

**EDWARD MILLEN HERITAGE REDEVELOPMENT
EDWARD MILLEN RESERVE
15 HILL VIEW TERRACE
EAST VICTORIA PARK**

ENVIRONMENTAL ACOUSTIC ASSESSMENT

SEPTEMBER 2023

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ENVIRONMENTAL ACOUSTIC ASSESSMENT
EDWARD MILLEN HERITAGE REDEVELOPMENT
EAST VICTORIA PARK

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FOR

BLACKOAK CAPITAL

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1. INTRODUCTION

Herring Storer Acoustics were commissioned by Blackoak Capital to undertake an acoustic assessment of noise emissions associated with the proposed refurbishment of the Mildred Creek Building, Rotunda and adjacent grounds, located at Edward Millen Reserve, 15 Hill View Terrace, East Victoria Park.

The report considers noise received at the neighbouring premises from the proposed development for compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*. This report considers noise emissions from:

- Mechanical services.
- Deliveries,
- Restaurant, Brewery & Community Function Space Patron Noise
- Community Market Patron Noise
- External live acoustic music (or similar)

Noise associated with waste vehicles has not been considered as their emissions would be exempt under Regulation 14A, when managed under a waste management plan, which would typically be produced by the operator once appointed.

We note that from information received from DWER, the bitumised area would be considered as a road, thus noise relating to motor vehicles is exempt from the *Environmental Protection (Noise) Regulations 1997*. We note that these noise sources are rarely critical in the determination of compliance. However, as requested by council and for completeness, they have been included in the assessment, for information purposes only.

For information, a plan of the proposed development is attached in Appendix A.

2. SUMMARY

Noise received at the neighbouring residences from the patron noise would comply with the requirements of the *Environmental Protections (Noise) Regulations 1997*.

Noise received at the neighbouring residences from the community market noise would comply with the requirements of the *Environmental Protections (Noise) Regulations 1997*. Note, that it is possible for some noise emissions to be present during setup (before 7AM, or 9AM on Sunday/Public Holiday), as well as with other non-crowd related activities such as bands, food trucks, etc. It is recommended that if the community market is to be a semi/permanent fixture a noise management plan for setup, as well as operations be developed once details are finalised.

Noise from the mechanical services has also been assessed to comply with the relevant criteria with barriers at least 1m above source height. However, as the design of the mechanical services has not been undertaken at this stage of the project, it is recommended that the mechanical services design be reviewed for compliance with the Regulatory requirements.

Noise associated with delivery of goods to the loading dock has been assessed to comply with the requirements of the *Environmental Protections (Noise) Regulations 1997* -during the day period - and deliveries should be restricted as of such.

It is noted that noise associated with cars movements and cars starting are exempt from complying with the Regulations. However, noise emissions from car doors is not strictly exempt

from the Regulations. Noise received at the existing neighbouring residences from these noise sources would comply with the Regulatory requirements, at all times.

Thus, noise emissions from the proposed development, would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for the proposed hours of operation.

3. CRITERIA

The allowable noise level at the surrounding locales is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Regulations 7 & 8 stipulate maximum allowable external noise levels. For highly sensitive area of a noise sensitive premises this is determined by the calculation of an influencing factor, which is then added to the base levels shown below in Table 3.1. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern. For other areas within a noise sensitive premises, the assigned noise levels are fixed throughout the day, as listed in Table 3.1.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises: highly sensitive area	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF
Commercial Premises	All Hours	60	75	80
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80

Note: L_{A10} is the noise level exceeded for 10% of the time.
 L_{A1} is the noise level exceeded for 1% of the time.
 L_{Amax} is the maximum noise level.
 IF is the influencing factor.

Under the Regulations, a highly sensitive area means that area (if any) of noise sensitive premises comprising –

- (a) A building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
- (b) Any other part of the premises within 15 m of that building or that part of the building.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

“impulsiveness” means a variation in the emission of a noise where the difference between L_{Apeak} and L_{Amax(Slow)} is more than 15 dB when determined for a single representative event;

“modulation” means a variation in the emission of noise that –

- (a) is more than 3 dB L_{Afast} or is more than 3 dB L_{Afast} in any one-third octave band;

“tonality”

(b) is present for more at least 10% of the representative assessment period; and

(c) is regular, cyclic and audible;
 means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and

(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{ASlow} levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

An aerial showing the neighbouring premises are shown below on Figure 3.1.

