

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

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Acoustic Impact Assessment

Version 3.1 Submitted to Client, replacing Version 3.0

Version 3: Changed activities at Multi Court (prev main court) and Building (prev Clubhouse)

Version 3.1: clarified recommendations confirming compliance

Friday, 31 October 2025

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1. Introduction

Cairns acoustics has been engaged by **Kmon Harris** to provide recommendations for the proposed development of a Sports Precinct, located at Norman Gardens, between Yaamba Road, Yeppoon Road, Norman Road, adjacent to the Central Queensland University, Rockhampton Campus.

The first phase of the project includes 16 Outdoor netball courts, associated canteen/admin building, as well as an amenities building, with car parking to service the Rockhampton Netball Centre, a Recreation and play zone, and infrastructural facilitation.

This report has been prepared by Annepals (AP) Bleeksma, M Sc Applied Physics. Starting in Cairns in 2011, AP has extensive experience in noise measurements, predictions and acoustic reports, spanning across the spectrum of legal conflicts, acoustic assessments for venues to the Office of Gaming and Liquor Licensing, planning (wedding venues, small factories, hospitals and state schools), ANEF compliance and advice on acoustic quality and noise abatement at home and in the workplace. He has also casually lectured quantum Physics and taught physics to engineering students at JCU.

This report assesses noise (and vibration) impacts on sensitive receptors from the proposed use and makes recommendations to ensure the noise levels caused are within regulations.

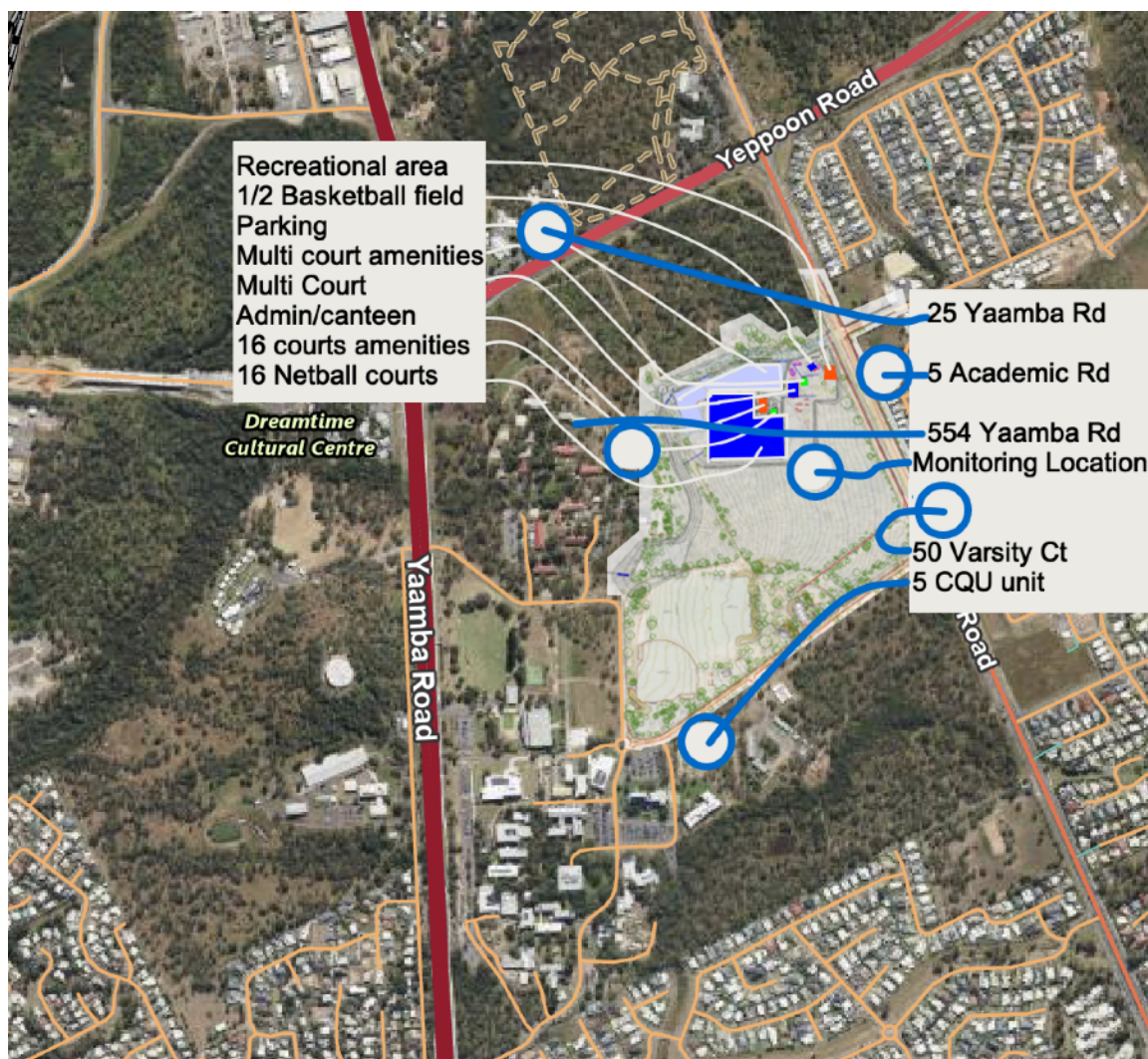


Figure 1, Proposed Sports Precinct Phase 1 on aerial view

2. Project Description

The Precinct is located at 554-700 Yaamba Road, Norman Gardens, between Yaamba Road, Yeppoon Road, Norman Road, Darambal Road and Founders Drive adjacent to the Central Queensland University, Rockhampton Campus. The project will be realised in separate phases, of which the first phase consists chiefly of the creation of 16 netball courts with associated canteen/admin and amenities buildings, recreational facilities and a parking facilities. Figure 1 shows a plan of the project in Phase 1.

