



Benbow
ENVIRONMENTAL

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Ref: 151121-04_Let_Rev2

27 August 2018

Alison Davidson

Planning Ingenuity

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MIRANDA NSW 2228

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Dear Alison,

RE: Noise Specific Statement for 7 Long Street, Smithfield

Benbow Environmental presents the following noise specific statement towards a Section 4.55 application for the facility at 7 Long Street, Smithfield. The Section 4.55 application seeks to modify a condition of the previous consent, so that truck movements may occur 24/7. Please find details below.

1. EXISTING CONDITIONS OF CONSENT

Condition 64 of the Notice of Determination Consent No. 2015/529/1 issued by Cumberland Council on 4 October 2016 states that:

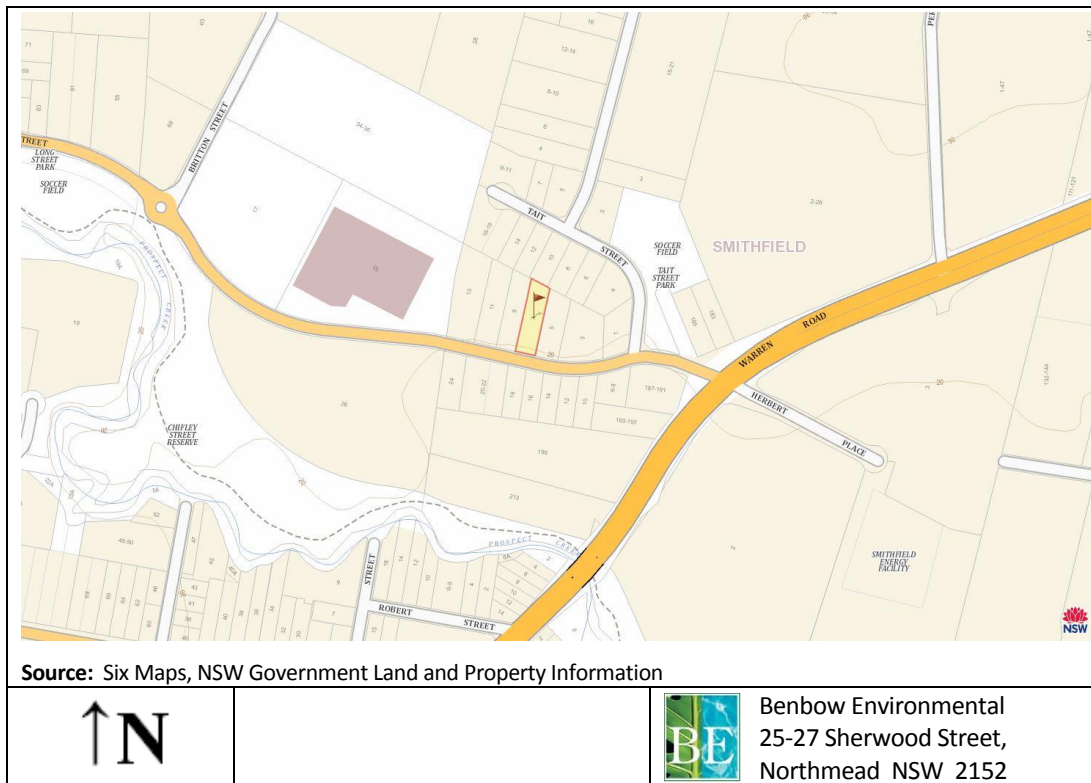
Truck movements to and from the site associated with the operation of the sludge dewatering plant shall be restricted to between the following hours:

- *Monday to Saturday: 7:00am to 6:00pm*

The client requests amending condition 64 to facilitate approval for truck movements associated with the operation of the plant to occur 24 hours per day 7 days per week. This noise specific statement provides supporting statements relating to the potential impact of operational noise from the site and road traffic noise on nearby receivers.

2. THE SITE

The site is located to the west of Cumberland Highway at 7 Long Street, Smithfield also known as Lot 16 in Deposited Plan 238072. Vehicles travelling to/from the site will travel along Long Street. From the Transport and Urban Planning report 15203L2, movements along Long Street will be 50% from the Cumberland Highway end, and 50% from the Gipps Road end. Long Street does not have any residential receptors located along it, while Cumberland Highway and Gipps Road are arterial roads.



