



ENVIRONMENTAL NOISE IMPACT
FAIRFIELD YOUTH AND COMMUNITY CENTRE
AT 31-55 VINE STREET, FAIRFIELD, NSW

REPORT NUMBER: 4784

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1.0 EXECUTIVE SUMMARY

Fairfield City Council proposes to build a Youth and Community Centre at 31-55 Vine Street, Fairfield.

The Youth and Community Centre is proposed to be located in public open space and will be surrounded by residential dwellings to the north, south and west. Commercial buildings are located to the north and recreational areas to the east and west. The centre will incorporate program rooms, indoor basketball courts, “chill zone”, administration offices and amenities.

Noise criteria for the Centre were derived from the NSW Industrial Noise Policy 2000 and based on ambient noise levels measured over a period of 7 days from Tuesday 21 February to Monday 27 February 2012 at residential Location “A”. The criteria are ($L_{Aeq, 15 \text{ minute}}$) **52 dBA** during the day, **50 dBA** in the evening and **46 dBA** at night. Considerations have also been given to the traffic noise criteria and noise amenity criteria all of which are detailed in Section 5 of this report.

The main sources of noise from the Youth and Community Centre may include amplified music and crowds of people. At the time of writing this report, specific details of the mechanical plant were not known.

A traffic report prepared by Fairfield Consulting Services dated 24 October 2011 predicts that the proposed Youth and Community Centre will generate approximately 6 vehicle trips per hour during the morning peak and 32 trips per hour during evening peak. These values have been adopted in our traffic noise assessment.

The environmental noise impact assessment has been modelled based on the proposed construction as discussed with the architect and using architectural drawings by AJ+C architects received by e-mail on Friday 9 and Wednesday 21 March 2012. Recommendations to reduce noise to within acceptable levels are detailed in Section 7 of this report.

We are of the opinion that provided the recommended noise controls are implemented into the building construction and included in the Plan of Management for the Centre, the noise emission from the proposed Youth and Community Centre will be considered acceptable and comply with the NSW EPA’s Industrial Noise Policy 2000.



2.0 CONSULTING BRIEF

Day Design Pty Ltd was engaged by Fairfield City Council to assess the environmental noise impact of the proposed Fairfield Youth and Community Centre located at 31-55 Vine Street, Fairfield. This commission involves the following:

Scope of Work:

- Inspect the site and environs
- Measure the background noise levels at critical locations and times
- Establish acceptable noise level criteria
- Quantify noise emissions from the proposed Youth and Community Centre
- Calculate the level of noise emission, taking into account building envelope transmission loss, screen walls and distance attenuation
- Prepare a site plan identifying the development and nearby noise sensitive locations
- Provide recommendations for noise control (if necessary)
- Prepare an Environmental Noise Impact Report.

3.0 PROJECT DESCRIPTION

The proposed Fairfield Youth and Community Centre is located at 31-55 Vine Street, Fairfield. The Centre will include two general purpose rooms, “chill zone”, indoor basketball courts, administrative offices and amenities and is intended to be used for three different purposes; youth, school programs and general community use.

3.1 Receptors

The centre is surrounded by residential dwellings, commercial premises and public recreational areas. The most affected receptors are as follows and are shown in Figure 1 attached;

- Residential Receptors
 - 38 Vine Street, Fairfield – approximately 110 metres away
 - 38 Latty Street, Fairfield – approximately 340 metres away
 - 11 Ulverstone Street, Fairfield – approximately 250 metres away
- Commercial Receptors
 - St John’s First Aid Shed – approximately 60 metres away
- Recreational Receptors
 - Fairfield Leisure Centre – approximately 30 metres away
 - Tennis courts – approximately 50 metres away



3.2 Operational Information

The hours of operation are sourced from the Fairfield Youth and Community Centre (FYCC) Operational Statement dated October 2011. They are as follows:

Table 1 Facility Trading Hours

	School Program and Community Hire	Youth Program Activities	Community Hire
Monday	7 am – 2 pm	3 pm – 8 pm	8 pm – 10 pm
Tuesday	7 am – 2 pm	3 pm – 8 pm	8 pm – 10 pm
Wednesday	7 am – 2 pm	3 pm – 8 pm	8 pm – 10 pm
Thursday	7 am – 2 pm	3 pm – 8 pm	8 pm – 10 pm
Friday	7 am – 2 pm	3 pm – 8 pm	8 pm – 12 am
Saturday	n/a	9 am – 5 pm	6 pm – 12 am
Sunday	n/a	9 am – 5 pm	6 pm – 10 pm

The operational statement states that the size and operation of the facility is similar to Prairiewood Youth Centre and assumes a maximum attendance of approximately 40 youths on site at any time during weekdays, and 60 youths during the weekend. Patronage during school programs and community hire events may vary significantly depending on the type of event being held at the centre.



3.3 Proposed Construction

Allen Jack + Cotter Architects propose to use the following materials for the construction of the Centre. Material abbreviations were taken from the elevation drawings received on Wednesday 21 March 2012.

