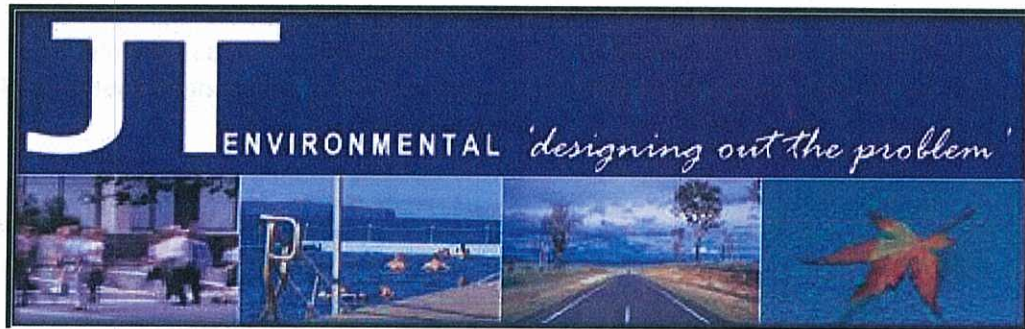




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Application Details	
Application Type	Material Change of Use
Defined Use	Extensions to existing Outdoor Sport and Recreational Use.
Street Address	Mulga Street, Blackwater
Property Description	Lot 2 on SP181608
Client	Blackwater Country Club Pty Ltd
Local Government Area	Duaringa Shire Council
Date	March 2012 (revised April)

In support of an application for

Material Change of Use - Extensions to Existing Club - Blackwater Country Club

Noise Impact Assessment

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 18 / 5 / 12

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Limitations

This report was prepared for the sole use of Blackwater Country Club Pty Ltd in accordance with generally accepted consulting practice. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has not been prepared for use by parties other than the client, the owner and their respective consulting advisors. It may not contain sufficient information for the purposes of other parties or for other uses. It is recommended that any works planned by others and relating specifically to the content of this report be reviewed by JT Environmental Pty Ltd to verify that the intent of our recommendations is properly reflected in the final design. To the best of our knowledge, information contained in this report is accurate at the date of issue.

Document Status					
Rev No.	Author	Reviewer	Approved for Issue		
			Name	Signature	Date
A	TCD	JLM	TCD		22.02.12
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APPROVAL dated 11/04/12
referred to in the ULDA
PLANS AND DOCUMENTS

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1.0 EXECUTIVE SUMMARY**1.1 SITE DETAILS**

Local Government Authority:	Duaringa Shire Council
Address of Site :	Mulga Street, Blackwater
Real Property Description :	Lot 2 on SP181608

1.2 APPLICATION DETAILS

Description of Proposal :	Impact Assessment
Purpose of Proposal Under City Plan:	MCU – Extension to existing sport and recreation facility
Applicant :	Blackwater Country Club Pty Ltd
Contact Person:	Tyson Dodd
Our Reference :	JT1168

2.0 INTRODUCTION

JT Environmental has been commissioned by Blackwater Country Club Pty Ltd to prepare a Noise Impact Assessment to address the specific operational issues associated with the extensions to the existing facility. As detailed in the site plans attached to the appendix of this report, the proposal includes the extension of the existing building on-site. More accurately, includes the extension of the club house to include new offices for the clubhouse, a larger gaming room, a new outdoor balcony and a Designated Outdoor Smoking Area (DOSA). As with new applications, this proposal will also formalise the car parking on-site. A site plan is attached as Appendix A.

This report has been prepared to identify and recommend where appropriate noise impact issues and attenuation on-site for the adjoining existing residential land uses. Currently the locality is dominated by vehicle movements along Mulga Street and more so from the Capricorn Highway to the south of the site and associated rail movements.

The site has been long established with golf course and bowling greens together with the clubhouse, however additional extensions are now required to the clubhouse.

It is on this basis that JT Environmental has conducted ambient noise monitoring at the southern most boundary of the site to establish and calibrate the noise modelling and to identify localised traffic emission sources which maybe present in the locality and to establish a reasonable ambient noise environment and associated plant and equipment given the location of residential receptors to the east of the site.

The purpose of this document is twofold:

1. To provide a Noise Impact Investigation of the potential noise impacts on existing receptors to the east and south of the site.
2. To provide direction to ensure that the subject site is operated in a manner that will achieve internal noise levels where appropriate for the locality for future sensitive receptors.

This NIA assesses:

- The current noise emissions onto the adjoining receptors to the east and south of the site; and
- To recommend noise control measures to ensure compliance with the relevant noise criteria (NIAPS and Australian Standards).

This assessment has been conducted with reference to Australian Standard AS 1055:1997 *Description and Measurement of Environmental Noise* Parts 1, 2 and 3 and in accordance with the Queensland Environmental Protection (Noise) Policy 2008 [EPP(Noise)], the Department of Environmental Resource Management (DERM) Noise

Measurement Manual (2000) and the Environmental Protection Agency's EcoAccess Guideline "Planning for Noise Control" (EcoAccess).

