NEWCASTLE SAND

Newcastle Sand Environmental Monthly Report:

March 2026

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1. INTRODUCTION

This report has been prepared in accordance with the *Protection of the Environment Operations Act 1997* (POEO Act), Environment Protection Licence (EPL) 21264 and the reporting requirements of Development Consent SSD-6125 and associated management plans for the Cabbage Tree Road Sand Quarry. It provides a summary of environmental monitoring results and performance for the reporting month.

The monthly report includes noise, water and air monitoring undertaken and reported in accordance with:

- EPL 21264
- Development Consent SSD-6125
- NSW EPA's 2013 *Requirements for publishing pollution monitoring data*
- DPE's *Web-Based Reporting Guideline – State Significant Mining Developments (2023)*

A summary of the EPL licence details and Development Consent details for Cabbage Tree Road Sand Quarry are provided in **Table 1** and **Table 2** below. Tables throughout this report provide key monitoring information from the EPL and the Consent requirements, including:

- Location of monitoring.
- Pollutant.
- Unit of measurement.
- Monitoring frequency required.

Refer to NSW EPA publishing guidelines at https://www.epa.nsw.gov.au/licensing-and-regulation/licensing/environment-protection-licences/licensing-under-poeo-act-1997/publishing-and-providing-pollution-monitoring-data for details of licence reporting requirements.

Table 1 Licensee EPL Summary

Licence Details	
Licence Number	**21264**
Anniversary Date	31 July
Licence Review	2024
Licensee	Williamtown Sand Syndicate PTY LTD
Licensee Address	PO Box 186 Waratah NSW 2298
Premises	Cabbage Tree Road Sand Quarry, 398 Cabbage Tree Road WILLIAMTOWN 2318
Scheduled Activity	Crushing, grinding or separating. Extractive activities.
Fee Based Activity	Crushing, grinding or separating. Extractive activities.
Link to Licence (EPA)	**EPL 21264**

Table 2 Development Consent Summary

Development Consent Details	
Development	**Cabbage Tree Road Sand Quarry**
Consent Authority	The Independent Planning Commission NSW
Applicant	Williamtown Sand Syndicate
Applicant Number and Link to Consent	**SSD-6125**

Table 3 and **Table 4** below outline the Quarry hours of operation for quarrying, loading and dispatching limits.

Table 3 Hours of Operation – Quarry Operations

Hours of Operation
Quarrying Operations
7am – 5pm Mon – Fri
7am – 4pm Saturday
At no time on Sundays or public holidays

Table 4 Hours of Operation - Loading and Dispatching

Hours of Operation
Loading and Dispatching of laden trucks
6am – 6pm Monday to Friday
7am – 4pm Saturday
At no time on Sundays or public holidays

2. NOISE & VIBRATION MONITORING

Noise monitoring is undertaken quarterly in accordance with EPL 21264 (Condition M8.1) and Development Consent SSD-6125. Locations of the receivers surrounding the project area is provided within **Appendix 1.** Noise Monitoring Locations (NMP, 2019). As quarry works move to the front of the quarry in 2026, noise monitoring will occur at 4 monitoring sites for three rounds of sampling.

2.1 CRITERIA

Table 5 Noise EPL Monitoring Criteria

Receiver	Day LAeq(15min)	Shoulder LAeq(15min)	Shoulder LA Max(1min)
Any resident receiver	43	39	45

2.2 RESULTS

Noise monitoring is undertaken in accordance with the EPL which states in Condition M8.1 that noise monitoring is to occur quarterly. Where quarry noise is inaudible or below thresholds, compliance is considered achieved. **Table 6** and **Table 7** below outline the day and morning shoulder monitoring results for March. See **Appendix 2.** Noise Monitoring Report for the full noise monitoring report.

Table 6 March 2026 Monitoring Results

Date	Location	Time	dB(A), Leq	Criterion dB(A) Leq	Identified Noise Sources, LAeq
24	R14	7:01am	57	43	Traffic (56), birds and insects (48), **NS (36)**
25	R14	7:05am	49	43	Traffic (47), birds & insects (44), **NS (31)**
26	R14	7:05am	51	43	Traffic (49), birds & insects (47), **NS (37)**
24	R27	10:29am	78	43	Traffic (78), **NS (IA)**
25	R27	10:49am	68	43	Traffic (68), **NS (IA)**
26	R27	7:54am	69	43	Traffic (69), **NS (IA)**

Date	Location	Time	dB(A), Leq	Criterion dB(A) Leq	Identified Noise Sources, LAeq
24	R38	8:44am	70	43	Traffic (70), birds and insects (27), **NS (IA)**
25	R38	9:06am	70	43	Traffic (70), birds & insects (26), **NS (IA)**
25	R38	11:18am	69	43	Traffic (69), birds & insects (53), **NS (IA)**
24	R74	7:06am	79	43	Traffic (79), birds & insects (37), **NS (IA)**
25	R74	7:07am	70	43	Traffic (70), birds & insects (26), **NS (IA)**
26	R74	9:34am	68	43	Traffic (68), birds & insects (35), **NS (IA)**
Note: All measurements were made under compliant meteorological conditions. Where operational noise was inaudible, no exceedance is deemed to have occurred.					

Table 7 March Monitoring Results - Morning Shoulder

Date	Location	Time	dB(A), Leq	Criterion dB(A) Leq	dB(A), L1 (1min)1	Criterion dB(A), L1 (1min)1	Identified Noise Sources, LAeq
24	R14	6:34am	55	39	39[3] 41 adjusted[2]	45	Traffic (55), birds and insects (43), **NS (34[3] / 36[2])**
25	R14	6:35am	49	39	34	45	Traffic (48), birds & insects (42), **NS (26)**
26	R14	6:35am	49	39	38[3] 42 adjusted[2]	45	Traffic (48), birds & insects (42), **NS (32[3] / 36[2])**
24	R27	6:00am	79	39	IA	45	Traffic (79), **NS (IA)**
25	R27	6:00am	80	39	IA	45	Traffic (80), **NS (IA)**
26	R27	6:00am	78	39	IA	45	Traffic (78), **NS (IA)**
24	R38	6:00am	69	39	IA	45	Traffic (69), **NS (IA)**
25	R38	6:00am	70	39	IA	45	Traffic (70), **NS (IA)**
26	R38	6:00am	71	39	IA	45	Traffic (71), **NS (IA)**
24	R74	6:35am	78	39	IA	45	Traffic (78), birds and insects (28), **NS (IA)**

25	R74	6:35am	73	39	IA	45	Traffic (73), birds & insects (30), **NS (IA)**
26	R74	6:35am	75	39	IA	45	Traffic (75), birds & insects (32), **NS (IA)**
Note: All measurements were made under compliant meteorological conditions. Where operational noise was inaudible, no exceedance is deemed to have occurred.							

The results in **Table 6** and **Table 7** show that, under the operating and meteorological conditions at the times, for the 30-minute (morning-shoulder) and 1.5-hour (day) compliance measurement periods, the quarry noise from Newcastle Sand was inaudible at the monitoring location.

3. WATER MONITORING

Water monitoring is undertaken in accordance with EPL 21264 (Conditions M2 and M3) and Development Consent SSD-7332 (Conditions B30–B32). This includes monthly groundwater sampling from a network of monitoring bores and, where applicable, surface water monitoring from sediment basins or natural watercourses. Parameters monitored are selected based on potential impacts to the Tomago Sandbeds and surrounding environments.

Monthly surface and groundwater results are compared to site-specific trigger levels from the Soil and Water Management Plan (SWMP, currently version 3 approved). Water monitoring locations are provided in **Appendix 3.** Water Monitoring Locations (SWMP, 2021). Surface water locations (SW1–SW4) are not listed in EPL 21264 and are therefore not subject to NSW EPA public reporting requirements. Monitoring at these locations is conducted to meet SSD-6125 and SWMP obligations and is reported internally and through the Annual Environmental Management Review (AEMR).

3.1 GROUNDWATER

In accordance with the SWMP, an exceedance of the trigger value does not necessarily indicate that there is an unacceptable risk on site, but rather a trigger for further investigation or evaluation of management options.

Table 8 EPL Groundwater Criteria and Monitoring Results and **Figure 1** Groundwater Level Monitoring Tarp Rules (Watershed HydroGeo, 2019) below present the results of the March groundwater monitoring period and the Trigger Action Response Plan associated. **Table 8** shows the groundwater monitoring results for March. No exceedances were recorded for this month.

