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NEW PRIMARY SCHOOL IN GREATER FLAGSTONE

Noise Impact Assessment

20 March 2026

Group GSA

QE025-01F02 Flagstone Noise Impact Assessment (r3)

40 YEARS 1982-2022 ACOUSTIC ENGINEERING EXCELLENCE

Brisbane Sydney Melbourne Gold Coast Kuwait Singapore
Renzo Tonin & Associates ABN 16 123 509 884
U14, 205 Montague Road, West End QLD 4101 | PO Box 820 SPRING HILL QLD 4004
P (07) 3367 3131 F (07) 3367 3121 brisbane@renzotonin.com.au www.renzotonin.com.au

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1 Introduction

This document presents the minimum acoustic performance requirements and design recommendations for a new primary school in Greater Flagstone ('the Project') to be located in the central north region of the Flagstone Development Area Qld ('subject site).

This noise impact assessment has been prepared on behalf of the State of Queensland, represented by the Department of Education (Applicant), in support of a Priority Development Area (PDA) development application over part of land at New Beith Road, Silverbark Ridge QLD 4124 and described as part of Lot 911 on SP356636 (site). This PDA development application seeks approval from the MEDQ for a development permit for a material change of use for educational establishment, child care centre, community facility and health care services.

The Applicant proposes a State primary school for Prep to Year 6, delivered in stages:

- Stage 1 opening in 2029 with capacity for approx. 712 enrolments.
- Stage 2 opening in 2031 with a cumulative enrolment capacity for approx. 1,092.
- Further undefined stage to provide a cumulative enrolment capacity of approx. 1,185.

The Applicant also proposes a child care centre (kindergarten) and community facility/health care services (hub) to be delivered at Stage 1 of the State primary school. The:

- child care centre is intended to be a two-unit kindergarten providing for up to 44 children per day, and up to 88 children across the week, and 15 hours care per week per child.
- community facility/health care services is intended to provide a range of services, supporting children and their families with early years programs and support, onsite health and wellbeing services, and family programs and activities.

The site is being created as part of a broader subdivision project delivered by Peet Flagstone City Pty Ltd under PDA development approvals DEV2024/1491 and DEV2023/1414. Works undertaken under these PDA development approvals provide the foundational infrastructure required to make the site 'fit for purpose' (including vegetation clearing, roadworks, sewerage, water supply, earthworks, telecommunications and electrical infrastructure)".

This study includes the assessment of noise impacts due to the operation of the development, and includes description and analysis of the following:

- Existing acoustic environment in the vicinity of the subject site.
- Acoustic criteria applicable to the operation of the development.
- Noise sources associated with the use of the development.
- Noise management principles to be employed to meet minimise noise from the uses as practicable.

1.1 Referenced documentation

This document addresses the requirements of:

- Logan City Council
- Qld Environmental Protection Act 1994
- Qld Environmental Protection (Noise) Policy 2019

Appendix A contains a glossary of acoustic terms used in this report.

1.2 Site background

The Project is to be located on a green field site within the Greater Flagstone PDA; specifically within the area forming Flagstone Context Area 3 Context Plan.

The area surrounding the subject site is currently being developed, with future uses including:

- Residential dwellings and public open space across a future road to the north
- Residential dwellings adjoining the eastern boundary
- Regional sports park across a future road to the south
- Residential dwellings and child care centre across a future road to the west

Vehicle access to the subject site will be via the future road adjoining the southern and northern boundaries.

Figure 1-1: Flagstone land use plan

Figure 1-2: Site survey

2 Proposed development

2.1 Proposed development

The master plan will generally include the following:

Precinct	Development
Administration	• Central Campus Administration incorporating • Corporate Services • Student Support Services
Resource Centre	• Central Campus Resource and Information Centre
Covered Areas	• Central Covered Area • Prep Covered Area • Junior precinct Covered Area • Senior precinct Covered Area
Tuck-shop/Canteen	• Canteen with the potential to integrate with possible specialist Kitchen/Hospitality space and Central Covered Area
Staff Accommodation	• Staff collaborative spaces provided in General Learning • Centres and staff social hub provided in or adjacent to the • Administration building
Student Amenities	• Amenities generally located adjacent to Covered areas with minimal student amenities within general classrooms buildings.
Staff Amenities	• Administration • Learning Centres • Resource Centre • External Amenities • Multipurpose Hall • Operational Services
Operational Services	• Grounds Care Store • Central Bulk Store • Archive Store • Cleaners Secure Store & Decanting area and Laundry • Facilities Manager and OS Staff Lunch area
Sports/ Play Facilities	• Single Court indoor multi-purpose sports/performance centre • Type 1 Sports Oval with 100m running track • Level platform for 2 Multipurpose courts • 1 x Court fully developed in Stage 1, with adjacent turfed platform for second developed court by others in the future. • Outdoor full court (for basketball, netball & pickleball) • Prep & Years 1–3 Play Areas - grassed play area approx. 3000m^2 and playground structure, sandpit, soft fall, shade structure
Junior Precinct	• Junior Learning Centre • Junior Student Common, Covered Area and Amenities
Other	• Landscaped Central Plaza • Covered Outdoor Food Court with seating adjacent to Canteen.
Kindergarten	• Indoor and outdoor kindergarten areas.
Community hub	• Allied health care