2.2 LIMITATIONS OF THE NIA

It is stressed that this NIA does not negate the need for site Owner/s, owner of the development to implement the recommendations of this report. The recommendations provided are to be implemented on site not only to gain the relevant development permits or approvals but to ensure that the site will maintain an appropriate level of environmental performance and most importantly, acoustic amenity.

Further, compliance with this NIA does not necessarily exempt the operators from prosecution or ensure compliance with legislation.

3.0 SITE DESCRIPTION

3.1 SURROUNDING LAND USES



Figure 1: Aerial with proposal overlay and Monitoring Location ML1

The site is located on one large allotment that currently serves the local community and the local mining community. As indicated in Figure 1 the site is directly across the road from existing receptors.

The use, design and construction of the proposed extensions to the site are sympathetic to its location for the associated sensitive receiving environments to the east and south. Albeit proposed extensions to the existing building, the primary noise source associated with the extensions is an internal use, being the gaming room. Conversational noise from patrons using the DOSA will occur, the focus is generally on the use of the internal facilities, and there JT Environmental would consider the use of the DOSA by patrons to be an expedited use.

4.0 EQUIPMENT AND PROCEDURES

4.1 INSTRUMENTATION

The following instruments were used to measure environmental noise impact levels.

- Norsonic 131 (Type 1) Noise Logger– Field Calibration of 94.1dB(A) prior to sampling and 94.0dB(A) post samplings
 - Microphone Height = 1.5m
 - Orientation – pointing vertically
 - SLM Time Weighting = Fast
 - SLM Frequency Weighting = A
 - Measurement period = 15min ; and
- Rion NC 73 Calibrator

The operation of the sound level measuring equipment was field calibrated to the reference signal and checked at the end of each measurement session to ensure it was within 0.5dB of the reference signal. All instrumentation used in this assessment hold a current calibration certificate from a certified NATA calibration laboratory.

4.2 MEASUREMENT PROCEDURE

Ambient noise was measured at the site 20th February to the 21st February 2012 (ambient) at ML1 indicated in Section 3.4. The resultant noise levels are provided in Table 3.0 and graphical representation in the Appendix of this report. The weather conditions during the survey were noted as fine with a temperature of approximately 9-24°C and a negligible wind speed.

The current resultant noise levels are provided in Tables 1.0-2.0 and graphical representation in the Appendix of this report for ML1 unattended monitoring. The Sound Level meter and microphone were positioned at ML1 pointing vertically.

5.0 MEASURED NOISE LEVELS

5.1 MEASURED ROAD EXISTING NOISE LEVELS

Ambient noise levels were monitored by JT Environmental at the ML1 for the proposed extensions to the current use. The objective of the background noise survey was to measure ambient noise levels at a location representative of the nearest potentially affected residences during the day, evening and night-time periods to enable the determination of the noise criteria for the proposed MCU. As indicated by the 24-hr sampling conducted at the southern boundary of the site as predicted is exposed to frequent line noise sources from road traffic and rail bound movements to the south.

Table 1.0 Measured Ambient Noise Levels ML1 2012.

Parameter	Period	Recorded Noise Levels
		Average
Lmax	Daytime (7am-6pm)	52.8
	Evening (6pm-10pm)	52.5
	Nighttime (10pm-7am)	52.7
L10	Daytime (7am-6pm)	54.1
	Evening (6pm-10pm)	53.7
	18 Hour	54.2
	Nighttime (10pm-7am)	53.9
L90	Daytime (7am-6pm)	40.6
	Evening (6pm-10pm)	47.1
	Nighttime (10pm-7am)	48.9
Leq	Daytime (7am-6pm)	52.9
	Evening (6pm-10pm)	52.5
	Nighttime (10pm-7am)	52.7

6.0 NOISE CRITERIA AND LIMITS APPLIED TO DEVELOPMENT

6.1 NOISE CRITERIA AND LIMITS

Appropriate noise assessment should consider the following:

- Emissions of contaminants including air pollutants, noise, and vibration does not cause environmental harm or nuisance.
- The design of the proposal minimises noise impacts on surrounding uses.
- Noise emission and vibrations from the site must not cause an environmental nuisance.
- No significant emissions of contaminants occur beyond the boundary of the site.
- The building design and layout locates potential noise sources away from sensitive surrounding uses.
- Major openings in buildings and all areas where work maybe conducted outside the buildings are located away from the nearest sensitive receiving environment. Noise emission and vibrations from the site must not cause an environmental nuisance.
- Where the site has a common boundary with a sensitive receiving environment:
 - no openings occur in walls facing a common boundary or sensitive land uses;
 - effective acoustic screening is provided; and
 - noise emitting services are located as far away as possible.

As the site is located in an area which has a representative background level for frequent single vehicle pass-by on Mulga Street and even more frequent single vehicle pass-by on the Capricorn Highway. Therefore the following noise sources from the proposal are to be determined.