Table 8 EPL Groundwater Criteria and Monitoring Results

Monitoring Well	Groundwater Quality						Groundwater Levels			
	Arsenic	Iron	Manganese	Field EC (µS/cm)	Field pH (pH units)	Field Turbidity (NTU)	Depth to Water (mbTOC)	GWE	Max inferred	Difference between inferred max and GW elevation
Site Trigger Values	**0.003**	**4.1**	**0.136**	**500**	**4.2-6.5**	**N/A**	**Refer to Figure 1**			
BH2	<0.001	0.58	0.010	106	4.8	6.0	5.50	2.17	3.8	1.63
BH4	<0.001	0.04	0.010	179	4.8	2.6	1.80	1.26	3	1.74
BH6	<0.001	3.1	0.009	241	5.1	0.7	1.75	1.87	4.4	2.53
BH7	<0.001	0.60	0.010	108	4.9	0.9	1.84	1.14	3.7	2.56
BH9A	<0.001	0.45	0.030	124	5.1	5.9	9.37	1.38	4.0	1.62
BH11	<0.001	1.5	0.006	163	4.7	6.4	2.70	3.93	5.5	1.57
MW239S	<0.001	0.56	<0.005	143	4.8	13	1.42	1.62	3.9	2.28

Level	Trigger	Action and Response	Report / Response Actions
0	Groundwater levels more than 0.5 m below *inferred* maximum historical level.	Standard operations – monthly dipping of operational on-site monitoring bores.	N/A
1	Groundwater levels within 0.5 m below *inferred* maximum historical level at any on-site bore.	Weekly (or more frequent) monitoring (dipping) of groundwater levels until water level declines to below high frequency level bores.	Internal and environmental consultant. Include note in Annual Report.
2	Groundwater levels within 0.25 m of *inferred* maximum historical level at any on-site bore.	Weekly (or more frequent) monitoring (dipping) of groundwater levels. Re-analysis and review of Minimum Extraction Level (MEL).	WSS to issue letter to DPIE, documenting groundwater level and rainfall trends, review and make recommendations regarding MEL.
3	Groundwater levels within resource area rise above previously *inferred* maximum groundwater level.	Analysis of recent data by hydrogeologist, including site data and data from local HWC wells and local Defence wells (if available). Revision of MEL. Remediation of earlier excavations to revised MEL if required by DPIE.	WSS to issue letter to DPIE, DoI Water and HWC, documenting groundwater level trends, and revision (if necessary) of MEL. Letter to outline remedial options, considering access, vegetation condition in previously rehabilitated areas. Re-grading of previously rehabilitated areas if required by DPIE.

Figure 1 Groundwater Level Monitoring Tarp Rules (Watershed HydroGeo, 2019)

3.2 PFAS

PFAS (Per- and Polyfluoroalkyl Substances) monitoring is conducted in accordance with the requirements of the Soil and Water Management Plan (2021) and Development Consent SSD-6125. Routine water sampling was undertaken in March across the full monitoring suite, including:

- Groundwater bores
- Surface water sites
- Wash plant process water

Monitoring is carried out in accordance with relevant national standards, including the PFAS National Environmental Management Plan (HEPA NEMP 2.0) trigger values. Quarterly PFAS monitoring at the wash plant fines was conducted in March and was below detection limits.

All PFAS analytes were either below detection limits or well below applicable trigger thresholds, with no exceedances recorded in any location during the sampling round. The results further demonstrate that the site's PFAS mitigation and management systems are operating effectively, with no risk posed to downstream water users or the surrounding environment.

4. AIR QUALITY

Air quality monitoring at the Newcastle Sand site is undertaken in accordance with EPL 21264 (Conditions M2 and M3) and the NSW *Approved Methods for Sampling and Analysis of Air Pollutants*. The focus is on particulate matter (PM10 and TSP) to assess compliance with ambient air quality criteria and to monitor potential off-site impacts.

Real-time data informs Trigger Action Response Plan (TARP) interventions, while HVAS results feed into compliance assessment and trend reporting.

4.1 AIR QUALITY CRITERIA

Table 9 EPL P1.1 Air Monitoring

EPL ID Number	Type of Monitoring	Location Description
13	Ambient Air Monitoring	RT1
14	Ambient Air Monitoring	RT2
15	Ambient Air Monitoring	HVAS-1 PM10
16	Ambient Air Monitoring	TSP

Table 10 EPL Air Monitoring Requirements

Air Monitoring Requirements			
Point 13,14			
Pollutant	**Unit of Measure**	**Frequency**	**Sampling Method**
PM10	micrograms per cubic	Continuous	Australian Standard
Point 15			
Pollutant	**Unit of Measure**	**Frequency**	**Sampling Method**
PM10	micrograms per cubic	Every 6 days	AM-18
Point 16			
Pollutant	**Unit of Measure**	**Frequency**	**Sampling Method**
Total suspended	micrograms per cubic	Every 6 days	AM-15

4.2 AIR QUALITY RESULTS

Air quality for PM10 and TSP levels recorded for March were within compliance limits.

Table 11 HVAS Air Monitoring Results

Sample Date	HVAS 1 (PM10) Paddock	Rolling Average	HVAS 2 (TSP) Sampson	Rolling Average
	Criteria 50 µg/m³	Criteria 25µg/m³	-	Criteria 90 µg/m³
2 March 2026	13	19.17	26	35.8
8 March 2026	14	19.24	25	35.9
14 March 2026	14	19.38	40	36.1
20 March 2026	9	19.43	25	36.0
26 March 2026	15	19.55	58	36.8