For plans and further project description we refer to The document produced by Place Design Group. “554-700 Yaamba Rd, Norman Gardens QLD 4701, Town Planning Report - Project Name: Rockhampton Netball Centre”

Traffic Noise Corridor

It is noted that Yaamba Road and Yeppoon Road are listed Traffic Noise Corridors, with State Infrastructure Planning indicating these roads to emit substantial traffic noise.

Figure 2 below shows an overlay of the Traffic Corridor, with the planned phase 1 and phase 2 proposed developments. Background noise monitoring has been executed in a location that is not affected by the noise of the traffic corridor.

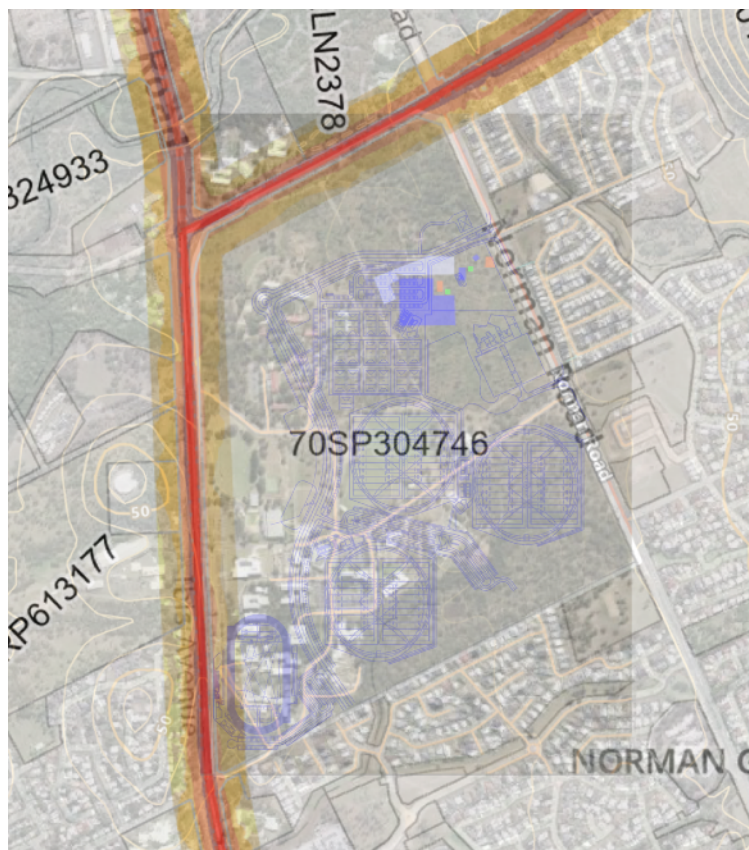


Figure 2 Traffic Noise Corridor

3 Zoning regulations regarding noise

The site is zoned Community Facilities, with nearest affected premises in Low Density Residential zones. Figure 3 shows the zoning map.