- Vehicle manoeuvring noise on-site from car parking;
- DOSA Conversational noise from patrons
- Plant and Equipment Noise (A/C).

Comparison of Like Parameters is to be used for all vehicle movements except for the fixed plant and equipment noise and when occurring between daytime and evening periods. As detailed in the NIAPS Policy, the criterion for the comparative methodology is;

- **Methodology One: Comparison of like parameters or descriptors**—the chosen parameter assessing the impact of the development does not exceed the same parameter describing the ambient noise by more than 3dB (A).

This criterion applies to all time-varying noise, while noting:

- applies during the day-time;

- requires adjustment for tonality and impulsiveness;
- applies at sensitive receptors, not uses within industrial areas;
- applies as a measured level, NOT component; and
- Applies at a distance of at least 3.5 metres from the receptor.

6.4 NOISE GUIDELINES

The aforementioned noise level measurements were conducted in accordance with the following generally accepted practices.

- General requirements of the Queensland *Environmental Protection Act 1994*;
- *Environmental Protection Regulation 1998*;
- *Environmental Protection Policy (Noise) 1997*;
- Noise Measurement Manual Queensland EPA, March 2000;
- Australian Standard AS 2107: 2000 *Acoustics-Recommended design sound levels and reverberation times for building interiors*.
- Australian Standard AS 1055.1-1997 *Acoustics-Description and measurement of environmental noise - General procedures*.
- Australian Standard AS 3671-1989 *Acoustics-Road traffic noise intrusion-Building siting and construction*.

6.5 LIQUOR LICENSING PROVISIONS EXPECTED FOR THE PREMISE

Office of Liquor and Gaming Regulation will have associated licensing for the venue for the serving of alcohol, gaming and entertainment in the form of amplified music. However given that the primary extensions are for office and DOSA use, amplified music is not recognised to be modified on-site.

6.6 NOISE CRITERIA FOR THIS SITE

Car parking, truck movements, mechanical plant and equipment activities etc are time-varying noise sources. For these types of noise sources the impact of the **development is not to exceed the same parameter describing the background noise by more than 5 dB (A) and 3 dB (A) during daytime (7.00am-6.00pm), evening (6.00pm-10.00pm) and night-time periods (10.00pm-7.00am) respectively for emissions from the site.**

This criterion applies to all time-varying noise, while noting:

- applies during the day-time and evening;
- requires the source to be adjusted for tonality and impulsiveness, as appropriate;
- applies as a measured level, NOT component; and
- applies at a distance of at least 3.5m from the receptor.

Additionally, the Recommended design sound levels indicated in AS 2107 internally of the proposed office building it to achieve a maximum LA_{eq} of 45 dB (A).

Comparison of Like Parameters is to be used for all vehicle movements except for the fixed plant and equipment noise and when occurring between daytime and evening periods. As detailed, the criterion for the comparative methodology is:

Methodology One: Comparison of like parameters or descriptors—the chosen parameter assessing the impact of the development does not exceed the same parameter describing the ambient noise by more than 5/3dB (A).

Appropriate noise assessment should consider the following:

- Emissions of any contaminants including air pollutants, noise, and vibration do not cause environmental harm or nuisance.
- The design of the proposal minimises noise impacts on surrounding uses.
- Noise emission and vibrations from the site must not cause an environmental nuisance.
- No significant emissions occur beyond the boundary of the site.
- The building design and layout locates potential noise sources away from sensitive surrounding uses.
- Major openings in buildings and all areas where work maybe conducted outside the buildings are located away from the nearest sensitive receiving environment. Noise emission and vibrations from the site must not cause an environmental nuisance.
- Where the site has a common boundary with a sensitive receiving environment:
 - No openings occur in walls facing a common boundary or sensitive land uses;
 - Effective acoustic screening is provided; and
 - Noise emitting services are located as far away as possible.

This criterion applies to all time-varying noise, while noting:

- applies during the day-time;
- requires adjustment for tonality and impulsiveness;
- applies at sensitive receptors, not uses within industrial areas;
- applies as a measured level, NOT component; and
- applies at a distance of at least 3.5-metres from the receptor.

AS2107 assessment methodology for Fixed Plant and Equipment Noise is to be used to assess impacts from the proposed use.

This methodology applies to assessment of noise emissions and immissions for steady-state or quasi-steady-state sound such as noise from air conditioning systems.

Based on this the maximum recommended design sound levels stated in Table 1 of AS2107. Therefore the noise levels are in terms of L_{eq} and should be applied as measured levels.

7.0 ASSESSMENT OF NOISE IMPACTS

7.1 OFFICE USES

From the ambient noise survey conducted for the site it is apparent that the site is subjected to localised traffic around the Mulga Street residences and from the Capricorn Highway. Additionally the average L_{max} noise level experience during the noise survey was a maximum of $L_{AMAX}=52.8$ dB (A) and an $L_{A10}=54.1$ dB (A) throughout the duration of the sampling.