Table 12 BAM Monitoring Results

Month	RT1 Average (24 hour)	RT2 Average (24 hour)
March	8.57	6.67

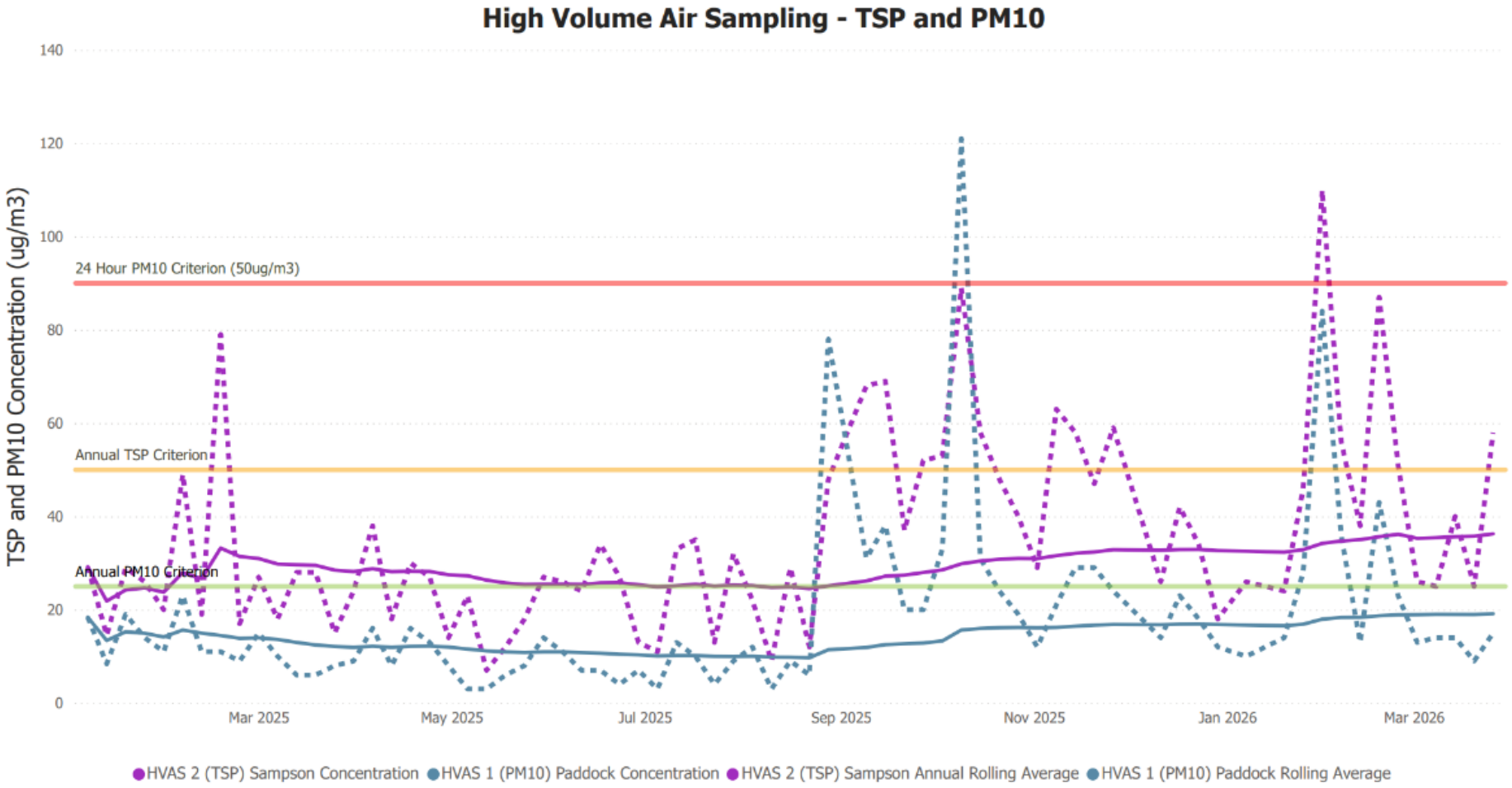

Figure 2 HVAS Long Term Results for TSP and PM10

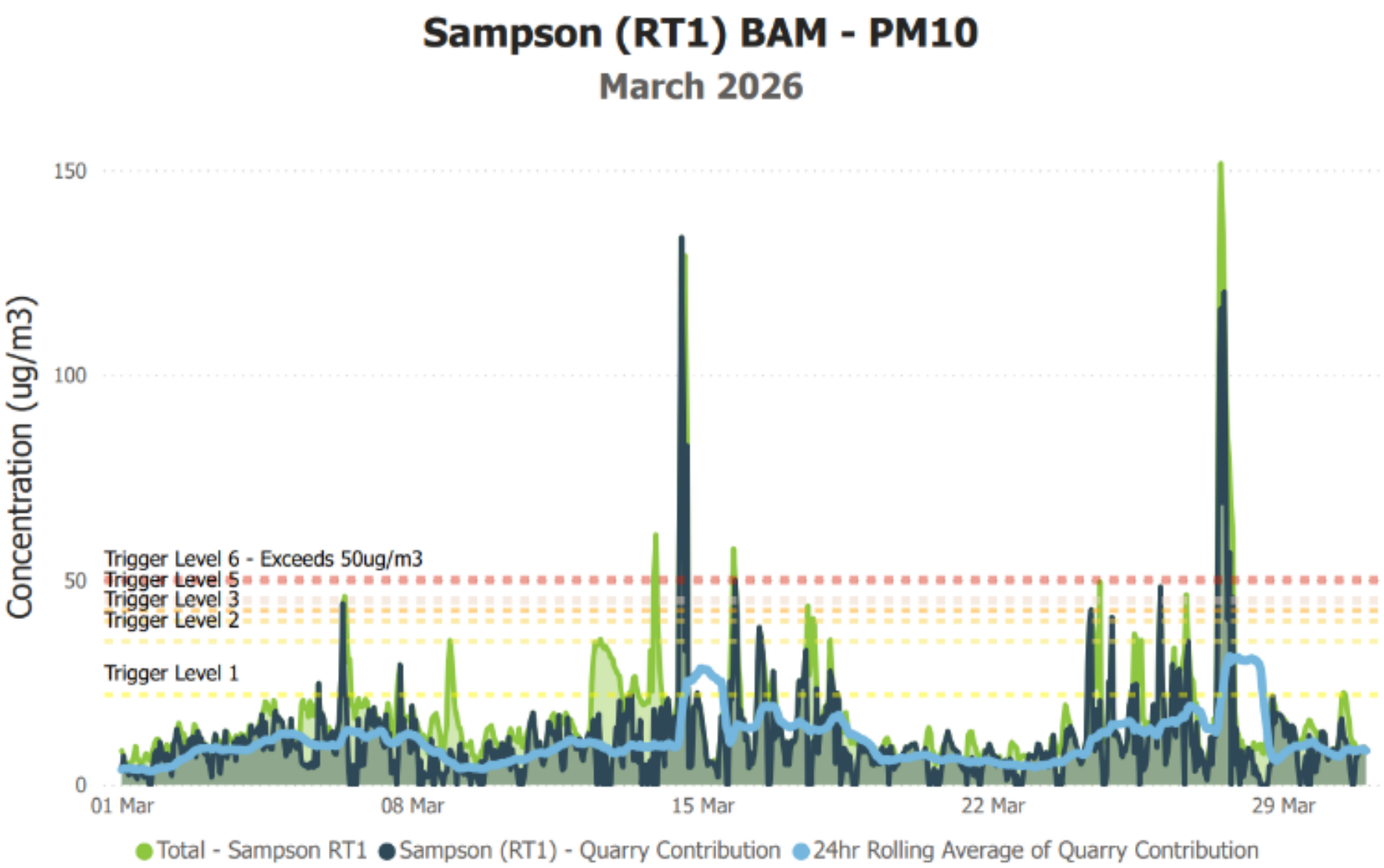

Figure 3 Sampson (RT1) BAM Long Term Results

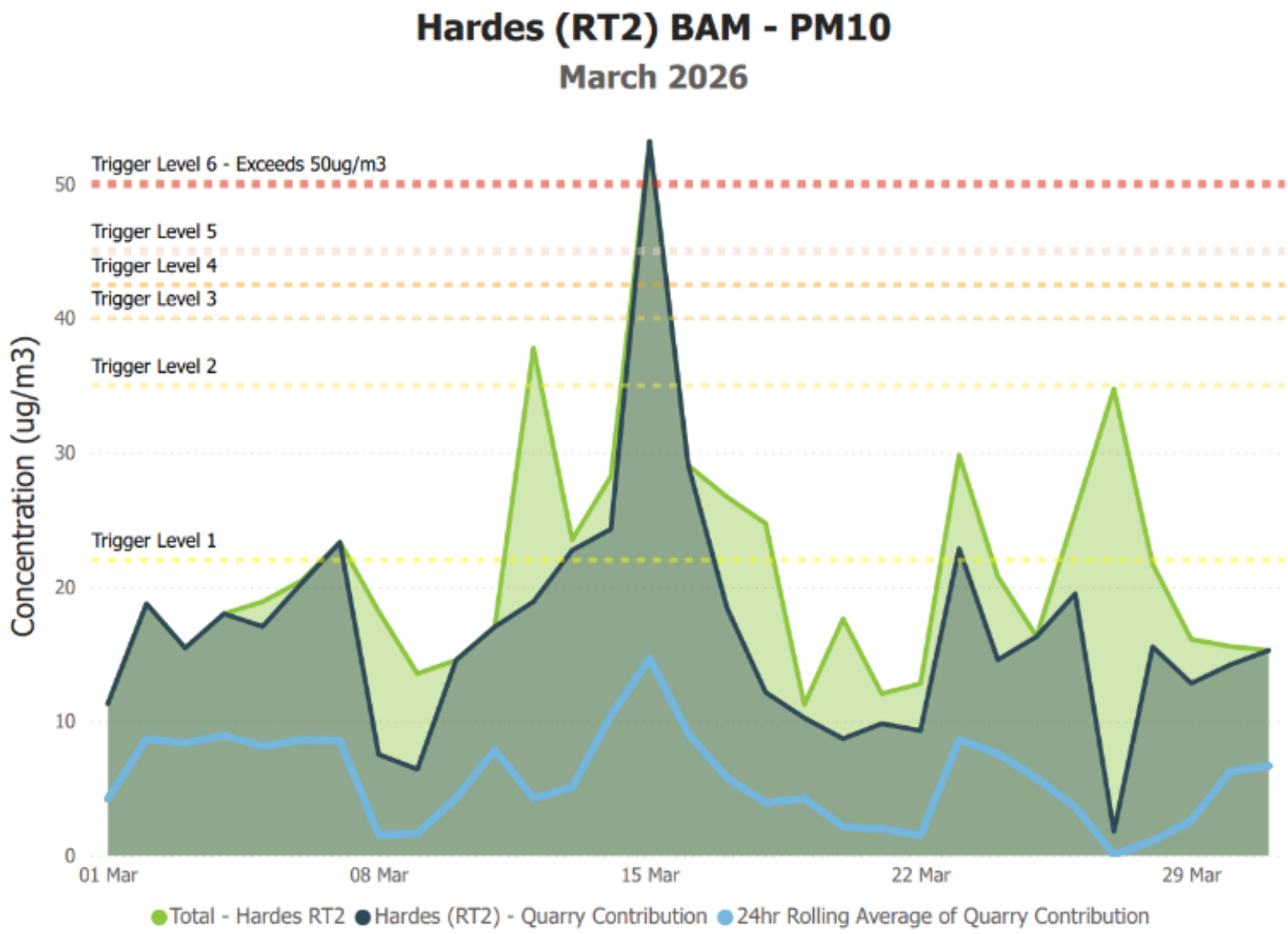

Figure 4 Hardes (RT1) BAM Long Term Results

Trigger Response Framework		
Trigger Stage	**Conditions**	**Action**
1	a) **Wind towards residents.** Where wind is directed towards surrounding residences,, that is the weather station indicates winds are blowing from the quatrants west (270°), THROUGH North (0°) to East (90°). **OR** b) **PM10 above background.** Continuous PM10 minotor shows rolling PM10 24-hour average exceeds the acerage background concentration of 22ug/m3.	Review operations and ensure water dust suppression is active (e.g. haul roads and stock-pile sprays)
2	a) Wind is directed toward surrounding residences; **AND** b) Rolling PM10 24-hour average axceeds 35ug/m3	No topsoil stripping or dozer pushing
3	a) Wind is directed toward surrounding residences; AND b) Rolling PM10 24-hour average exceeds 40ug/m3	No sand processing. **In addition to Stage 1 & 2 actions.**
4	a) Levels ontinue to increase after two hours since last action; AND **b) Wind is directed towards surrounding residences;** AND c) Rolling PM10 24-hour average exceeds 42.5 ug/m3	Suspend sand extraction. **In addition to Stage 1, 2, & 3 actions.**
5	a) PM10 levels continue to increase after two hours since last actions; **AND** b) Wind is directed towards surrounding residences; **AND** c) rolling PM10 24-hour average exceeds 45ug/m3	Suspend loading trucks (i.e. no machinery operating - except water carts and product haulage trucks already loaded). **In addition to Stage 1, 2, 3 & 4 actions.**
6	a) Rolling PM10 24-hour average exceeds 50ug/m3.	**All activities suspended (except dust control measures)** Complete Incident Notification to DPE within 24 hours. Complete Incident Investigation and Corrective Action Report.