Lightweight Cladding Type 1 (LC1)

- ‘Vitrapanel’ on 150 mm steel studs with R3.0 insulation between studs and internal lining consisting of;
 - o Basketball Hall: floor to ceiling – 50% solid timber and 50% perforated timber
 - o Program Rooms: up to 2500mm AFFL - 50% solid timber and 50% perforated timber
 - o Program Rooms: above 2500mm AFFL – 100% ‘Barrisol’

Lightweight Cladding Type 2 (LC2)

- James Hardie ‘Scyon Matrix’ 8 mm cladding on 150 mm steel studs with R3.0 insulation between studs.
 - o Basketball Hall: floor to ceiling – 50% solid timber and 50% perforated timber
 - o Program Rooms: up to 2500mm AFFL - 50% solid timber and 50% perforated timber
 - o Program Rooms: above 2500mm AFFL – 100% ‘Barrisol’

Metal Roof (MR)

- Lysaght ‘Klip-Lok’ Hi-Strength 700 with R4.0 insulation and ceiling consisting of;
 - o Basketball Hall: 100% ‘Barrisol’ stretch ceiling
 - o Program Rooms: 50% solid plasterboard and 50% perforated plasterboard
 - o Chill Zone: 50% solid plasterboard and 50% perforated plasterboard

Aluminium Louvres (AL)

- Operable aluminium louvres

Aluminium Framed glazing (AFG)

- 6 mm thick glazing

Polycarbonate Cladding (PCC)

- ‘Danpalon’ 16 mm multicell



4.0 AMBIENT NOISE LEVELS

4.1 Noise Survey Instrumentation

Noise level measurements and analysis were made with instrumentation as follows in Table 2 below.

Table 2 Noise Instrumentation

Description	Model No.	Serial No.
Infobyte Noise Logger	iM3	40
Condenser Microphone 0.5" diameter	MK 250	4344
Microphone Windscreen	Acoustically transparent foam	

An environmental noise logger is used to continuously monitor ambient noise levels and provide information on the statistical distribution of noise during an extended period of time. The Infobyte Noise Monitor iM3 is a Type 2 precision environmental noise monitor meeting all the applicable requirements of AS1259 for an integrating-averaging sound level meter.

All instrument systems had been laboratory calibrated using instrumentation traceable to Australian National Standards and certified within the last two years thus conforming to Australian Standards. The measurement system was also field calibrated prior to and after noise surveys. Calibration drift was found to be less than 1 dB for long-term measurements. Therefore no adjustments for instrument drift during the measurement period were warranted.



4.2 Measured Ambient Noise Levels

In order to assess the severity of a possible environmental noise problem in a residential area it is necessary to measure the ambient background noise level at the times and locations of worst possible annoyance. The lower the background noise level, the more perceptible the intrusive noise becomes and the more potentially annoying.

The ambient L_{90} background noise level is a statistical measure of the sound pressure level that is exceeded for 90% of the measuring period (typically 15 minutes).

The Rating Background Level (RBL) is defined by the NSW Office of Environment and Heritage (OEH) as the median value of the (lower) tenth percentile of L_{90} ambient background noise levels for day, evening or night periods, measured over a number days during the proposed days and times of operation.

Ambient L_{90} background noise levels were measured at location "A" shown on the Site Plan Figure 1 over seven (7) days from Tuesday 21 February to Monday 27 February 2012. These levels are presented in the attached Figure 2 and also in Table 3 below.

The places of worst possible annoyance are residential dwellings located to the north, south and west. Other places which may be affected by noise from the proposed centre include commercial premises and active recreational areas all of which are shown on the attached Site Plan Figure 1.

Table 3 Rating Background Level

Noise Measurement Location	Time Period	Rating Background Level	Existing L_{eq} Noise Level
Location 'A' – 34 Vine Street, Fairfield	Day (7 am to 6 pm)	51 dBA	61 dBA
	Evening (6 pm to 10 pm)	50 dBA	60 dBA
	Night (10 pm to 7 am)	41 dBA	58 dBA

Meteorological conditions during the testing typically consisted of clear skies. Atmospheric conditions were considered ideal for noise monitoring. Therefore noise measurements were considered reliable and typical for the receptor area.



5.0 ACCEPTABLE NOISE LEVELS

5.1 NSW Industrial Noise Policy

The NSW Environment Protection Authority (EPA) published the NSW Industrial Noise Policy in January 2000. The policy is specifically aimed at assessing noise from industrial noise sources scheduled under the Protection of the Environment Operations Act 1997.

The appropriate regulatory authority may, by notice in writing given to such a person, prohibit the person from causing, permitting or allowing:

any specified activity to be carried on at the premises, or

- a) any specified article to be used or operated at the premises,

or both, in such a manner as to cause the emission from the premises, at all times or on specified days, or between specified times on all days or on specified days, of noise that, when measured at any specified point (whether within or outside the premises,) is in excess of a specified level. It is an offence to contravene a noise control notice. However, prior to being issued with a noise control notice, no offence has been committed.

The Industrial Noise Policy provides a useful framework to assess noise emission from non-scheduled premises, whether that premises produces offensive or non-offensive noise.

The Protection of the Environment Operations Act 1997 defines “Offensive Noise” as noise:

- a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:
 - (i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or
 - (ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or
 - (iii) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances prescribed by the regulation.

The limits set out in the NSW Industrial Noise Policy were used as a guide for determining whether predicted levels of noise were considered offensive or not.



5.2 Residential Receptor Noise Intrusiveness Criteria

The EPA states in Section 2.1 of its NSW Industrial Noise Policy that the L_{Aeq} level of noise intrusion from broad-band industrial noise sources measured over a 15-minute period, may be up to 5 dB above the L_{A90} background noise level at the receptor without being considered offensive.

The representative Rating Background Levels were as shown in Table 3.1 above. Therefore the acceptable L_{eq} noise intrusiveness criteria for broadband noise at the residences are as follows:

- (51 + 5 =) **56 dBA** during the day (7 am – 6 pm);
- (50 + 5 =) **55 dBA** in the evening (6 pm – 10 pm);
- (41 + 5 =) **46 dBA** at night (10 pm – 7 am).

Where a noise source contains certain characteristics, such as tonality, impulsiveness, intermittency, irregularity or dominant low-frequency content, there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level. Correction factors may be applied to the noise annoyance criteria to determine the project specific criteria.

