment Protection Authority (1994). *Environmental Noise Control Manual*

Department of Environment and Climate Change NSW (2010). *Noise Guide for Local Government*.

Liquor Administration Board "Noise Control Guidelines"

Van den Berg G.P. and Passchier-Vermeer W. (1999). *Assessment of low frequency noise complaints, Proc, Internoise 99*.

W.J. Davies, P. Hepworth, A. Moorhouse, R. Oldfield (2005). *Noise from Pubs and Clubs, Ph 1*.

A. Moorhouse, D. Waddington, M. Adams (2005). *Proposed criteria for the assessment of low frequency noise disturbance*.

Rodney Stevens Acoustics Pty Ltd (1 August 2016). *Noise Assessment Report. Proposed Gymnasium. 37/2-6 Warrigal Street, The Entrance, NSW*.

Central Coast Council (7 September 2016). *Application to Modify Development Consent. Notice of Determination. (Development Application Number: DA/569/2016/A)*

A Glossary of commonly used acoustical terms is presented in Appendix A to aid the reader in understanding the Report.

### COMMERCIAL IN CONFIDENCE

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Mr Luke Greenwood  
Noise Impact Assessment – F45 Fitness Studio  
37/2-6 Warrigal Street, The Entrance

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### 3 PROJECT DESCRIPTION

An F45 Fitness Studio occupies Shop 37 2-6 Warrigal Street, The Entrance. Noise sources of concern include music, dropping weights, and trainer instruction. Approved operating hours are 6am-7pm Monday to Friday, 7am-12pm on Saturday, and closed on Sunday.

This assessment will focus on the noise impact at nearest receivers and it should be acknowledged that compliance with criteria at nearest receivers will ensure satisfactory results at more remote locations.

Nearest receivers identified during our site visits are shown on Figure 1:

Figure 1: Site Plan



### 4 EXISTING ACOUSTIC ENVIRONMENT

A background noise level survey was conducted using a Class 1, Svan 977 environmental noise logging monitor, installed on the west side of Taylor Street, approximately 30 metres from the Warrigal Street intersection. The selected location is representative of the acoustic environment in the receiver area and is considered an acceptable location for determination of the background noise in accordance with Appendix B of the NSW Environment Protection Authority's (EPA's) – Noise Policy for Industry (NPI).

Noise levels were continuously monitored from 1 April to 7 April 2019, to determine the existing background and ambient noise levels for the area. The instrument was programmed to accumulate environmental noise data continuously and store results in internal memory. The data were then analysed to determine 15 minute Leq and statistical noise levels using dedicated software supplied with the instrument.

REVERB ACOUSTICS

May 2019  
Document Ref: 19-2316-R1

Commercial in Confidence



Mr Luke Greenwood  
Noise Impact Assessment – F45 Fitness Studio  
37/2-6 Warrigal Street, The Entrance

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The instrument was calibrated with a Brüel and Kjaer 4230 sound level calibrator producing 94dB at 1kHz before and after the monitoring period, as part of the instrument's programming and downloading procedure, and showed an error less than 0.5dB.

Table 1 shows a summary of our noise survey, including the Assessment Background Levels (ABL's), for the day, evening and night periods. From these ABL's the Rating Background Level (RBL) has been calculated, according to the procedures described in the EPA's NPI and by following the procedures and guidelines detailed in Australian Standard AS1055-1997, "Acoustics - Description and Measurement of Environmental Noise, Part 1 General Procedures". A complete set of logger results is not shown, but available on request. Measured road traffic noise levels at the site are shown in Table 2.

