



MEMORANDUM

DATE:	3 August 2022	RWDI REFERENCE #: 2204455
TO:	Matt Burrow, Neoscape	EMAIL: mburrow@neoscape.com.au
	CC: Scott Walsh, Walsh Architects	EMAIL: scott@walsharchitects.com.au
FROM:	Rosa Lin, RWDI	Email: rosa.lin@rwdi.com
RE:	Notice of potential relaxation of noise emissions limits The Bathers 4 Collaroy St. and 1 Alexander St., Collaroy, NSW	

To the Stakeholders and the Project Team,

While reviewing our assessment report before finalisation, we have identified an error in the conditioned DA acoustic report (Report No. 20356 Version A dated 28 October 2020, Wilkinson Murray). *If corrected (via an S4.55), this translates to some reduction in the noise-emissions controls required for the project.*

The night-time project noise emissions limit of 35 dBA was derived from an incorrect Rating background noise level (RBL). The errors and applicable corrections are detailed in Table 1 on the next page.



Table 1: Noise emissions limits to residential receptors – conditioned but incorrect vs. correct values

Time of day	INCORRECT (DA Acoustic Report #20356 A)	CORRECT [Note 1]	INCORRECT (DA Acoustic Report #20356 A)	CORRECT	Based on standardized values – no change	INCORRECT (DA Acoustic Report #20356 A)	CORRECT
	Rating Background Level (RBL) dBA L ₉₀)	Rating Background Level (RBL) dBA L ₉₀)	EPA Intrusiveness & Warringah DCP (dBA L _{eq} , 15min) (RBL + 5)	EPA Intrusiveness & Warringah DCP (dBA L _{eq} , 15min) (RBL + 5)	EPA Project Amenity Noise Level (PANL) (dBA L _{eq} , 15min)	Project Emissions Limit (dBA L _{eq} , 15min) (Lower value of RBL+5 and PANL)	Project Emissions Limit (dBA L _{eq} , 15min) (Lower value of RBL+5 and PANL)
Day	48	50	53	55	58	53	55
Evening	44	47	49	52	48	48	48
Night	30	45	35	50	43	35	43

Note 1: These values are the correct measured background noise (L90) values, presented in the same DA acoustic report 20356A, on page 3, Table 3-1.

Appendix A provides excerpt pages from the conditioned DA Report 20356A, marked up with the errors and corrections in a step-by-step format.

If corrected, the night-time project noise emissions limit should be 43 dBA, an 8 dB relaxation from the current conditioned 35 dBA. This difference presents opportunities to reduce some of the silencer requirements. These opportunities are presented in Appendix B; the mechanical engineer and architect can provide more specific input on the potential cost savings.

A minor difference of 2 dB to the daytime noise limits is also applicable but will not result in material changes to mitigation measures. This is because the night-time limits are the controlling factors for noise control design.

A Section 4.55 Modifications Application will be required to apply the correct emissions noise limits to the project. The following operational noise related approval conditions will require amendment:

LEC No: 2021/48099

3. Noise of operations



Noise emissions must not exceed the "Summary dBA Leq,15min" values in table 5-3 of the noise report "20356A" by Wilkinson Murray Pty.

Reason: to protect amenity in-line with Protection of Environment Operations Act 1997, Noise Policy for Industry, and local DCP. (DACHPBOC6)

35. Detailed review of noise

A detailed review of noise emissions is to be conducted as per the recommendations in section 5.2 of the noise report "20356A" by Wilkinson Murray Pty. Total noise emissions must not exceed the "Summary dBA Leq,15min" values in table 5-3.

Reason: to protect amenity in-line with Protection of Environment Operations Act 1997, Noise Policy for Industry, and local DCP. (DACHPCPC6)

We ask that the Client, Stakeholders and relevant Design Team members review Appendix B to aid the decision of whether to lodge an s4.55 for relaxed project noise emissions criteria. If the Client decides to lodge the ad-hoc s4.55 application, RWDI can submit an amended DA acoustic report (or amended operational noise conditions, as appropriate) to support the application.

Please let us know any questions.

Yours truly,

A handwritten signature in black ink, appearing to read 'Rosa Lin'.

Rosa Lin, M.A.Sc.
Senior Acoustician
RWDI

Attachments:

- Attachment A: Step-by-step markup of proposed corrections to the DA Acoustic Report 20356A
- Attachment B: Comparative noise emissions controls required for the different night-time noise emissions criteria

3 EXISTING NOISE ENVIRONMENT

To quantify the existing noise environment, long-term ambient noise levels were monitored on site at the Alexander and Collaroy Street facades of the existing building, *Sydney Collaroy Beach house YHA*, which is to be demolished. The monitoring was conducted between 1 and 13 October 2020. The monitoring locations are illustrated in Figure 2-1. These locations were chosen as they are representative of the location of the northern and southern facades of the proposed development.