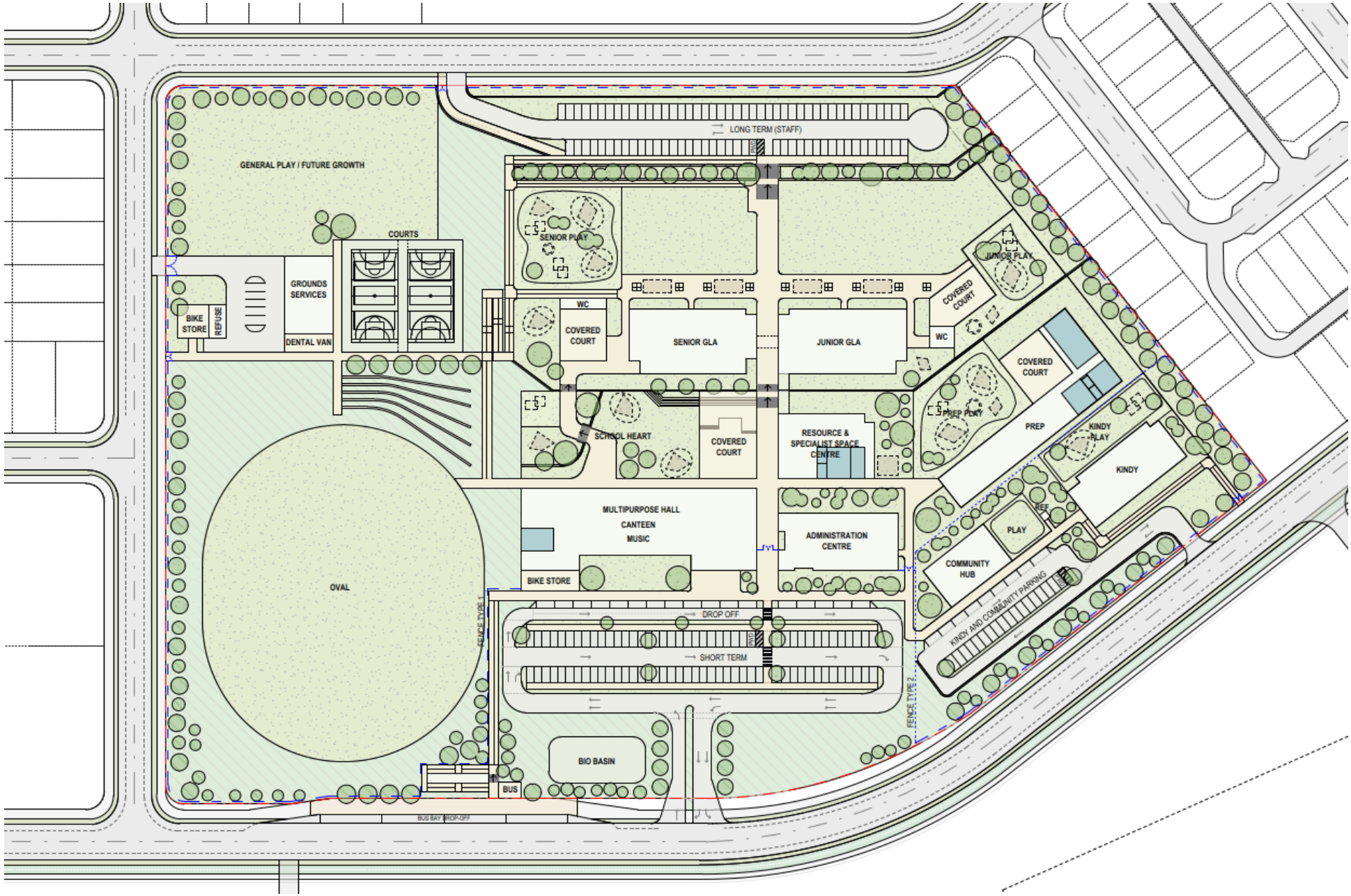

Figure 2-1: Development plan

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New Primary School in Greater Flagstone

Noise Impact Assessment

3 Existing noise environment

3.1 Unattended noise measurements

The existing noise environment is categorised by low to moderate background levels during the day. The acoustic environment would be categorised as rural suburban.

Noise measurement of existing ambient noise levels was conducted using attended noise measurements on Thursday 3rd July 2025. The test instrumentation consisted of:

Equipment	Equipment type	Serial
Noise logger – NM1	NTi-XL2	A2A-12467-E0
Calibrator	Bruel & Kjaer Calibrator	2699433

The average ambient results include values for the L_{A01}[1], L_{A10}[2], L_{Aeq}[3] and L_{Amax}[4] for each of the day, evening and night periods. For the L_{Amax}, L_{A01} and L_{A10} parameters, arithmetic averaging has been used. For L_{Aeq}, logarithmic averaging has been used. For L_{A90}[5] the result has been calculated as the Rating Background Level (RBL) of the dataset in accordance with accepted practice.