5.3 Residential Noise Amenity Criterion

Depending on the type of area in which the noise is being made, there is a certain reasonable expectancy for noise amenity. Table 2.1 of the NSW Industrial Noise Policy provides a schedule of recommended L_{eq} industrial noise levels that under normal circumstances should not be exceeded. If successive developments occur near a residential area, each one allowing a criterion of background noise level plus 5 dBA, the ambient noise level will gradually creep higher.

Compliance with the Noise Amenity levels in Table 2.1 will limit ambient noise creep. For example in an urban residential area, the L_{eq} noise emission level may not exceed 60 to 65 dBA in the daytime (7 am to 6 pm), 50 to 55 dBA in the evening (6 pm to 10 pm) and 45 to 50 dBA during the night (10 pm to 7 am).

Wherever the existing L_{eq} noise level from industrial noise sources approaches or exceeds the Amenity criterion at a critical receptor location, the intrusive L_{eq} noise from the noise source in question must be reduced to a level that may be as much as 10 dBA below the existing L_{eq} industrial noise level.

In this case the Noise Amenity criterion is:

- (60 - 8 =) **52 dBA** during the day (7 am – 6 pm);
- (60 - 10 =) **50 dBA** in the evening (6 pm – 10 pm);
- (58 - 10 =) **48 dBA** at night (10 pm – 7 am).



5.4 Traffic Noise Criterion

The NSW EPA indicates in Table 3 of its NSW Road Noise Policy (2011) that the assessment criteria on existing residences affected by additional traffic on existing sub-arterial roads generated by land use developments should not exceed $L_{eq, (15 \text{ hour})}$ **60 dBA** during the day-time (7 am to 10 pm) and $L_{eq, (9 \text{ hour})}$ **55 dBA** during night-time (10 pm to 7 am).

The NSW Road Noise Policy also discusses a sleep disturbance criterion taken from the Environmental Criteria for Road Traffic Noise (Environmental Protection Authority NSW 1999) stating that the $L_{A1, 1 \text{ minute}}$ level of any noise should not exceed the ambient L_{A90} noise level by more than 15 dB.

Based on the measured night time L_{90} of **41 dBA**, the L_{A1} level should not exceed $(41 + 15 =)$ **56 dBA** outside the windows of a bedroom at night (10 pm – 7 am).

5.5 Commercial Receptor Noise Amenity Criterion

The NSW Industrial Noise Policy recommends that the acceptable L_{eq} amenity noise level criteria at the boundary of nearby commercial premises (when in use) from industrial noise sources is **65 to 70 dBA**.

5.6 Active Recreation Area Noise Amenity Criterion

The NSW Industrial Noise Policy recommends that the acceptable L_{eq} amenity noise level criteria at the boundary of active recreational areas (when in use) from industrial noise sources is **55 to 60 dBA**.



5.7 Project Specific Noise Criteria

When all the above factors are considered, we find that the most stringent noise criterion is elements of the Residential Noise Amenity Criterion (Section 5.4 above) and the Noise Intrusiveness Criteria (Section 4.2 above). Based on our measurements of ambient background noise, the maximum acceptable level of intrusive noise is as follows:

- **$L_{eq, 11\text{-hour}}$ 52 dBA** during the day (7 am – 6 pm);
- **$L_{eq, 4\text{-hour}}$ 50 dBA** in the evening (6 pm – 10 pm);
- **$L_{eq, 15\text{-minute}}$ 46 dBA** at night (10 pm – 7 am).

Other noise criterion includes the Traffic Noise Criteria (Section 4.3 above) of:

- **$L_{eq, 15\text{ hour}}$ 60 dBA** during the day (7 am – 10 pm)
- **$L_{eq, 9\text{ hour}}$ 55 dBA** at night (10 pm – 7 am)
- **L_{A1} 56 dBA** for sleep disturbance at night (10 pm – 7 am)

These criteria are to be assessed at the most affected point on or within the receptors property boundary. For upper floors, the noise is assessed outside the nearest window.

The Commercial and Active Recreational Noise Amenity Criteria (Sections 4.4 and 4.5 above) of:

- **L_{eq} 65 dBA** at nearby commercial premises
- **L_{eq} 55 dBA** at active recreational areas



6.0 FAIRFIELD YOUTH AND COMMUNITY CENTRE NOISE EMISSIONS

Fairfield City Council proposes to build a Youth and Community Centre to accommodate youth programs, school programs and general community use.

The major sources of noise emitted from the Youth and Community Centre is assumed to be live amplified music, dance shows, sporting events, parties and general noise from patrons. Other noise sources will include mechanical plant and traffic noise generated by the proposed development. Special events are also expected to be held at the centre. Activities during such events can range from music festivals to dance and sporting competitions. The attendance during a special event could be as high as 1000 people.

Our assessment is based on the architectural drawings by AJ + C received on Wednesday 21 March 2012 and the proposed construction detailed in Section 3 of this report. We have assumed that the program rooms and chill zones are carpeted and that the sports hall will consist of wooden floors. Operable metal louvres to the sports hall are assumed to be opened in this assessment.

6.1 Youth and Community Centre Noise Emission

The Youth and Community Centre is intended to be used for youth/school programs and general community use. Different facilities within the centre will be used for varying activities. Such activities include;

- Indoor Courts
 - A range of indoor sports such as basketball, netball and gymnastics
 - Music and dance competitions
- Program Rooms
 - Music and dance lessons
 - Educational classes
 - Arts and craft classes
- Chill Zones
 - Area for conversations and relaxing
- Outside areas
 - Area for conversations and relaxing

The activities which are likely to emit high levels of noise would be music, dance lessons/competitions and indoor sports with a crowd present.