The results of noise measurements were processed in accordance with the procedures of the NSW EPA's *Noise Policy for Industry*. In addition, results of noise logging in the centre of the site conducted by Acoustic Logic for the Stage 1 DA are also presented. The results are detailed in Table 3-1.

Table 3-1 Measured Noise Levels at Site – dBA

Period	Alexander Street Facade		Collaroy Street Facade	
	L _{Aeq}	RBL	L _{Aeq}	RBL
Day	64	51	60	50
Evening	61	47	59	48
Night	58	45	56	45

Correct RBL values to be used in Table 5-3 on page 6 (use the lower of the two sets)

In addition, maximum traffic L_{Aeq (period)} noise levels have been calculated from noise logging data and are presented in Table 3-2 below.

Table 3-2 Representative Day/Night Traffic Noise – dBA

Monitoring Location	Day 15hr 7am-10pm	Night 9hr 10pm-7am
Alexander Street Facade	63	58
Collaroy Street Facade	60	56

Results of noise logging are shown in **Appendix A**.

5 ASSESSMENT OF NOISE EMISSIONS

Noise emissions from the site are expected to be primarily associated with the mechanical plant servicing the building including air-conditioning plant and carpark ventilation.

The nearest noise sensitive receivers surrounding the site are primarily residential buildings as detailed in Section 3.

Noise impacts from the proposed development at the surrounding residential receivers are expected to be minimal. Nevertheless, the relevant noise emission criteria applicable at the site and the potential impact at the surrounding receivers are discussed in the following sections.

5.1 Noise Emission Guidelines.

The following documents have been referenced in forming the noise emission guidelines for the development:

- Warringah Development Control Plan (DCP) 2010
- Environmental Protection Authority (EPA) *Noise Policy for Industry* (NPfI)

5.1.1 Warringah DCP (2010)

Part D.3 Noise - Applies to Land

This control applies to land to which Warringah Local Environmental Plan 2011 applies.

Objectives

- To encourage innovative design solutions to improve the urban environment.
- To ensure that noise emission does not unreasonably diminish the amenity of the area or result in noise intrusion which would be unreasonable for occupants, users or visitors.

Requirements

1. Noise from combined operation of all mechanical plant and equipment must not generate noise levels that exceed the ambient background noise by more than 5dB(A) when measured in accordance with the NSW Industrial Noise Policy at the receiving boundary of residential and other noise sensitive land uses.

See also NSW *Industrial Noise Policy* Appendices

2. Development near existing noise generating activities, such as industry and roads, is to be designed to mitigate the effect of that noise.
3. Waste collection and delivery vehicles are not to operate in the vicinity of residential uses between 10pm and 6am.
4. Where possible, locate noise sensitive rooms such as bedrooms and private open space away from noise sources. For example, locate kitchens or service areas closer to busy road frontages and bedrooms away from road frontages.

Relevant criteria

- Where possible, locate noise sources away from the bedroom areas of adjoining dwellings/properties to minimise impact.

5.1.2 EPA Noise Policy for Industry (NPI)

The EPA's *NPI* addresses noise guidelines for emissions from new developments at various receiving lands uses. The *NPI* nominates two criteria for assessment, "Amenity" and "Intrusiveness".

The intrusiveness criteria seek to limit the level of impact that a new noise source creates on an existing environment. The guideline nominates that noise from new industrial noise sources should not exceed the background noise level by more than 5dB.

The *NPI*, nominates recommended amenity noise levels (RANL) for various receiver types. The amenity criteria are designed to limit the combined ambient noise level from all industrial noise sources, existing *and* new.

To ensure the noise emission contribution from all industrial noise sources remain below the RANL (see Table 5-1 below) a *Project Amenity Noise Level* (PANL) applies for each new source of industrial noise by subtracting 5dBA from the RANL.

Table 5-1 Recommended Amenity Noise Levels (RANL)

Relevant criteria

Receiver Type	Noise Amenity Area	Time of Day ¹	L _{Aeq} dBA
Residential	Urban	Day	60
		Evening	50
		Night	45

Note: 1. Daytime 7.00am-6.00pm, Evening 6.00pm-10.00pm, Night 10.00pm-7.00am.

To standardise the noise emission levels to account for the effect of short-term noise events that may skew the noise levels measured over a 15-minute period, the *NPI* nominates that an additional 3dBA should be added to the amenity L_{Aeq, period} noise levels listed above.

In summary, after applying all changes to noise emission levels discussed above the PANL should be calculated as below:

$$PANL = RANL - 5dBA + 3dBA$$

Therefore, the project amenity noise levels applicable at the site is as below.