Table sourced: Newcastle Sand, Air Quality Management Plan, 26th March, 2019, Ref: Air QMP V3 20190326

Figure 5 Air Quality Trigger Framework (AQMP, 2019)

5. METEOROLOGICAL

5.1 METEOROLOGICAL CRITERIA

Meteorological observations for March 2026 were sourced from the Williamtown RAAF station (ID: 061078), located approximately 7.5 m above ground level and representative of local conditions at Newcastle Sand.

Table 13 and **Table 14** below outline the location and criteria associated with EPL 21264 (Conditions M5 and M6), the Air Quality Management Plan (AQMP), and the NSW EPA Approved Methods for Sampling of Air Pollutants (2016) require data to be used to support the validity of air and noise monitoring events and inform real-time responses to dust risks via the AQMP Trigger Action Response Plan (TARP).

Table 13 Meteorological Monitoring Location

EPL ID number	Type of Monitoring	Location description
17	Meteorological Station	Williamtown Bureau of Meteorology Station

Table 14 Meteorological Monitoring Criteria

Parameter	Sampling method	Units of measure	Averaging period	Frequency
Temperature at 2 meters	AM-4	Degrees Celsius	1 hour	Continuous
Wind direction at 10 meters	AM-2 & AM-4	Degrees	15 minutes	Continuous
Wind speed at 10 meters	AM-2 & AM-4	Meters per second	15 minutes	Continuous
Sigma Theta	AM-2 & AM-4	Degrees	15 minutes	Continuous
Rainfall	AM-4	Millimetres	15 minutes	Continuous
Relative Humidity	AM-4	Percent	1 hour	Continuous

5.2 METEOROLOGICAL RESULTS

Rainfall data was obtained from the Bureau of Meteorology Williamtown RAAF AWS (Station No. 061078, Williamtown, NSW - Daily Weather Observations (bom.gov.au)). A total of 107.4 mm of rainfall was recorded over the March period.

Meteorological conditions during the month were typical for the season. Wind direction is used to assess the relevance of elevated PM10 events recorded by BAM. No anomalies were observed in rainfall or humidity that would invalidate monitoring results.

Table 15 Meteorological Results

Month	**Max mean temperature at 2 meters (Degrees** Celsius)	**Wind direction at 10 meters** (Degrees)	**Highest wind speed at 10 meters** (Km/h)	**Rainfall** (Millimetres)	**Mean Relative Humidity at 3pm** (Percent)
March	27.6	WNW	76	107.4	59

6. TRAFFIC

Table 16 shows the monthly summary of traffic movements as per Schedule 3 Condition 26 of Development Consent. The weighbridge and ticketing system is routinely calibrated and managed by an accredited external business to ensure the sale and transport of sand from the quarry is consistent with approved haulage limits and operational times. Full daily vehicle logs are retained on-site and are available for inspection upon request by regulators.

6.1 TRUCK MOVEMENT CRITERIA

Truck movements are monitored daily at the site entry point. The data ensures compliance with the approved hourly vehicle limits under Development Consent and supports broader compliance with noise and air quality management objectives. The maximum approved haulage as per Condition 23 of Consent SSD 6125 is outlined in **Table 16** below.

Table 16 Approved Movement Criteria

Time Period	Limits (Trucks/Hour)
6:00am – 7:00am	6
7:00am – 6:00pm (Monday to Friday)	10
7:00am – 4:00pm (Saturday)	10
Sundays / Public Holidays	No truck movements permitted

6.2 TRUCK MONITORING RESULTS

Error! Reference source not found. below outlines the Newcastle sand truck movement compliance for March.

Table 17: Truck Movement data.

DAY	HOUR	DAY OF WEEK	LIMIT	P/F
2	6	Monday	6	PASS
2	7	Monday	10	PASS
2	8	Monday	10	PASS
2	9	Monday	10	PASS
2	10	Monday	10	PASS
2	11	Monday	10	PASS
2	12	Monday	10	PASS
2	13	Monday	10	PASS
2	14	Monday	10	PASS
2	15	Monday	10	PASS
2	16	Monday	10	PASS
2	17	Monday	10	PASS
3	6	Tuesday	6	PASS
3	7	Tuesday	10	PASS
3	8	Tuesday	10	PASS
3	9	Tuesday	10	PASS
3	10	Tuesday	10	PASS
3	11	Tuesday	10	PASS
3	12	Tuesday	10	PASS
3	13	Tuesday	10	PASS
3	14	Tuesday	10	PASS
3	15	Tuesday	10	PASS
3	16	Tuesday	10	PASS
3	17	Tuesday	10	PASS
4	6	Wednesday	6	PASS
4	7	Wednesday	10	PASS
4	8	Wednesday	10	PASS
4	9	Wednesday	10	PASS
4	10	Wednesday	10	PASS
4	11	Wednesday	10	PASS
4	12	Wednesday	10	PASS
4	13	Wednesday	10	PASS
4	14	Wednesday	10	PASS
4	15	Wednesday	10	PASS

DAY	HOUR	DAY OF WEEK	LIMIT	P/F
4	16	Wednesday	10	PASS
4	17	Wednesday	10	PASS
5	6	Thursday	6	PASS
5	7	Thursday	10	PASS
5	8	Thursday	10	PASS
5	9	Thursday	10	PASS
5	10	Thursday	10	PASS
5	11	Thursday	10	PASS
5	12	Thursday	10	PASS
5	13	Thursday	10	PASS
5	14	Thursday	10	PASS
5	15	Thursday	10	PASS
5	16	Thursday	10	PASS
5	17	Thursday	10	PASS
6	6	Friday	6	PASS
6	7	Friday	10	PASS
6	8	Friday	10	PASS
6	9	Friday	10	PASS
6	10	Friday	10	PASS
6	11	Friday	10	PASS
6	12	Friday	10	PASS
6	13	Friday	10	PASS
6	14	Friday	10	PASS
6	15	Friday	10	PASS
6	16	Friday	10	PASS
6	17	Friday	10	PASS
7	7	Saturday	10	PASS
7	8	Saturday	10	PASS
7	9	Saturday	10	PASS
7	10	Saturday	10	PASS
7	11	Saturday	10	PASS
9	6	Monday	6	PASS
9	7	Monday	10	PASS
9	9	Monday	10	PASS
9	10	Monday	10	PASS
9	11	Monday	10	PASS
9	12	Monday	10	PASS
9	13	Monday	10	PASS
9	14	Monday	10	PASS
9	16	Monday	10	PASS
9	17	Monday	10	PASS
10	6	Tuesday	6	PASS
10	7	Tuesday	10	PASS

DAY	HOUR	DAY OF WEEK	LIMIT	P/F
10	8	Tuesday	10	PASS
10	9	Tuesday	10	PASS
10	10	Tuesday	10	PASS
10	11	Tuesday	10	PASS
10	12	Tuesday	10	PASS
10	14	Tuesday	10	PASS
10	15	Tuesday	10	PASS
10	16	Tuesday	10	PASS
10	17	Tuesday	10	PASS
11	6	Wednesday	6	PASS
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12	7	Thursday	10	PASS
12	8	Thursday	10	PASS
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12	10	Thursday	10	PASS
12	11	Thursday	10	PASS
12	12	Thursday	10	PASS
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12	15	Thursday	10	PASS
12	16	Thursday	10	PASS
12	17	Thursday	10	PASS
13	6	Friday	6	PASS
13	7	Friday	10	PASS
13	8	Friday	10	PASS
13	9	Friday	10	PASS
13	10	Friday	10	PASS
13	11	Friday	10	PASS
13	12	Friday	10	PASS
13	13	Friday	10	PASS
13	14	Friday	10	PASS
13	15	Friday	10	PASS

DAY	HOUR	DAY OF WEEK	LIMIT	P/F
13	16	Friday	10	PASS
13	17	Friday	10	PASS
14	7	Saturday	10	PASS
14	8	Saturday	10	PASS
14	9	Saturday	10	PASS
14	10	Saturday	10	PASS
14	11	Saturday	10	PASS
16	6	Monday	6	PASS
16	7	Monday	10	PASS
16	8	Monday	10	PASS
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17	6	Tuesday	6	PASS
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17	10	Tuesday	10	PASS
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17	15	Tuesday	10	PASS
17	16	Tuesday	10	PASS
17	17	Tuesday	10	PASS
18	6	Wednesday	6	PASS
18	7	Wednesday	10	PASS
18	8	Wednesday	10	PASS
18	9	Wednesday	10	PASS
18	10	Wednesday	10	PASS
18	11	Wednesday	10	PASS
18	12	Wednesday	10	PASS
18	13	Wednesday	10	PASS
18	14	Wednesday	10	PASS
18	15	Wednesday	10	PASS
18	17	Wednesday	10	PASS
19	6	Thursday	6	PASS