Sound power noise levels of such activities have been measured by Day Design from past projects and are shown in Table 4 below. The levels have been adjusted in line with the expected number of patrons outlined in the Operational Statement.

Table 4 L_{eq} Youth and Community Centre Sound Power Levels

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	63	125	250	500	1k	2k	4k	8k
Sports crowd of 500 children	106	78	81	85	98	104	99	93	91
Amplified band consisting of electric guitars, piano, drum kit and vocals	105	110	113	109	102	97	93	88	85
Basketball game – 10 playing, 20 watching	97	71	74	79	84	94	92	87	81

For the purpose of assessing the maximum level of noise from the centre, we have assumed that a special event will occur at the centre that includes:

- Indoor Courts - Amplified music competition with a crowd of 500 youths, and
- Program rooms – Amplified band rehearsal

The predicted level of noise emitted from the centre is summarised in the tables below. Table 5 shows the predicted noise level emitted from the indoor courts and Table 6 summarises the level of noise emitted from the program rooms. We have assumed that significantly quieter activities will be occurring in the chill out zones, administrative offices and amenities and therefore will not contribute to the overall noise emission.

Table 5 Predicted $L_{eq, 15 \text{ minute}}$ Noise Levels from the Indoor Courts

Receptor Location	Predicted L_{eq} Noise Level	Noise Criteria	Compliance
Residential - 38 Vine Street, Fairfield	52 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Day: Yes Evening: No Night: No
Residential - 38 Latty Street, Fairfield	47 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Day: Yes Evening: Yes Night: No
Residential - 11 Ulverstone Street, Fairfield	50 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Day: Yes Evening: Yes Night: No

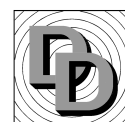


Table 5 Predicted $L_{eq, 15 \text{ minute}}$ Noise Levels from the Indoor Courts - Continued

Active Recreational Area - Tennis courts	58 dBA	60 dBA (when in use)	Yes
Active Recreational Area - Fairfield Leisure Centre	59 dBA	60 dBA (when in use)	Yes
Commercial - St John's First Aid Shed	50 dBA	65 dBA (when in use)	Yes

It is shown in Table 5 above that the predicated $L_{eq, 15 \text{ minute}}$ noise levels from the indoor courts is in excess of the noise criteria detailed in Section 5 at:

- 38 Vine Street during the evening and night,
- 38 Latty Street at night, and
- 11 Ulverstone Street at night.

Therefore noise controls will be required.

Table 6 Predicted $L_{eq, 15 \text{ minute}}$ Noise Levels from the Program Rooms

Receptor Location	Predicted L_{eq} Noise Level	Noise Criteria	Compliance
Residential - 38 Vine Street, Fairfield	36 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Yes
Residential - 38 Latty Street, Fairfield	26 dBA		
Residential - 11 Ulverstone Street, Fairfield	31 dBA		
Active Recreational Area - Tennis courts	41 dBA	55 dBA (when in use)	Yes
Active Recreational Area - Fairfield Leisure Centre	41 dBA	55 dBA (when in use)	Yes
Commercial - St John's First Aid Shed	45 dBA	65 dBA (when in use)	Yes



6.2 Car Park Noise Emission

We understand that the Fairfield Youth and Community Centre will share the same car park and access point as the Fairfield Leisure Centre. Currently the existing car park has 108 parking spots and will be extended by an additional 62 spots in the future. Table 16 of the traffic report prepared by Fairfield Consulting Services dated 24 October 2011 details that the traffic generation for the proposed development will be:

- 6 vehicle trips per hour (4 inbound / 2 outbound) during morning peak, and
- 32 trips per hour (20 inbound / 12 outbound) during evening peak.

The $L_{eq, 1 \text{ hour}}$ sound power level and spectrum of cars entering/exiting car parks has been previously measured by Day Design from past jobs. The sound power levels shown in Table 7 below, have been adjusted according to the number of cars that are predicted in the traffic report.

Table 7 $L_{eq, 1 \text{ hour}}$ Sound Power Level of Cars at the Proposed Centre's Driveway

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	63	125	250	500	1k	2k	4k	8k
L_{eq} noise level of cars entering/exiting the car park during morning peak (4 inbound / 2 outbound)	73	80	74	71	69	69	65	61	57
L_{eq} noise level of cars entering/exiting the car park during evening peak (20 inbound / 12 outbound)	80	87	81	78	76	76	72	68	64
$L_{A1, 1 \text{ minute}}$ noise level from a closing car door	90	92	89	84	85	84	82	81	79

The predicted $L_{eq, 1 \text{ hour}}$ and $L_{A1, 1 \text{ minute}}$ noise level at the nearest resident due to cars entering and exiting the car park is shown in Table 8 below. The level of noise from the car park has been assessed against the day time criteria for the morning and evening peak occur during the day-time.

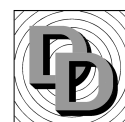


Table 8 Predicted L_{eq} Noise Level at Residential Receptor

Receptor Location	Predicted L_{eq} Noise Level	Noise Criteria	Compliance
Residential - 38 Vine Street, Fairfield	Morning Peak: 26 dBA	60 dBA	Yes
	Evening Peak: 33 dBA		

Table 9 Predicted $L_{1, 1 \text{ minute}}$ Noise Level at Residential Receptor

Receptor Location	Predicted L_{eq} Noise Level	Noise Criteria	Compliance
Residential - 38 Vine Street, Fairfield	42 dBA	56 dBA	Yes

We have assumed that the number of cars entering the car park during the night-time is less than during morning and evening peak. Since the L_{eq} noise level during the morning and evening peak is below 55 dBA, it can be assumed that the car park generated noise levels will comply with the night-time road traffic noise criteria

These predicted levels do not take into account the existing car park noise generated by the Fairfield Leisure Centre.