Table 3-1: Existing ambient noise levels

Logger location	Period of measurement	Average Noise Levels (dBA)				
		L_{A01}	L_{A10}	L_{A90} (RBL)	L_{Aeq}	L_{Amax}
M1	Day	57	49	35	54	67
	Evening	46	37	29	40	56
	Night	43	35	25	42	56

It is noted that the logger was located adjacent an active construction site. Accordingly, the L_{Aeq}, L_{A10}, L_{A01} and L_{Amax} are exacerbated by extraneous noise. It is expected that the weekday L_{A90} parameter would be largely unaffected by sporadic construction noise and accordingly would be acceptable for use.

The measurement procedures used, and the results reported in this document were conducted in accordance with Renzo Tonin and Associates' Quality Assurance System, Australian Standard 1055-1989 "Acoustics - Description and Measurement of Environmental Noise" and the DEHP's Noise Control Manual (August 2013).

[1] L_{A01} is the A-weighted sound pressure level exceeded for 1% of the time.
[2] L_{A10} is the A-weighted sound pressure level exceeded for 10% of the time.
[3] L_{Aeq} is the equivalent or energy-averaged A-weighted sound pressure level.
[4] L_{Amax} is the average of the maximum A-weighted sound pressure levels occurring within the consecutive 15 minute samples.
[5] L_{A90} is the A-weighted sound pressure level exceeded for 90% of the time.

4 Noise criteria

It is acknowledged that Economic Development Queensland (EDQ) does not stipulate specific noise criteria. In absence of this, this report will assess the proposed development against the criteria commonly adopted for education projects, which includes:

- Environmental Protection Act 1994 'the Act'
- Environmental Protection (Noise) Policy 2019
- Local council, that being Logan City Council

4.1 Environmental Protection Act 1994

The object of this Act is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development).

The Act describes a number of offences relating to noise emission, including building work, regulated devices (e.g. power tools), pumps, air-conditioning equipment, refrigeration equipment, etc.

4.1.1 Section 440U: Air-conditioning equipment

(1) This section applies to premises at or for which there is air conditioning equipment.

(2) An occupier of the premises must not use, or permit the use of, the equipment on any day—

(a) before 7a.m, if it makes a noise of more than 3dB(A) above the background level; or

(b) from 7a.m. to 10p.m, if it makes a noise of more than 5dB(A) above the background level; or

(c) after 10p.m, if it makes a noise of more than 3dB(A) above the background level.

4.1.2 440X Open-air events

(1) An occupier of premises must not use, or permit the use of, the premises for an open-air event on any day –

(a) before 7a.m, if the use causes audible noise; or

(b) from 7a.m. to 10p.m, if the use causes noise of more than 70dB(A); or

(c) from 10p.m. to midnight, if the use causes noise of more than the lesser of the following –

(i) 50dB(A);

(ii) 10dB(A) above the background level.

(2) However, subsection (1) does not apply to licensed premises.

(3) Also, subsection (1)(b) does not apply if –

(a) the premises is, or is part of, an educational institution; and

(b) the use of the premises for an open-air event is organised by or for the educational institution for non-commercial purposes of the institution.

The noise assessment criteria provided under Section 440W of the EP Act do not apply where the activity is "..organised by or for the educational institution for non-commercial purposes of the institution".

Should the oval be hired out to host events that are not organised by nor for the school, or if the oval is hired out to third parties for for-profit and/or commercial purposes, the noise emissions from the oval (or part/s of the oval) would need to comply with the noise emission criteria prescribed by the EP Act.

4.1.3 Section 440W: Indoor venues

(1) An occupier of a building must not use, or permit the use of, the building as an indoor venue on any day—

a) before 7a.m, if the use makes an audible noise; or

b) from 7a.m. to 10p.m, if the use makes a noise of more than 5dB(A) above the background level; or

c) from 10p.m. to midnight, if the use makes a noise of more than 3dB(A) above the background level.

(2) However, subsection (1) (b) does not apply if—

d) the building is, or is part of, an educational institution; and

e) the use of the building as an indoor venue is organised by or for the educational institution for non-commercial purposes of the institution.

The noise assessment criteria provided under Section 440W of the EP Act do not apply where the activity is "..organised by or for the educational institution for non-commercial purposes of the institution".

Should indoor spaces (e.g. MPH) be hired out to host events that are not organised by nor for the school, or if such spaces are hired out to third parties for for-profit and/or commercial purposes, the noise emissions from such spaces would need to comply with the noise emission criteria prescribed by the EP Act.

4.2 Department of Environment and Science – Environmental Protection (Noise) Policy 2019

Schedule 1 of the EPP (Noise) 2019 presents outdoor and indoor acoustic quality objectives during the day, evening and night-time periods. These objectives apply to all forms of noise experienced by a receptor.

The acoustic quality objectives for uses in proximity to the subject site are reproduced in Table 4-1. It can be seen in this table that the objectives are presented in terms of the adjusted L_{Aeq}, L_{A10} and L_{A01} noise levels measured over a 1-hour time period.

