

# CRAIG HILL ACOUSTICS

Acoustic Consultants

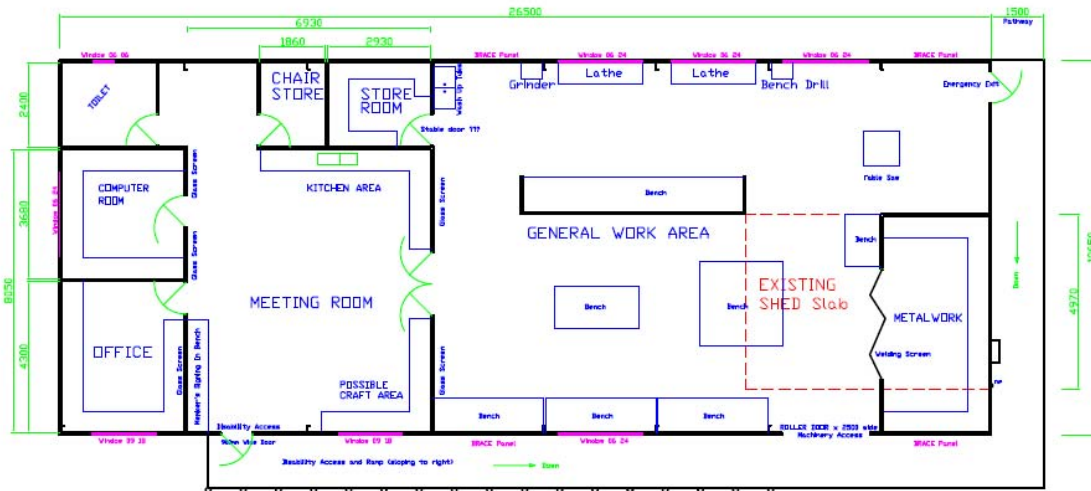
QLD & NSW



## NOISE LEVEL IMPACT ASSESSMENT

### Mens Shed

Tweed Heads



Thursday, June 13, 2013

## DOCUMENT CONTROL PAGE

### Noise Impact Assessment

Mens Shed Tweed Heads  
Reference: Mens Shed130613/1

Report prepared for Tweed Heads Community Men's Shed Inc

Date Thursday, June 13, 2013

Site Park Street  
Tweed Heads

Authorised by John Pitt 0423 462992

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## **1.0 INTRODUCTION**

The purpose of this report is to examine noise impact from the proposed Mens Shed at Park Street, Tweed Heads.

Activities on the site will include light woodwork and light metalwork consistent with those done by a 'back-yard' hobbier.

Equipment installed will be light duty and operating infrequently during opening hours.

The general area will be used for a variety of activities including craft activities such as leather work and electronics projects where assembly and soldering type work would be done as well as small woodworking and metal working activities.

The office and meeting room areas would be of a passive nature where computer classes and meetings would be held.

Hours of operations: 8am – 5pm Monday to Friday 8am -1pm Saturday,  
There may be times when meetings will be held in the evening, but no machinery will be operated.

## 2.0 SURROUNDINGS

The nearest noise sensitive properties are:


North: PCYC / Daycare 50m, Residents 140m

South: Daycare centre 6m play area – Indoor 12m, Residents 150m.

East: Day Care 75m, Residents 150m

West: Residents 25m



station 1 

### 3.0 CRITERIA

#### Industrial Noise Policy

State of NSW and the Department of Environment, Climate Change and Water NSW

#### 3.1 Intrusive Noise criterion

According to the EPA's INP, the intrusiveness of a mechanical noise source may generally be considered acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (represented by the  $L_{Aeq}$  descriptor) does not exceed the background noise level measured in the absence of the source by more than 5dB(A).

The intrusiveness criterion is summarised as follows:

$L_{Aeq}$  Rating = background noise level plus 5dB(A)

Where:  $L_{Aeq,15minute}$  represents the equivalent continuous (energy-average) A-weighted sound pressure level **of the source** over 15 minutes.