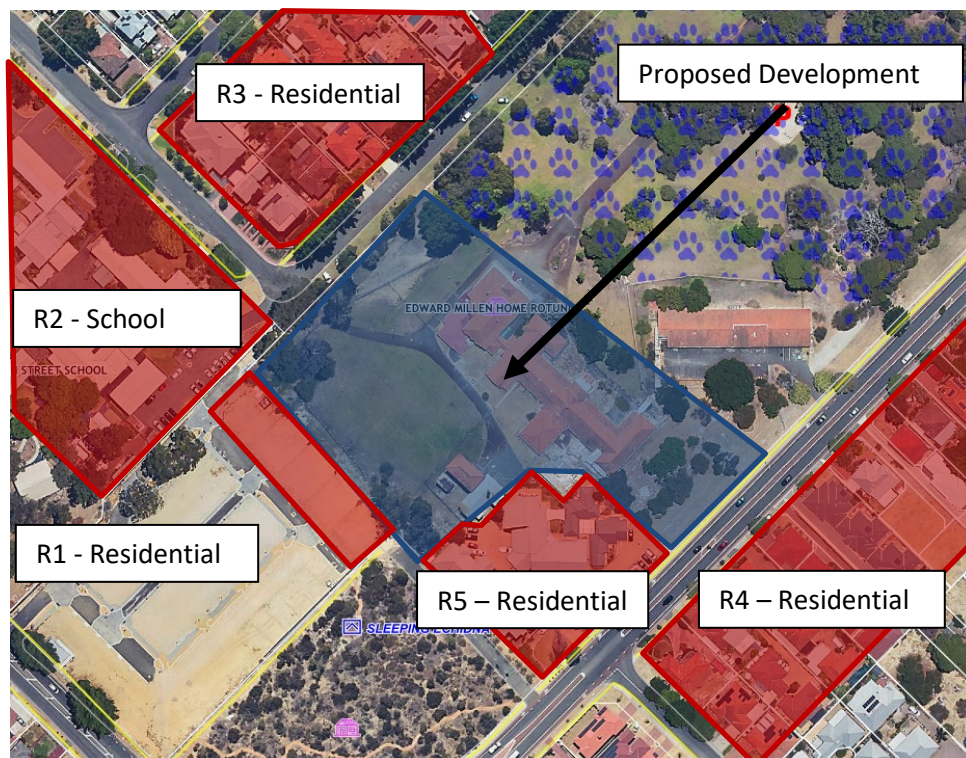


FIGURE 3.1 – NEIGHBOURING LOTS

For the neighbouring residences, the influencing factor has been determined to be +8 dB based on the following:

R1, R4 and R5		
Major Road within 450m –	Berwick Street	+2 dB
Minor Road within 100m	Hill View Terrace	+2 dB
Total		+4 dB

R2 and R3		
Major Road within 450m –	Berwick Street	+2 dB
Total		+2 dB

Thus, the assigned noise levels would be as listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		LA10	LA1	LAm _{ax}
R1, R4 and R5	0700 - 1900 hours Monday to Saturday (Day)	49	59	69
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	44	54	69
	1900 - 2200 hours all days (Evening)	44	54	59
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	39	49	59
R2 and R3	0700 - 1900 hours Monday to Saturday (Day)	47	57	67
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	42	52	67
	1900 - 2200 hours all days (Evening)	42	52	57
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	37	47	57

Note: LA10 is the noise level exceeded for 10% of the time.
 LA1 is the noise level exceeded for 1% of the time.
 LAm_{ax} is the maximum noise level.

Note R1 is currently undeveloped but treated as Residential due to Town of Victoria Park LDP 3 indicating its approval for residential development.

4. PROPOSAL

From information supplied, we understand that the refurbished facility would operate throughout the day until 11-12PM, 7 Days a week, hence the critical period for emissions would be the “Night” period.

5. MODELLING

To assess the noise received at the neighbouring premises from the proposed development, noise modelling was undertaken using the noise modelling program SoundPlan.

Calculations were carried out using the DWER’s weather conditions, which relate to worst case noise propagation, as stated in the Department of Environment Regulation “Draft Guidance on Environmental Noise for Prescribed Premises”. These conditions include winds blowing from sources to the receiver(s).