**Table 1: Summary of Noise Logger Results, dB(A)**

Time Period	Background L90			Ambient Leq		
	Day 7am-6pm	Evening 6pm-10pm	Night 10pm-7am	Day 7am-6pm	Evening 6pm-10pm	Night 10pm-7am
15-16 Dec	47.9	49.0	38.4	53.6	54.9	49.1
16-17 Dec	49.6	47.9	39.5	55.2	53.9	48.3
17-18 Dec	45.6	46.5	38.0	51.8	52.6	49.8
18-19 Dec	47.6	46.2	37.6	54.2	53.3	48.9
19-20 Dec	47.4	46.8	40.0	52.4	51.9	48.7
20-21 Dec	46.1	46.0	39.2	52.2	51.7	48.2
21-22 Dec	44.8	44.9	39.0	51.2	51.6	47.9
<b>RBL</b>	<b>47.4</b>	<b>46.5</b>	<b>39.0</b>	--	--	--
<b>LAeq</b>	--	--	--	<b>53.2</b>	<b>53.0</b>	<b>48.7</b>

Site, weather and measuring conditions were all satisfactory during our noise surveys. We therefore see no serious reason to modify the results because of influencing factors related to the site, weather or our measuring techniques. A summary of the measured noise environment at the site appears in Table 2, taken from our logger results. The measured noise levels are typical for residential areas near a busy road.

**Table 2: Existing Source Noise levels**

Time Period	Leq		Lmax		L10		L90	
	Range	Average	Range	Average	Range	Average	Range	Average
Day	49-61	53	57-82	66	52-65	55	43-55	48
Evening	50-66	53	58-83	66	52-70	55	45-56	48
Night	41-64	48	52-77	62	43-69	51	37-55	42

## 5 CRITERIA

### 5.1 Nearby Receivers

Noise from industrial noise sources scheduled under the Protection of Environment Operations Act is assessed using the NSW Environment Protection Authority's (EPA's) Noise Policy for Industry (NPI). However, local Councils and Government Departments may also apply the criteria for land use planning, compliance and complaints management. The NPI specifies two separate criteria designed to ensure existing and future developments meet environmental noise objectives. The first limits intrusive noise to 5dB(A) above the background noise level and the other is based on the total industrial noise in an area in relation to the noise levels from the development to be assessed. Project Noise Trigger Levels are established for new developments by applying both criteria to the situation and adopting the more stringent of the two.

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The existing L(A)eq for the receiver areas is dominated by traffic on nearby roads, and commercial activity during the day, evening and night. Reference to Table 2.2 of the NPI shows that all receiver areas are classified as urban. The Project Amenity Level is derived by subtracting 5dB(A) from the recommended amenity level shown in Table 2.2. A further +3dB(A) adjustment is required to standardise the time periods to LAeq,15 minute. The adjustments are carried out as follows:

Recommended Amenity Noise Level (Table 2.2) – 5dB(A) +3dB(A)

Table 3 below specifies the applicable project intrusiveness and amenity noise trigger levels for the proposed redevelopment.

**Table 3: - Intrusiveness and Amenity Noise levels**

Period	Intrusiveness Criteria	Amenity Criteria
Day	52 (47+5)	58 (60-5+3)
Evening	51 (46+5)	48 (50-5+3)
Night	44 (39+5)	43 (45-5+3)
Shoulder (6am-7am)	47 (42+5)	43 (45-5+3)

**Receiver Type: Urban (See EPA's NPI - Table 2.1)**

1. Shoulder Period: the lowest 10<sup>th</sup> percentile of LAF90,15min dB measurements for the equivalent of one week's worth of valid data taken over the shoulder period (that is, all days included in a single data set of shoulder periods (see Section A3 of the EPA's NPI).

Project Noise Trigger Levels, determined as the more stringent of the intrusiveness criteria and the amenity / high traffic criteria, are as follows:

Day **48dB LAeq,15 Minute** 7am to 6pm Mon to Sat or 8am to 6pm Sun and Pub Hol.  
Evening **46dB LAeq,15 Minute** 6pm to 10pm  
Night **43dB LAeq,15 Minute** 10pm to 7am Mon to Sat or 10pm to 8am Sun and Pub Hol.  
Shoulder **43dB LAeq,15 Minute** 6am to 7am.