To limit continuing increases in noise levels, the maximum ambient noise level within an area from industrial noise sources should not normally exceed the acceptable noise levels specified in Table 2.1 of the policy.

#### 3.2 Amenity Criteria

Table 3.1

Recommended $L_{Aeq}$ Noise Levels from Industrial Sources				
Type of Receiver	Indicative Noise Amenity Area	Time of Day	Recommended $L_{Aeq}$ Noise Level, dB(A)	
			Acceptable	Recommended Maximum
Residence	Suburban	Day	50	55
		Evening	45	50
		Night	40	45
Active recreation area (e.g. school playground, golf course)	All	When in use	55	60

#### Time of day:

- day**: the period from 7:00 am to 6:00 pm Monday to Saturday; or 8:00 am to 6:00 pm on Sundays and public holidays
- evening**: the period from 6:00 pm to 10:00 pm
- night**: the remaining periods.

Where on site measurements are taken the lowest of the recommended and the actual shall be used.

### 3.3 Construction Noise

State of NSW and Department of Environment and Climate Change NSW

Table 3.2

Time of day	Management level LAeq(15min)	How to apply
<p><b>Recommended standard hours:</b></p> <p>Monday to Friday 7 am to 6 pm</p> <p>Saturday 8 am to 1 pm</p> <p>No work on Sundays or public holidays</p>	<p>Noise affected RBL + 10 dB</p>	<p>The noise affected level represents the point above which there may be some community reaction to noise.</p> <p>*Where the predicted or measured LAeq (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level.</p> <p>*The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.</p>
	<p>Highly noise affected 75 dB(A)</p>	<p>The highly noise affected level represents the point above which there may be strong community reaction to noise.</p> <p>*Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account:</p> <ol style="list-style-type: none"> <li>times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences)</li> <li>If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.</li> </ol>
<p><b>Outside recommended standard hours</b></p>	<p>Noise affected RBL + 5 dB</p>	<p>*A strong justification would typically be required for works outside the recommended standard hours.</p> <p>*The proponent should apply all feasible and reasonable work practices to meet the noise affected level.</p> <p>*Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community.</p>

\* Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence.

## **4.0 NOISE MEASUREMENTS**

### **4.1 EQUIPMENT**

The following equipment was utilised during the test assessments:

The following equipment was utilised during the test assessments:

Svantec Type 1, Sound and Vibration Analyser Model 949 Serial No 6023. calibrated March 2012.

BSWA Sound Level Calibrator Serial No 490190. calibrated March 2013.

The above equipment complies with the requirements of Australian Standards 1259.2 1990, Sound Level Meters, Part 2 Integrating – Averaging, as required by the Australian Standards. Equipment was calibrated before the tests and checked after and found to be within the acceptable drift.

The above equipment complies with the requirements in **IEC 61672**.



## 5.0 IMPACT ON SURROUNDINGS

### 5.1 AMBIENT LEVELS

A logger was set up at station 1.

Tests were conducted between the 6th – 11th June 2013.

Weather conditions consisted of S- SE winds varying from 0 -20 kts with periods of rain on the 9<sup>th</sup> and 10<sup>th</sup> where results were excluded.

Table 5.1

Period	RBL LA90	Intrusive Criterion = RBL+5	Amenity Criteria	Final Environmental Criteria
Day	42	47	45	47
evening	40	45	50	45

Day periods only considered due to proposed operating hours.

#### Time of day:

—**day**: the period from 7:00 am to 6:00 pm Monday to Saturday; or  
8:00 am to 6:00 pm on Sundays and public holidays

—**evening**: the period from 6:00 pm to 10:00 pm

—**night**: the remaining periods.

## 6.0 NOISE FROM THE DEVELOPMENT

A variety of activities would be conducted at the premises.