3. TRUCK ACTIVITIES

The site has approval to operate a sludge dewatering plant. Sludge is removed from a construction site and transported in trucks using sealed bins or in bulk tankers.

The EIS stated expected traffic movements related to the site activities would generate approximately 1-2 truck movements per hour. This will not change. The vehicles travelling to the site are either vacuum excavation trucks or long rigid vehicles which are able to manoeuvre within the site and exit in a forward direction. The majority of the time, the plant would operate during the normal business hours of 7:00am to 6:00pm.

There are some instances when the site will need to open outside these hours, for example, for road projects that are undertaken during the night to avoid traffic disruption. To allow these projects to bring their sludge to the site, DEMAST will require approval for trucks to access the site 24/7.

It is expected that the occasional night projects would result in an average of two (2) trucks per hour entering the site. It is also possible on the very rare occasion that the site would receive up to four (4) trucks per hour and then no trucks the following hour.

4. OPERATIONAL NOISE AND ROAD TRAFFIC NOISE

Any noise from trucks on site, or operational equipment on site should be assessed against the Industrial Noise Policy/Noise Policy for Industry criteria. Noise from trucks off site on public roads are assessed against the Road Noise Policy.

In this report, operational noise is addressed in section 5, and road traffic noise is addressed in section 5.4. Conclusions are given in section 6.

5. SITE NOISE CRITERIA

Truck movements and equipment on site are recommended to comply with the site criteria set out in the EIS. The site criteria sets out two noise criteria at the nearest receptors, an $L_{Aeq,15min}$ criteria for the time-averaged sound pressure level over a 15 minute period; and an L_{Amax} criteria for the maximum sound pressure level associated with an event.

Operational noise criteria presented in 151121_EIS_Rev3 are reproduced in Table 1 below. R1 is 3 Low Street Smithfield, R2 is 19 Rhondda Street Smithfield, R3 is 24 Iris Street Guildford West and R4 is 4 Vale Street Woodpark.

Table 1: Project Specific Noise Levels Associated with Operational Activities, dB(A)

Receptor	Period	PSNL	Sleep Disturbance L_{max}
R1, R2, R3 and R4	Day	$L_{eq,15\text{ minute}}$ 53	-
	Evening	$L_{eq,evening}$ 50	-
	Night	$L_{eq,15\text{ minute}}$ 45	63

5.1 NOISE MODELLING

Predictive Noise Modelling was carried out using the Concawe algorithm within SoundPLAN v7.3. The noise sources as well as the topographical features of the subject area, surrounding buildings and receiver locations, were all considered in the noise model to predict the noise emissions of the proposed development at the nearest potentially affected residences.

5.1.1 Assumptions made for noise modelling

It should be noted that the relevant assessment period for operational noise emissions has been considered to be 15 minutes. Therefore noise source durations detailed in the following assumptions should be considered per 15 minute period in view of potential noise impacts under worst-case scenarios. Each assessment-specific assumption has been detailed below:

- Off-site topographical information was obtained from the Department of Lands, Six Maps, with contour maps having intervals of 10 m;
- Off-site structures such as the primary industrial and commercial building surrounding the Project Site have been included in the model;
- All receptors were modelled at 1.5 m above ground level;
- All ground areas have been modelled considering different ground factors ranging from 0 (hard) to 1 (soft);

- On site trucks have been modelled considering two moving point sources at heights of 1.5 m and 3.6 m above ground level in order to account for the engine (1.5 m) and the exhaust outlet (3.6 m). An on-site speed of 10 km/h has been considered;
- Sludge dumping operation has been modelled as a point source and has been considered to last for 30 seconds;
- Air compressors and internal noise associated with sludge filtration have been modelled as point sources and will be operational for 100% of the assessment period;
- The construction materials utilised in the industrial building structure is made of Steel sheets and bricks. The roller shutter doors located on the northern side of the structure have been modelled in the closed position during the sludge trucks unloading process and the sludge filtration process;

5.1.2 Operational Noise Sources

The sound power levels for the identified noise sources associated with the operational activities have been utilised from the extensive database of measurements undertaken by Acoustic Engineers at Benbow Environmental. Approximate A-weighted third octave band centre frequency sound power levels have been used and are presented in Table 2.