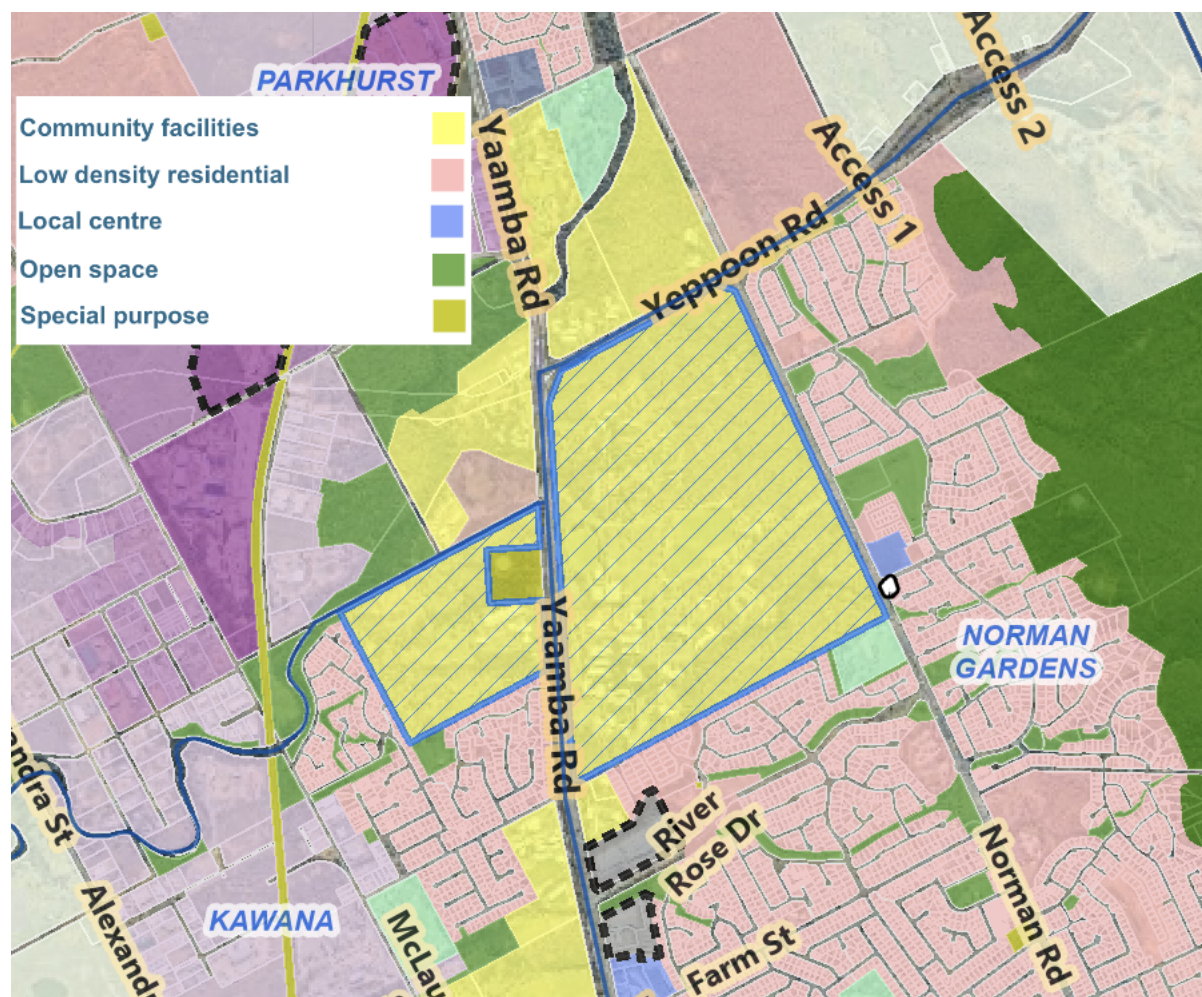


Figure 3, Zoning

6.7.1.2 Zoning regulations with regards to noise in the development minimises the impacts of noise, odour, lighting, overlooking and traffic on nearby sensitive land use(s);

Purpose

The purpose of the zone will be achieved through the following outcomes:

Performance Outcomes

PO8	AO8.1
Non-residential development maintains a high level of amenity for the surrounding area, having regard to hours of operation and noise.	Where adjoining a residential zone, non-residential uses operate between the hours of 06:00 and 22:00.

4. Legislation, Regulations

The following acts, policies and guidelines have been consulted:

4.1 The Environmental Protection Act 1994: the EP Act.

The EP act contains in Section 440, a number of criteria for noise to be deemed as nuisance. These may be overwritten in local bylaws. Rockhampton states its local laws with regards to noise in its Noise Nuisance Guidance Sheet.

4.2 The Environmental Protection (Noise) Policy 2019: The Noise Policy, of which Schedule 1 establishes acoustic quality objectives

For this development, as for most, the acoustic quality objectives of the Noise Policy form a set of key criteria, with maximum noise levels according to different noise descriptors set as fixed numbers. Table 1 above lists relevant maximum noise levels at affected locations.

Sensitive receptor	Time of day	Acoustic quality objectives (measured at the receptor) dB(A)			Environmental value
		L _{Aeq,adj,1hr}	L _{A10,adj,1hr}	L _{A1,adj,1hr}	
residence (for outdoors)	daytime and evening	50	55	65	health and wellbeing
residence (for indoors)	daytime and evening	35	40	45	health and wellbeing
	night-time	30	35	40	health and wellbeing, in relation to the ability to sleep
library and educational institution (including a school, college and university) (for indoors)	when open for business or when classes are being offered	35			health and wellbeing
childcare centre or kindergarten (for indoors)	when open for business, other than when the children usually sleep	35			health and wellbeing
childcare centre or kindergarten (for indoors)	when the children usually sleep	30			health and wellbeing, in relation to the ability to sleep
school or playground (for outdoors)	when the children usually play outside	55			health and wellbeing, and community amenity
hospital, surgery or other medical institution (for indoors)	visiting hours	35			health and wellbeing
commercial and retail activity (for indoors)	when the activity is open for business	45			health and wellbeing, in relation to the ability to converse

Given the fact that the distance from source to affected location is much greater than the distance between outdoor residential space and the dwellings's facade, and applying an outdoor-indoor transmission loss of 10dB for dwellings and 20dB for educational or office, the indoor acoustic quality objectives will be the stricter criteria.

Table 1 Acoustic quality objectives

4.3 Environmental Protection Regulation 2019

This regulations refers back to the Noise Policy when it comes to criteria.

4.5 Queensland Development Code MP 4.4: The Transport Corridor Noise Code

The Transport Noise Corridor Code applies to residential developments close to a road that due to its traffic emits substantial noise. It does not restrict the development of the Rockhampton Sports Precinct but does provide some information about the existing noise environment.

4.6 Local Planning Regulations, and bylaws.

Planning regulations have been discussed in the previous section, local bylaws are referred to where applicable. Rockhampton states its local laws with regards to noise in its Noise Nuisance Guidance Sheet.

4.7 AS1055.1-3 – Acoustics – Description and Measurement of Environmental Noise

Reporting and measurements have been made in accordance.

4.8 Queensland Noise Measurement Procedures Manual

Reporting and measurements have been made in accordance.

5. Activities' applicable regulations

Whereas zoning regulations stipulate no activities outside the hours between 6am and 10pm, other regulations specify maximum allowable noise levels within these hours, depending on the activity that emits the noise. The next sections list these activities, applicable noise regulation or law, and its criteria at the most affected locations.

5.0 Noise policy applies in any case

For every activity the Noise Policy's Acoustic Quality Objectives apply. When it comes to establishing criteria, the affected location use determines which level applies. For educational facilities or offices Leq determines the criteria, for dwellings the nature of the activity noise determines which sound descriptor (Leq, L10 or L01) creates the most strict criteria.

5.1 Use of netball courts

General sports activities are outdoor events, and as such attract Council Noise Nuisance Guidelines. Below the local bylaw with regards to open air events.

Open air events	Must not use or permit the use of: a) before 7am on any day, if the noise is audible; or b) from 7am to 10pm on any day, if the noise is more than 70dB(A); or c) from 10pm to midnight, if the use causes noise of more than the lesser of 50dB(A) or 10dB(A) above the background level.
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5.2 Use of canteen, admin and amenities buildings

No noise is forecast to be emitted from the use of amenities. An admin building is expected to have air conditioning installed, which local bylaws state are not to produce noise levels of more than 5dB above background noise levels between the hours of 7am and 10pm on any day.

Source	Regulation	Allowable
Indoor venues	Council bylaw	Must not use or permit the use of: a) before 7am on any day, if the noise is audible; or b) from 7am to 10pm on any day, if the noise is more than 5dB(A) above background; or c) from 10pm to midnight, if the noise is more than 3dB(A) above the background level.

5.3 Spectators

Spectators are assumed to be interested family and friends. Large crowd cheering is not forecast.