## 5.2 Adjoining Apartments

The design criteria are set according to the use of adjoining rooms and the likely sources of noise within them. Published sound insulation performance in terms of Rw/STC ratings relate to partitions tested in ideal laboratory conditions or opinions based on such measurements. We therefore recommend selecting partitions with a laboratory Rw rating 3-4dB higher than required, to compensate for loss of performance through installation on-site.

There are differing classes of speech privacy which depend on speech level, absorption and background noise level in the adjoining room, and the sound insulation of the common partitions. The background noise level is typically generated by air-flow over grilles or diffusers in offices and by conversation and general people movements in corridors and reception areas.

Criteria for the assessment of quasi-steady-state noise sources, are sourced from AS/NZS 2107-2016 "Acoustics-Recommended Design Sound Levels and Reverberation Times for Building Interiors" and are detailed below.

Room Type	dB(A)
<b>RESIDENTIAL BUILDINGS</b>	
<i>Houses &amp; apartments in inner city areas or entertainment districts or near major roads-</i>	
Living areas	35 – 45
Sleeping areas (night time)	35 – 40

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The aim of this assessment is to ensure that the allowable noise levels shown above are not (theoretically) exceeded within any habitable room of apartments above the F45 Fitness Studio.

The transmission of noise within a building can occur in two ways, namely, air-borne noise and structure-borne noise. Air-borne sounds can be considerably attenuated by intervening enclosures i.e. walls, floors, ceilings, screens, etc. Control of structure-borne noise is more difficult as it causes vibration of the building structure and is readily transmitted to adjoining areas with little attenuation. Therefore, structure-borne noise needs to be suppressed at the source by provision of isolation mountings and hangers, anti-vibration pads, resilient flooring, etc.

Just as the terms air-borne and structure-borne define the origin of sound, so direct or indirect defines the method of transmission of noise to the receiving room. The direct sound, whether air-borne or structure-borne, is that which impinges directly on the surface of the intervening partition between the source and receiver and is radiated from the source directly to the receiver. Indirect or flanking sound is that component of the source which reaches the receiving room by way of open or inadequate windows, doors, ceiling plenums or ventilation ducts. Increasing the Weighted Sound Reduction Index (Rw) of the dividing partition will have little effect if the acoustic energy of the indirect field dominates. The weaker insulating path is always the critical one.

The main transmission path considered in the assessment is the common floor/ceiling system between adjoining tenancies and flanking noise thru shop-front glazing.

### 5.3 Background (Incidental) Music

Repetitive low frequency drum and base noise, that is a feature of all live and recorded music, may be a source of offensive noise for neighbouring residents and simply applying the EPA criteria will underestimate its intrusive nature. We have therefore applied the Liquor Administration Board's (LAB's) Standard Noise Conditions for the assessment of background music, and modified to suit the situation, as shown below:

*"The LA10 noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz - 8kHz inclusive) by more than 5dB between 07:00 am and 12:00 midnight at the boundary of any affected residence.*

*The LA10 noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz - 8kHz inclusive) between 12:00 midnight and 07:00 am at the boundary of any affected residence.*

*Notwithstanding compliance with the above, the noise from the licensed premises shall not be audible within any habitable room in any residential premises between the hours of 12:00 midnight and 07:00 am".*

To ensure the requirements of the LAB (and therefore Council) are satisfied, we have adopted a planning level equal to the prevailing background noise level in the adjacent residential area, during the most stringent early morning period from 6am to 7am of **42dB(A),L10**. This equates to planning noise level targets.