Table 4-1: EPP (Noise) acoustic quality objectives

Sensitive Receptor	Time of Day	Acoustic Quality Objectives (dBA)		
		$L_{Aeq, adj, 1hr}$	$L_{A10, adj, 1hr}$	$L_{A01, adj, 1hr}$
Residence (for outdoors)	Daytime and Evening	50	55	65
Residence (for indoors)	Daytime and Evening	35	40	45
	Night-time	30	35	40

The internal noise objective for the day and evening is 35dB $L_{Aeq\ 1hour}$. This internal objective can be approximated to an external objective by adding 10dB across an open façade. The resultant external objective would be 45dB $L_{Aeq\ 1\ hour}$.

4.3 Logan City Council Planning Scheme

Acoustic requirements included in the Logan City Council Planning Scheme have been considered with regard to Planning Scheme Policy – SC6.2.3 – Environmental Management. Acoustic requirements provided within the planning scheme are reproduced in Table 4-2.

Table 4-2: Logan City Council Planning Scheme - Acoustic requirements

Noise level at the boundary of premises			
Noise type	**Time period**	**Monday to Saturday**	**Sunday and public holidays**
Non-steady sound*	Day 7:00am - 6:00pm	LAeq,adj,T ≤ LA90 plus 5 dB(A)	LAeq,adj,T ≤ LA90 plus 5 dB(A)
	Evening 6:00pm to 10:00pm	LAeq,adj,T ≤ LA90 plus 5 dB(A)	LAeq,adj,T ≤ LA90 plus 5 dB(A)
	Night 10:00 - 7:00am	LAeq,adj,T ≤ LA90 plus 0 dB(A) and LAmax ≤ 60dB(A)	LAeq,adj,T ≤ LA90 plus 0 dB(A) and LAmax ≤ 60dB(A)
Continuous noise*	Anytime	LA90,T plus 0dB(A)	LA90,T plus 0dB(A)

4.4 Noise emission objectives

Project noise emission objectives have been established based on the requirements dictated by the Act and EPP (Noise) 2019.

Background based noise assessments in developing areas can often lead to noise emission objectives which are overly stringent. This is due to low background noise levels which can occur in the absence of traffic or general neighbourhood noise. Given that receivers in the vicinity of the Project will be located adjacent to or in proximity to main collector routes through the Flagstone central area, higher background noise levels would be expected. Accordingly, assessment is also provided in context with the EPP (Noise) acoustic quality objectives, which are not background noise dependent.

Noise emission criteria applicable to the use of the school is provided in Table 4-3.

Table 4-3: Project noise criteria

Noise source	Type of use	Noise requirement	Noise criteria	Noise objective, dB L_{Aeq}
PAC MPH	Educational	EP Act	N/A	-
	Community use	EPP (Noise)	45	45
MP Courts Sports Field	Educational	EP Act	N/A	-
	Community use	EPP (Noise)	45	45
Carpark	All	EPP (Noise)	BG + 5dB	45
Mechanical plant	All	EPP Noise	45	45

5 Assessment of noise impacts

Noise impacts to receivers external to the site has been addressed for the following noise sources:

- Noise from student play areas
- Noise associated with the carpark
- Noise from the multipurpose hall
- Noise from multipurpose ball courts and ovals
- New mechanical plant servicing the Project

5.1 Noise from student play areas

Junior and prep play areas are located in proximity to the eastern residential boundary. Noise from these uses have been assessed.

Source noise levels have been adopted from the AAAC *Guideline for Child Care Centre Acoustic Assessment* Association of Australasian Acoustical Consultants. A sound power level of 90dBA has been assumed for each of the outdoor areas.

5.2 Noise from the carpark

New carparks are proposed with access via the future roads bordering the north and south boundaries. Noise associated with vehicles accessing these carparks have been addressed. Predictions utilising the sound power levels and conditions provided in Table 5-1.

Table 5-1: Driveway noise sources

Activity	Sound power level, dBA	Vehicles per hour (vph)
Cars moving (10km/h)	84 assessed as L_{Aeq}	North carpark – 85 South carpark - 120

5.3 Noise from the multipurpose hall

Noise from the use of the hall for educational purposes would be exempt from assessment as per Part 440W of the EP Act. This is consistent with industry practice in the assessment of educational projects.

It is our understanding that the MPH may be utilised for third party use and accordingly requires assessment for potential impacts to surrounding noise sensitive receivers.

The MPH would be designed to mitigate rain noise impacts on the roof. These treatments have been considered in predicting noise breakout from the use of the hall. Acoustic ratings to external walls would also need to be considered, however this would be undertaken as part of the schematic design of the buildings.

The potential third party use of the MPH is unknown; however, the following is envisaged noise generated within the MPH could be associated with:

- Amplified speech and music
- Indoor sports
- Dance classes

The MPH would typically be naturally ventilated as per previous DoE projects.

5.3.1 Source noise levels

Noise from the operation of the MPH has been assessed for each noise source nominated above. Windows and/or doors to the MPH have been assumed to be open, encompassing an area of approximately 45m^2 on each of the northern and southern facades.