Table 2: A-weighted Sound Power Levels Associated with Operational Activities, dB(A)

Noise Source	Overall	Third Octave Band Centre Frequency (Hz)									
		25	31	40	50	63	80	100	125	160	200
		250	315	400	500	630	800	1k	1.25k	1.6k	2k
		2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
Sludge Tipping											
Sucker truck Maneuvering at 10km/hr	98	55	61	70	61	65	68	69	73	73	75
		76	74	77	83	83	83	87	88	86	85
		84	81	79	76	75	69	64	62	56	54
Sludge Dumping	80	30	32	34	42	45	49	59	61	60	60
		63	62	63	66	69	69	70	72	72	69
		70	68	64	64	63	58	54	51	48	44
Internal sources											
Bobcat	92	36	59	61	51	65	66	77	68	60	62
		66	69	74	81	78	78	81	85	84	84
		81	75	71	71	65	63	56	51	45	42

In addition, sleep disturbance has been assessed at all residential receptors considering truck air brake release. A noise level 116 dB(A) L_{max} has been considered for the air brake release in the calculations.

5.2 PREDICTED SITE NOISE LEVELS

One (1) operational scenario considering all operations (truck manoeuvring, sludge dumping and sludge filtration) was established for the modelling of operational noise generation.

As seen in Table 3, operations associated with the L_{Aeq} noise descriptor are predicted to comply with the criteria at all the considered residential receptors. This includes on site truck movements during the night-time period.

Table 3: Noise Modelling Results Associated with Operational Activities for L_{eq} dB(A)

Receiver	Condition A	Condition B	Condition C	PSNL		
	(L_{eq} , 15 minute)	(L_{eq} , 15 minute)	(L_{eq} , 15 minute)	Day (L_{eq} , 15 minute)	Evening (L_{eq} , 15 minute)	Night (L_{eq} , 15 minute)
R1	<25	<25	<25	53	50	45
R2	<25	<25	<25	53	50	45
R3	<25	<25	<25	53	50	45
R4	<25	<25	<25	53	50	45

In Table 4, the maximum noise levels from a night-time air brake release are assessed against the sleep disturbance criteria. The closest receiver is 370 m away from the site with significant building shielding between the source and the receiver. It is shown that predicted maximum noise levels at the receivers during an air brake release are well below the sleep disturbance criteria.

Table 4: Noise Modelling Results Associated with Operational Activities for L_{max} dB(A) – Sleep disturbance

Receiver	Condition A	Condition B	Condition C	PSNL
	L_{max} , dB(A)	L_{max} , dB(A)	L_{max} , dB(A)	Night (L_{eq} , 15 minute)
R1	<40	<40	<40	63
R2	<40	<40	<40	63
R3	<40	<40	<40	63
R4	<40	<40	<40	63

5.3 FURTHER COMMENTS

It is noted that if criteria were to be derived under the current Noise Policy for Industry, the $L_{Aeq,15\text{ minute}}$ criteria would be 53 dB(A) (Day), 48 dB(A) (Evening) and 43 dB(A) (Night), and the L_{Amax} criteria would be 52 dB(A). The predicted operations would comply with the criteria derived under the Noise Policy for Industry.

General Terms of Approval (GTA) from the NSW Environmental Protection Authority were issued with the development consent. Pages 1 and 2 of the GTA considers traffic and night time operation:

- 5) *Due to the intention of the applicant to operate 24 hours per day, the EPA encourages investigation into measures to reduce the impact of reverse tones on on-site plant, in order to reduce the effects of sleep disturbance on the neighbouring community.*

The predicted operational activities and truck movements on site in the noise assessment conducted as part of the EIS 151121_EIS_Rev3 complied with the operational L_{Aeq} 15 minute criteria and L_{Amax} criteria by a significant margin. An air-brake release represents a worst case scenario over reversing tones, and compliance with the relevant criteria was shown for an air brake release.

5.4 ROAD TRAFFIC NOISE

To analyse the noise impacts of off-site truck movements at the nearest receivers, the relevant standard is the NSW Road Noise Policy (RNP). The RNP was developed by the NSW EPA primarily to identify the strategies that address the issue of road traffic noise from:

- Existing roads;
- New road projects;
- Road redevelopment projects; and
- New traffic-generating developments.