A daytime design level of 47LAeq 15 mins at an affected place would apply.

### 6.1 NOISE FROM INSIDE THE PREMISES

Table 6.1

	3m from source	Out door play area 6m	PCYC 30m	Res north 140m	Res east 150m	Res south 145m	Res west 30m	<45LA90
<b>Mig welding</b>	83	77	68	50	50	50	68	32
<b>Drill press</b>	74	68	59	41	41	41	59	23
<b>Lath</b>	73	67	58	40	40	40	58	22
<b>Lath startup</b>	80	74	65	47	47	47	65	29
<b>Drop saw</b>	95	89	80	62	62	62	80	44
<b>Large grinder</b>	89	83	74	56	56	56	74	38
<b>Small grinder</b>	85	79	70	52	52	52	70	34
<b>Air dusting</b>	90	84	75	57	57	57	75	39
<b>Compressor</b>	80	74	65	47	47	47	65	29
<b>Planer</b>	96	90	81	63	63	63	81	45
<b>Bench saw</b>	94	88	79	61	61	61	79	43
<b>Router</b>	96	90	81	63	63	63	81	45
<b>Belt sander</b>	90	84	75	57	57	57	75	39
<b>Orbital sander</b>	93	87	78	60	60	60	78	42
<b>Air extraction</b>	80	74	65	47	47	47	65	29
<b>Hammer chisel</b>	85	79	70	52	52	52	70	34

Air extraction to be housed internally.

Sound shell requirements in general work area only:

Roof Ceiling: 45Rw

Walls: 45Rw

Windows: 36 Rw (west) 30Rw (east)

Emergency exit: 42mm solid core door with soft seal all sides.

Windows and doors are to be closed when above activities are undertaken.

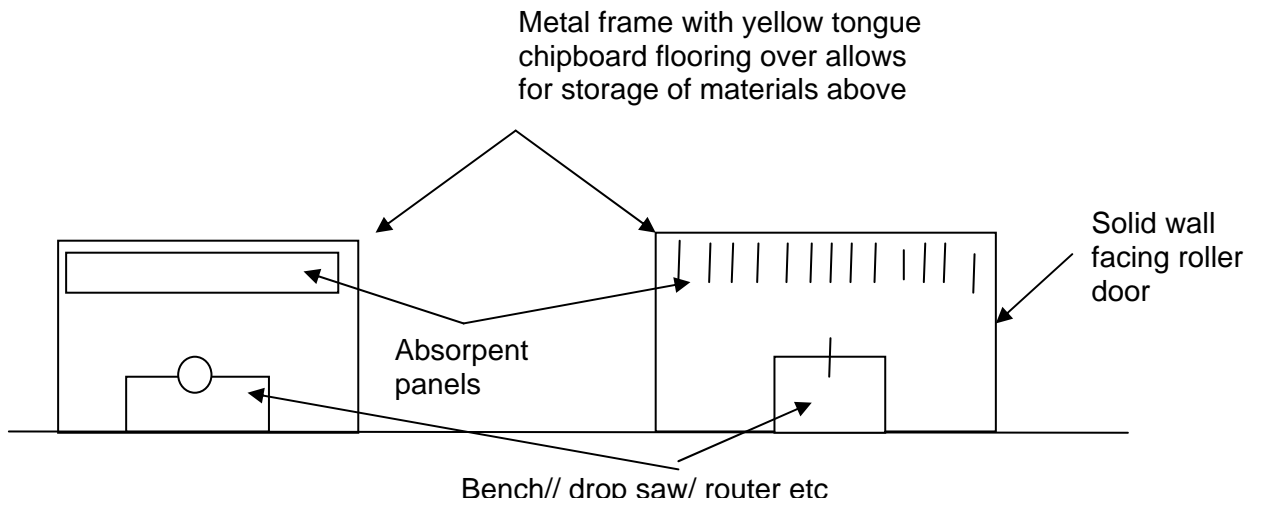
To allow the roller door to be open during above activities work stations for bench & drop saw, router and electric plane would need to be treated with the following treatment.