6.3 Mechanical Plant Noise Emission

At the time of writing this report, mechanical plant has yet to be selected. It is understood that two rooftop condensers are proposed to be installed. A prediction on the noise impact of the mechanical plant will be calculated once the details of the mechanical plant is finalised.



6.4 Cumulative Noise Impact

The cumulative noise impact from the proposed Youth and Community Centre at the most affected receptors is summarised in the tables below.

Table 10 Predicted Overall Noise Levels at the Most Affected Receptors
(Without noise controls)

Receptor Location	Noise Source	Predicted L_{eq} Noise Level	Noise Criteria	Compliance
Residential - 38 Vine Street, Fairfield	Indoor Courts	52 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Day: Yes Evening: No Night: No
	Program Rooms	36 dBA		
	Car Park	33 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	52 dBA		
Residential - 38 Latty Street, Fairfield	Indoor Courts	47 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Day: Yes Evening: Yes Night: No
	Program Rooms	26 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	47 dBA		
Residential - 11 Ulverstone Street, Fairfield	Indoor Courts	50 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Day: Yes Evening: No Night: No
	Program Rooms	31 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	50 dBA		



Table 10 Predicted Overall Noise Levels at the Most Affected Receptors - Continued
(Without noise controls)

Receptor Location	Noise Source	Predicted L_{eq} Noise Level	Noise Criteria	Compliance
Active Recreational Area - Tennis courts	Indoor Courts	58 dBA	60 dBA (when in use)	Yes
	Program Rooms	41 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	58 dBA		
Active Recreational Area - Fairfield Leisure Centre	Indoor Courts	59 dBA	60 dBA (when in use)	Yes
	Program Rooms	41 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	59 dBA		
Commercial - St John's First Aid Shed	Indoor Courts	50 dBA	65 dBA (when in use)	Yes
	Program Rooms	45 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	51 dBA		



7.0 NOISE CONTROL RECOMMENDATIONS

The predicted level of noise emission from the proposed development is in excess of the acceptable noise criterion established in Section 5 of this report. Therefore noise controls will be required. We recommend the following acoustical treatment:

7.1 Aluminium Framed Glazing and Hinged Doors

We recommend that all aluminium framed glazing (AFG) have a minimum R_w 32. Typical glazing that achieves R_w 32 is 6.4 mm laminated glass in a fixed aluminium frame. Hinged glazed doors to the indoor courts and chill rooms shall have a minimum R_w 28. Typical operable glazing that achieves R_w 28 is 6.4 mm laminated glass. Thicker glazing may be substituted to reduce the risk of impact damage.

We recommend any operable windows to the program rooms and chill zone be closed during loud activities such as music and dance rehearsals. The windows are not required to be closed during passive activities such as arts and crafts classes.

7.2 Maximum Sound Pressure Levels

Table 10 above shows that the predicted $L_{eq, 15 \text{ minute}}$ noise level is in excess of the acceptable limits at:

- 38 Vine Street during the evening and night,
- 38 Latty Street at night, and
- 11 Ulverstone Street at night.

For amplified music we recommend the maximum sound pressure level **measured three metres from the speakers** be at a maximum level of;

- **86 dBA** from 7 am to 6 pm and
- **84 dBA** from 6 pm to 10 pm and
- **80 dBA** from 10 pm to midnight.



7.3 Aluminium Louvres

The predicted noise levels which are in excess of the acceptable limits are due to noise escaping through the operable aluminium louvres to the indoor sports hall. The maximum sound pressure level measured at three metres from the speakers may be increased depending on the open percentage area of the louvres. The maximum sound pressure level versus the louver percentage open area is as follows;

- 100% of louvres open equates to a maximum sound pressure level at three metres from the speaker of **86 dBA** from 7 am to 6 pm, **84 dBA** from 6 pm to 10 pm and **80 dBA** from 10 pm to midnight,
- 50% of louvres open equates to a maximum sound pressure level at three metres from the speaker of **89 dBA** from 7 am to 6 pm, **87 dBA** from 6 pm to 10 pm and **83 dBA** from 10 pm to midnight,
- 0% of louvres open (fully closed) equates to a maximum sound pressure level at three metres from the speaker of **95 dBA** from 7 am to 6 pm, **93 dBA** from 7 am to 10 pm and **89 dBA** from 10 pm to midnight.

7.4 Construction Disclaimer

Recommendations made in this report are intended to resolve acoustical problems only. We make no claim of expertise in other areas and draw your attention to the possibility that our recommendations may not meet the structural, fire, thermal or other aspects of building construction.

We encourage clients to check with us before using materials or equipment that are alternative to those specified in our Acoustical Report.



8.0 PREDICTED NOISE LEVELS AT RECEPTOR LOCATIONS

Assuming the recommendations of Section 7 have been satisfactorily implemented, the resultant intrusive $L_{Aeq, 15 \text{ minute}}$ noise levels at various receptor locations is calculated to be as shown below in Table 11.