Table 5-2 Project Amenity Noise Level (PANL)

Relevant criteria

Receiver Type	Noise Amenity Area	Time of Day ¹	PANL L _{Aeq} dBA
Residential	Urban	Day	58
		Evening	48
		Night	43

Note: 1. Daytime 7.00am-6.00pm, Evening 6.00pm-10.00pm, Night 10.00pm-7.00am.

The project amenity noise levels listed above should be utilised when assessing noise emissions from the site.

5.1.3 Summary of Noise Emission Criteria

A summary of the noise emission criteria based on all applicable noise emission guidelines detailed above is presented in Table 5-3.

Table 5-3 Summary of Noise Emission Guidelines

Receiver Type	Time of Day ¹	RBL (dBA L ₉₀)	EPA Intrusiveness & Warringah DCP dBA[L _{eq,15min}]	EPA Project Amenity Noise Level (PANL) dBA[L _{eq, 15min}]	Summary dBA L _{eq,15min}
Residential	Day	48	53 / 55	58	53 / 55
	Evening	44	49 / 52	48	48
	Night	30	35 / 50	43	35 / 43

Note 1: Daytime 7.00am–6.00pm; Evening 6.00pm–10.00pm; Night 10.00pm–7.00am

Final criteria table

Step 1:
Correct values from Table 3-1 page 3:
Day: 50
Evening: 47
Night: 45

Step 3: Lower value of Intrusiveness vs. PANL as the applicable project emissions limit to neighbouring residential receptors

5.2 Recommended Constructions – Noise Emissions

5.2.1 Mechanical Plant

Step 2:
Intrusiveness = RBL+5;
RBL based on correct values from Table 3-1 page 3

No details of specific mechanical plant have been determined at this early stage of the project. Likely sources of noise from the proposed development will be the mechanical plant associated with building air-conditioning and ventilation located on the roof, and any plant associated with the proposed basement carpark.

A preliminary review of noise emissions from likely rooftop mechanical plant has indicated that conventional acoustic treatments (acoustic louvres, design of building setbacks and barriers) will be enough to achieve compliance with the noise emission guideline nominated above.

A detailed review of noise from mechanical plant servicing the development should be conducted in the detailed design phase of the project once specific mechanical system details are selected by the mechanical contractor.

APPENDIX B: COMPARATIVE CHART FOR NOISE CONTROLS TO MEET DIFFERENT NIGHT-TIME EMISSIONS TARGETS

This table presents noise controls for fans to meet the currently conditioned **35 dBA** night-time emissions limit at offsite residential receptors; the last column contains comments regarding relaxations based on the potential, corrected **43 dBA** night-time emissions limit.