5.4 Car parks

Car parks have historically been regarded as key noise emitters, however recent measurements have found car doors do no longer make a loud noise when being shut. However, the acoustic quality objectives of the Noise Policy apply.

5.5 Irrigation pumps, refrigeration, air conditioning, PA

Air conditioning and irrigation pumps' maximum noise levels are regulated by council bylaws and referenced to background noise levels. PA systems when used for indoor venues also attract maximum levels regulated in terms of background noise.

The three sources have in common that they are adjustable in the sense that planning for noise results in maximum noise levels permitted to be emitted. Local bylaws state:

Source	Regulation	Allowable
Air Condition/ refrigeration	Council bylaw	Must not use or permit the use of: a) from 7am to 10pm on any day, if the noise is more than 5dB(A) above background noise levels; or b) before 7am or after 10pm on any day, if the noise is more than 3dB(A) above background.
PA (indoor)		
Electrical, mechanical or pneumatic pumps (including pool and spa pumps)	Council bylaw	Must not use or permit the use of: a) before 7am or after 10pm on any day, if the noise is audible; or b) from 7am to 7pm on any day, if the noise is more than 5dB(A) above background; or c) from 7pm to 10pm on any day, if the noise is more than 3dB(A) above background.

Also the acoustic quality objectives of the Noise Policy apply.

6 Activities Noise Levels

6.1 Netball Courts Use, basketball court use

The noise produced is categorised in two categories, being the use of 16 netball courts within a competition context, and the non-competitive the use of the multi-court and half basketball field. For both categories the situation in which most noise is emitted is taken. Table 2 lists the noise levels. A PA system will be subject of S6.3.

Noises emitted consist of

- Players calling out to each other
- Umpire's whistle
- Cheers from spectators

Measurements have been made of the use of touch footy fields, with spectators and whistle blowing. These have been applied to each netball court, by means of an emitting surface adjusted to the same sound power per surface area.

The bottom row in Table 2 shows the measured noise levels, where it is noted that due to close proximity to a major road, the background noise is high, 50dB(A), where the background noise at Rockhampton Sports precinct doesn't exceed 44dB(A). This means the sounds of sports field use will be louder, people talk/shout louder, and so is the use of whistles. We can therefore be confident in the numbers used for simulation.

Experience tells that the use of whistles is generally of little influence due to the short duration of whistles, and the long time between whistle blowing. This can be seen in Table 2 bottom row, with an Lmax of 77dB(A), where L01 is already 10dB less.

Experience also tells the use of a PA is the significant factor not only in terms of sound levels, but also in terms of the perception of noise emitted by PA use.

Source	Measure d at	Leq	L10	L01	Lmax			
16 courts simultaneous	Sideline	57	61	67	77			
PA at 16 courts court	Any of 4 loud- speakers	Adjustable, Lmax applies						
Basketball field	Sideline	50	53	59	67			
Multi-court	Sideline	50	53	59	67			
Observed	Start Time	Dist.	Lmax	Lamin	LAeq	LA01	LA10	LA90
Men footy @field	3/3/25 19:1	0	77	49	57	67	58	50

Table 2, Noise emission netball court use, with measured observations

The noise levels produced are given in Table 2, and given the fact that outdoor Acoustic Quality Objectives for L01, and Leq have a greater difference with these for Leq than the source for 16 courts ordinary use, and the same for the multi court, Leq is sufficient to ensure compliance with L10 and L01 sound levels.

6.2 Netball Canteen/admin building use

The activities at the Canteen. Admin building are sports administration, and meetings/training sessions for umpires and the like. A crowd gathering is a possibility at the end of season or a tournament. Also air conditioning is likely to be installed and amplified music or a PA may be installed, these are the subject of Section 6.3. Table 3 shows the noise levels from a club house crowd filled with excitement. Note that for cheering, e.g. when a tournament is concluded, an L01 level of 85dB is applied, which is twice as loud.

Source	Measured at	Leq	L10	L01	Lmax
Excited crowd 80 people	Outer edge of crowd	65	69	75	85 (cheering)
PA for crowd	Any of 4 loud-speakers	Adjustable, Lmax applies			
PA for music	Any of 2 loudspeakers	Leq applies (see Section 6.5)			

Table 3, Noise emission crowd

6.3 Spectator noise

Spectator noise is part of the use of sports field, and has been measured as part of observing existing sports field use (Table 2 bottom row).

6.4 Car Parks

Car parks are planned for a total of 332 cars. At the stage of phase 1 it is assumed a maximum of 100 cars arriving or departing inside a one hour period. Levels observed at a local school drop off have been applied. The levels are in Table 4 below.

Source	Measured at	Leq	L10	L01
Car park noise	5m from cars if in one location, 300s, 10 cars total	55	59	62

Table 4, Noise emission car park

6.5 PA, Airconditioning, refrigeration and irrigation

The levels of these activities are adjustable, hence the calculation is made so as to establish the highest permissible levels at the source.

It is noted that PA use for music is characterised by $L_{10}=L_{eq}+3\text{dB}$ and $L_{01}=L_{eq}+6\text{dB}$; hence L_{eq} is the decisive factor with regards to Acoustic Quality Objectives. However, Council bylaws state a maximum level, which is a maximum instantaneous level. This is particularly helpful with PA use for announcements, where the average amount of time that the PA is used is highly variable, but a maximum level can be easily set either at the source, or (preferably) with a feedback system. The noise levels at affected locations from noise emitted by outdoor use of PA systems also vary with wind.

For air conditioning, refrigeration and irrigation the maximum rated sound levels of the equipment will be established, assuming 1 hour of constant use at maximum rated sound levels, hence L_{eq} shall be applied for criteria.

7 Affected locations and existing noise environment

7.1 Most affected locations

Figure 1 shows most affected premises as well as the background noise monitoring location. The background noise monitoring location has been chosen so that the effect of the Traffic Noise Corridor is not affecting results, and provides an optimum location to ensure no affected location experiences lower background noise levels.

It is noted that elevations have been incorporated in the simulations, which confirm the most affected locations.