Table 11 Predicted Overall Noise Levels at the Most Affected Receptors
(With noise controls)

Receptor Location	Noise Source	Predicted L_{eq} Noise Level	Noise Criteria	Compliance
Residential - 38 Vine Street, Fairfield	Indoor Courts	45 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Yes
	Program Rooms	36 dBA		
	Car Park	33 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	46 dBA		
Residential - 38 Latty Street, Fairfield	Indoor Courts	40 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Yes
	Program Rooms	26 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	40 dBA		
Residential - 11 Ulverstone Street, Fairfield	Indoor Courts	43 dBA	Day: 52 dBA Evening: 50 dBA Night: 46 dBA	Yes
	Program Rooms	31 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	43 dBA		



Table 11 Predicted Overall Noise Levels at the Most Affected Receptors - Continued
(With noise controls)

Receptor Location	Noise Source	Predicted L_{eq} Noise Level	Noise Criteria	Compliance
Active Recreational Area - Tennis courts	Indoor Courts	51 dBA	60 dBA (when in use)	Yes
	Program Rooms	41 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	51 dBA		
Active Recreational Area - Fairfield Leisure Centre	Indoor Courts	52 dBA	60 dBA (when in use)	Yes
	Program Rooms	41 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	52 dBA		
Commercial - St John's First Aid Shed	Indoor Courts	43 dBA	65 dBA (when in use)	Yes
	Program Rooms	45 dBA		
	Mechanical	N/A		
	Overall L_{Aeq} Noise Level	47 dBA		

The predicted levels are based on the aluminium louvre open area of 100%. Decreasing the louvre open area and increasing the maximum sound pressure level in accordance to Section 7.3 will result in the same predicted overall noise levels shown in Table 11.



9.0 NOISE IMPACT STATEMENT

Measurements and computations show that, provided the recommendations in Section 7 of this report are implemented, the level of noise emitted by the proposed Fairfield Youth and Community Centre will meet NSW EPA's acceptable noise level requirements as detailed in Section 5 of this report.

We are of the opinion that sound emitted from this development will not cause "offensive noise" as defined by the Protection of the Environment Operations Act 1997.



Phillip Lu, BSc (Physics)

Acoustical Scientist

for and on behalf of Day Design Pty Ltd.

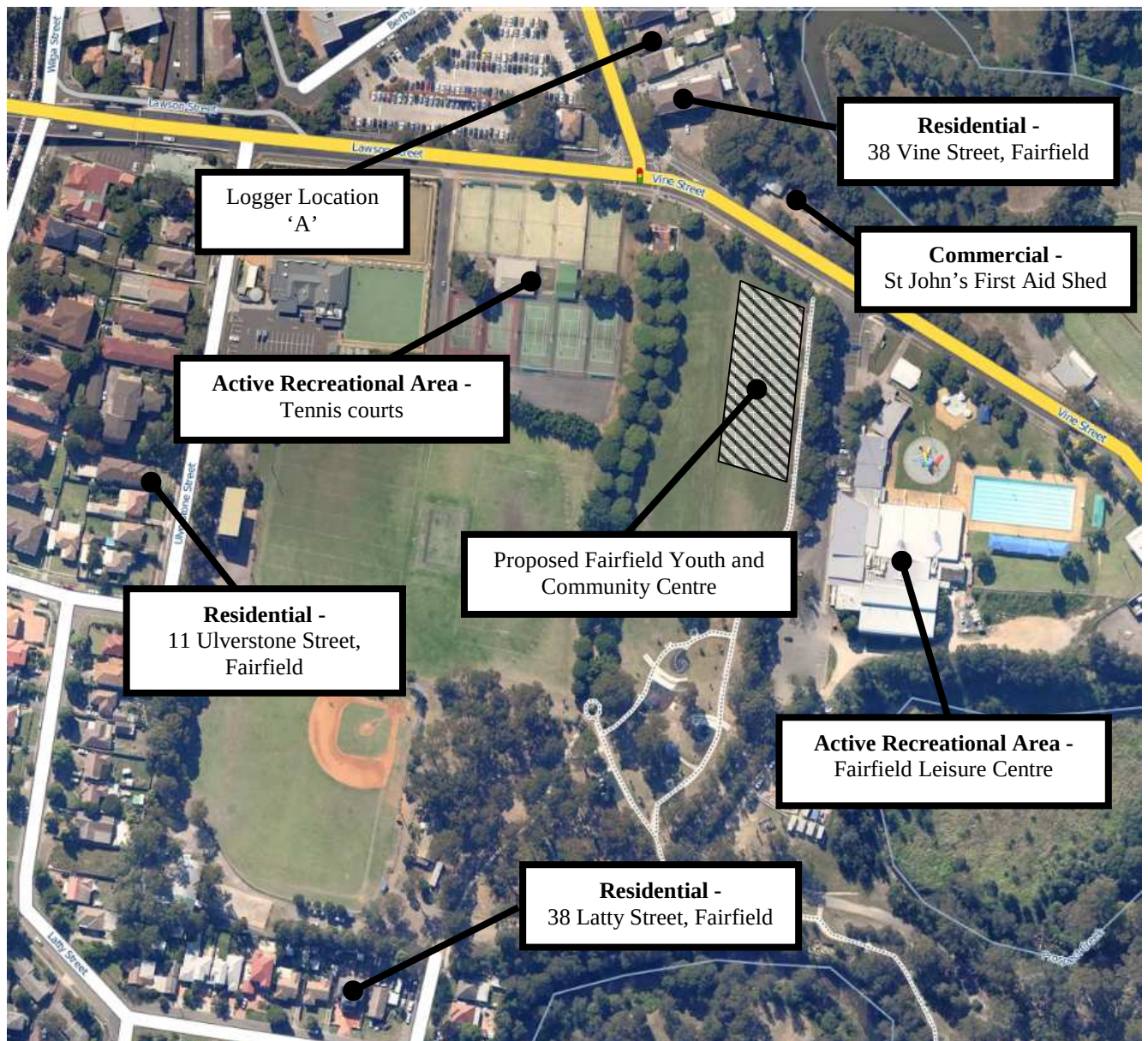
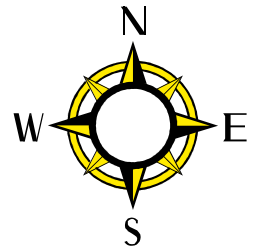
A.A.A.C. MEMBERSHIP

Day Design Pty Ltd is a member company of the Association of Australian Acoustical Consultants, and the work herein reported has been performed in accordance with the terms of membership.