NOISE CONTROLS for FANS TO MEET 35 dBA EMISSIONS LIMIT (NIGHT-TIME) (Conditioned via DA Report 20356A)														Variance based on potential 43 dBA EMISSIONS LIMIT	
Equipment & equipment opening to be treated	Example/proxy unit by Fantech	Width increment (various sizes available)	Free Area	Length (mm)	Insertion Loss dB (in each octave band centre frequency)								Additional Requirements		
					63	125	250	500	1k	2k	4k	8k			
1a	Carpark exhaust fan outlet – Block D rooftop	RS15E	325	43%	1800	8	16	31	48	50	44	29	22	<ul style="list-style-type: none"> For all exposed ductwork for this fan on the Block D rooftop: <ul style="list-style-type: none"> Internal duct lining: 50 mm Supertel or similar Duct wall and fan casing gauge: min. 0.9 bmt; heavier gauge preferred Wrap in duct lagging (duct wrap): 50 mm insulated mass loaded vinyl (min. 11 kg/m²), such as Pyrotek Soundlag 4525c; or, shield with barrier or enclosure with material of same or heavier mass. In addition to the two attenuators – <i>both to be installed on the inlet side of the fan</i> – line the entire supply air ductwork internally with 50 mm Supertel or equivalent 32 kg/m³ glasswool insulation, including the bends. The mechanical room must be treated with 50 mm 32 kg/m³ glasswool or rockwool insulation over the entire ceiling. 	No change – worst case is noise on project itself.
1b	Rooftop duct to carpark exhaust fan – Block D rooftop	-	-	-	-	-	-	-	-	-	-	-	-	<ul style="list-style-type: none"> In addition to the two attenuators – <i>both to be installed on the inlet side of the fan</i> – line the entire supply air ductwork internally with 50 mm Supertel or equivalent 32 kg/m³ glasswool insulation, including the bends. The mechanical room must be treated with 50 mm 32 kg/m³ glasswool or rockwool insulation over the entire ceiling. 	No change – worst case is noise on project itself.
2a	Carpark supply CPSF-B.1 inlet affecting Block B Ground level to north	NSA05E	250	20%	2100	14	29	48	50	50	50	48	41	<ul style="list-style-type: none"> In addition to the two attenuators – <i>both to be installed on the inlet side of the fan</i> – line the entire supply air ductwork internally with 50 mm Supertel or equivalent 32 kg/m³ glasswool insulation, including the bends. The mechanical room must be treated with 50 mm 32 kg/m³ glasswool or rockwool insulation over the entire ceiling. 	Only one silencer required. E.g., Fantech NSA05D instead of NSA05E+NSA22A
2b	Carpark supply CPSF-B.1 inlet affecting Block B Ground level to north	NSA22A	425	53%	600	5	8	10	17	18	16	13	14	<ul style="list-style-type: none"> Based on <i>quieter fan data</i> (85 dBA Lw or 65 dBA Lp at 3m) from the 9 June 2022 mechanical package. Provide 50 mm Supertel or equivalent 32 kg/m³ glasswool insulation, including the bends to the supply side between the fan and the first two discharge openings. 	Second silencer (item 2b) not required
3a	Carpark supply CPSF-G.1 inlet affecting Block A Ground level to north side	NSA10A	300	33%	600	7	10	15	27	31	29	24	20	<ul style="list-style-type: none"> Based on <i>quieter fan data</i> (85 dBA Lw or 65 dBA Lp at 3m) from the 9 June 2022 mechanical package. Provide 50 mm Supertel or equivalent 32 kg/m³ glasswool insulation, including the bends to the supply side between the fan and the first two discharge openings. 	No change
4	Carpark supply CPSF-G.2 inlet affecting Block C Ground level to South	NSA05A	250	20%	600	9	12	23	39	41	40	35	27	<ul style="list-style-type: none"> For all exposed ductwork for these rooftop fans: <ul style="list-style-type: none"> Internal duct lining: 50 mm Supertel or similar Duct wall and fan casing gauge: min. 0.9 bmt; heavier gauge preferred 	No change
5	Supply Fan SAF-R.1 Block B rooftop	NSA12A	325	38%	600	6	9	14	24	28	25	21	18	<ul style="list-style-type: none"> For all exposed ductwork for these rooftop fans: <ul style="list-style-type: none"> Internal duct lining: 50 mm Supertel or similar Duct wall and fan casing gauge: min. 0.9 bmt; heavier gauge preferred 	No change
6	Garbage Exhaust Fan GEF-R.1	NSA12A	325	38%	600	6	9	14	24	28	25	21	18	<ul style="list-style-type: none"> Attenuators for EAF.G.2 and EAF.G.3 are only required if these fans will be operating at night-time (assuming lab rating of 49 dB(A) Lp at 3m, JETLINE-200ECO from 9 June 2022 mechanical package.) 	Reduced silencer, for example, Fantech NSA25A instead of NSA12A
7	Garbage Exhaust Fan GEF-R.2	NSA22A	425	53%	600	5	8	10	17	18	16	13	14	<ul style="list-style-type: none"> Attenuators for EAF.G.2 and EAF.G.3 are only required if these fans will be operating at night-time (assuming lab rating of 49 dB(A) Lp at 3m, JETLINE-200ECO from 9 June 2022 mechanical package.) 	Reduced silencer, for example, Fantech NSA25A instead of NSA12A

8	Exhaust Fans EAF-G.2 and G.3	NSA12A	325	38%	600	6	9	14	24	28	25	21	18	Attenuator only required if this fan will be operating at night-time (assuming lab rating of 49 dB(A) Lp at 3m, JETLINE-200ECO from 9 June 2022 mechanical package.)	Reduce to acoustic louvre from silencer, for example Fantech ASB
9	Exhaust Fan EAF-G.1	NSA22A	425	53%	600	5	8	10	17	18	16	13	14	Line supply ductwork within 5 m of the fan with 50 mm internal glasswool insulation 32 kg/m ³ Recommend the fire pump fans room be treated with 50 mm 32 kg/m ³ glasswool or rockwool insulation over the entire ceiling.	Reduce to acoustic louvre from silencer, for example Fantech ASB
10	Fire Pump Supply Fan FPSF-B.1	-	-	-	-	-	-	-	-	-	-	-	-	Line exhaust ductwork within 5 m of the fan with 50 mm internal glasswool insulation 32 kg/m ³ Recommend the fire pump fans room be treated with 50 mm 32 kg/m ³ glasswool or rockwool insulation over the entire ceiling.	No change
11	Fire Pump Exhaust Fan FPEF-B.1	-	-	-	-	-	-	-	-	-	-	-	-	Line exhaust ductwork within 5 m of the fan with 50 mm internal glasswool insulation 32 kg/m ³ Recommend the fire pump fans room be treated with 50 mm 32 kg/m ³ glasswool or rockwool insulation over the entire ceiling.	No change

CUs shall still follow recommendations in the report based on current design (no changes). Specifically, the CUs at L3 balcony and at ground level will require night-time set back (7~10dB(A) quieter than at full capacity).