Calculations were based on the sound power levels used in the calculations are listed in Table 5.1, as well as plans provided by the client.

TABLE 5.1 – SOUND POWER LEVELS

Item	Sound Power Level, dB(A)
Crowd Noise (Beer Garden)	66 per sqm
Car Moving in Car Park	79
Car Starting	85
Door Closing	87
Delivery Truck	85
Air conditioning condensing Unit	71
Kitchen Exhaust	74
Small scale live music (acoustic style)	75

6. ASSESSMENT

The tables below show the assessment of noise emissions of concern from the operation.

The façade construction for the buildings will need to be ascertained as part of the design development phase of the project to ensure that noise from inside the building will meet the Regulations.

The resultant noise levels at the neighbouring residence from patron noise (beer garden, restaurant, community function and community market) and the mechanical services are tabulated in Table 6.1.

It has also been assumed than any centralised AV indoor or outdoor music associated with the venue would be played at background levels, ie lower than the noise of the patrons and not be audible otherwise. However, an allocation and assessment has been made for small scale live music, such as guitar with a solo singer, outside in the beer garden/terrace/courtyard areas, noting that any larger music operation such as a rock band or similar would require a specific event application.

From previous measurements, noise emissions from patrons does not contain any annoying characteristics. Noise emissions from the mechanical services could be tonal and a +5 dB(A) penalty would be applicable and music would be classified as music and a +10 dB(A) penalty would be applicable, with these adjustments shown in Table 6.1. Noise emissions from patrons, the mechanical services and music needs to comply with the assigned L_{A10} noise levels.

It is noted that waste collection has not been assessed as the proposed waste collection hours of between 10:00AM to 2:00PM would lead to an exemption of noise under Regulation 14.

TABLE 6.1 - ACOUSTIC MODELLING RESULTS FOR L_{A10} CRITERIA

Neighbouring Premises	Calculated Noise Level (dB(A))			
	Restaurant/Brewery/ Community Function	Community Market	Mechanical Plant	Music
R1 South West Residential	29	33	26 (31)	26 [36]
R2 School	26	33	26 (31)	18 [28]
R3 West Residential	19	42	29 (34)	19 [29]
R4 East Residential	33	24	34 (39)	27 [37]
R5 South East Residential	30	13	29 (34)	18 [28]

() Includes +5 dB(A) penalty for tonality; [] includes +10 dB(A) penalty for Music

With regards to noise associated with cars within the parking area, resultant noise levels are tabulated in Tables 6.2 and 6.3. It is noted that noise emissions from a moving car being an L_{A1} noise level, with noise emissions from cars starting and doors closing being an L_{Amax} noise level.

Based on the definitions of tonality, noise emissions from car movements and car starts, being an L_{A1} and L_{Amax} respectively, being present for less than 10% of the time, would not be considered tonal. Thus, no penalties would be applicable, and the assessment would be as listed in Table 6.2 (Car Moving) and Table 6.3 (Car Starting). However, noise emissions from car doors closing could be impulsive, hence the +10dB penalty has been included in the assessment.

**TABLE 6.2 - ACOUSTIC MODELLING RESULTS L_{A1} CRITERIA
CAR MOVEMENTS AND DELIVERIES**

Neighbouring Premises	Calculated Noise Level (dB(A))	
	Car Movements	Deliveries
R1 South West Residential	15	17
R2 School	22	23
R3 West Residential	24	12
R4 East Residential	45	51
R5 South East Residential	41	42

**TABLE 6.3 - ACOUSTIC MODELLING RESULTS L_{Amax} CRITERIA
CAR STARTING / DOOR CLOSING**

Neighbouring Premises	Calculated Noise Level (dB(A))	
	Car Starting	Door Closing
R1 South West Residential	12	14 [24]
R2 School	26	27 [37]
R3 West Residential	28	29 [39]
R4 East Residential	44	48 [58]
R5 South East Residential	47	48 [58]

[] Includes +10 dB(A) penalty for impulsiveness.

Tables 6.4 to 6.11 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise with a cumulative L_{A10} emission (including the child care centre assessed in 31550-2-23264 summarised in Table 6.12.

