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Lot 2 DP1252505 - Putta Bucca

Addendum - Training Facility DA



Mid-Western Regional Council

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1 Introduction

Acoustik was engaged by the Mid-Western Regional Council to provide an addendum to the rezoning report “Lot 2 DP1252505 - Putta Bucca Acoustic Assessment for Zoning” (Ref: 2109.02.Report.1). The rezoning report included a preliminary assessment for the proposed Glen Willow Centre of Excellence. Updated plans for the Training Centre are addressed in this addendum report and supersede any noise control recommendations regarding the training centre in the main report. The focus of the addendum is to determine any adverse impact of noise from the training centre on Putta Bucca House and to be used as a development application acoustic assessment.

The updated plans rearrange the order of the three proposed buildings so that Building A now houses the common facilities for dining, lectures and gym, Buildings B and C are accommodation blocks with a total of 32 rooms in single bed to 4 bed dormitory style. The carpark is located at the western end of the site, entry and exit to the site is via Putta Bucca Road. This report does not address building acoustic requirements related to the National Construction Code requirements for internal wall separating accommodation rooms, external or internal windows and doors.

The layout of the updated development including the parking area and driveway system is included in Figure 1 below.

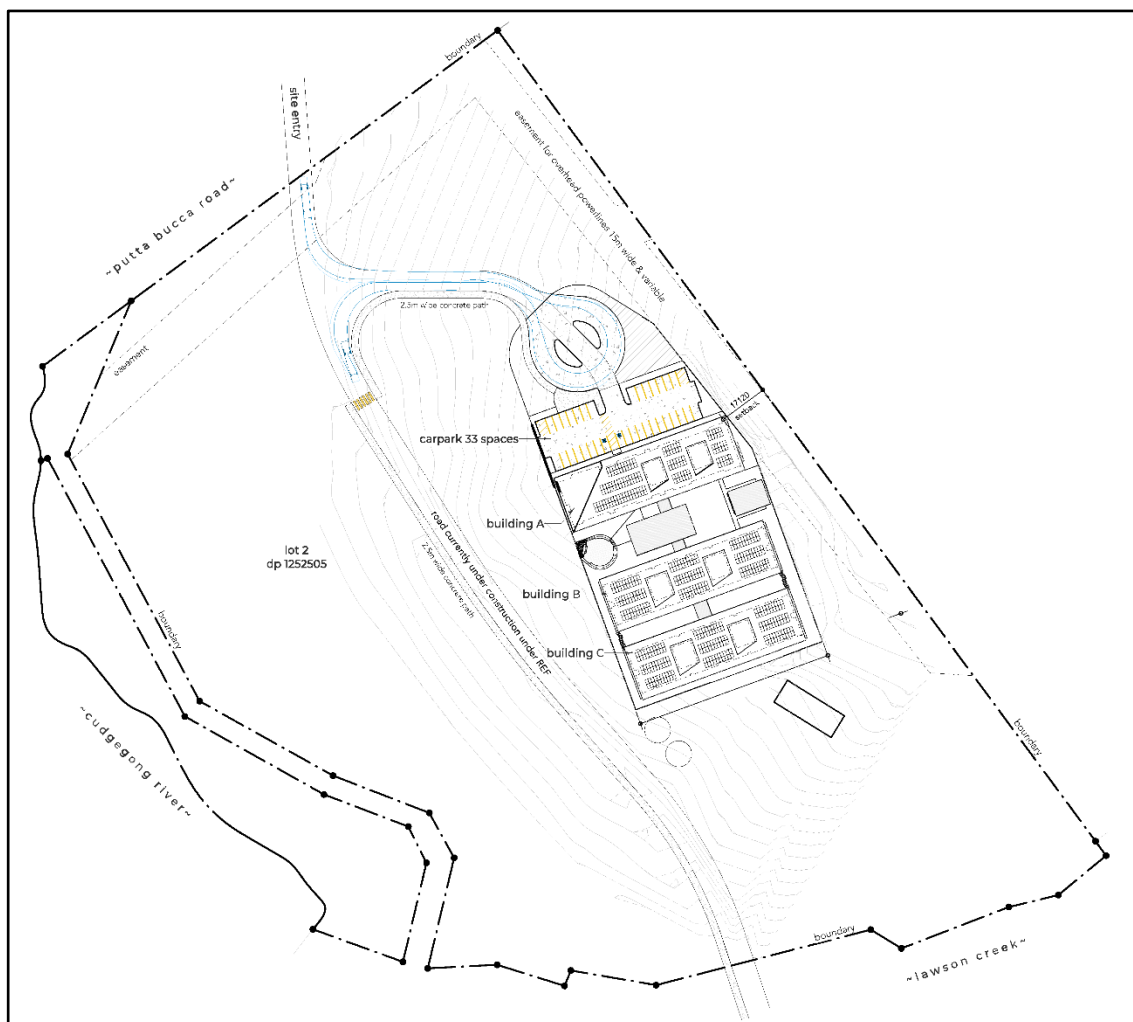


Figure 1: Development layout on Lot 2 DP1252505

Referenced documents and acoustic terminology is the same as the zoning report.

2 Project Noise Criteria

Environmental noise measurements in the zoning report were conducted in October 2021 and will still be suitable for use in this addendum report. The environmental noise triggers developed in Section 2 of the zoning report are repeated in Table 1 below.

The training centre operations of the Kitchen Exhaust Fan and large gatherings for lectures would not be expected to occur after 10 pm in the evenings. Therefore, a sleep arousal is not required.

Table 1: Proposed Noise Trigger Levels – Residential and other noise receivers – Rural Residential

Area	Intrusive Level L _{A90} + 5 dB	Project Amenity Noise Urban Residential	Noise Trigger dBA
Day 0700 – 1800	40	48	40
Evening 1800 – 2200	37	43	37
Night 2200 – 0700	35	38	35
Morning Shoulder 0500 – 0700	40	43	40