The most affected locations are

- 1 25 Yaamba Rd (corner Yeppoon Rd) Department of Resources Offices
- 2 5 Academic Court, Dwelling
- 3 554/700 Yaamba Road, Capricornia College Student, and Dean, Residence
- 4 50 Varsity Ct, dwelling
- 5 CQU unit at Darrambal Rd, educational

The acoustic quality objectives are to be applied in accordance with these functions

7.2 Existing noise environment

Background noise levels have been taken at the monitoring location indicated in Figure 4. We can see from Figure 4 that on 26 September around 12.30pm a person interfered with the logger, resulting in a short period of abnormally low levels followed by a short period of abnormally high levels. It is noted that lower average levels were found on a different day, so averaging of L90 levels in accordance with AS1055 does produce a valid result.

Table 5 shows the average L90 levels, and the lowest average L90 levels, taken in accordance with AS1055 as background noise levels.

Further it is noted that a minimum L90 level at night has been established for the purpose of establishing the maximum noise produced by an irrigation pump, should this be used at night-time. As the Council by-law states no audible noise, this is to be taken as not audible at any time, where as comparison to background levels refers to background levels which are average L90 levels over a day-period (daytime, evening, or night-time).

Figure 4 shows an image of the sound logger in situ; Figure 5 shows a graphic representation of the background noise levels.

The average background noise levels are given in Table 5

Day part	Day of week	L90, ave	Lmin	Lowest average	
Night-time 22-07	Wed 24 - Thur 25 Sep	42dB(A)	32dB(A)	37dB(A)	Night-time
Daytime 07-18	Thu 25 Sep	43dB(A)	34dB(A)	40dB(A)	Daytime

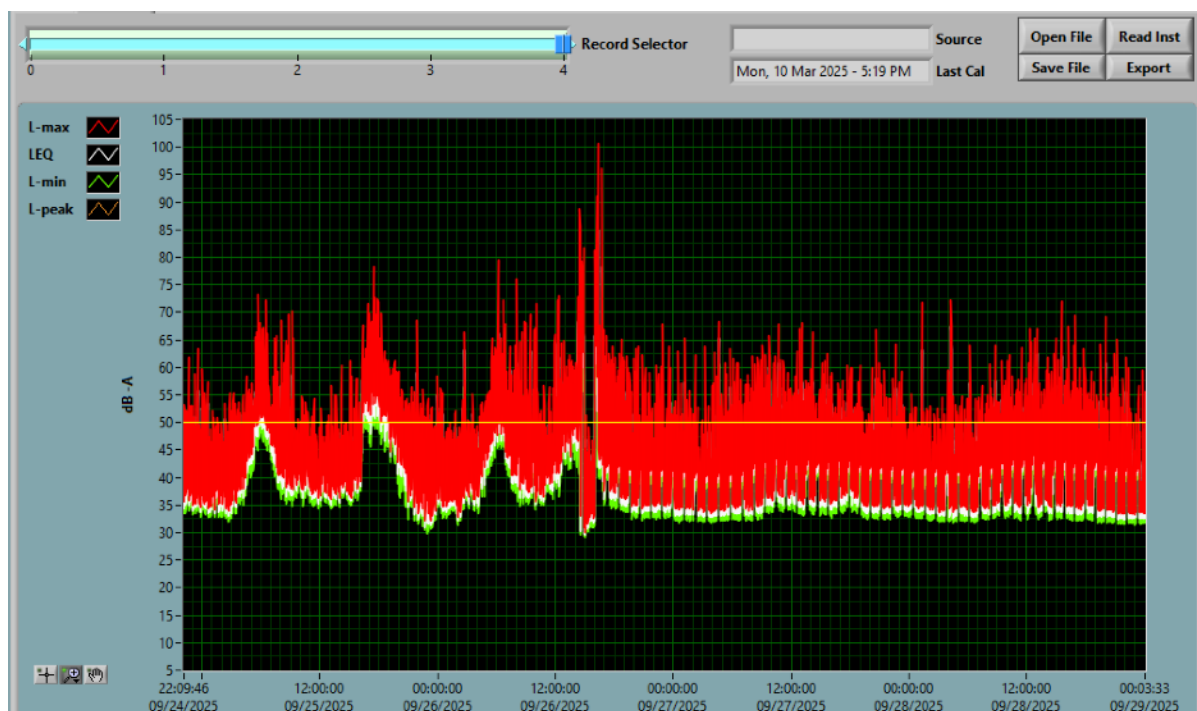


Figure 4, Graphic presentation of recorded noise levels



Figure 4, Sound logger in situ

Evening 18-22	Thu 25 Sep	44dB(A)	30dB(A)	38dB(A)	Evening
Night-time 22-07	Thu 25 - Fri 26 Sep	42dB(A)	30dB(A)		
Daytime 07-18	Fri 26 Sep	44dB(A)	30dB(A)	Lowest Minimum night-time	
Evening 18-22	Fri 26 Sep	39dB(A)	32dB(A)		30dB(A)
Night-time 22-07	Fri 26 - Sat 27 Sep	37dB(A)	32dB(A)		
Daytime 07-18	Sat 27 Sep	42dB(A)	32dB(A)		
Evening 18-22	Sat 27 Sep	38dB(A)	32dB(A)		
Night-time 22-07	Sat 27 - Su 28 Sep	38dB(A)	32dB(A)		
Daytime 07-18	Su 28 Sep	40dB(A)	32dB(A)		
Evening 18-22	Su 28 Sep	38dB(A)	31dB(A)		
Night-time 22-07	Su-Mo 28-29 Sep	38dB(A)	31dB(A)		

Table 5, Average and lowest background noise levels

7.3 Noise criteria at affected locations

Having established the differences between L01, L10 and Leq of the activities, we may now list the criteria at affected locations for each of the sources. For this we refer to the columns aptly titled “Criteria” in Tables 9 and 10.