Attachments:

- Figure 1 – Site Plan
- Figure 2 – Ambient Noise Survey
- Figure 3 – Floor Plans
- Figure 4 – Elevation Plans

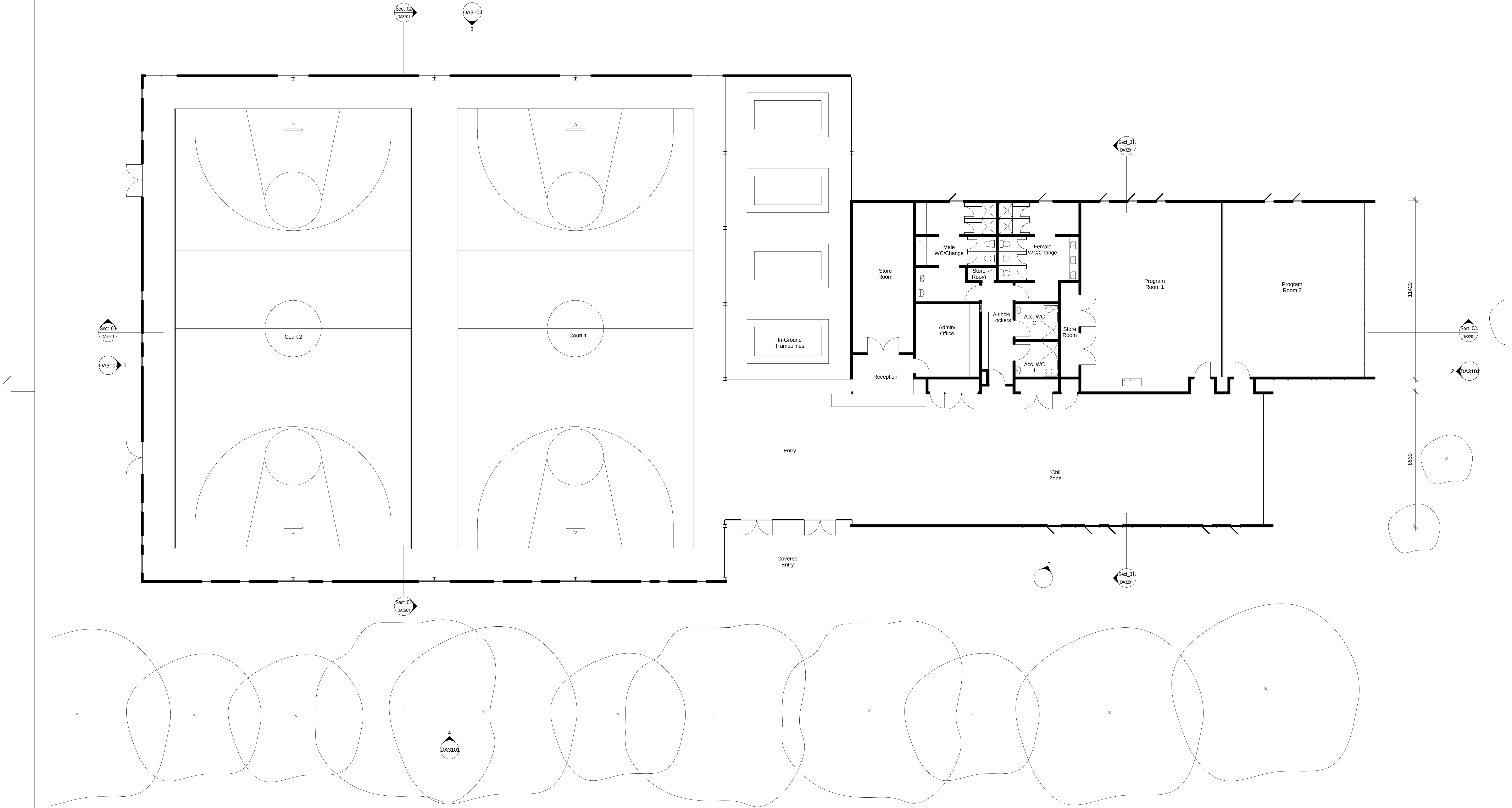




Ambient Noise Survey

Located at 34 Vine Street, Fairfield, NSW



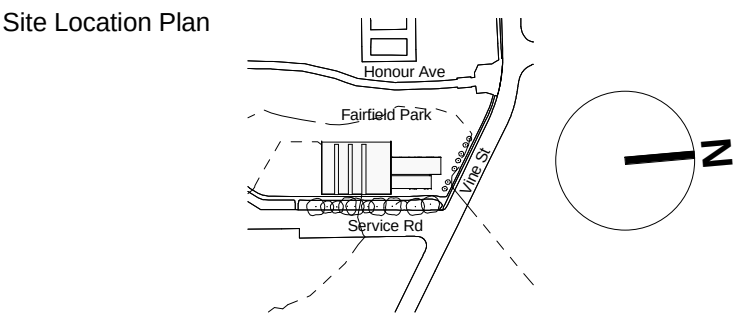


Revisions		
No.	Date	Description

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Notified Architects: Michael Heenan 5264, Peter Ireland 6661, Reginald Smith 3332, Peter Stronach 3372

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Project
Fairfield Youth & Community Centre
Fairfield Park
FAIRFIELD
NSW