Commercial Premises	During Use - Not dependant on Intrusive Level		65
Active Recreation – Parks	During Use - Not dependant on Intrusive Level		55
Passive Recreation – Parks	During Use - Not dependant on Intrusive Level		50

2.1 Noise Criteria - Construction

The assessment of construction noise will be minimally different to the assessment in the zoning report as the area of the site under construction is similar.

3 Noise Predictions

Noise generated by the updated training centre is predicted using computer-based modelling.

The following noise sources were used in the modelling:

1. Ventilation fans and external air-conditioning condensers
2. Vehicles exiting or arriving at the training centre
3. Wedding and other social events held at Putta Bucca house – 74 Putta Bucca Road
4. Vehicles exiting the Putta Bucca House grounds

Weather Induced Noise-Enhancement

The NPI generally requires that Noise-enhancing meteorological conditions are considered for noise modelling predictions. In this case all the predicted noise levels made with the predictor program are within distances of less than 150 m. At these distances, there is insignificant enhancement due to weather effects, so it was not included in the modelling results.

3.1 Training Centre Noise Generation

The operation of the training centre is predominately residential group accommodation. Building A houses facilities for training sessions/lectures, gymnasium, and dining. Building A will be the primary noise source due to external HVAC noise sources like the Kitchen Exhaust fans and air-conditioning condensers. Buildings B and C are accommodation rooms, the accommodation rooms could be fitted with air-conditioning.

The placement of the Kitchen Exhaust Fan (KEF) is assumed to be on the southern end of the roof of Building A (no more than 5 m from the Southern edge of the roof). Any air-conditioning external condenser unit used to provide air-conditioning for Building A should be placed at the northern end of Building A so that the raised land to the North of the training centre protects Putta Bucca house as a natural noise barrier. External condensing units if used for the accommodation buildings can be located close to the northern or southern ends of the buildings. On the northern end the raised land to Putta Bucca House will act as a noise barrier and on the Southern end of the building the Accommodation building will be the noise barrier.

Assumed sound power levels for the HVAC items are listed in Table 2 below.