DAY	HOUR	DAY OF WEEK	LIMIT	P/F
19	7	Thursday	10	PASS
19	8	Thursday	10	PASS
19	9	Thursday	10	PASS
19	10	Thursday	10	PASS
19	11	Thursday	10	PASS
19	12	Thursday	10	PASS
19	13	Thursday	10	PASS
19	14	Thursday	10	PASS
19	16	Thursday	10	PASS
19	17	Thursday	10	PASS
20	6	Friday	6	PASS
20	7	Friday	10	PASS
20	8	Friday	10	PASS
20	9	Friday	10	PASS
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20	16	Friday	10	PASS
21	7	Saturday	10	PASS
21	8	Saturday	10	PASS
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23	7	Monday	10	PASS
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23	11	Monday	10	PASS
23	12	Monday	10	PASS
23	13	Monday	10	PASS
23	14	Monday	10	PASS
23	15	Monday	10	PASS
23	16	Monday	10	PASS
23	17	Monday	10	PASS
24	6	Tuesday	6	PASS
24	7	Tuesday	10	PASS
24	8	Tuesday	10	PASS
24	9	Tuesday	10	PASS
24	10	Tuesday	10	PASS
24	11	Tuesday	10	PASS

DAY	HOUR	DAY OF WEEK	LIMIT	P/F
24	12	Tuesday	10	PASS
24	13	Tuesday	10	PASS
24	14	Tuesday	10	PASS
24	15	Tuesday	10	PASS
24	16	Tuesday	10	PASS
24	17	Tuesday	10	PASS
25	6	Wednesday	6	PASS
25	7	Wednesday	10	PASS
25	8	Wednesday	10	PASS
25	9	Wednesday	10	PASS
25	10	Wednesday	10	PASS
25	11	Wednesday	10	PASS
25	12	Wednesday	10	PASS
25	13	Wednesday	10	PASS
25	14	Wednesday	10	PASS
25	15	Wednesday	10	PASS
25	16	Wednesday	10	PASS
26	6	Thursday	6	PASS
26	7	Thursday	10	PASS
26	8	Thursday	10	PASS
26	9	Thursday	10	PASS
26	10	Thursday	10	PASS
26	11	Thursday	10	PASS
26	12	Thursday	10	PASS
26	13	Thursday	10	PASS
26	14	Thursday	10	PASS
26	15	Thursday	10	PASS
26	16	Thursday	10	PASS
26	17	Thursday	10	PASS
27	6	Friday	6	PASS
27	7	Friday	10	PASS
27	8	Friday	10	PASS
27	9	Friday	10	PASS
27	10	Friday	10	PASS
27	11	Friday	10	PASS
27	12	Friday	10	PASS
27	13	Friday	10	PASS
27	14	Friday	10	PASS
27	15	Friday	10	PASS
27	16	Friday	10	PASS
27	17	Friday	10	PASS
28	7	Saturday	10	PASS
28	8	Saturday	10	PASS

DAY	HOUR	DAY OF WEEK	LIMIT	P/F
28	9	Saturday	10	PASS
28	10	Saturday	10	PASS
28	11	Saturday	10	PASS
30	6	Monday	6	PASS
30	7	Monday	10	PASS
30	8	Monday	10	PASS
30	9	Monday	10	PASS
30	10	Monday	10	PASS
30	11	Monday	10	PASS
30	12	Monday	10	PASS
30	13	Monday	10	PASS
30	14	Monday	10	PASS
30	15	Monday	10	PASS
30	16	Monday	10	PASS
30	17	Monday	10	PASS
31	7	Tuesday	10	PASS
31	8	Tuesday	10	PASS
31	9	Tuesday	10	PASS
31	10	Tuesday	10	PASS
31	11	Tuesday	10	PASS
31	12	Tuesday	10	PASS
31	13	Tuesday	10	PASS
31	14	Tuesday	10	PASS
31	15	Tuesday	10	PASS
31	16	Tuesday	10	PASS
31	17	Tuesday	10	PASS

7. COMMUNITY & COMPLIANCE

7.1 COMPLAINTS

There were no community complaints in the reporting period.

The last community complaint was on the 28 February 2024 regarding truck movements. The matter has since been resolved and closed out, details of this can be found on the Newcastle Sand website: https://www.newcastlesand.com.au/complaints-register/

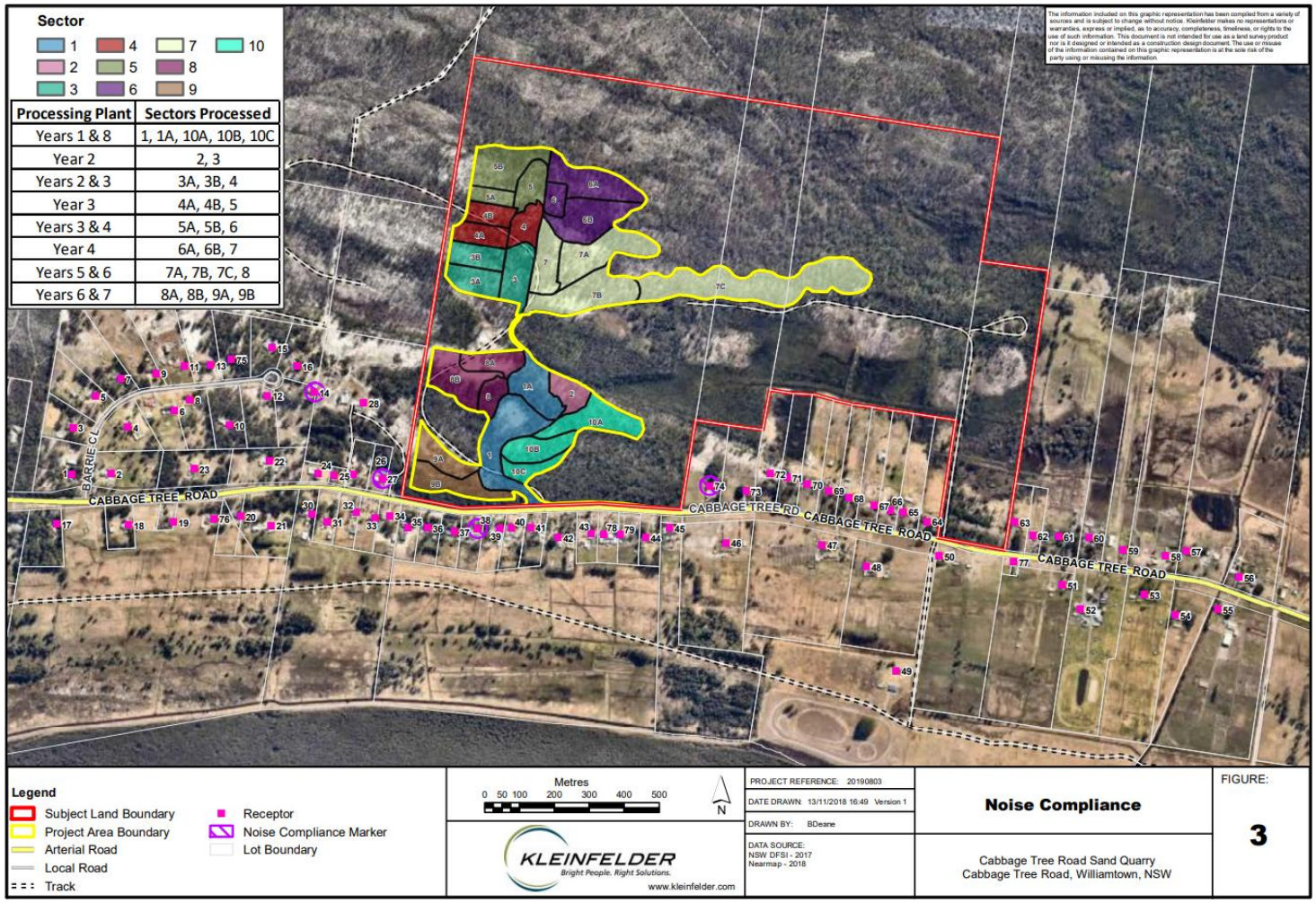
7.2 INCIDENTS

There were no incidents in the reporting period.

7.3 NON-COMPLIANCES

There were no non-compliances within the reporting period.

APPENDIX 1. NOISE MONITORING LOCATIONS (NMP, 2019)



APPENDIX 2. NOISE MONITORING REPORT

Document No: 161267/11202

ATTENDED NOISE MONITORING
QUARTER 1 – MARCH 2026
Newcastle Sands
Williamtown, NSW

Prepared for:
Williamtown Sand Syndicate Pty Ltd
Cabbage Tree Road
WILLIAMTOWN NSW 2318

Author:

Matthew Pennington
B.Env.Sc.Mgt
Project Consultant

Review:

Neil Pennington MAIP, MAAS, MASA
B. Sc., B.Math. (Hons)
Principal/Director

April 2026

TABLE OF CONENTS

EXECUTIVE SUMMARY

Attended noise monitoring has been carried out for the Newcastle Sand (NS) mine on 24, 25 and 26 March 2026. Monitoring was carried out in accordance with requirements of Development Consent (SSD-6125), EPL21264, the Newcastle Sand Noise Management Plan and other relevant Australian Standards and guidelines.