8 Simulation of levels of affected locations

8.1 Non-adjustable sources

In order to come to a unified approach all sound levels have been recalculated as a sound power level representing the total sound power of the source. Table 6 shows the noise levels applied to the simulation with indexed locations of Figure 5.

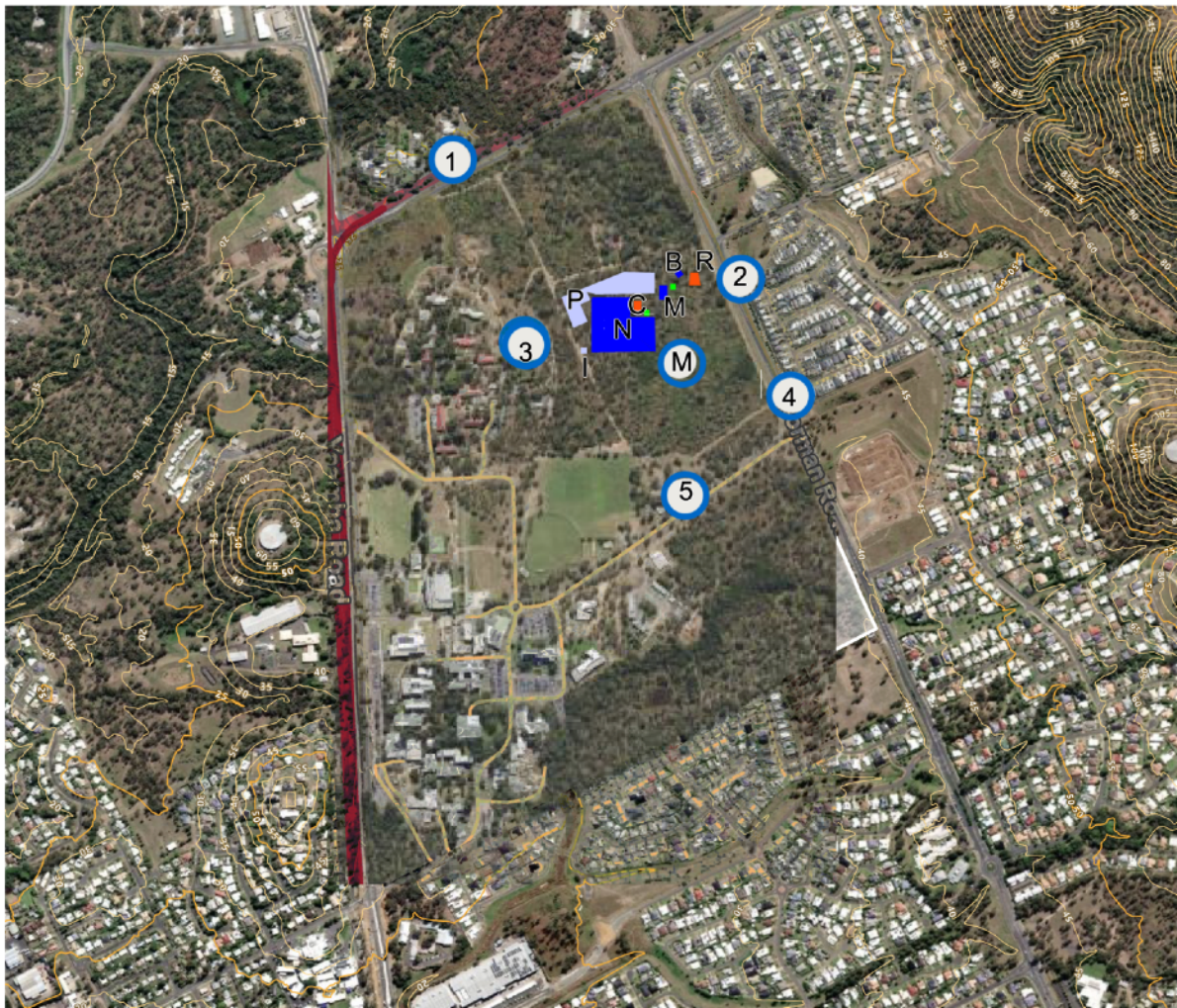


Figure 6, Activity and affected, and monitoring locations

In-index	Location	Source	Distance	Level	Descriptor
1	N	16 Netball courts, no spectators, Basketball court	Sideline	55dB(A)	Leq
2	M	Multi court, 40 spectators	Sideline	80dB(A)	L01

3	C	Use of canteen/admin building (int/ext)	Edge of crowd	85dB(A)	L01
4	C	Use of canteen/admin building (int/ext)	Edge of Crowd	65dB(A)	Leq
5	P	Car park - arrival or departure for event, 1 hour 200 people.	5m	55dB(A)	Leq

Table 6, Emitted noise by activity, int = interior; ext = exterior

8.2 Adjustable sources

Table 7 shows the variable/adjustable sources and the descriptors which provide the strictest criteria to which the sources must be set.

Source	Determining descriptor
PA, Multi court	Leq, Lmax
PA indoor use at canteen/admin building	Leq
PA outdoor use at canteen/admin building	Leq
Air conditioning at canteen/admin building	Leq
Irrigation pump	Leq