The ambient noise results indicate that the site has a fairly low background noise level with the current noise emissions across the daytime, evening and night-time periods being very consistent.

On the basis of the ambient noise survey completed for the locality and the $L_{eq} = 52.8$ dB(A) at ML1 which is a distance of 72-metres from the proposed extensions the monitoring results can be utilised for a determining the maximum Plant and Equipment Noise levels associated with the club. Additionally, given the ambient noise level, standard construction provides for the R_w required to achieve the internal L_{eq} of 45 and 40 associated with AS 2107. Table 3 provides an indication of the noise levels that will be experienced within the existing residences from the proposed club house extensions and the required R_w to be achieved by the facade construction.

7.2 EMISSIONS – CLUB OPERATION

7.2.1 EXTERNAL DINING – OUTDOOR BALCONY

People noise outside the main facade of the Club on the new outdoor balcony which could include will include meals served and the associated (DOSAs) with the Club is typically a continuous noise with occasional elevated short-term elevated noise events that in the Daytime and Evening periods should be compared to ambient like parameters noise levels. As such assessed against the ambient L_{10} and L_{eq} noise levels is required. This can be taken from the information presented in Table 2 for which the desired minimum criterion noise level to achieve would be **54.1 dB (A) L_{10} (daytime) and 53.7 dB (A) L_{10} (evening) and 53.9 dB (A) L_{10} (night-time) at 3.5 meters** from the nearest residential receptor in the Daytime, Evening and Night-time periods.

Considering information also obtained the noise level from a group of patrons (60 adults) was recorded as 67.5-dB (A) (L_{10}) at 5-metres. While this number of patrons associated with an outdoor area at the Blackwater Country Club would be highly unlikely to occur, associated worst-case scenario can be compared.

Given the potential separation distance to the nearest residence to the east, the following demonstrates that resultant noise level from external patron noise at these receptors:

Source noise level (L_{p1}): 67.5-dB (A) at 5-metre (r_1)

Distance separation to the nearest receptor from the boundary of the proposed development: 105-metres (r_2)

Resultant noise levels at nearest receptor facade (L_{p2}): 41.1 dB (A) L_{10} as a result of distance attenuation, no reductions applied for reduced angle of view from building screening or acoustic fencing.

From $L_{p2} = L_{p1} - 20 \log (r_2/r_1)$

Thus the noise of external patrons in the daytime and evening periods will not present any noise amenity impact on the residential area to the east of the site given the existing level of noise sources within the locality and the separation distance.

For external people noise including conversational noise within the outdoor balcony environment that may occur in the night-time period from 10pm – 12pm, the assessment has considered the potential for impact upon **Sleep Disturbance at the nearest residential receptors**. As per the methodology requirements, noise sources measured internal maximum noise levels in area categories R2-R3 must not **exceed 40 dB (A) (AS2107: 2000) internal of the existing residences**.

From the above calculations, the predicted noise level at the nearest residence was 41.1-dB (A) L_{10} . As no assumption can be made as to the construction specification of this nearest residence, the noise loss through an open window to these residences of 5-dB (A) must be used. This would result in noise levels internally of this residence of 36.1-dB (A) L_{eq} , thus below the criterion noise level of 40dB (A) L_{eq} . External people noise eating/socialising within the new proposed outdoor balcony area should not provide for any impact upon the local level of noise amenity in the night-time period base on the increased separation distance to the façade, and the use of the Club as detailed in the application will not be in operation during the hours of 12pm to 10am.

Operation of the Tavern during the daytime and evening periods will comply with existing ambient noise levels generated by existing noise sources. The monitored daytime L_{10} of 54.1 dB (A) is somewhat similar to the existing ambient noise level on-site.

7.3 NOISE EMISSIONS – PLANT AND EQUIPMENT NOISE IMPACTS

Plant and equipment installed on-site will consist of A/C systems and plant and equipment for the use in the kitchen of the club and associated office uses. However, an assessment of all possible externally located plant and equipment installed is to be completed in accordance with the AS2107 methodology. The criteria in this regard are: **The maximum recommended design sound levels stated in Table 1 of AS2107.** It is important to note that there are NO proposed extensions to the kitchen facilities that may result in addition extraction equipment.

Assuming that any additional fixed plant and equipment may be required to operate at any time, from Table 1 of AS2107 the minimum design sound level to be achieved at the nearest residential area will be 35 dB (A) L_{eq} internal, being that for sleeping areas for houses and apartments near major roads.

As for previous night-time and sleeping area assessment, the construction components and facade attenuation characteristics of the nearest residences is not accurately known, and thus a maximum 5-dB (A) noise transmission loss must be assumed through an open window. Therefore, the criterion noise level to be achieved is **40 dB (A)** external to the nearest residence.