5.4.1 Road Category

As mentioned in section 2, truck movements are predicted to be along Long Street, then 50% along the Cumberland Highway, and 50% along Gipps Road. There are no residential receptors along Long Street, whilst Gipps Road and the Cumberland Highway have residential receptors fronting them. Gipps Road and the Cumberland Highway are Arterial Roads. Gipps Road is a classified state arterial road, Gazetted Road Number 646 in the NSW Schedule of Classified Roads and unclassified Regional Roads. The Cumberland Highway is a Classified Highway, Gazetted Road Number 13 in the NSW Schedule of Classified Roads and unclassified Regional Roads. Based on the RNP road classification description, the Cumberland Highway and Gipps Road would be classified as 'Arterial' Roads.

5.4.2 Road Noise Assessment Criteria

Section 2.3 of the RNP outlines the criteria for assessing road traffic noise. The relevant sections of Table 3 of the RNP to Gipps Road and the Cumberland Highway are shown in Table 5.

Table 5: Road Traffic Noise Assessment Criteria For Residential Land Uses, dB(A)

Road Category	Type of Project/Land Use	Assessment Criteria, dB(A)	
		Day (7 am-10 pm)	Night (10 pm-7 am)
Freeway/arterial/sub-arterial roads and transit ways	3. Existing residences affected by additional traffic on existing freeways/ arterial/sub-arterial roads generated by land use developments	L_{Aeq} (15 hour) 60 dB (external)	L_{Aeq} (9 hour) 55 dB (external)

* measured at 1 m from a building façade.

The noise level descriptor that has been adopted by the NSW RNP for use with the above criteria is the L_{Aeq} .

5.4.3 Relative Increase Criteria

In addition to the assessment criteria outlined above, any increase in the total traffic noise level at a location due to a proposed project or traffic-generating development, must be considered. Residences experiencing increases in total traffic noise levels above the relative criteria should also be considered for mitigation as described in Section 3.4 of the RNP. For road projects where the main subject road is a local road, the relative increase criterion does not apply.

Table 6 of the RNP outlines the relative increase criteria for residential land uses, with the details applicable to this project shown in Table 6.

Table 6: Relative Increase Criteria For Residential Land Uses, dB(A)

Road Category	Type of Project/Land Use	Total Traffic Noise Level Increase, dB(A)	
		Day (7 am-10 pm)	Night (10 pm-7 am)
Arterial roads	Land use development with potential to generate additional traffic on existing road	Existing traffic $L_{Aeq}(15 \text{ hour}) + 12 \text{ dB}$ (external)	Existing traffic $L_{Aeq}(9 \text{ hour}) + 12 \text{ dB}$ (external)

The assessment criteria provided in Table 5 and the relative increase criteria provided in Table 6 should both be considered when designing project specific noise levels. When existing traffic levels are below the criteria in Table 5, the lower of the relative increase criteria and the assessment criteria in Table 5 should be adopted. For example, if the assessment criteria is 60 dB(A) and the relative increase criteria is 42 dB(A), then a project specific noise level of 42 dB(A) should be adopted. Similarly, if the assessment criteria is 60 dB(A) and the relative increase criteria is 65 dB(A), a project specific noise level of 60 dB(A) should be adopted.

5.4.4 Exceedance of Criteria

If the criteria shown in both Table 5 and Table 6 cannot be achieved, justification should be provided that all feasible and reasonable mitigation measures have been applied.

For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.

5.4.5 Road Traffic Noise Assessment

5.4.5.1 Assumptions

The relevant assessment period for road traffic noise emissions is 15 and 9 hours for the day and night time. Each assessment-specific assumption has been detailed below:

- The 2015 Transport and Urban Planning report states that the facility will generate up to 22 truck trips per day, 2 truck trips per hour, with a trip being a movement to and from the site (44 total movements).