Table 7, Emitted noise and limiting descriptors

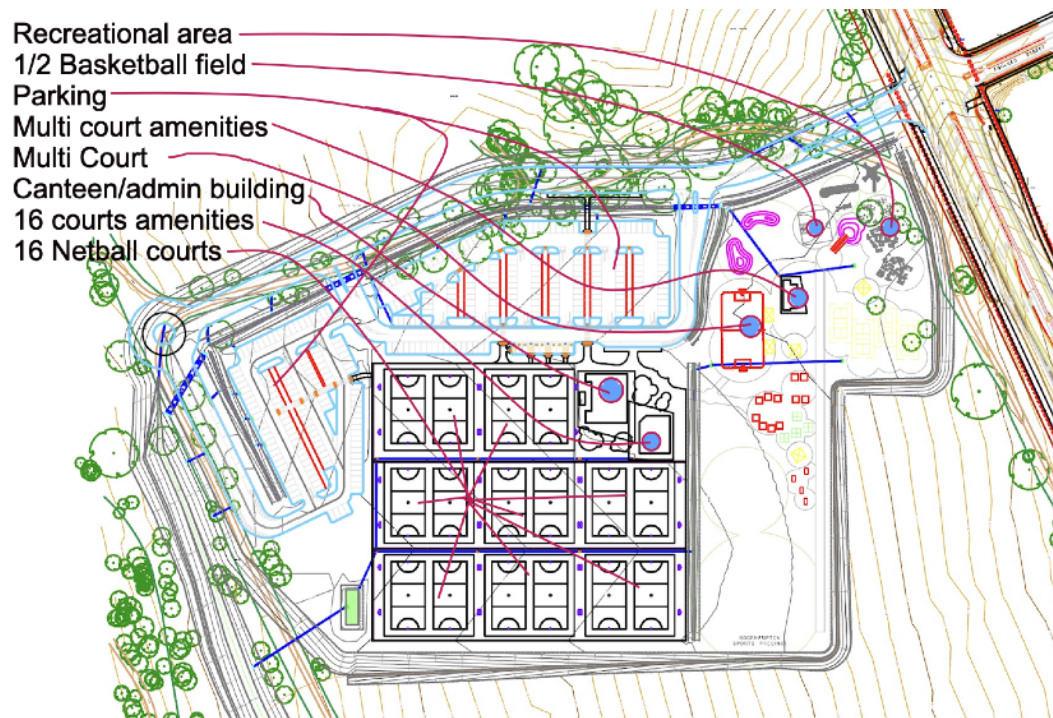


Figure 5 Activity Locations

9 Simulation of noise levels

9.1 Lay-out/plan of sources

Figure 5 (previous page) shows a map of the locations of activities, with Figure 6 (previous page) showing the activities, affected locations and monitoring location. Also in the map are the elevation lines which have been input in the iNoise program.

It is noted that the recreational area has not been identified as a significant source of noise, and that the noise emitted by the basketball court has been used in simulations.

9.2 Simulation raw results

Table 8 shows the raw results of the simulation, as well as the sound levels at the sources, following the descriptions of Section 8. One note, for the simulation of the irrigation pump a source power level of 80dB has been chosen, which equals to a level of 69dB at 1m distance. While these simulations correctly predict the attenuation of sound levels between source and affected location, for comparison with the criteria a number of calculations are necessary. For indoor levels the levels found at the affected locations are reduced by 10dB, for a stereo PA, two loudspeakers mean 3dB more is to be applied. For adjustable sources a backward calculation is to be applied.

	Self	A1, off	A2, dw	A3, dw	A4, dw	A5, ed
16 netball flds	56	37	43	46	40	40
PA clubh	82	37	45	44	40	39
PA netb	80	36	46	42	40	38
basktb	56	18	32	22	22	19
Clubh crowd ind	85	22	29	28	25	24
Clubh crowd out	85	48	57	54	51	50
Multi court	85	49	61	55	53	51
parking	55	18	23	27	17	17
pump	80	18	21	31	19	20

Table 8, Results of raw sound levels simulation

The raw results provide a noise level drop from the source, where sources have been created in accordance with the actual source, which is emitting surfaces for playing courts, and crowds, a facade emitting noise for a crowd inside the canteen (although a highly unlikely event), point sources for loudspeakers, air conditioning and irrigation pumps.

Some of the raw results use different noise levels than those used in the calculations, for example a maximum crowd noise of 85dB(A) is used for simulation, and the resulting drop in noise from source to the affected locations has been applied to the average crowd noise of 65dB(A). This is a save method, as for a lower source level the noise drop is not greater than for a higher noise level.

9.2 Calculations, comparison to criteria, using simulation results.

Table 9 (next page) shows the calculated noise levels for unadjustable sources at affected locations.

Columns indicate: “self”= source level; “raw”= simulation results of level reduction from source to affected location; “in-out”=in-out transmission loss (for PA inside canteen/admin building a 10dB loss has been applied); “level”=the resulting noise level at the affected location. The worst calculated noise level is the use of 16 netball courts, just passing the noise criteria. However the used source levels assume all courts occupied with a small number of spectators. Thus this is an exceptionally loud application of the use of 16 courts.

BGD = 38	Self	Raw	In-out	Level @ affected location	Criteria	
A1						
16 netball flds, eq	55	36	-20	16dB(A)	45dB(A)	√
Multi court, eq	65	29	-20	9dB(A)	45dB(A)	√
Multi court, max	85	49	0	49dB(A)	70dB(A)	√
Clubh crowd ind, eq	65	27	-20	7dB(A)	45dB(A)	√

Clubh crowd ind, max	85	47	30	-30dB(A)	41dB(A)	√
Clubh crowd out, eq	65	27	-20	7dB(A)	45dB(A)	√
Clubh crowd out, max	85	48	0	48dB(A)	70dB(A)	√
basktb, eq	50	12	-20	-8dB(A)	45dB(A)	√
basktb, max	60	22	0	22dB(A)	70dB(A)	√
parking	55	18	-20	-2dB(A)	45dB(A)	√
Max of A2-A4						
16 netball flds	55	45	-10	35dB(A)	35dB(A)	√
Multi court eq	65	41	-10	31dB(A)	35dB(A)	√
Multi court max	85	61	0	61dB(A)	70dB(A)	√
Clubh crowd ind eq	65	9	-10	-1dB(A)	35dB(A)	√
Clubh crowd ind max	85	29	-20	9dB(A)	41dB(A)	√
Clubh crowd out eq	65	37	-10	27dB(A)	35dB(A)	√
Clubh crowd out max	85	57	0	57dB(A)	70dB(A)	√
basktb, eq	50	26	-10	16dB(A)	35dB(A)	√
basktb, max	60	36	0	36dB(A)	70dB(A)	√
parking	55	27	-10	17dB(A)	35dB(A)	√
A5						
16 netball flds	55	39	-10	29dB(A)	35dB(A)	√
Multi court eq	65	31	-10	21dB(A)	35dB(A)	√
Multi court max	85	51	-10	41dB(A)	70dB(A)	√
Clubh crowd ind eq	65	4	-20	-16dB(A)	35dB(A)	√
Clubh crowd ind max	85	24	-30	-6dB(A)	41dB(A)	√
Clubh crowd out eq	65	30	-10	20dB(A)	35dB(A)	√
Clubh crowd out max	85	50	-10	40dB(A)	70dB(A)	√
basktb, eq	50	13	-10	3dB(A)	35dB(A)	√
basktb, eq	60	23	-10	13dB(A)	70dB(A)	√
parking	55	27	-10	17dB(A)	35dB(A)	√