Given the separation distance from the nearest part of the proposal boundary, for where fixed plant and equipment may be located, to the adjacent residences, the following provides advice on the level of noise emission to be achieved for fixed plant and equipment.

Distance separation to the nearest receptor:	63.5-metres (min) (r_2)
Noise loss over distance:	47.0dB (A) = (from $10\log(4.\pi.r^2)$)
Criterion Noise Level:	40-dB (A)

Therefore, fixed plant and equipment noise level should not exceed:

$40 + 47.0 = 87.0$ dB (A) SWL – combined resultant noise level from all required fixed plant or equipment, not a single component noise level.

Therefore, as indicated above, the location of any fixed plant and equipment, such as A/C systems for the extensions to the offices, along the eastern façade of the development will need to achieve the required internal Noise Level within the closest residential receptor with windows open.

7.4 NOISE EMISSIONS – CAR PARKING

The proposed development for an extension to the Blackwater Country Club includes Offices, outdoor balcony and DOSA area. Additionally, the existing car parking on-site is to be formalised and therefore an appropriate assessment of emissions from and impact

by the car parking and manoeuvring area is to be determined. On the basis of the proposal the sensitive receptors to the east are the closest receptors from the formalised car parking arrangements.

Car parking noises are typical short-term noise event (door slamming, car starts-ups) that in the Daytime and Evening periods should be compared to ambient like parameter noise levels, and as short-term noise events has been assessment against the ambient L_{max} noise levels.

Given the data logger location at the southern frontage to the Mulga Street alignment of the site an assessment of the noise impacts onto existing residential uses is required. The closest possible sensitive receptors to the west of the site are at a distance of 30.4-metres from the closest vehicle car parking area. Based on the levels recorded, the minimum noise level L₁ was determined from the logging results as **52.5dB (A)** which was the evening period. It must be noted that the night-time L₁ was monitored as being 52.7dB (A).

From the above, desired minimum criterion noise level to achieve would be +3 dB (A) L₁ at 3.5 metres from the nearest residential receptor in the Daytime and Evening periods from Car parking Noise (**=55.5 dB (A) L_{max}**).

JT Environmental in conjunction with others consultants have recorded the noise from car parking activities as generally not exceeding 75-dB (A) L_{max} at 3 metres for heavy delivery vehicles. These include such noises as door slams, vehicle start-ups and the noise of vehicle drive-by's, including those on slight inclines.

Given the separation distance to the nearest residence to the east the following demonstrates the resultant noise level from car parking activity at these receptors:

Source noise level (L_{p1}): 67 dB (A) at 3-metres

Distance separation to nearest receptor: 30.4-metres (r₂)

Resultant noise levels at nearest receptor (L_{p2}): **54.9-dB (A)**

$$\text{From } L_{p2} = L_{p1} - 20 \log (r_2/r_1)$$

Noise attenuation (acoustic barrier) Min reduction: N/A dB (A).

Resultant estimated Noise impact level: **54.9-dB (A) L_{max}**

Thus the noise of car parking activity in the Daytime and Evening periods should not present any adverse noise amenity impact on the surrounding and adjoining residential areas. The above car park noise level has also been determined as a L_{max} noise event.

For car parking noise that may occur in the night-time period (10pm-1am as the club closes at 12pm), the assessment has considered the potential impact upon Sleep disturbance at the nearest residential receptors. From the recorded noise levels the site could be described as being in an R2 to R3 noise category (during the night-time period), as per AS1055.2-1997. Thus as per the general Sleep disturbance methodology measure, internal maximum noise levels in area categories R2 to R3 must not regularly exceed 45 dB (A) L_{max} within bedrooms.

From the calculations above, the predicted noise levels from car park activity are L_{max} 54.9-dB (A) at the nearest property boundary of the residence to the west based on the separation distance. As no assumption can be made as to the construction specification of these nearest residences the noise loss through an open window to these nearest residences of 5-dB (A) must be used which results in a internal noise level exceeding the abovementioned criterion on 45dB(A) L_{max} internally. Given this exceedence, it is appropriate to consider an Acoustic Screening fence along the Mulga Street frontage to the car parking area.

Noise attenuation (Intervening acoustic barrier on eastern side of church allotment – 1.8-metre acoustic fence providing a path difference of 0.101-m) Min reduction: 7-dB (A) at this location given the alignment of the car parking to the dwellings to the east of the site.

Resultant estimated Noise impact level at the façade of the adjoining residential houses to the east of the site: 47.9-dB (A) $L_{MAX,T}$ - External

As no assumption can be made as to the construction specification of these nearest residences the noise loss through an open window to these nearest residences of 5-dB (A) must be used which results in a internal noise level achieving the abovementioned criterion on 45 dB (A) L_{max} internally with a modelled internal noise level through open windows of **42.9 dB (A) L_{max}** .