The suggested treatment would reduce the predominate high frequencies at the source.

An example below shows Bradford Acoustic Baffles, however the same or similar results can be achieved using strips of carpet suspended under a metal frame. If dust is an issue the carpet can be covered in a Mylar fabric.

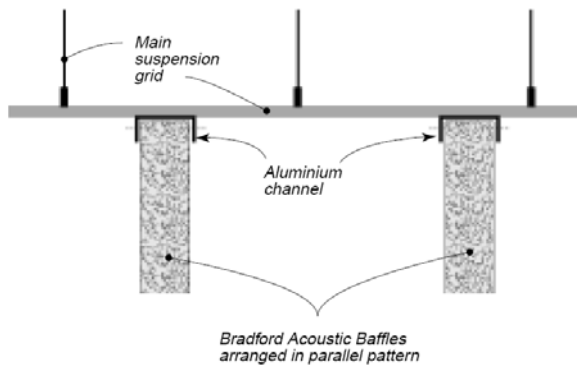
Where work stations are adjacent to the open roller door there should be a solid wall or barrier 11kgm<sup>2</sup> or better so that no direct line of site is available from the sound source to the roller door.

Work station treatment below:

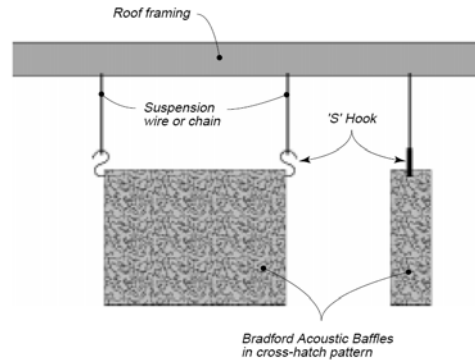


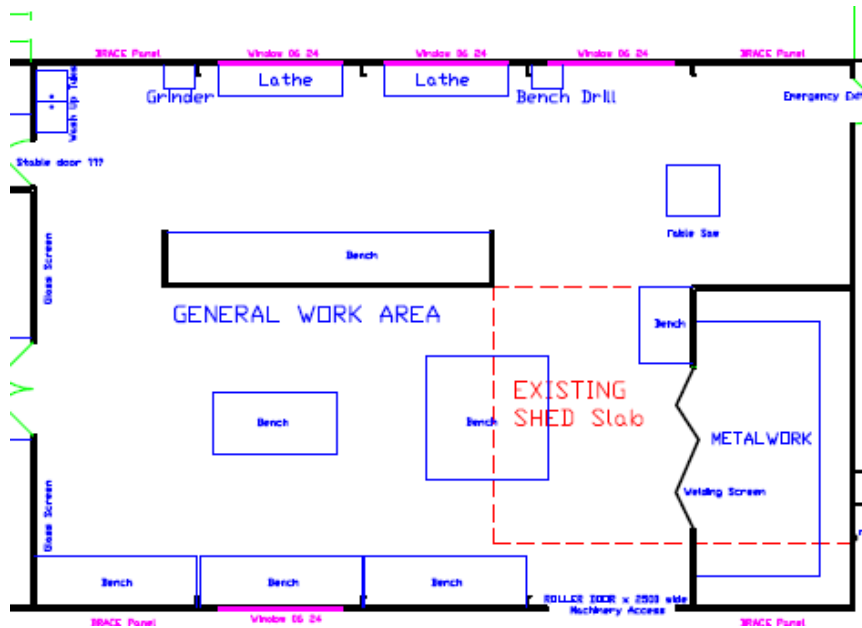
Bradford Acoustic Baffles.

ACOUSTIC BAFFLES FIXED IN ALUMINIUM TRACK AND ARRANGED IN A PARALLEL PATTERN.