Table 9, Results simulation and criteria unadjustable sources

We conclude that the noise levels produced by unadjustable noise emissions passes all relevant regulatory criteria, except that between the hours of 6 and 7 no audible noise is to be produced. No audible noise is best interpreted as no maximum noise levels above background level. It can be seen that the organised use of the netball fields between 6am and 7am is thus not permissible.

Table 10 applies the simulation results of drop in levels between source and affected location, and calculates back to the source, to find the maximum allowable level. For each extra loudspeaker 3dB is added, hence 12 dB for outdoor PA, 6 dB for indoor and outdoor canteen/admin building PA, and 18dB for 6 air conditioning or refrigeration units. Note that for PA a source level is measured at 3m from the source, whereas for air conditioning, refrigeration and irrigation equipment the rating level at 1m from the source is applied.

For the any use of loudspeakers, a maximum level of 90dB(A) per loudspeaker is imposed, to prevent escalating levels of crowds competing with the PA, as well as to prevent hearing damage.

As special case is the potential night-time use of an irrigation pump, in which case the noise level at the affected location may not exceed 30dB, meaning the source may not produce more than (79-11) 68dB(A) certified level at 1m from the course.

	Criteria	Sim drop	3dB per unit	In-out	Allow (aff loc)	Allow (all loc)
BGD level = 38	38					
A1						
PA clubh ind eq, music	45	45	0	30	120dB(A)	
PA clubh ind max, announceme	41	45	0	0	86dB(A)	
PA clubh outd eq, music	45	45	0	0	90dB(A)	
PA clubh outd max, announcen	70	45	0	0	115dB(A)	
PA netb max	70	31	12	0	113dB(A)	
Clubh Air con, refr	41	45	18	0	104dB(A)	
pump, eq, 1m	41	51	0	0	92dB(A)	
Strictest of A2-A4						
PA clubh ind eq, music	35	37	0	20	92dB(A)	<u>92dB(A)</u>
PA clubh ind max, announceme	41	37	0	0	78dB(A)	<u>78dB(A)</u>
PA clubh outd eq, music	35	37	0	0	72dB(A)	<u>72dB(A)</u>
PA clubh outd max, announcen	70	37	0	0	107dB(A)	<u>107dB(A)</u>
PA netb max	70	34	12	0	116dB(A)	<u>113dB(A)</u>
Clubh Air con, refr	41	37	18	0	96dB(A)	<u>96dB(A)</u>
pump, eq, 1m	41	38	0	0	79dB(A)	<u>79dB(A)</u>
A5						
PA clubh ind eq, music	35	43	0	30	108dB(A)	
PA clubh ind max, announceme	41	43	0	0	84dB(A)	
PA clubh outd eq, music	35	43	0	0	78dB(A)	

PA clubh outd max, announcer	70	43	0	0	113dB(A)	
PA netb max	70	42	12	0	124dB(A)	
Clubh Air con, refr	41	43	18	0	102dB(A)	
pump, eq, 1m	41	49	0	0	90dB(A)	

Table 10, Maximum source levels based on simulation results and corrections for multiple sources and indoor-outdoor transmission loss where applicable.

10. Recommendations

Noise emitted by activities related to the development is found to comply with relevant laws and regulations, with the application of the following conditions:

- 1 Indoor use of PA in canteen/admin building two loudspeakers producing a maximum of 78dB(A) each.
- 2 Outdoor use of PA outside of the canteen/admin building for playing music, two loudspeakers producing a maximum of 72dB(A) each. These loudspeakers are not allowed to be connected to a system that amplifies the voice for making announcements.
- 3 Outdoor use of PA outside of canteen/admin building, maximum two loudspeakers emitting 90dB(A) each, to be used only for the human voice making announcements.
- 4 The competitive or organised use of any court is not permissible before 7am.
- 5 A maximum of 10 loudspeakers, producing not more than 55dB(A) each may be used only for announcements of the human voice, and be placed around the edge of the 16 netball courts at equal distances.
- 6 Air conditioning and refrigeration units directly next to the Canteen/admin building to produce other more than 96dB rating level at 1m from the source, maximum 6 in total
- 7 Irrigation pump to be rated at not more than 79dB(A) at one meter from the source, when used in the daytime or evening, and not more than 68dB(A) when used at night-time.

Within the conditions stated, the development is in accordance with the target noise levels for day time and evening periods.

Appendix 1 Glossary of terms

Daytime: 7am – 6pm

Evening: 6pm – 10pm

Night-time: 10pm – 7am

LAeq, T: equivalent noise level: the level of an imaginary constant source of noise that would produce the same sound energy as the level measured over the measurement period T.

LA10, T: the level that is exceeded 10% of the time, an indicator of the level produced by a varying source of sound, measured over the measurement period T.

LA90, T: The level that is exceeded 90% of the time, an indicator of background noise levels and noise levels of constant sources of sound, measured over the measurement period T.

LA,max: Maximum Noise Levels of an event, the highest root mean square value of a single wave. (This is still less than Peak Level, which is the peak level of that wave)

Lr the rating level, which is maximum levels as certified for equipment