**TABLE 6.4 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS
RESTAURANT/BREWERY (NIGHT PERIOD)**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 South West Residential	29	39	Complies
R2 School	26	37	Complies
R3 West Residential	19	37	Complies
R4 East Residential	33	39	Complies
R5 South East Residential	30	39	Complies

**TABLE 6.5 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS
COMMUNITY MARKET (EVENING, & SUNDAY/PUBLIC HOLIDAY PERIOD)**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 South West Residential	33	44	Complies
R2 School	33	42	Complies
R3 West Residential	42	42	Complies
R4 East Residential	24	44	Complies
R5 South East Residential	13	44	Complies

TABLE 6.6 – ASSESSMENT OF L_{A10} NIGHT PERIOD NOISE LEVEL EMISSIONS

AIR CONDITIONING

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 South West Residential	31	39	Complies
R2 School	31	37	Complies
R3 West Residential	34	37	Complies
R4 East Residential	39	39	Complies
R5 South East Residential	34	39	Complies

TABLE 6.7 – ASSESSMENT OF L_{A10} NIGHT PERIOD NOISE LEVEL EMISSIONS

MUSIC

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 South West Residential	36	39	Complies
R2 School	28	37	Complies
R3 West Residential	29	37	Complies
R4 East Residential	37	39	Complies
R5 South East Residential	28	39	Complies

TABLE 6.8 – ASSESSMENT OF L_{A1} NIGHT PERIOD NOISE LEVEL EMISSIONS

CAR MOVEMENTS

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 South West Residential	15	49	Complies
R2 School	22	47	Complies
R3 West Residential	24	47	Complies
R4 East Residential	45	49	Complies
R5 South East Residential	41	49	Complies

TABLE 6.9 – ASSESSMENT OF L_{Amax} NIGHT PERIOD NOISE LEVEL EMISSIONS

CAR STARTING

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 South West Residential	12	59	Complies
R2 School	26	57	Complies
R3 West Residential	28	59	Complies
R4 East Residential	44	59	Complies
R5 South East Residential	47	59	Complies

TABLE 6.10 – ASSESSMENT OF L_{Amax} NIGHT PERIOD NOISE LEVEL EMISSIONS

CAR DOOR

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 South West Residential	24	59	Complies
R2 School	37	57	Complies
R3 West Residential	39	59	Complies
R4 East Residential	58	59	Complies
R5 South East Residential	58	59	Complies

**TABLE 6.11 – ASSESSMENT OF LA1 DAY PERIOD NOISE LEVEL EMISSIONS
 DELIVERIES**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 South West Residential	17	59	Complies
R2 School	23	57	Complies
R3 West Residential	12	57	Complies
R4 East Residential	51	59	Complies
R5 South East Residential	42	59	Complies

**TABLE 6.12 – ASSESSMENT OF LA10 DAY PERIOD NOISE LEVEL EMISSIONS
 CUMULATIVE**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
R1 South West Residential	48	49	Complies
R2 School	42	47	Complies
R3 West Residential	45	47	Complies
R4 East Residential	40	49	Complies
R5 South East Residential	37	49	Complies

7. CONCLUSION

Noise received at the neighbouring residences from the patron noise throughout the premises would comply with the requirements of the *Environmental Protections (Noise) Regulations 1997*.

Noise received at the neighbouring residences from the community market noise would comply with the requirements of the *Environmental Protections (Noise) Regulations 1997*. Note, that is possible for some noise emissions to be present during setup (before 7AM, or 9AM on Sunday/Public Holiday), as well as with other non-crowd related activities such as bands, food trucks, etc. It is recommended that if the community market is to be a semi/permanent fixture a noise management plan for setup, as well as operations be developed once details are finalised.

Noise from the mechanical services has also been assessed to comply with the relevant criteria with barriers at least 1m above source height. However, as the design of the mechanical services has not been undertaken at this stage of the project, it is recommended that the mechanical services design be reviewed for compliance with the Regulatory requirements.