**Table 4: Background Music Planning Level, L(A)10**

		Octave Band Centre Frequency, Hz							
dB(A)	31.5	63	125	250	500	1k	2k	4k	8k
42	24	27	30	32	36	37	31	29	23

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## 6 METHODOLOGY

### 6.1 Site Noise

Reverb Acoustics conducted measurements of typical morning classes on two (2) separate occasions. The main sources identified were the instructor's voice, client voices and footfall noise. Dropping of weights was not audible during our visits, however, to assess a worst-case situation we have assumed a full-class during a cardio-session using weights. It should be acknowledged that it is usual practice to place a second layer of gym matting in areas where dumbbells or kettlebells are used.

The sound power level of each activity was determined according to the procedures described in AS2102 or AS1217 as appropriate, and theoretically propagated at to nearby receivers. Propagation calculations were carried out using the following equation. Where noise impacts above the criteria are identified, suitable noise control measures are implemented and reassessed to demonstrate satisfactory received noise levels in the residential area.

Equation 1:

$$L_{eq,T} = L_w - 10 \log(2\pi r^2) + 10 \log \frac{(D \times N)}{T}$$

Where  $L_w$  is sound power level of source (dB(A))       $N$  is number of events  
 $R$  distance to receiver (m)       $T$  is total assessment period (sec)  
 $D$  is duration of noise for each event (sec)

### 6.2 Background (Incidental) Music

An in-house amplification system is used with speakers located in each corner of the main gym area. Measurements revealed that output from speakers has been set at **75dB(A) at a distance of 1m** from each speaker. Using noise data for the above situation and the known criteria in the residential area enabled calculation of the required transmission loss of each building element. Inspection of the premises has revealed that glazing, the entry door and the roof/ceiling system are the main noise leakage paths. The SPL dB(A) at a distance of 1m is shown in Table 5.

Table 5: SPL Background Music at 3m dB(A),L10

Octave Band Centre Frequency, Hz									
dB(A)	31.5	63	125	250	500	1k	2k	4k	8k
75	28	43	55	65	70	71	66	65	50

From consideration of the known dimensions and orientation of each building component the sound pressure level immediately outside was propagated to nearest residences using an equation<sup>1</sup> giving the sound field due to an incoherent plane radiator.

<sup>1</sup> Equation (5.104), DA Bies and CH Hansen, *Engineering Noise Control*, E & FN Spon, 1996.

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## 7 ANALYSIS AND DISCUSSION

### 7.1 Incidental Music

Background (incidental) music is played during fitness classes to create a more appealing atmosphere for clients and staff. The most significant noise paths are the glazing and entry doors fronting Warrigal Street. The following Table shows sample calculations to predict noise from incidental music, propagated through the front facade to nearest receivers directly opposite the studio across Warrigal Street and apartments directly above.

**Table 6: Calculated SPL Incidental Music – Thru Warrigal Street Facade Propagated South to Residential Facades dB(A),L10**

Item	dB(A)	Octave Band Centre Frequency, Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
SPL at facade <sup>1</sup>	75	28	43	55	65	70	71	66	65	50
TL glazing/doors <sup>2</sup>		-4	-8	-14	-18	-21	-24	-28	-26	-32
Area Gain		+11	+11	+11	+11	+11	+11	+11	+11	+11
<b>SPL at rec</b>	<b>30</b>	<b>1</b>	<b>12</b>	<b>18</b>	<b>24</b>	<b>26</b>	<b>24</b>	<b>15</b>	<b>16</b>	<b>-5</b>
<b>Criteria</b>	<b>42</b>	<b>24</b>	<b>27</b>	<b>30</b>	<b>32</b>	<b>36</b>	<b>37</b>	<b>31</b>	<b>29</b>	<b>23</b>
<b>Impact</b>	<b>-12</b>	<b>-23</b>	<b>-15</b>	<b>-12</b>	<b>-8</b>	<b>-10</b>	<b>-13</b>	<b>-16</b>	<b>-13</b>	<b>-28</b>

1. Background music. 2. 5mm clear float glass.

**Table 7: Calculated SPL Incidental Music – Thru Warrigal Street Facade Propagated Within Residential Apartments Above Studio dB(A),L10**