Table 2: Sound Power Levels for HVAC Items at Training Centre – Unweighted Spectrum values, Overall dBA

Item	63	125	250	500	1k	2k	4k	8k	dBA
KEF	75	78	74	73	70	65	58	48	73
Condenser for Building A	87	86	81	80	75	71	66	63	81
Condensers for Buildings B & C	76	75	70	69	64	60	55	52	70

The training centre has an outdoor area on the Southern side of Building A that includes a firepit, BBQ and a Recovery Pool. Events using amplified music and voice should be completed by 10 pm, after 10 pm any gatherings should be small and with groups notified to reduce noise from conversations and music. If required patron noise in the Firepit/BBQ area can be controlled by staff at the centre.

3.1.1 Training Centre Traffic Noise

The training centre car parking located on the at the western end of the development. Based on the Roads and Traffic Authority – “Guide to Traffic Generating Developments” version 2.2. The proposed sports centre has 32 units and the evening peak hour trips for a hotel are estimated at 0.4 trips per unit and the daily trips of 3 trips per unit, leading to 13 trips in the busiest hour in the evening and 96 daily trips. A trip is defined as a single journey, a return journey is two trips.

Signage should be used to advise patrons leaving and arriving at the centre to reduce noise generation that could impact neighbouring residents.

To be conservative vehicle trips to and from the training centre are modelled as originating and ending at Putta Bucca Road. The internal road exiting the site toward the Glen Willow Sports Fields would be expected to carry some traffic. Noise from vehicles using the internal road to the south of the training centre will be reduced at Putta Bucca House due to topography and acoustic shielding due to the internal road being at a lower ground level.

Predicted noise levels at Putta Bucca house are listed in Table 3 below.

Table 3: Predicted Noise Levels - dBA

Location	Day	Evening	Night	Notes
Putta Bucca House*	29	30	26	The total noise due to Training Centre Operations
Putta Bucca House*	23	27	16	Noise generated by vehicle traffic
Putta Bucca House*	28	28	26	Noise generated by HVAC at Training Centre

Notes*: The noise levels are predicted in the residential zone 30 m from Putta Bucca House.

Note: The above table does not include noise generation due to patrons using the outdoor BBQ and recovery areas at the training centre.

Note: The above predicted noise levels do not exceed the noise triggers (refer Table 1) for the day, evening, or night at Putta Bucca House

3.2 Putta Bucca House Noise Generation

Putta Bucca House hosts events at the residence and as reported in the zoning report in a semi-permanent marque on the grounds. As the layout of the training centre is updated for this addendum report the noise levels from events at Putta Bucca House are updated for the revised residential accommodation at the training centre.

The excavation for the training site allows for the land to the north of the training centre to act as a natural noise barrier reducing the noise levels that will affect both the common areas and the residential buildings B and C in the training centre. The Northern ends of the residential buildings do not include any external windows opening into habitable rooms of the accommodation.

Noise levels during the loudest stages of events at Putta Bucca House (during speeches etc) are not predicted to exceed 50 dBA in the residential areas of the training centre. Noise due to cars leaving the site are predicted to be 34 dBA on the northern end of the training centre.

Accommodation rooms on the side of buildings B facing the BBQ area would experience noise levels outside their windows of up to 49 dBA when an event was on at Putta Bucca house event tent was in progress. Allowing for a 10 dB via a partially open window the guests in these rooms would need to close the external windows to achieve a room noise level of 35 dBA inside the room.

The noise contour maps for the above predictions are presented in Appendix A.

4 Summary of Acoustic Assumptions and Recommendations

The assumptions in noise modelling for the Training Centre and Putta Bucca house are listed in the noise predictions section above. In summary:

- The KEF is to be located no more than 5 m from the southern end of the roof edge on building A
- Any external condenser(s) for air-conditioning in building A must be located at the Northern end of building A
- Any external condensers for air-conditioning in the accommodation building are to be located at the northern or southern ends of the building a maximum of 2 units is assumed on any one end of the accommodation blocks
- The assumed sound power levels for HVAC items are listed in Table 2 above
- The listed HVAC items does not include smaller fan for toilet exhausts or other ventilation fans and mechanical plant which will need to be allowed for in the final design for mechanical plant noise emissions
- For compliance checking and design the combined noise levels due to mechanical plant must not exceed 49 dBA when measured at any point along the northern property boundary with Putta Bucca House

A. Appendix A - Contour Noise Maps

Noise Contour Maps from Predictor