Sound pressure levels within the MPH are provided in Table 5-2.

Table 5-2: Internal sound pressure level

Measurement description	Sound pressure level, dB								
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	A-wt
Within MPH (amplified music and speech)	94	96	86	87	83	81	82	78	90
Within MPH (dance)	89	91	81	82	78	76	77	73	85
Within MPH (sport)	65	71	70	74	76	75	64	51	80

5.3.2 Multipurpose hall constructions

Acoustic constructions utilised for the assessment are provided in Table 5-3. Such constructions are provided as proof of concept, and would be subject to assessment during the schematic design and detailed design phases of the MPH.

Table 5-3: MPH facade constructions

	Building element	Recommended construction	Approximate Rw
MPH	Roof / ceiling	• 0.5mm sheet metal cladding • Bradford Anticon 60 blanket. • Minimum 250mm ceiling cavity filled with 75mm thick 14kg/m3 density insulation	30
	External walls	• 125mm tilt concrete panel	50

5.4 Sporting oval

The following assumptions are made for the assessment of noise from the sporting oval:

- It is assumed that the oval will be completely vacated and lights out by 10:00p.m.
- Worst-case of 60 people at the oval at any given hour, consisting of 60 players (four teams of 15 players) for training.
- It is assumed that spectators will only be spectating and talking during a typical practice session (i.e. no loud cheering and/or shouting).
- Sound power levels were taken from a previous similar project of a junior soccer game. It is assumed that noise emissions for other games such as touch football and rugby will be similar to soccer (e.g. similar noise levels when kicking a ball, passing a ball, etc.). The sound power levels for a practice session were scaled to account for 60 players on the field.

5.5 Noise from ballcourts

Typical noise levels for hardcourt sporting activities likely to be held on the ballcourts were obtained from our database and library files.

Noise from ball court activities varies considerably given the use (e.g. basketball, tennis, netball, futsal) and the patrons using the court. To this author's knowledge, no large-scale data capture of noise associated with such sports has been undertaken in Australia which would provide a robust statistical value for assessment purposes. Accordingly, a sound power level for ball court activities has been adopted which is toward the upper range of measurements conducted by RTA.

In determining noise levels associated with the courts, RTA have adopted a sound power level of 94dB L_{Aeq} which is considered conservative for this assessment.

5.6 Predicted noise levels

Predicted noise levels from the operation of school uses are provided in Table 5-4. Predicted noise levels consider the constructions in Section 5.3.2.

Receivers have been grouped by worst case locations, namely:

- Western receivers
- Northern receivers
- Eastern receivers

Consideration has been given to the approved *Flagstone Residential Subdivision – Context Area 3 South* prepared for PEET Flagstone Pty Ltd civil plans included in the EDQ approval for the larger priority development area (PDA) [ref: DEV2024/1491]. The eastern boundary adjoining future residential allotments incorporates a retaining wall which increases the height of residential lots in the order of 2-

2.5m above the outdoor play areas. This increase in receiver height, coupled with a boundary fence sitting atop the retaining wall, has been considered in the calculation of noise to receiver locations.

Predicted noise levels consider acoustic treatments nominated in Section 6.

Table 5-4: Predicted noise levels

Noise source	Conditions	Assessment location	Predicted noise level, dB $L_{Aeq\ 15min}$	EPP (Noise) Acoustic Quality Objective $L_{Aeq\ 1hour}$ (Day / Evening)
Carpark	N/A	Western receivers	35	45
		Northern receivers	41	45
		Eastern receivers	< 30	45
Prep, junior play and kindergarten areas	1800mm high acoustic screen above 2m retaining wall	Eastern receivers	42	45
MPH (amplified speech and music)	Closed façade	Western receivers	34	45
		Northern receivers	33	45
		Eastern receivers	< 30	45
MPH (amplified speech and music)	Façade open	Western receivers	51	45
		Northern receivers	51	45
		Eastern receivers	33	45
MPH (dance class)	Façade open	Western receivers	46	45
		Northern receivers	46	45
		Eastern receivers	< 30	45
MPH (indoor sports)	Façade open	Western receivers	41	45
		Northern receivers	41	45
		Eastern receivers	< 30	45
MP Courts	N/A	Western receivers	46	45
		Northern receivers	47	45
		Eastern receivers	<30	45
	1800mm high acoustic screen	Western receivers	38	45
		Northern receivers	39	45
		Eastern receivers	<30	45
Sporting Fields	N/A	Western receivers	59	45
		Northern receivers	56	45
		Eastern receivers	31	45

5.7 Mechanical plant

A detailed assessment of mechanical plant servicing the Project has not been conducted due to the infancy of the development design. However, the following should be considered when siting plant equipment in order to minimise noise impacts from plant operation on adjoining uses:

- Air-conditioning condenser units should be located on facades opposite those facing residential dwellings in order to maximise distance and screening to receivers (e.g. southern sides of buildings).
- Exhaust and supply fans may require internally lined duct work on the intake and discharge and should ideally face away from the west, north and east boundaries (e.g. face south).