Item	dB(A)	Octave Band Centre Frequency, Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
SPL at facade <sup>1</sup>	75	28	43	55	65	70	71	66	65	50
TL glazing/doors <sup>2</sup>		-4	-8	-14	-18	-21	-24	-28	-26	-32
Area Gain		+11	+11	+11	+11	+11	+11	+11	+11	+11
Barrier loss <sup>3</sup>		6	8	9	12	14	17	20	23	24
<b>SPL at rec</b>	<b>31</b>	<b>9</b>	<b>18</b>	<b>23</b>	<b>26</b>	<b>26</b>	<b>21</b>	<b>9</b>	<b>7</b>	<b>-15</b>
<b>Criteria</b>	<b>42</b>	<b>24</b>	<b>27</b>	<b>30</b>	<b>32</b>	<b>36</b>	<b>37</b>	<b>31</b>	<b>29</b>	<b>23</b>
<b>Impact</b>	<b>-11</b>	<b>-15</b>	<b>-9</b>	<b>-7</b>	<b>-6</b>	<b>-10</b>	<b>-16</b>	<b>-22</b>	<b>-22</b>	<b>-38</b>

1. Background music. 2. 4-5mm clear float glass. 3. Intervening awning.

Theoretical results in the above Table show that noise emissions from incidental music will be compliant with the overall LAB (and therefore Council) criteria at the nearest residences to the south across Warrigal Street and also within apartments directly above the studio.

The LAB criteria also requires that music to be inaudible within any habitable room in any residential premises between the hours of 12:00 midnight and 07:00 am. The IOA (i.e. European equivalent of the Australian Acoustic Society and the Acoustic Society of America) gives the following definition, "Noise is considered to be inaudible when it is at a sufficiently low level that it is not recognisable as emanating from the source in question and it does not alter the perception of the ambient noise environment that would prevail in the absence of the source in question". The IOA further suggests that entertainment noise will be inaudible within a residence when the L10 (entertainment noise level) does not exceed L90 (background noise level) in any 1/3 octave band between 40Hz and 160Hz. Reference to the above Tables reveals that incidental music is predicted to be more than 6dB(A) below the prevailing background noise level at 31.5Hz-8KHz, implying that music will be inaudible.

Attended measurements at the boundaries of residences directly opposite the site during a typical class with music accompaniment has confirmed that noise emanating from the studio was inaudible, validating our theoretical calculations. Compliance with the criteria is dependent on the specified limit being set and maintained for music output. Use of incidental music is considered acceptable, subject to the noise control recommendations detailed in Section 8.

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## 7.2 Training Activities (Dropping Weights/Clients/Instructor)

Impacts from weights and training equipment on the floor, together with trainers instructing clients (raised speech) has the potential to create unacceptable noise levels at nearest receivers. The following Tables show calculations to predict the combined noise impact, from these activities at nearest receivers directly opposite the studio across Warrigal Street and apartments directly above.

**Table 8: Calculated SPL Studio Activities – Thru Warrigal Street Facade Propagated South to Residential Facades dB(A),Leq**

Item	dB(A)	Octave Band Centre Frequency, Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
Lw activities <sup>1</sup>	82	46	54	66	78	75	75	70	62	36
TL glazing/doors <sup>2</sup>		-4	-8	-14	-18	-21	-24	-28	-26	-32
Area Gain		+11	+11	+11	+11	+11	+11	+11	+11	+11
<b>SPL at rec</b>	<b>34</b>	<b>14</b>	<b>18</b>	<b>24</b>	<b>32</b>	<b>26</b>	<b>23</b>	<b>14</b>	<b>8</b>	<b>-24</b>
<b>Crit (5am-7am)</b>	<b>43</b>									
<b>Impact</b>	<b>0</b>									