ACOUSTIC BAFFLES SUSPENDED AND ARRANGED IN A CROSS-HATCH PATTERN.





## 6.2 EXTERNAL NOISE

### Carpark

Carpark noise would not be out of place in the area as the area already is utilised for parking by the Nearby YMCA and Day care centres.

### Deliveries

Generally members would pick up materials in private vehicles.

### Waste

General “domestic type” waste, including waste paper, bottles, food stuff and containers, plastics and the like would be separated into recyclables and non-recyclables in a conventional ‘wheelie bin’ for roadside collection by Council’s Contractor.

Industrial waste would generally be stored temporarily on site in bins and disposed of to the Council’s landfill by the operator.

### Offices

Activity from offices would include meetings, classes and general office use and not be audible at any noise sensitive place.

## Airconditioning

Equipment for the offices has not been chose at this stage therefore noise levels from a similar project is used below. Equipment fitted to east or west exterior walls.

**Table 6.2**

	3m from source	Out door play area 30m	Ymca 30m	Res north 140m	Res east 150m	Res south 145m	Res west 30m	<47LA90
<b>Split systems</b>	68	47	NA	NA	NA	NA	NA	0

NA: Not audible

Noise from airconditioning units would not be audible at a noise sensitive place.

If other units are chosen design levels of not greater than 45LAeq at the nearest noise sensitive place should be considered.

## 7.0 CONSTRUCTION NOISE

Construction noise would be within the normal hours below.

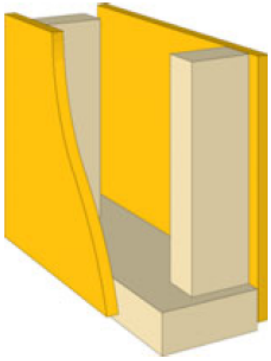
Time of day	Management level LAeq(15min)	How to apply
<p><b>Recommended standard hours:</b></p> <p>Monday to Friday 7 am to 6 pm</p> <p>Saturday 8 am to 1 pm</p> <p>No work on Sundays or public holidays</p>	<p>Noise affected RBL + 10 dB</p>	<p>The noise affected level represents the point above which there may be some community reaction to noise.</p> <p>*Where the predicted or measured LAeq (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level.</p> <p>*The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.</p>

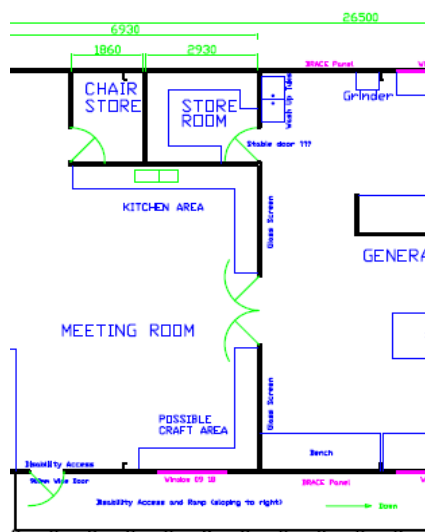
## 8.0 SEPARATION OF OFFICES AND WORK AREA

If both areas are operating at the same time a separation of 50 Rw would be required at the separating wall for both doors and wall.

Acoustic ceilings should be installed with a minimum rating of 60 NRC and if carpet is not used the room would need further reverberation control using absorptent material to walls or suitable furnishings.