Monitoring was conducted by Matthew Pennington (Project Consultant, Spectrum Acoustics), and Jonnah Moore (Field Technician, Spectrum Acoustics).

The site was in full operation during the entire survey period.

The site-specific operational criteria were not exceeded at any location or at any time throughout the monitoring period.

Data from those times where noise from NS operations was audible and measurable were analysed using Bruel & Kjaer *"Evaluator"* software. This analysis showed the noise did not contain any tonal or impulsive components as per definitions of "modifying factor corrections" in the NSW Noise Policy for Industry. The noise did contain low frequency components and the relevant modifying factor corrections have been applied where applicable. It is acknowledged that the general area is impacted by low and mid-range frequency noise from Cabbage Tree Road and identification of individual sources requires subjective assessment.

NS was compliant with Environmental Protection Licence (EPL) 21264 and Newcastle Sand Development Consent (SSD-6125) for Quarter 1 (March) 2026.

1.0 INTRODUCTION

This report presents the results of attended noise compliance monitoring and measurements conducted for Newcastle Sand (NS) on 24, 25, and 26 March 2026. Monitoring was undertaken in accordance with requirements of Newcastle Sand Noise Management Plan (NMP) dated March 2019. The noise monitoring programme and procedures in the NMP have been developed in accordance with the NS Environmental Protection Licence (EPL) no 21264 and the Newcastle Sand Development Consent (SSD-6125). To aid in the understanding of this report a description of acoustical terms is attached as **Appendix A**.

1.1 Noise Monitoring Locations

The NMP (Section 8.1) contains a table (Table 8) detailing recommended locations for attended noise monitoring and corresponding identification numbers for each boundary of the site, as follows.

Table 8: Noise monitoring locations

Generalised Location	Recommended Receptor ID
Nearest residence to west (at road level)	27
Nearest residence to west elevated on hill crest	14[1]
Residence due south of quarry	38
Nearest residence to the south east	74

1. Receptor R14 has a private noise agreement in place.

Condition M8.1 of the EPL states that attended noise monitoring is to be undertaken at a location representative of the most affected residences in the noise limit conditions. Monitoring was conducted at receiver numbers 14, 27, 38, and 74 which are representative of receivers in all directions of the site. The monitoring locations are also shown on **Figure 1**, identified as a 'Noise Compliance Marker'.

1.2 Monitoring Frequency and Duration

EPL21264 indicates that the attended noise monitoring must be conducted quarterly during the morning-shoulder and day periods only. Each quarterly survey is to consist of 30 minute morning-shoulder measurements and 1.5 hour day measurements at one location representative of the most affected residences in the noise limit conditions (in accordance with EPL21264 to be done over a minimum of three consecutive 24 hour periods).

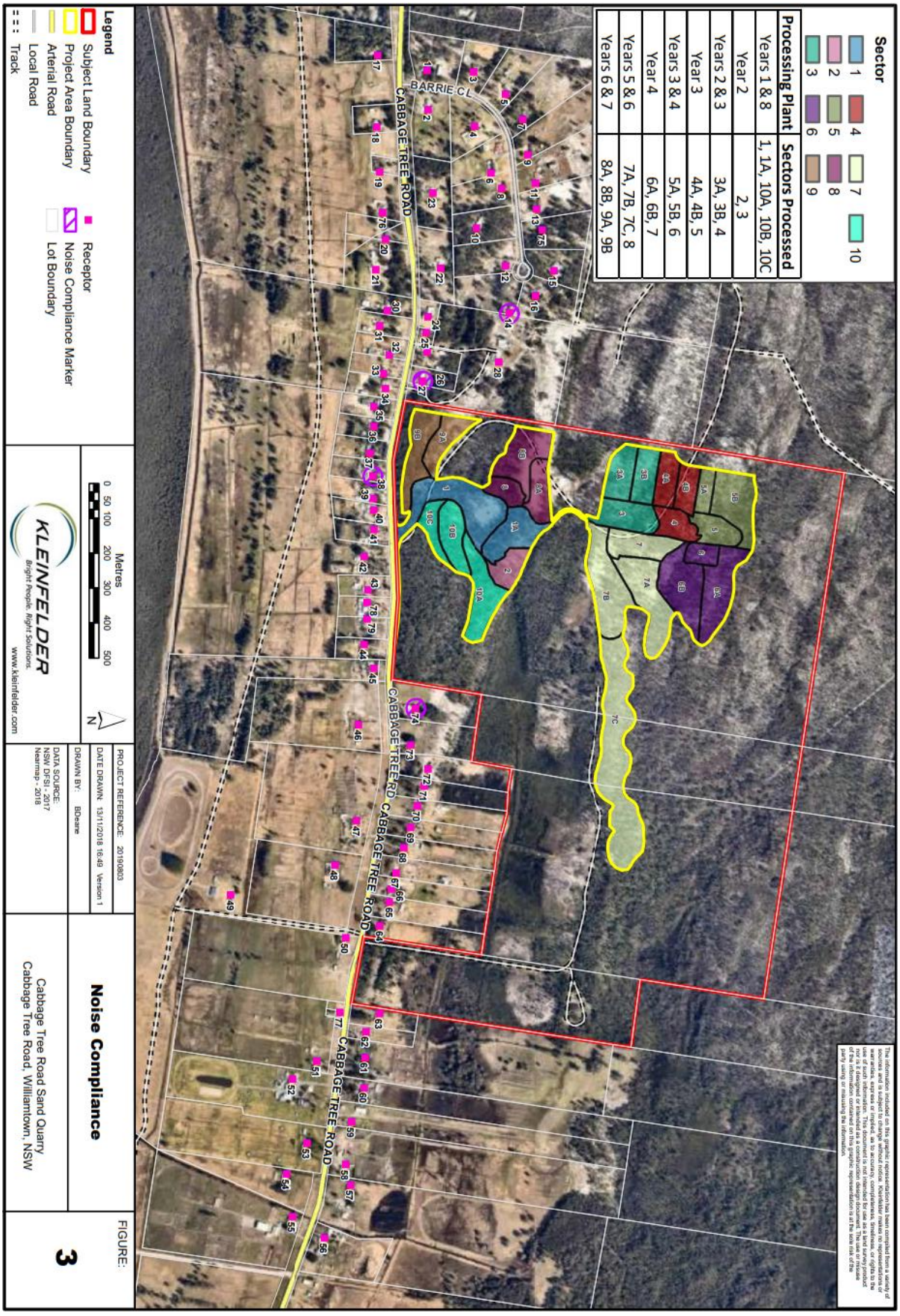


Figure 1
Noise Monitoring Location

2.0 CRITERIA AND CONDITIONS

2.1 Noise Assessment Criteria

The noise assessment criteria are detailed in Condition L3.1 of the. The criteria vary for each receiver monitoring location. The applicable morning-shoulder and day criterion is shown in the tables of results (**Tables 1 - 6** in **Section 4.1**). Noise criteria for all residences listed in the EPL are as shown below. The above noise criteria include the requirement that noise levels at day shoulder must not exceed **45 dB(A) L1 (1 min)** (sleep disturbance criterion) at any residence.

Receiver	Day LAeq(15 Min)	Shoulder LAeq(15 Min)	Shoulder LA Max(1 Min)
Any residential reciever	43	39	45

Operational noise generated at the premises must not exceed the noise limits shown in the table above.

2.2 Monitoring Location Definition

Condition L3.7 of the EPL states that to determine compliance with the Leq (15 min) operational noise limits the noise measurement equipment must be measured at the most affected point on or within the residential boundary, or at the most affected point within 30m of the dwelling where the dwelling is more than 30m from the boundary.

2.3 Applicable Meteorological Conditions

The noise limits apply under all meteorological conditions except for any one of the following;

1. Wind speeds greater than 3m/s at 10m above ground level; or
2. Stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or
3. Stability category G temperature inversion conditions.

2.4 Other Conditions

To determine compliance with the Leq (15 min) operational noise criteria the modification factors in Fact Sheet C of the NSW Noise Policy for Industry must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

3.0 NOISE MONITORING PROCEDURE

3.1 Monitoring Equipment

Attended noise monitoring was conducted by Matthew Pennington & Jonnah Moore (Spectrum Acoustics) with a Brüel & Kjær Type 2250 Precision Sound Analyser. This instrument has Class 1 characteristics as defined in AS IEC61672.1-2019 and has current NATA calibration. Calibration certificates are included in Appendix B. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the 15-minute monitoring periods with data acquired at 1 or 2 second statistical intervals and the meter set to “fast” response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing NPI ‘modifying factors’. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

3.2 Measurement Analysis

The 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from NS was audible, Bruel & Kjaer “Evaluator” analysis software was used to quantify the contributions of NS and other significant noise sources to the overall noise level. Mine noise from NS is shown in the tables in bold type. Where noise from NS was inaudible during the lowest period of overall noise during each measurement, the NS contribution is given as “IA”.

3.3 Meteorological Data

Meteorological data used in this report were taken from the Williamtown Bureau of Meteorology Station.

4.0 RESULTS AND DISCUSSION

4.1 Measured Noise Levels

4.1.1 NS Operations

Measured noise levels at the monitoring location are summarised in **Tables 1 - 6**.