1. Class activities. 2. 5mm clear float glass.

**Table 9: Calculated SPL Studio Activities – Thru Warrigal Street Facade Propagated Within Residential Apartments Above Studio dB(A),Leq**

Item	dB(A)	Octave Band Centre Frequency, Hz								
		31.5	63	125	250	500	1k	2k	4k	8k
SPL at facade <sup>1</sup>	82	46	54	66	78	75	75	70	62	36
TL glazing/doors <sup>2</sup>		-4	-8	-14	-18	-21	-24	-28	-26	-32
Area Gain		+11	+11	+11	+11	+11	+11	+11	+11	+11
Barrier loss <sup>3</sup>		6	8	9	12	14	17	20	23	24
<b>SPL at rec</b>	<b>34</b>	<b>20</b>	<b>22</b>	<b>27</b>	<b>32</b>	<b>24</b>	<b>18</b>	<b>6</b>	<b>-3</b>	<b>-36</b>
<b>Crit (5am-7am)</b>	<b>43</b>									
<b>Impact</b>	<b>0</b>									

1. Class activities. 2. 5mm clear float glass. 3. Intervening awning.

As can be seen by the above results, noise from class activities (clients, dropping weights, etc) and trainer instruction is predicted to be compliant with the criteria at nearest residential boundaries. See Section 8 for acoustic strategies to ensure ongoing compliance.

## 7.3 Cumulative Noise Impact

The cumulative noise impact from all activities associated with the site must be considered to confirm compliance. Peak periods during the early morning are considered the time periods of most concern. The acoustic sum of all noise generating items expected to operate at the site, propagated to nearest residential receivers, is shown in the following Table.

**Table 7: Cumulative Noise Impact - Propagated to Nearest Receivers (Peak Periods)**

Receiver/Item	Bgd Music	Gym Activities	Sum
Res's S across rd	30	34	<b>35</b>
Apartments above	31	34	<b>36</b>

Criteria: Day=48dB(A),Leq, Evening=46dB(A),Leq, Night=43dB(A),Leq Shoulder (6am-7am)=43dB(A),Leq

As can be seen by the above results, the cumulative noise impact from activities associated with operation of the development will be compliant with the criteria at all nearby receivers during all assessed time periods, subject to recommendations detailed in Section 8 being implemented.

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## 7.4 Noise/Vibration Transmission to Adjoining Tenancies

Section 5.2 specified an average maximum noise level within apartments of 35dB(A), implying that the floor/ceiling system must attenuate at least 47dB(A) at 250-500Hz to provide an acceptable noise environment in adjoining consulting suites. To put results into context, an impact of 47 implies that the partition must be capable of attenuating 47dB (i.e. 82dB(A) – 35 = 47).

Inspection of the premises during our site visit reveals that the floor/ceiling system is at least 150mm reinforced concrete with a suspended ceiling below. To calculate the  $R_w$  (airborne) rating of the partition wall noted above, we used Marshall Day's Insul Predictive Program (used by over many acoustic consultancies worldwide and has proved a reliable tool for accurately predicting the acoustic performance of complex building systems). The Insul program has predicted that the partition wall will attenuate more than 50dB(A) at speech frequency range (250-500Hz) and more than 35dB(A) at lower frequencies. Noise levels from activities associated with the fitness centre are therefore predicted to be acceptable in adjoining consultancy rooms.

Structure-borne noise transmission also has the potential to be audible within apartments above when weights are dropped on the floor. Reference to the Rodney Stevens acoustic report confirms that 35mm impact matting was recommended for the free weights and dumbbell/kettlebell sections of the studio. Inspection of the studio during our site visits revealed that the entire active floor area is covered with hard wearing 12mm compressed rubber. As a further precaution, additional sections of the 12mm rubber matting is laid on top of the flooring in areas where dumbbells and kettlebells are used. This flooring is compressed and in our experience relatively ineffective at reducing structure-borne noise transmission from impacts. We therefore recommend the following:

- Retain existing 12mm compressed flooring to entire active studio area.
- Store 40-50mm thick gymnastic mats (say 2400mm x 1200mm dimensions) in an easily accessible location to be used as an overlay when using dumbbells and kettlebells.
- Details of selected mats are to be forwarded to the acoustic consultant for approval prior to purchase.