7.5 NOISE EMISSIONS – SERVICE VEHICLE UNLOADING

Truck deliveries to rear of building loading dock as detailed on the site plan:

Source noise level (L_{p1}): 75.0 dB (A) @ 3-metres (63-metres to receptor)
 From $L_{p2} = L_{p1} - 20 \log (r_2/r_1) = 48\text{-dB (A)}$ – Path diff barrier at boundary (0.12m = 8 dB (A) reduction) (height of 1.8m acoustic fence at frontage) = **40 dB (A) L_{max}**

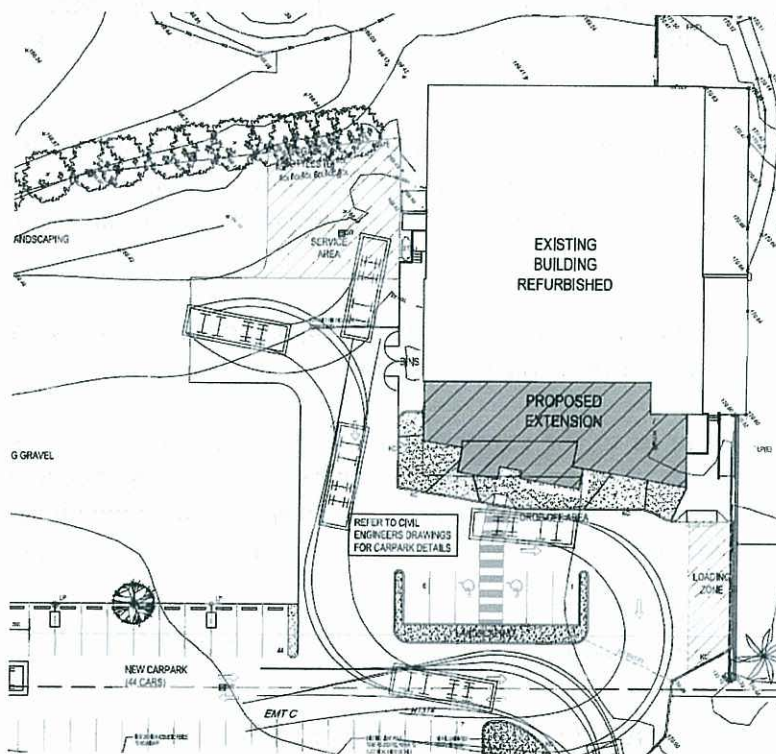
Thus the noise of car parking activity will not present any adverse noise amenity impact on the residential receptors to the east or south of the subject site, and general activities, given the vehicle movements that are evident in the locality would be consistent with the ambient noise levels of the locality as monitored on-site.

As the proposed extensions are just additional space and office use, the existing delivery and operational hours are expected to be maintained.

7.6 NOISE EMISSIONS – WASTE COLLECTION AND SERVICE AREA

Waste collection and service vehicles will have access to the service area of the site where the service access area is located. LRV and RCV manoeuvring are typically short noise events associated with service vehicles (i.e. lifting, waste bin moving, truck movements, metal on metal banging etc. The highest recorded noise level from these activities noted by JT Environmental and others is 88 dB(A) L_{eq} (over 30sec) and an 108 dB(A) L_{MAX} (including 5 dB(A) for impulsiveness) that in the Daytime and Evening periods should be compared to ambient like parameter noise levels.

Figure 7: Loading and Service area formalised.



Given the data logger location at the southern boundary of the site an assessment of the noise impacts onto existing residential uses is required. The closest possible sensitive receptors to the west of the site and based on the levels recorded, the minimum noise level L_{max} and L_{eq} respectfully was determined from the logging results as **52.7-dB (A) L_{MAX}** and **52.7 dB(A) L_{eq}** which were the night-time ambient monitoring. The detailed calculations have been provided in Table 4.

Table 4.0 Resultant Noise Impacts at facade for service vehicles.

	L _{max}	at- metres	RESIDENTIAL RECEIVER	Leq	at- metres
SEVICE VEHICLES	108	1	SEVICE VEHICLES	88	1
Distance to Receiver Dwelling	63	m	Distance to Receiver Dwelling	63	m
Building Screening	0	dB(A)	Building Screening	0	dB(A)
Acoustic Barrier (path difference)	-8		Acoustic Barrier (path difference)	-8	
RESIDENTIAL RECEIVER	-35.98681099	dB(A)	Distance Attenuation	-35.98681099	dB(A)
Facade Reflection	2.5	dB(A)	Facade Reflection	2.5	dB(A)
Impact outside dwelling L _{max}	66.51318901	dB(A)	Impact outside dwelling Leq	46.51318901	dB(A)
Criteria	108	1	Criteria	88	1

On the basis of the noise reduction over distance for existing residential receptors within the locality the lowest ambient noise levels were determined in comparison with the emission levels. Thus the noise of service vehicles in the Daytime and Evening periods should not present any adverse noise amenity impact on the surrounding and adjoining residential areas. Given that the L_{MAX} noise level however is higher than the current, the regularity of this source is low and will be maintained as per the existing access to the site.