- A total of 32 day movements and 12 night movements trucks have been considered for the 15-hour day and 9-hour night time periods respectively in order to assess the worst case scenario. As per the 2015 Transport and Urban Planning report, movements are split 50% to Long Street and 50% to the Cumberland Highway. At either end of Long Street, movements are split evenly heading north/south on Gipps Road and north/south on the Cumberland Highway;
- Based on the 2018 RMS Traffic Volume Viewer data for Cumberland Highway (data taken approximately 300 m south of Long street intersection), the total daily traffic volume is 64,130 vehicles (northbound and southbound);
- Based on the 2016 RMS Traffic Volume Viewer data for Gipps Road (data taken approximately 280 m south of Long street intersection), the total daily traffic volume is 18,348 vehicles (northbound and southbound);
- Hourly data was used to split the existing traffic numbers into day and night periods, with existing heavy vehicle traffic given a conservative estimate of 10% of the total traffic on each road;
- Calculation of the road traffic noise contribution has been undertaken using the Calculation of Road Traffic Noise (CoRTN) algorithm within SoundPLAN v7.3. The following correction factors have been used within the CoRTN algorithm:
 - ▶ For Australian conditions (free field corrected), -0.7 dB;
 - ▶ L_{10} to L_{eq} , -3.0 dB;
 - ▶ For low traffic flow, -30 dB with the traffic volumes therefore multiplied by 1000;
 - ▶ For Heavy Engines, -0.6 dB; and
 - ▶ For Heavy Exhausts, -8.6 dB.
- Vehicles are assumed to travel at the posted speed of 50 km/h; and
- Noise levels are calculated at the most potentially impacted road traffic receivers. As there are no residential receivers along Long Street, receivers on Gipps Road and the Cumberland Highway have been considered. Receivers on Gipps road north and south of the Long Street intersection, and on Cumberland Highway, north and South of the Long Street intersection, have been considered. Receivers closest to the roads whilst being close to the Long Street intersection have been selected, with the terrain and distance from the façade of the property to the side of the road has been considered in the calculations;

5.4.5.2 Off-Site Road Traffic Predicted Noise Levels

The calculated noise levels to the nearest receiver associated with off-site road traffic are shown in Table 7.

Table 7: Predicted Noise Levels Associated with Road Traffic for L_{eq} , dB(A)

Receiver	Criteria		Existing Noise		Site Contribution		Cumulative Noise	
	$L_{eq,15hr}$	$L_{eq,9hr}$	$L_{eq,15hr}$	$L_{eq,9hr}$	$L_{eq,15hr}$	$L_{eq,9hr}$	$L_{eq,15hr}$	$L_{eq,9hr}$
2 Low St, Smithfield (Fronts Cumberland Highway, South of Long Street)	60	55	72.0	65.3	41.3	38.3	72.0	65.3
76 Betts Road, Merrylands West (Fronts Cumberland Highway, North of Long Street)	60	55	69.1	62.5	40.6	38.4	69.1	62.5
1 Alpha Road, Greystanes (Fronts Gipps Road, North of Long Street)	60	55	64.6	59.1	40.5	38.5	64.6	59.1
59 Hassall Street, Smithfield (Fronts Gipps Road, South of Long Street)	60	55	63.9	58.1	39.8	37.4	63.9	58.1

From Table 7, it can be seen that the predicted noise contribution associated with the Long Street site are well below the L_{Aeq} (15 hour) 60 dB(A) and L_{Aeq} (9 hour) 55 dB(A) criteria presented for the day and night periods. It can also be seen that the existing arterial roads also carry significant amounts of current traffic. For the proposed truck movements to impact at all on the existing noise levels experienced at receivers given the current high traffic levels, the predicted contribution from site movements would need to be within 10 dB of the existing levels. It can be seen from Table 7 that the predicted contribution is at least 20 dB below the existing noise levels, and up to 30 dB below the existing road traffic noise levels. Therefore, predicted truck movements from the Long Street site will have no impact at receivers during the day or night periods. The zero increase in road traffic noise is also well below the 2 dB increase guidelines outlined in section 3.4.1 of the Road Noise Policy.

Step 3 of Section 3.4.1 of the RNP identifies possible reasonable and feasible control measures when exceedances of either of the outlined criteria. As no exceedances or increases in road traffic noise are predicted, the proposed night time vehicle movements comply with the RNP.

6. CONCLUSION

The proposed night-time truck movements are predicted to readily comply with the operational site criteria as shown in Table 3 and Table 4, and the Road Noise Policy criteria as shown in Table 7. Approval for modification to condition 64 to enable proper function of the approved facility with night-time truck movements (24 hours) rather than restriction from 7:00am to 6:00pm (Monday to Friday) is recommended given the demonstrated compliance as detailed in this statement.

Please feel free to contact me at any time if you have further questions.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Phang', followed by a horizontal line.

Dr Peter Gangemi
Senior Acoustic Engineer