The mechanical services for the building will be designed to ensure that the limits previously presented in Table 4-3 are met. These limits are to be co-ordinated with the mechanical engineer's design.

A detailed assessment of the noise impact from mechanical plant will be undertaken later, when a detailed plant layout and noise data is available.

5.8 Discussion

Noise emissions from the use of the school have been assessed. With regard to each proposed activity, we note:

- It is our understanding that noise associated with indoor uses, external courts and sporting fields is not assessable under the provisions of the EP Act. Noise from potential third party use has been addressed. In this regard:
  - Noise from third party use of the oval is expected to result in some significant exceedances of noise emission criteria, up to 19dB for the day period. It is noted however that this would not be atypical for sporting ovals with residential dwellings in close proximity.
  - Predicted noise from the use of the outdoor courts may exceed EPP (Noise) criteria by up to 2dB, and Council criteria by up to 7dBA. Acoustic treatment may be adopted to meet both criteria, namely a 1800mm screen around the ball courts (refer to Section 6.3) to achieve noise emission requirements.
- Predicted noise levels associated with the junior, prep and kindergarten play area indicate exceedances of the EPP (Noise) criteria in the absence of acoustic treatment. Acoustic treatment to reduce noise from these spaces is recommended given the proximity of the play areas to future residences (refer to Section 6.2).
- Noise from the operation of the MPH will meet noise emission requirements based on a closed façade.
- With regard to the operation of the MPH with an open façade, we note:
  - Noise emissions due to amplified speech and music, and during dance classes may exceed noise emission requirements.
  - Noise emissions due to indoor sports are expected to meet noise emission requirements.

6 Recommendations

6.1 Mechanical plant

Noise from the operation of mechanical plant is to meet the noise emission requirements nominate in Section 4 of this report.

6.2 Junior and prep play areas

In order to mitigate noise from the junior and prep play areas, an 1800mm high acoustic fence is to be incorporated atop the approved retaining wall along the eastern residential boundary of the development.

The fence construction may be revised as part of the schematic design phase, however should constitute an imperforate material with a surface density of no less than 4kg/m^2.