Table 1
NS Operational Noise Monitoring Results – 24 March 2026 (Morning-Shoulder)

Location	Time	dB(A), Leq	Criterion dB(A) Leq	dB(A), L1 (1min)[1]	Criterion dB(A), L1 (1min)[1]	Identified Noise Sources, LAeq
R14	6:34am	55	39	39[3] 41 adjusted[2]	45	Traffic (55), birds & insects (43), **NS (34[3] / 36[2])**
R27	6:00am	79	39	IA	45	Traffic (79), **NS (IA)**
R38	6:00am	69	39	IA	45	Traffic (69), **NS (IA)**
R74	6:35am	78	39	IA	45	Traffic (78), birds & insects (28), **NS (IA)**

1. L1 (1 min) from NS mine noise only.
2. See Table 7 and text for positively-adjusted results.
3. Measured NS noise level.

Table 2 NS Operational Noise Monitoring Results – 24 March 2026 (Day)				
Location	**Time**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Identified Noise Sources, LAeq**
R14	7:01am	57	43	Traffic (56), birds & insects (48), **NS (36)**
R27	10:29am	78	43	Traffic (78), **NS (IA)**
R38	8:44am	70	43	Traffic (70), birds & insects (27), **NS (IA)**
R74	7:06am	79	43	Traffic (79), birds & insects (37), **NS (IA)**

Table 3 NS Operational Noise Monitoring Results – 25 March 2026 (Morning-Shoulder)						
Location	**Time**	**dB(A), Leq**	**Criterion dB(A) Leq**	**dB(A), L1 (1min)[1]**	**Criterion dB(A), L1 (1min)[1]**	**Identified Noise Sources, LAeq**
R14	6:35am	49	39	34	45	Traffic (48), birds & insects (42), **NS (26)**
R27	6:00am	80	39	IA	45	Traffic (80), **NS (IA)**
R38	6:00am	70	39	IA	45	Traffic (70), **NS (IA)**
R74	6:35am	73	39	IA	45	Traffic (73), birds & insects (30), **NS (IA)**

1. L1 (1 min) from NS mine noise only.

Table 4 NS Operational Noise Monitoring Results – 25 March 2026 (Day)				
Location	**Time**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Identified Noise Sources, LAeq**
R14	7:05am	49	43	Traffic (47), birds & insects (44), **NS (31)**
R27	10:49am	68	43	Traffic (68), **NS (IA)**
R38	9:06am	70	43	Traffic (70), birds & insects (26), **NS (IA)**
R74	7:07am	70	43	Traffic (70), birds & insects (26), **NS (IA)**

Table 5 NS Operational Noise Monitoring Results – 26 March 2026 (Morning-Shoulder)						
Location	**Time**	**dB(A), Leq**	**Criterion dB(A) Leq**	**dB(A), L1 (1min)[1]**	**Criterion dB(A), L1 (1min)[1]**	**Identified Noise Sources, LAeq**
R14	6:35am	49	39	38[3] 42 adjusted[2]	45	Traffic (48), birds & insects (42), **NS (32[3] / 36[2])**
R27	6:00am	78	39	IA	45	Traffic (78), **NS (IA)**
R38	6:00am	71	39	IA	45	Traffic (71), **NS (IA)**
R74	6:35am	75	39	IA	45	Traffic (75), birds & insects (32), **NS (IA)**

1. L1 (1 min) from NS mine noise only.
2. See Table 10 and text for positively-adjusted results.
3. Measured NS noise level

Table 6 NS Operational Noise Monitoring Results – 26 March 2026 (Day)				
Location	**Time**	**dB(A), Leq**	**Criterion dB(A) Leq**	**Identified Noise Sources, LAeq**
R14	7:05am	51	43	Traffic (49), birds & insects (47), **NS (37)**
R27	7:54am	69	43	Traffic (69), **NS (IA)**
R38	11:18am	69	43	Traffic (69), birds & insects (53), **NS (IA)**
R74	9:34am	68	43	Traffic (68), birds & insects (35), **NS (IA)**

4.2 Discussion of Results

The results in **Tables 1-6** show that, under the operating and meteorological conditions at the times, for the 30 minute (morning-shoulder) and 1.5 hour (day) compliance measurement periods, the mine noise from NS was audible and measurable at the monitoring location R14 throughout all monitoring periods, but was inaudible at all other monitoring locations throughout all monitoring periods. The results also show that the mine noise from NS did not exceed the applicable noise criteria at any time. The measured noise emissions from NS were attributed to general operational hum, machine engine revs, and modulated reverse alarms. All noise measurements were made under compliant meteorological conditions, except for those undertaken at R27 during the day-time period between the 24th to 26th of March, and at R38 during the day-time period of the 26th of March, where there were non-compliant meteorological conditions.

Data from those times where NS operations were audible were analysed using the “Evaluator” software. This analysis showed the noise did not contain any tonal, impulsive components as per definitions of “modifying factor corrections” in the NPfI that could be attributable to the noise emissions from the mine. The methodology for analysing the low frequency noise modifying factor correction in the NPfI is shown in extract below;

Low-frequency noise	Measurement of source contribution C- weighted and A-weighted level and one-third octave measurements in the range 10– 160 Hz	Measure/assess source contribution C- and A-weighted Leq,T levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and: • where any of the one-third octave noise levels in Table C2 are exceeded by up to and including 5 dB and cannot be mitigated, a 2-dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period. • where any of the one-third octave noise levels in Table C2 are exceeded by more than 5 dB and cannot be mitigated, a 5-dB(A) positive adjustment to measured/predicted A- weighted levels applies for the evening/night period and a 2- dB(A) positive adjustment applies for the daytime period.	2 or 5 dB	A difference of 15 dB or more between C- and A-weighted measurements identifies the potential for an unbalance spectrum and potential increased annoyance. The values in Table C2 are derived from Moorhouse (2011) for DEFRA fluctuating low-frequency noise criteria with corrections to reflect external assessment locations.

Table C2 : One-third octave low-frequency noise thresholds.

Hz/dB(Z)	One-third octave L Z_{eq},15min threshold level												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44

The correction applies to the mine noise component only. In most instances the screening criteria will be the one third octave analysis. Should the mine noise not comply with this then the C minus A analysis is to be applied. The entire study area is subjected to low-frequency noise from Cabbage Tree Road, Newcastle Airport (Williamtown) and Williamtown RAAF Base, whether NS is audible or not, and defining the contribution from NS is not always possible unless the noise is clearly definable, typically at a level of 30 dB(A) or greater. Due to this, quantitative assessment of low frequency noise was possible for some of the measurements taken throughout the survey, and the results of these analyses are shown below.

Table 7 presents the low-frequency assessment of the mine noise measured at 34 dB(A) at R14 on the 24th of March 2026.

Table 7. Low-frequency analysis – R14 6:34 am													
Hz/dB(Z)	One-third octave LZeq,15min threshold level												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
R14, dB(Z)	--	52	64	55	54	66	54	50	48	48	45	46	41
Threshold, dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44
Exceedance, dB	--	0	0	0	0	5	0	0	0	0	0	0	0

The results in Table 7 show an exceedance of the low-frequency criterion, up to and including 5 dB, in the 31.5Hz one-third octave band. As such, a 2-dB(A) positive adjustment will be applied to the measured NS noise levels. The positively adjusted NS noise levels are therefore 36 dB(A),Leq(15 min) and 41 dB(A),L1(1 min) which do not exceed the applicable noise criteria.

Table 8 presents the low-frequency assessment of the mine noise measured at 36 dB(A) at R14 on the 24th of March 2026.

Table 8. Low-frequency analysis – R14 7:05 am													
Hz/dB(Z)	One-third octave LZeq,15min threshold level												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
R14, dB(Z)	--	50	64	54	55	65	53	49	49	48	46	50	42
Threshold, dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44
Exceedance, dB	--	0	0	0	0	4	0	0	0	0	0	4	0

The results in Table 8 show an exceedance of the low-frequency criterion, up to and including 5 dB, in the 31.5Hz and 125Hz one-third octave bands. However, positive adjustments are only applicable to measured noise levels during the evening/night periods for exceedances of this magnitude, as per Table C1 of the NPfI. As such, no correction has been applied to the measured noise levels.

Table 9 presents the low-frequency assessment of the mine noise measured at 31 dB(A) at R14 on the 25th of March 2026.

Table 9. Low-frequency analysis – R14 7:05 am													
Hz/dB(Z)	**One-third octave $L_{Zeq,15min}$ threshold level**												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
R14, dB(Z)	--	58	64	59	52	60	54	48	48	48	49	42	39
Threshold, dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44
Exceedance, dB	--	0	0	0	0	0	0	0	0	0	1	0	0

The results in Table 9 show an exceedance of the low-frequency criterion, up to and including 5 dB, in the 100Hz one-third octave band. However, positive adjustments are only applicable to measured noise levels during the evening/night periods for exceedances of this magnitude, as per Table C1 of the NPfI. As such, no correction has been applied to the measured noise levels.

Table 10 presents the low-frequency assessment of the mine noise measured at 32 dB(A) at R14 on the 26th of March 2026.