8.0 CONCLUSION

For the proposed extensions to the current Blackwater Country Club on Mulga Street, Blackwater, as proposed on the attached site plans as detailed in Appendix (A) ambient noise level measurements were conducted at the front southern boundary of the site to assess the current ambient noise environmental. The results obtained are somewhat representative of the locality in which the site exists.

A development application is being sort for an extension to the current club in the form of a larger gamin room, DOSA and outdoor balcony that is likely to be used for alfresco dining. As such these associated emissions from the extension have been considered in the modelling and the resultant emission estimations. Additionally, the proposal serves to formalise the existing car parking area on-site in addition to the service vehicle area next to the existing club building. As detailed in Table 2 the noise impacts currently associated with the site are dominated by vehicle movements along Mulga Street and the Capricorn Highway.

The noise monitoring and modelling conducted for the extensions to the club indicate that these extensions with the proposed recommendations will not have any detrimental impacts on the surrounding receptors. Given the general nature of the existing club and its presence within the community, the use on-site will maintain the existing operational hours to mid-night.

9.0 RECOMMENDATIONS

As demonstrated above the location of the proposed new extensions assist in facilitating the maximum possible attenuation from the outdoor balcony area. The proposed extensions in the layout provided by the applicant can be established on this site with no additional annoyance to existing residential uses within the immediate locality.

However based on the experience of this consultancy the following recommendations for the operation of this facility are made to Duaringa Shire Council and the ULDA.

- External Plant and Equipment is installed to achieve the Sound Weighting Level detailed in Section 7.2 of this report;
- Establish a 1.5-metre acoustic fence along the eastern boundary and southern boundary to the car parking area as detailed in the site plan attached as Appendix A.

10.0 REFERENCES

Australian Standard (AS 2107:2000). Acoustics—Recommended design sound levels and reverberation times for building interiors.

Australian Standard AS3671 (1989). Acoustics—Road traffic noise intrusion—Building siting and construction.

Australian Standard 1055 (1997). Acoustics—Description and measurement of environmental noise Part 1: General procedures.

Environmental Protection Act 1994

Environmental Protection Regulation 20088

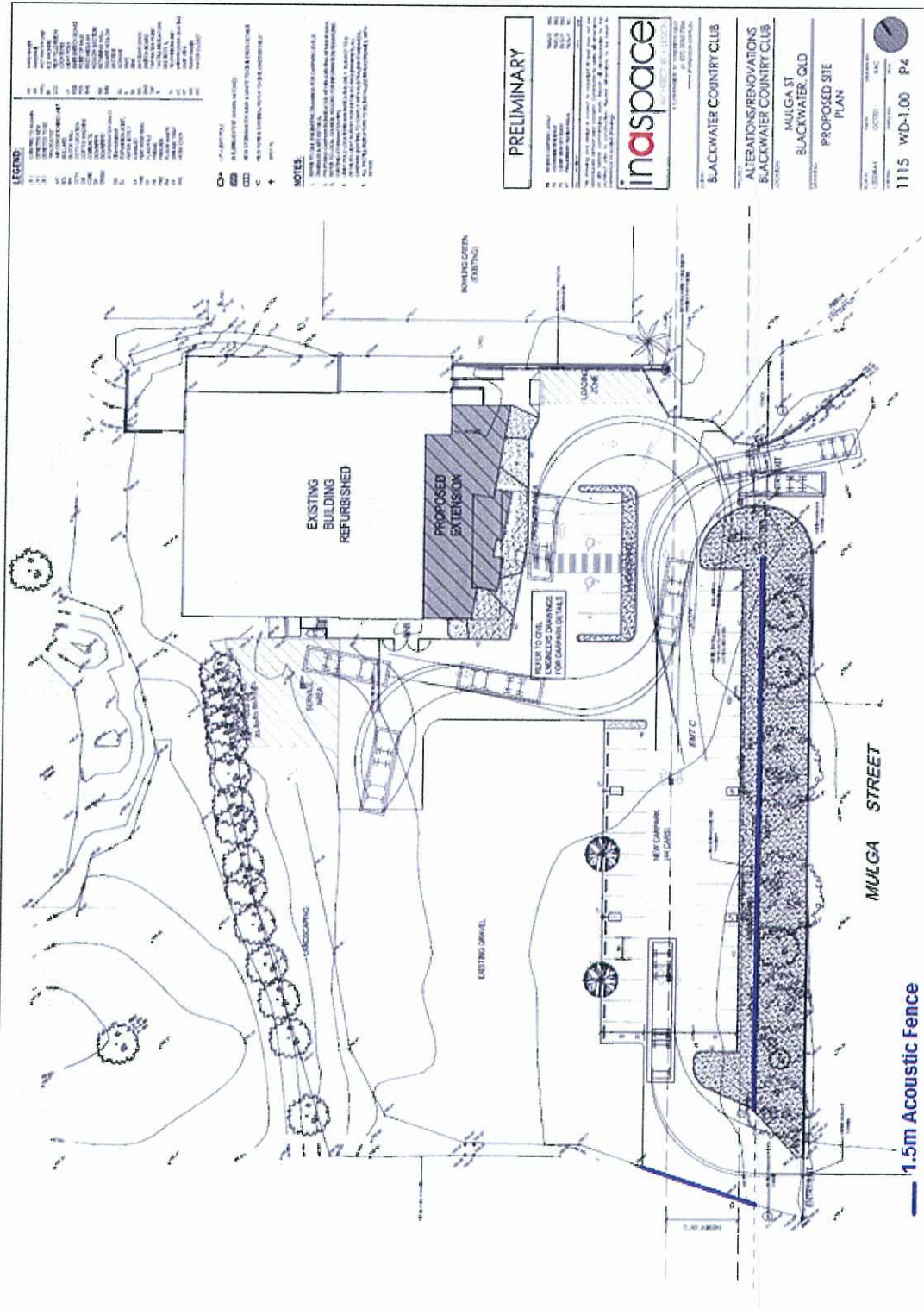
Environmental Protection (Noise) Policy 20087