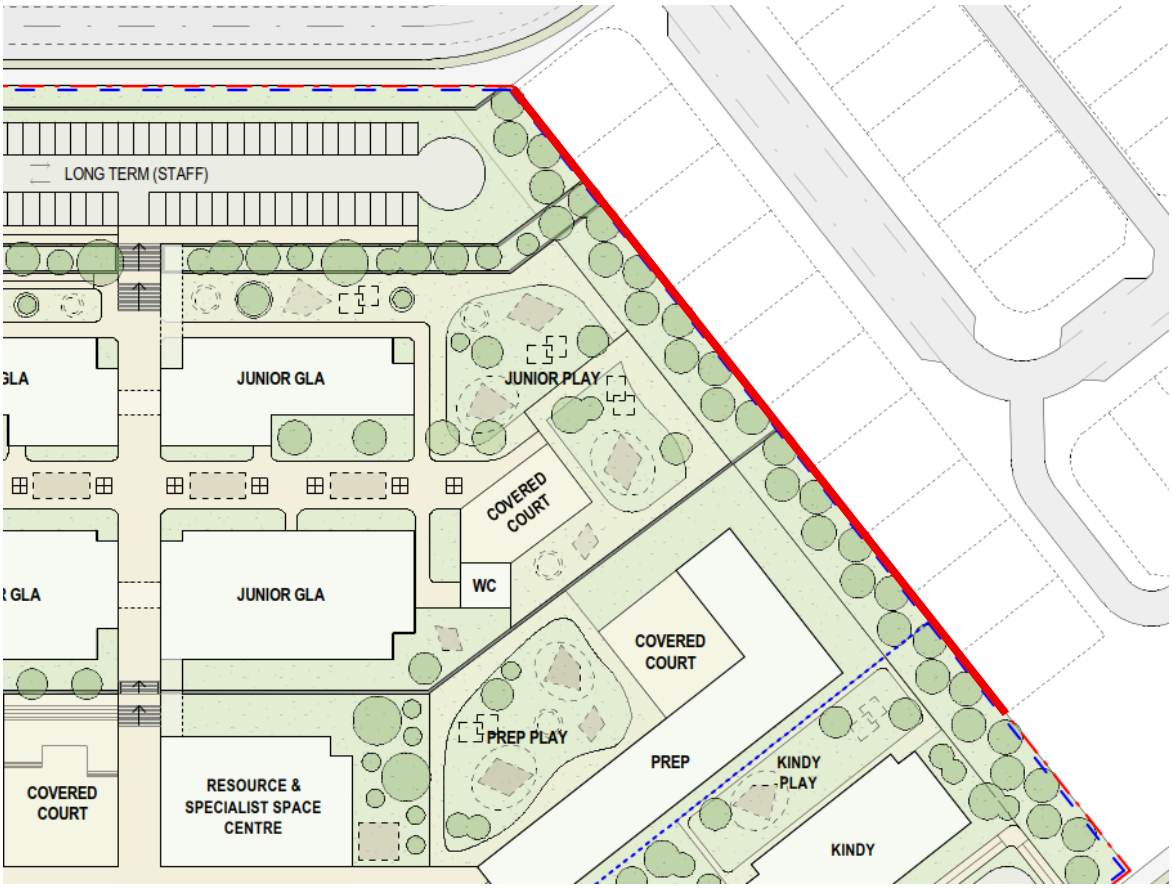

Figure 6-1: Acoustic screen along east boundary

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6.3 Outdoor courts

In the event that the outdoor courts are to be used for third party use, an 1800mm high acoustic fence should be constructed around the north and western sides of the outdoor court. The fence construction may be revised as part of the schematic design phase, however should constitute an imperforate material with a surface density of no less than 4kg/m^2. The grounds services building may form part of the acoustic screen.

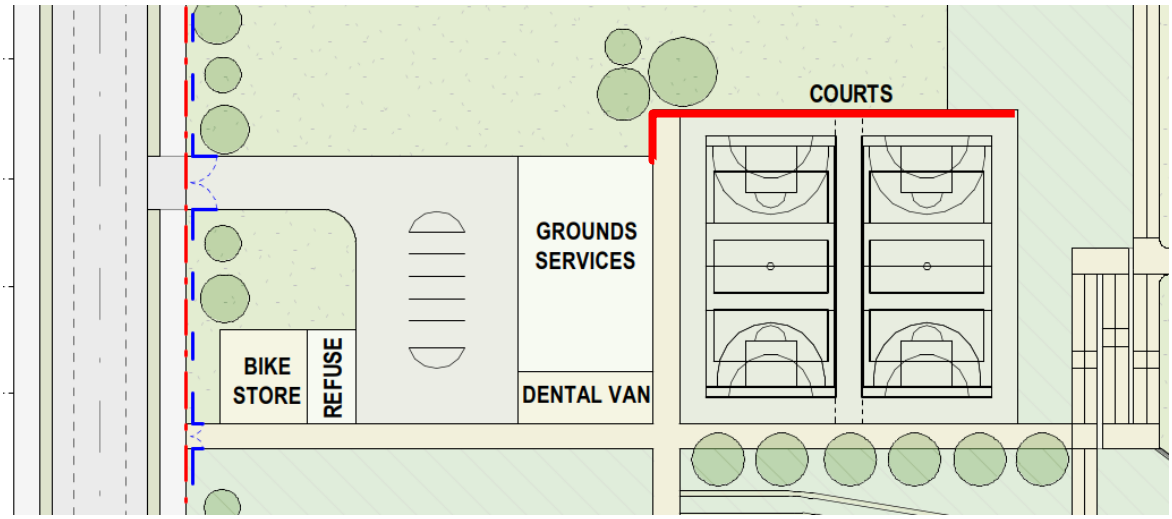

Figure 6-2: Acoustic screen around courts

6.4 Multipurpose hall

The following recommendations are provided for the third-party operation of the multipurpose hall (i.e. not for educational purposes):

- Where amplified music and speech is utilised (including dance class), all external windows and doors are to be closed.
- The maximum amplified sound pressure level within the MPH with windows and doors closed should not exceed 90dB(A) $L_{Aeq.}$
- Indoor sporting may occur with windows and doors open. However, these openings should only be incorporated on the north and south facades and not exceed 45m^2.
- Acoustic treatment to the MPH should be reviewed as part of the schematic design and detailed phases to ensure that noise emission requirements (third party use) are met.

Complaint management procedures should be incorporated to ensure that any complaints from the local community are recorded and acted upon.

6.5 Sporting oval

In the event the sporting oval is to be used for third party use, a noise management plan should be prepared in order to reduce noise impacts as practically possible. This may include hours of operation, restrictions on amplified music or public announcement systems, and complaint management procedures.

APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.		
Amenity	A desirable or useful feature or facility of a building or place.		
A-weighting	A filter applied to the sound recording made by a microphone to approximate the response of the human ear.		
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the LA90 noise level if measured as an overall level or an L90 noise level when measured in octave or third-octave bands.		
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of common sounds in our environment:		
	threshold of hearing	0 dB	The faintest sound we can hear, defined as 20 micro Pascal
		10 dB	Human breathing
	almost silent	20 dB	
		30 dB	Quiet bedroom or in a quiet national park location
	generally quiet	40 dB	Library
		50 dB	Typical office space or ambience in the city at night
	moderately loud	60 dB	CBD mall at lunch time
		70 dB	The sound of a car passing on the street
	loud	80 dB	Loud music played at home
		90 dB	The sound of a truck passing on the street
	very loud	100 dB	Indoor rock band concert
		110 dB	Operating a chainsaw or jackhammer
	extremely loud	120 dB	Jet plane take-off at 100m away
	threshold of pain	130 dB	
		140 dB	Military jet take-off at 25m away
dB(A)	A-weighted decibel. The A- weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter is denoted as dB(A). Practically all noise is measured using the A filter.		
Discontinuous Construction	A wall system having a minimum 20mm cavity between two separate leaves, where, for other than masonry there is no mechanical linkage between leaves except at the periphery.		
EPA	Environment Protection Authority		