Table 10. Low-frequency analysis – R14 6:35 am													
Hz/dB(Z)	**One-third octave $L_{Zeq,15min}$ threshold level**												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
R14, dB(Z)	--	57	62	58	55	61	53	53	50	49	48	44	38
Threshold, dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44
Exceedance, dB	--	0	0	0	0	0	0	3	0	1	0	0	0

The results in Table 10 show an exceedance of the low-frequency criterion, up to and including 5 dB, in the 50Hz and 80Hz one-third octave bands. As such, a 4-dB(A) positive adjustment will be applied to the measured NS noise levels. The positively adjusted NS noise levels are therefore 36 dB(A),Leq(15 min) and 42 dB(A),L1(1 min) which do not exceed the applicable noise criteria.

Table 11 presents the low-frequency assessment of the mine noise measured at 37 dB(A) at R14 on the 26th of March 2026.

Table 11. Low-frequency analysis – R14 7:05 am													
Hz/dB(Z)	**One-third octave $L_{Zeq,15min}$ threshold level**												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
R14, dB(Z)	--	53	61	59	54	63	53	52	50	46	44	41	39
Threshold, dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44
Exceedance, dB	--	0	0	0	0	2	0	2	0	0	0	0	0

The results in Table 11 show an exceedance of the low-frequency criterion, up to and including 5 dB, in the 31.5Hz and 50Hz one-third octave bands. However, positive adjustments are only applicable to measured

noise levels during the evening/night periods for exceedances of this magnitude, as per Table C1 of the NPfI. As such, no correction has been applied to the measured noise levels.

4.2.1 L1 (1 min)

The noise measurements results in **Tables 1, 3, & 5** (and site observations) show that noise from the operation of NS under the operating and meteorological conditions at the times, did not exceed the L1 (1 min) criterion at the monitoring location. Since L1 (1 min) levels were significantly lower than the criterion, at the operational noise monitoring locations R27, R38 and R74, measurements at the residential facade was not considered necessary as compliance was assured. At monitoring location R14, measurements were conducted within 5m of the residential façade.

APPENDIX A

DESCRIPTION OF ACOUSTICAL TERMS

Table A1

Definition of acoustical terms

Term	Description
dB(A)	The quantitative measure of sound heard by the human ear, measured by the A-Scale Weighting Network of a sound level meter expressed in decibels (dB).
SPL	Sound Pressure Level. The incremental variation of sound pressure above and below atmospheric pressure and expressed in decibels. The human ear responds to pressure fluctuations, resulting in sound being heard.
STL	Sound Transmission Loss. The ability of a partition to attenuate sound, in dB.
Lw	Sound Power Level radiated by a noise source per unit time re 1pW.
Leq	Equivalent Continuous Noise Level - taking into account the fluctuations of noise over time. The time-varying level is computed to give an equivalent dB(A) level that is equal to the energy content and time period.
L1	Average Peak Noise Level - the level exceeded for 1% of the monitoring period.
L90	“Background” Noise Level - the level exceeded for 90% of the monitoring period.

APPENDIX B

CALIBRATION CERTIFICATE

NVMS

Sydney Calibration Laboratory
Unit 21, 1 Talavera Road, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

NATA
WORLD RECOGNISED ACCREDITATION

CERTIFICATE OF CALIBRATION

Certificate No: CAU2401038

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 3030460
Microphone:	Brüel & Kjær	4189	No: 3318407
Preamplifier:	Brüel & Kjær	ZC-0032	No: 31079
Supplied Calibrator:	Brüel & Kjær	4231	No: 2466354
Software version:	BZ7223 Version 4.7.6	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

Spectrum Acoustics Pty Ltd
8 Panylan St
Cardiff NSW 2285

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1. Procedures from IEC 61672-3:2013 were used to perform the periodic tests. The measurements included in this document are traceable to Australian / International standards through accredited calibration of all relevant reference equipment.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
X	Calibration without repair/adjustment		Calibration after repair/adjustment

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration: 04/11/2024

Certificate issued: 06/11/2024

Barath Chandar Rajendran
Calibration Technician

Sajeeb Tharayil
Approved signatory

NVMS

Sydney Calibration Laboratory
Unit 21, 1 Talavera Road, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

NATA
WORLD RECOGNISED ACCREDITATION

CERTIFICATE OF CALIBRATION

Certificate No: CAU2401041

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 2747794
Microphone:	Brüel & Kjær	4189	No: 2733511
Preamplifier:	Brüel & Kjær	ZC-0032	No: 15339
Supplied Calibrator:	Brüel & Kjær	4231	No: 2466354
Software version:	BZ7223 Version 4.6	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

Spectrum Acoustics Pty Ltd
8 Panylan St
Cardiff NSW 2285

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1. Procedures from IEC 61672-3:2013 were used to perform the periodic tests. The measurements included in this document are traceable to Australian / International standards through accredited calibration of all relevant reference equipment.

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RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
	Calibration without repair/adjustment	X	Calibration after repair/adjustment

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration: 05/11/2024

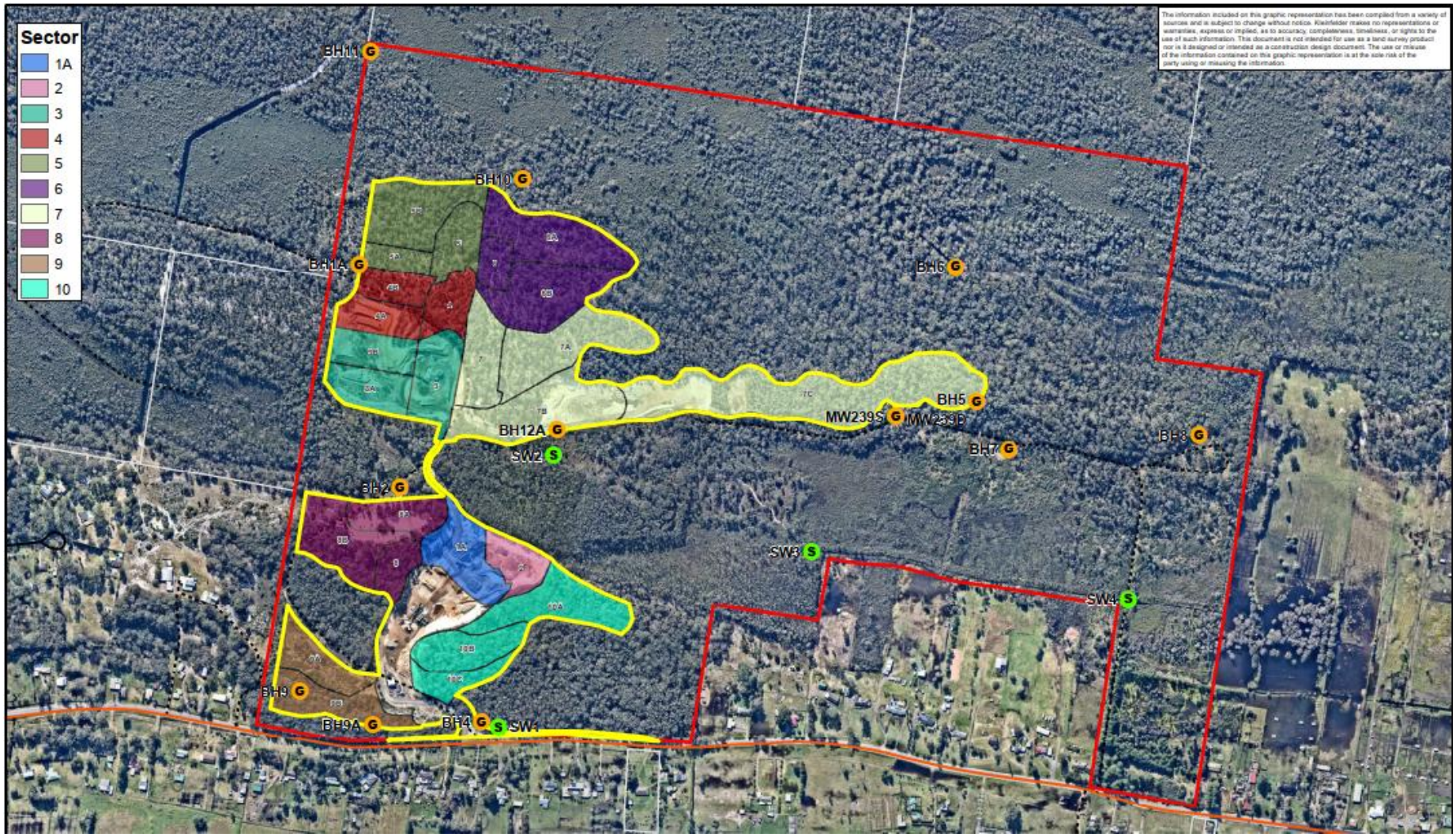
Certificate issued: 06/11/2024

Barath Chandar Rajendran
Calibration Technician

Sajeeb Tharayil
Approved signatory

NEWCASTLE SAND

APPENDIX 3. WATER MONITORING LOCATIONS (SWMP, 2021)



APPENDIX 4. AIR MONITORING LOCATIONS (AQMP, 2019)