See Section 8 for floor covering recommendations to ensure structure-borne noise transmission (i.e. from dropping of weights) does not become an issue.

As previously stated, attended measurements at the boundaries of residences directly opposite the site during a typical class has confirmed that noise emanating from the studio was inaudible, and therefore compliant with the criteria.

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## 8 NOISE CONTROL RECOMMENDATIONS

8.1 Approved current operating hours are acceptable, as shown below:

6am-7pm Monday to Friday  
7am-12pm on Saturday  
Closed on Sunday.

8.2 Background (incidental) music is permitted. Output must be limited to 75dB(A) at a distance of 1m from each speaker. This level has already been calibrated to corresponding settings on the sound system controls.

8.3 The existing 12mm compressed rubber matting is to be retained in the active floor area of the studio.

8.4 The following strategies are to be implemented to eliminate audible structure-borne noise transmission to apartments above:

- Retain existing 12mm compressed flooring to entire active studio area.
- Store 40-50mm thick gymnastic mats (say 2400mm x 1200mm dimensions) in an easily accessible location to be used as an overlay when using dumbbells and kettlebells.
- Details of selected mats are to be forwarded to the acoustic consultant for approval prior to purchase.

Comparable systems may be used subject to review by Reverb Acoustics.

*Figure 2: Examples of Typical Additional Matting Overlay.*



8.5 The main entry door must be closed at all times during classes. The automatic door closer must be maintained in good working order.



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## 9 CONCLUSION

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A noise impact assessment for a fitness studio at 37/2-6 Warrigal Street, The Entrance, has been completed, resulting in noise control recommendations summarised in Section 8 of this Report. The site is suitable for the intended purpose providing recommendations outlined in this report are incorporated into the design. With these or equivalent measures in place, noise from the site will be either within the criteria or generally below the existing background noise level in the area for the majority of the time.

Considering the relatively constant traffic on nearby roads and nearby commercial activity, noise generated by the site may be audible at times but not intrusive at any nearby receiver. As the character and amplitude of activities associated with the site will be similar to those already impacting the area, it will be less intrusive than an unfamiliar introduced source and should be acceptable, considering the economic and social benefit to the local community as a whole.

Providing the recommendations presented in this report are implemented, operation of the fitness studio will not have any long term adverse impact upon the acoustical amenity of nearby residents. We therefore see no acoustic reason why the proposal should be denied.

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*Principal Consultant*

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# **APPENDIX A**

## **Definition of Acoustic Terms**

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### Definition of Acoustic Terms

Term	Definition
dB(A)	A unit of measurement in decibels (A), of sound pressure level which has its frequency characteristics modified by a filter ("A-weighted") so as to more closely approximate the frequency response of the human ear.
ABL	<i>Assessment Background Level</i> – A single figure representing each individual assessment period (day, evening, night). Determined as the L90 of the L90's for each separate period.
RBL	<i>Rating Background Level</i> – The overall single figure background level for each assessment period (day, evening, night) over the entire monitoring period.
Leq	Equivalent Continuous Noise Level - which, lasting for as long as a given noise event has the same amount of acoustic energy as the given event.
L90	The noise level which is equalled or exceeded for 90% of the measurement period. An indicator of the mean minimum noise level, and is used in Australia as the descriptor for background or ambient noise (usually in dBA).
L10	The noise level which is equalled or exceeded for 10% of the measurement period. L <sub>10</sub> is an indicator of the mean maximum noise level, and was previously used in Australia as the descriptor for intrusive noise (usually in dBA).