Noise Measurement Manual Queensland EPA, March 2000

Guideline for Acoustic Consultants (June 2010) Office of Liquor and Gaming Regulation

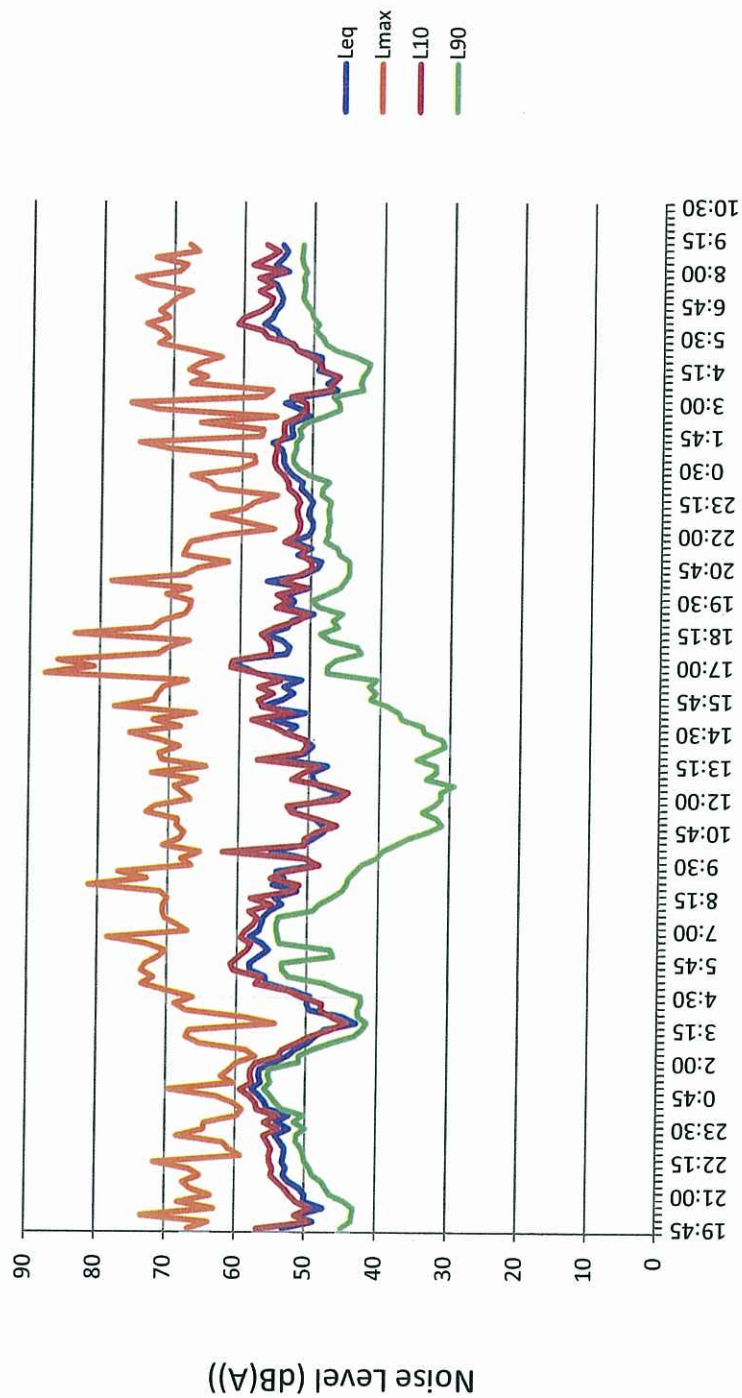
11.0 APPENDIX

11.1 APPENDIX A – SITE PLANS



11.2 APPENDIX B – NOISE SAMPLING

ML1 - Noise Measurements (20th - 21st February 2012)



Time (hour of day 00:00)