### Timber Frame Internal Wall Systems

SYSTEM SPECIFICATION			TYPICAL LAYOUT (CSR 425a shown)			ACOUSTIC OPINION			
<ul style="list-style-type: none"> <li>Lining material as per system table.</li> <li>Staggered timber studs at 600mm maximum centres each side.</li> <li>Minimum 20mm clearance between stud and opposing lining.</li> <li>No noggings or any connection between studs.</li> <li>Cavity insulation as per system table. (Insulation may need to be cut and placed between studs).</li> <li>Lining material as per system table.</li> </ul>						<b>PKA-051</b>  NOT Deemed Discontinuous Construction			
FRL Report/Opinion	SYSTEM N°	WALL LININGS	PLATE WIDTH mm	90	120	140	Rw / Rw+Ctr		
- / - / -	CSR 425	<i>BOTH SIDES</i> • 1 x 10mm GYPROCK SOUNDCHEK plasterboard.	CAVITY INFILL (Refer to Section 'A')						
			(a) Nil	40/33	42/35	43/36			
			(b) 75 Gold Batts™ 1.5	49/40	51/42	52/43			
			(c) 75 Soundscreen™ 2.0 batts	50/40	52/42	53/43			
			(d) TSB3/ASB3 Polyester batts	47/40	49/42	50/43			
WALL THICKNESS mm			110	140	160				



**Doors:** Doors to separating wall would need to be double acoustically treated 42mm solid core in swinging appropriate seals.

## **9.0 CONCLUSIONS**

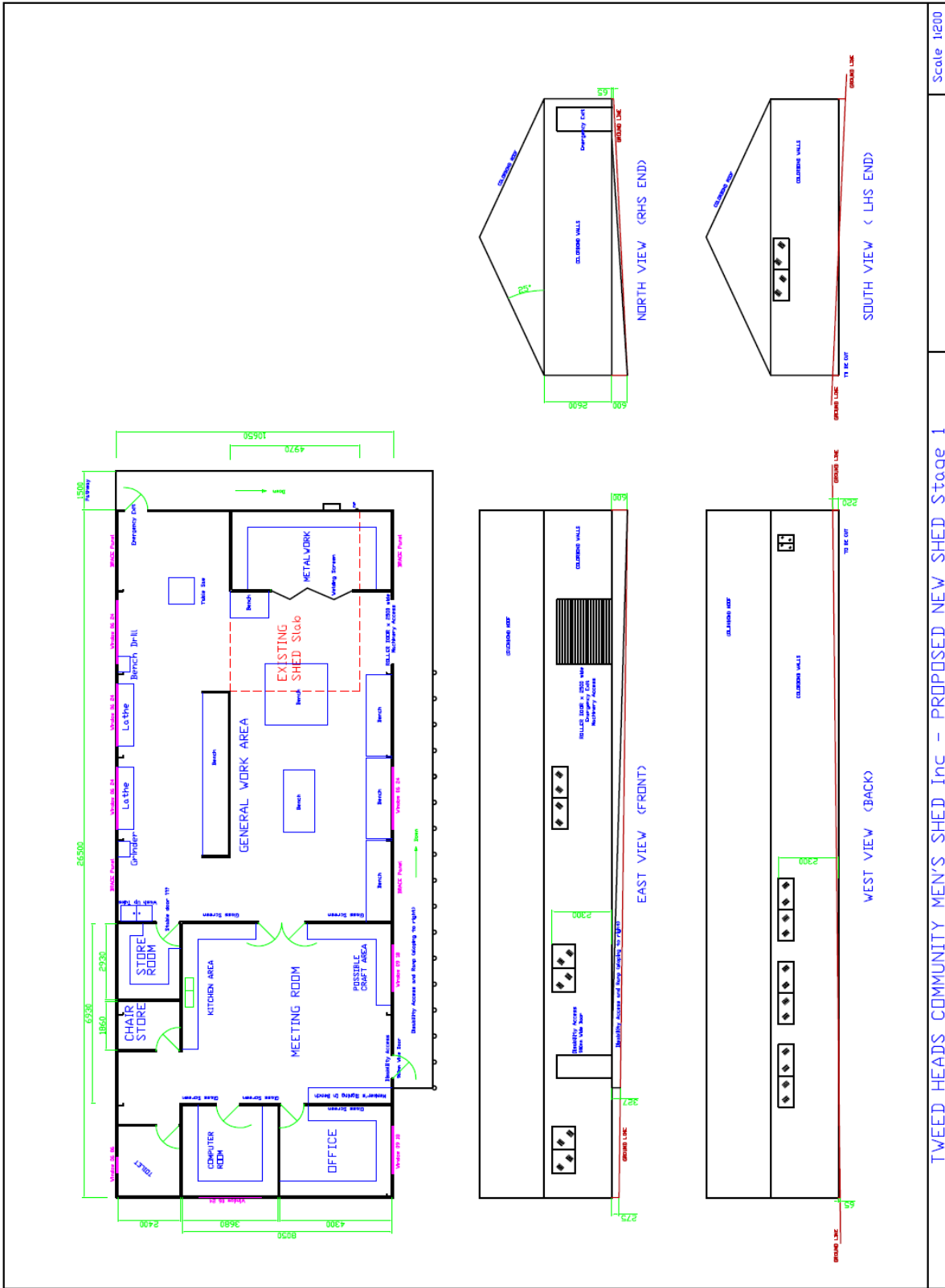
Based on the above listed noise sources and on site managed activities, no unreasonable noise is expected to occur at nearby noise sensitive residents.