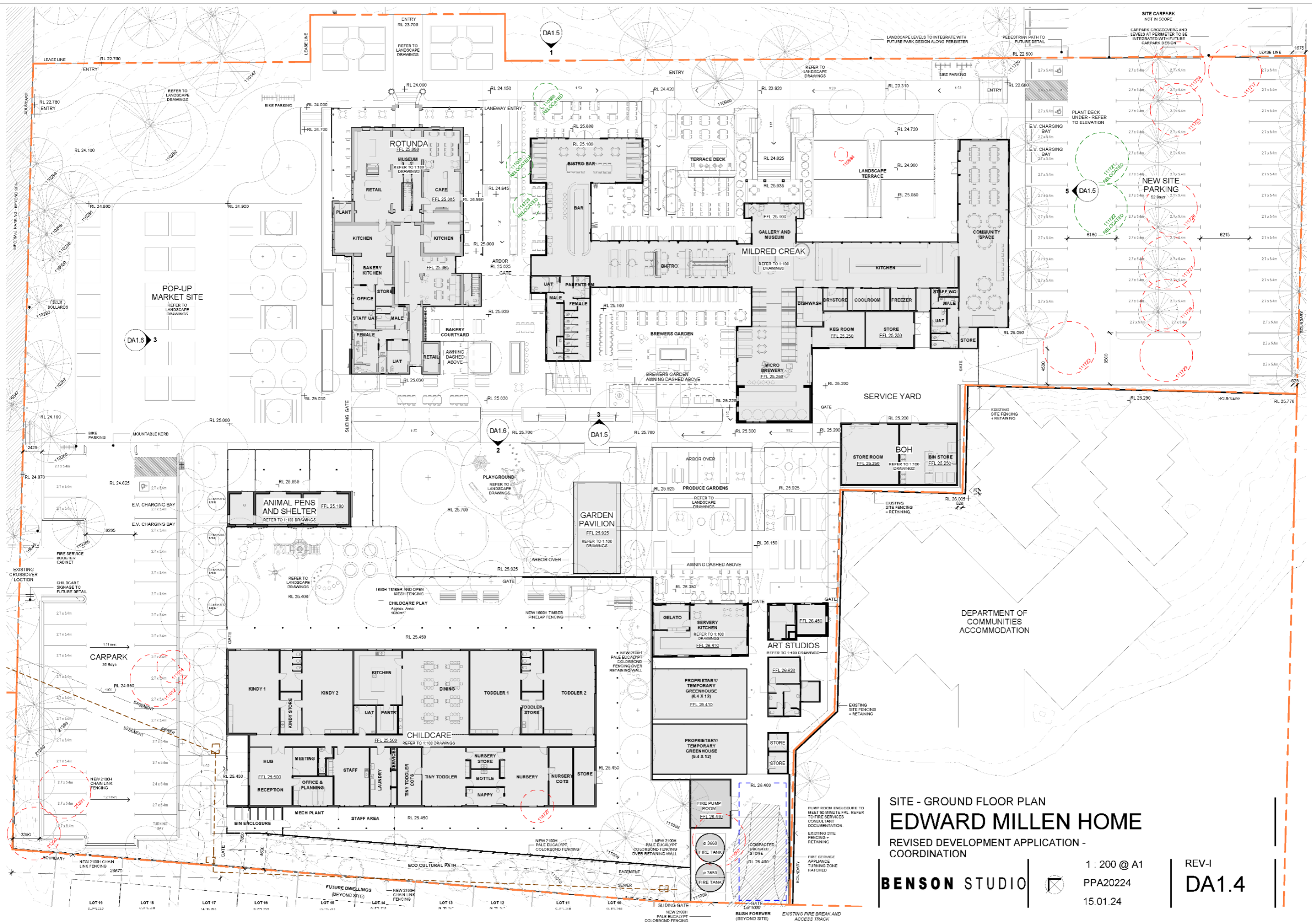
Noise associated with delivery of goods to the loading dock has been assessed to comply with the requirements of the *Environmental Protections (Noise) Regulations 1997* - during the day period - and deliveries should be restricted as of such.

It is noted that noise associated with cars movements and cars starting are exempt from complying with the Regulations. However, noise emissions from car doors is not strictly exempt from the Regulations. Noise received at the existing neighbouring residences from these noise sources would comply with the Regulatory requirements, at all times.

Thus, noise emissions from the proposed development, would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for the proposed hours of operation.

APPENDIX A

PLANS



SITE - GROUND FLOOR PLAN
EDWARD MILLEN HOME
 REVISED DEVELOPMENT APPLICATION -
 COORDINATION

BENSON STUDIO

1: 200 @ A1
 PPA20224
 15.01.24

REV-I
DA1.4