Field Test	A test of the sound insulation performance in-situ. See also 'Laboratory Test' The sound insulation performance between building spaces can be measured by conducting a field test, for example, early during the construction stage or on completion. A field test is conducted in a non-ideal acoustic environment. It is generally not possible to measure the performance of an individual building element accurately as the results can be affected by numerous field conditions.
FIIC	Field Impact Isolation Class. A measure of the noise impact performance of a floor. The value indicates the resistance of the floor to the transmission of impact sound and is measured using a standard tapping machine. It is measured in-situ and is therefore subject to the inherent accuracies involved in such a measurement. The term is defined in ASTM E492 and E1007. It is a field measure of the level of impact sound transmitted to a space via a floor. The equivalent measurement in a laboratory is termed the IIC. The higher the value the better the performance.
Flanking	Flanking is the transfer of sound through paths around a building element rather than through the building element material directly. For example, sound travelling through a gap underneath a door or a gap at the top of a wall.
IIC	Impact Isolation Class A measure of the noise impact performance of a floor. It is measured in very controlled conditions in a laboratory and is characterised by how much sound reaches the receiving room from the operation a standard tapping machine placed on the floor. The term is defined in ASTM E492 and E1007. The higher the number the better the performance.
Impact Noise	The noise in a room, caused by impact or collision of an object onto the walls or the floor. Typical sources of impact noise are footsteps on the floor above a tenancy and the slamming of doors on cupboards mounted on the common wall between tenancies.
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
LAeq or Leq	The “equivalent noise level” is the summation of noise events and integrated over a selected period of time, which would produce the same energy as a fluctuating sound level. When A-weighted, this is written as the LAeq.
Lmax	The maximum sound pressure level measured over a given period. When A-weighted, this is usually written as the LAmax.
Ln,w	Weighted Normalised Impact Sound Pressure Level A measure of the sound level transmitted from impacts on a floor to a tenancy below. It is measured in very controlled conditions in a laboratory and is characterised by how much sound reaches the receiving room from a standard tapping machine. A lower value indicates a better performing floor.
LnT,w	Weighted Standardised Field Impact Sound Pressure Level As for Ln,w but measured in-situ and therefore subject to the inherent accuracies involved in such a measurement. The equivalent measurement in a laboratory is the Ln,w. A lower value indicates a better performing floor.
Laboratory Test	The performance of a building element when measured in a laboratory. The sound insulation performance of a building element installed in a building however can differ from its laboratory performance for many reasons including the quality of workmanship, the size and shape of the space in which the measurement is conducted, flanking paths and the specific characteristics of the material used which may vary from batch to batch.

NRC	Noise Reduction Coefficient. A measure of the ability of a material to absorb sound. The NRC is generally a number between 0 and 1 but in some circumstances can be slightly greater than 1 because of absorption at the edges of the material. A material with an NRC rating of 1 absorbs 100% of incoming sound, that is, no sound is reflected back from the material. The NRS is the average of the absorption coefficient measured in the octave bands 250Hz, 500Hz, 1kHz & 2kHz which correspond to the predominant frequencies associated with the human voice.
Partition wall	A wall dividing two rooms.
Rw	Weighted Sound Reduction Index A measure of the sound insulation performance of a building element. It is measured in very controlled conditions in a laboratory. The term supersedes the value STC which was used in older versions of the Building Code of Australia. Rw is measured and calculated using the procedure in ISO 717-1. The related field measurement is the DnT,w. The higher the value the better the acoustic performance of the building element.
R'w	Weighted Apparent Sound Reduction Index. As for Rw but measured in-situ and therefore subject to the inherent accuracies involved in such a measurement. The higher the value the better the acoustic performance of the building element.
Sound absorption	The ability of a material to absorb sound energy by conversion to thermal energy.
Sound Insulation	Sound insulation refers to the ability of a construction or building element to limit noise transmission through the building element. The sound insulation of a material can be described by the Rw and the sound insulation between two rooms can be described by the DnT,w.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 pico watt.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone referenced to 20 mico Pascal.
Structure-borne Noise	Audible noise generated by vibration induced in the ground and/or a structure. Vibration can be generated by impact or by solid contact with a vibrating machine. Structure-borne noise cannot be attenuated by barriers or walls but requires the isolation of the vibration source itself. This can be achieved using a resilient element placed between the vibration source and its support such as rubber, neoprene or springs or by physical separation (using an air gap for example). Examples of structure-borne noise include the noise of trains in underground tunnels heard to a listener above the ground, the sound of footsteps on the floor above a listener and the sound of a lift car passing in a shaft. See also 'Impact Noise'.
Transmission Loss	The sound level difference between one room or area and another, usually of sound transmitted through an intervening partition or wall. Also the vibration level difference between one point and another. For example, if the sound level on one side of a wall is 100dB and 65dB on the other side, it is said that the transmission loss of the wall is 35dB. If the transmission loss is normalised or standardised, it then becomes the Rw or R'w or DnT,w.