Where the above is operated as a closed system the ventilation would need to be provided.

Ear protection should be used when operating equipment in the work area.

**Assessment Based on plans attached**

# APPENDIX A : PLANS



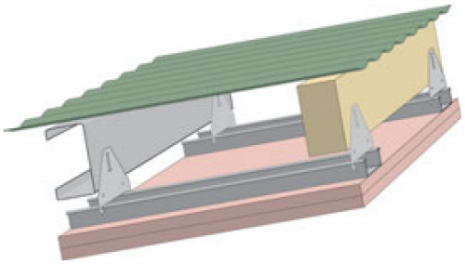
TWEED HEADS COMMUNITY MEN'S SHED Inc - PROPOSED NEW SHED Stage 1



## APPENDIX B : EXAMPLE

The following could be used for both the walls and ceiling.

### Roof/Ceiling Systems

SYSTEM SPECIFICATION		TYPICAL LAYOUT (CSR 865a shown))			ACOUSTIC OPINION
<ul style="list-style-type: none"> <li>• A low slope metal roof.</li> <li>• 150mm Timber or Steel Purlins.</li> <li>• RONDO Furring Channel fixed to purlin with fixing clips (N°226).</li> <li>• Cavity infill as per system table.</li> <li>• Ceiling lining as per system table, fixed to furring channel.</li> </ul>					PKA-056
FRL Report/Opinion	SYSTEM N°	CEILING LININGS	CAVITY INFILL (Refer to Section A)	R <sub>w</sub> / R <sub>w</sub> +C <sub>tr</sub>	
- / - / -	CSR 877	• 1 x 10mm GYPROCK SOUNDCHEK plasterboard.	(a) Nil (b) 165 Gold Batts™ 3.0 (c) 120 Soundscreen™ 3.0 batts	39/32 47/38 46/37	
60/60/60 +RISF 30 minutes FCO 1373	CSR 878	• 1 x 16mm GYPROCK FYRCHEK plasterboard.	(a) Nil (b) 165 Gold Batts™ 3.0 (c) 120 Soundscreen™ 3.0 batts	39/32 47/38 46/37	
90/90/90 +RISF 60 minutes FCO 1373	CSR 865	• 2 x 16mm GYPROCK FYRCHEK plasterboard.	(a) Nil (b) 165 Gold Batts™ 3.0 (c) 120 Soundscreen™ 3.0 batts	45/38 53/44 52/43	
120/120/120 +RISF 60 minutes FCO 1373	CSR 866	• 3 x 16mm GYPROCK FYRCHEK plasterboard.	(a) Nil (b) 165 Gold Batts™ 3.0 (c) 120 Soundscreen™ 3.0 batts	47/40 55/46 54/45	