Proj. No. 11030

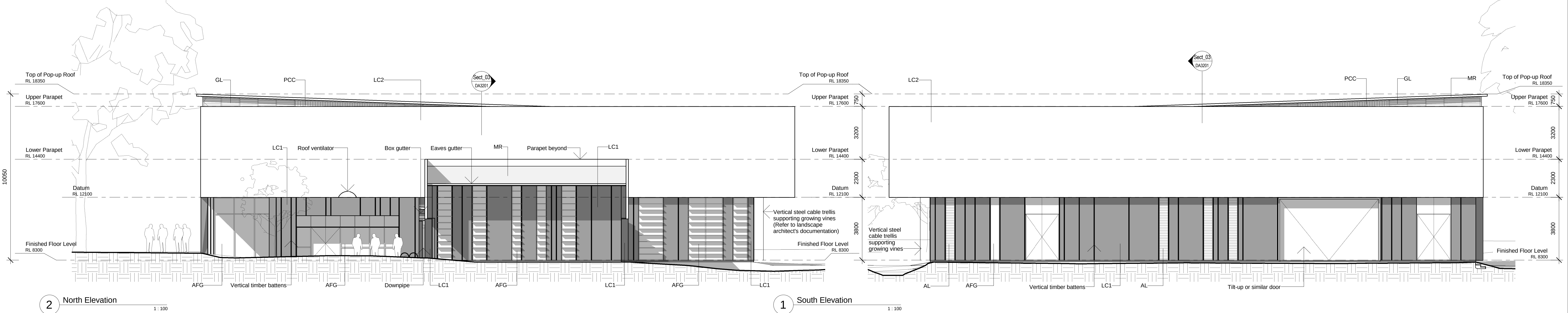
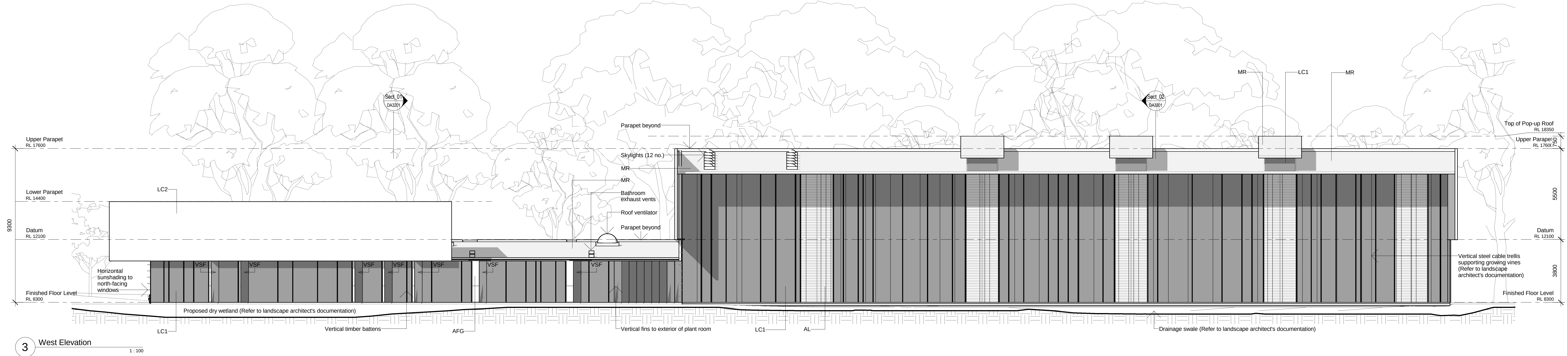
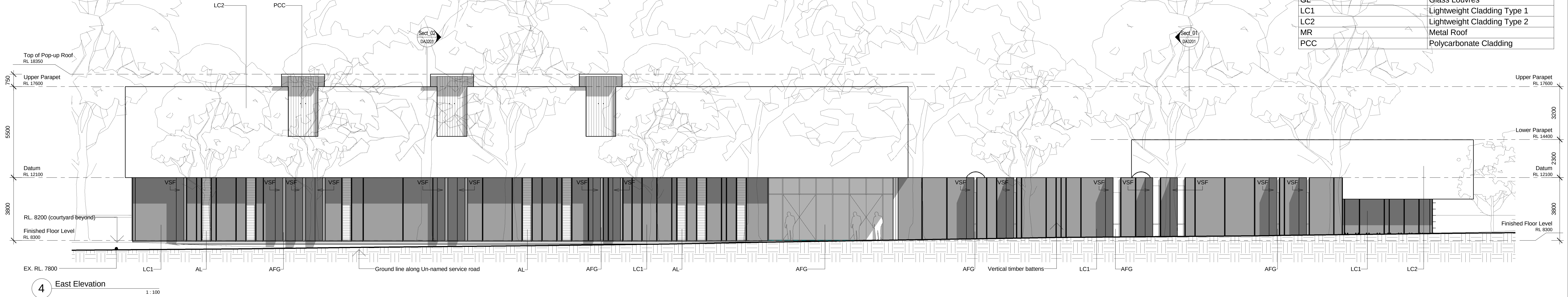
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GROUND FLOOR PLAN
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Drawing Status
Development Application

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4784 Figure 4

ABBREVIATION	MATERIAL
AFG	Aluminium Framed Glazing
AL	Aluminium Louvres
GL	Glass Louvres
LC1	Lightweight Cladding Type 1
LC2	Lightweight Cladding Type 2
MR	Metal Roof
PCC	Polycarbonate Cladding



Revisions	No.	Date	Description

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Site Location Plan

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Project
Fairfield Youth & Community Centre

Fairfield Park
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NSW

Proj. No. 11030

Drawing Title
ELEVATIONS
DRAFT

Drawing Status
Development Application

Scale
1:100

Drawing No.
DA3101

Issue

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