

ATTACHMENT 12

NOISE REPORT

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ANNUAL NOISE COMPLIANCE TESTING OF PF FORMATION PTY LTD EXTRACTIVE INDUSTRY OPERATIONS

**HITCHCOCK ROAD SAND PROJECT
(DECEMBER 2023 - JULY 2024)**

Date: Tuesday, 26 November 2024

File Reference: 1933C20240722hwMarootaS1-4.docx

DOCUMENT CONTROL

Project title	Annual Noise compliance testing of PF Formation Pty Ltd extractive industry operations Hitchcock Road Sand Project (December 2023 – July 2024)		
Project number	1933		
Document reference	1933C20240722hwMarootaS1-4.docx		
Document path	G:\Shared drives\KA Acoustics 2024\REPORT\Other\1933 (hw) Maroota Quarries\1933C20240722hwMarootaS1-4.docx		
Date	Author	Review	Notes
26/11/2024	HW	JT	Report available for issue
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ANNUAL NOISE COMPLIANCE TESTING
OF PF FORMATION PTY LTD EXTRACTIVE INDUSTRY OPERATIONS
HITCHCOCK ROAD SAND PROJECT
(DECEMBER 2023 – JULY 2024)

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1.0 CONSULTANT'S BRIEF

Koikas Acoustics Pty Ltd was engaged by PF Formation Pty Ltd to undertake noise compliance testing during the sand extraction operations for the Hitchcock Road Sand Project in Maroota.

The assessment provides the following:

- a discussion of the applicable noise criteria at each site, and
- attended noise monitoring survey results.

Sand extractions have been undertaken in this area for many years. Koikas Acoustics has been advised that there have been no noise complaints received from the local community regarding the sand quarrying extraction works since periodic noise surveys commenced.

All monitoring procedures were done as per the requirements of the Project Approval of 3rd February 2009 and EPA Licence 3407.

Some measurements of sleep disturbance could not be taken 1 metre from a bedroom window. Sound level measurements were taken from the boundary. Measurements taken from the boundary were closer to the noise source and therefore louder compared to if measurements had been taken outside a bedroom window.



2.0 SITE DESCRIPTION

2.1 SITE LOCATION

The Hitchcock Road Sand Project site is bounded by:

- Old Northern Road along the East;
- Wisemans Ferry Road to the West (intersecting with the Old Northern Road to the North),
and
- Other rural properties to the South.

Refer to Figure 1 below for the project site extraction area.



Figure 1. Hitchcock Road Sand Project Site Area

2.2 HOURS OF OPERATION

The hours of operation are specified in the development consents and EPL's as shown in Table 1 below.

Activity	Day	Time [Hours]
Construction	Monday to Friday	0700 – 1800
	Saturday	0800 – 1300
	Sunday and Public Holiday	None
Quarrying and processing including overburden removal	Monday to Saturday	0700 – 1800
	Sunday and Public Holiday	None
Product Transportation	Monday to Saturday	0600 – 1800
	Sunday and Public Holiday	None
Maintenance	Monday to Saturday	0700 – 1800
	Sunday and Public Holiday	None

2.3 AMBIENT NOISE PROFILE OF THE NOISE MONITORING SITES (RECEIVERS)

The assessment site is located in a rural residential area. The main roads passing through this area being Old Northern Road and Wisemans Ferry Road carry light and heavy vehicles.

During the daytime, the perceived intrusiveness of noise from vehicles traversing along these roads whilst residents are inside or outside their homes is expected to be significantly greater compared to the noise of sand quarrying extraction activities.

2.4 MONITORING LOCATIONS

Noise monitoring was conducted in the Maroota area at the following locations:

1. Tornatola property Hitchcock Road (driveway);
2. Pignataro property (corner of Wisemans Ferry Road and Old Northern Road);
3. 4369 Old Northern Road, and
4. Maroota Public School (rear of school).

Jurds house (previously referred to as Location 3) has since converted from residential to commercial use only during business hours. As such, the nearest most sensitive residential receiver is located at 4369 Old Northern Road. The neighbours at 4360 Old Northern Road were considered a non-sensitive receiver by agreement.

The site locations are shown below in Figure 2.



Figure 2. Monitoring site locations (image source – Google Maps)

3.0 NOISE CRITERIA

The noise criteria are specified in the project approval, EPA Licence 3407 and approved Noise Management Plan.

3.1 BACKGROUND NOISE

The noise criteria have been derived from previous noise surveys by undertaking long-term ambient noise level measurements at a representative site. The background noise level was determined over consecutive 15-minute periods for one week. From this data of $L_{A90,15 \text{ minutes}}$ noise levels, the 10 percentile lowest background noise levels were determined for each of the days. The *rating background level* was then determined by calculating the median value of the daily 10-percentile background noise levels for each of the three specific periods: daytime, evening and nighttime.

The rating background level result is used to determine the noise criteria applicable to the surrounding residential properties as per the Environment Protection Authority's (EPA) Noise Policy for Industry (NPfI) October 2017 assessment procedures.

The background noise level $L_{A90, 15 \text{ minutes}}$ is normally determined in the absence of extraneous noise such as traffic, wind, rain, conversation, birds chirping, insect noise and unnatural increases in noise from distant sources due to local air movement. The EPA defines such sources as *incidental noise* which can cause the masking of offensive noise from a specific source. When traffic or other incidental noises cannot be excluded, then it is considered that these noise sources are part of the background noise.

3.2 EPA NOISE POLICY FOR INDUSTRY

Noise emission design targets have been referenced from the NSW Environmental Protection Authority Noise Policy (EPA) for Industry (NPfI). The NPfI replaces the former Industrial Noise Policy, also prepared by the EPA.

The NPfI is designed to assess environmental noise impacts associated with scheduled activities prescribed within the Protection of the Environment Operations Act 1997, Schedule 1. It is also used as a reference tool for establishing suitable planning levels for noise generated by mechanical plant and equipment and noise emission from commercial/industrial operations.

The guideline applies limits on the short-term intrusive nature of a noise or noise-generating



development (project intrusive noise level), as well as applying an upper limit on cumulative industrial noise emissions from all surrounding development/industry (project amenity noise level). The most stringent of the project intrusive noise level and project amenity noise level is applied as the **project noise trigger level**, which is a noise emission from a source or development site that would trigger a management response.

To determine which of the intrusive and amenity noise criteria is more stringent, the underlying noise metrics must be the same. As the intrusive noise level is defined in terms of an $L_{Aeq, 15 \text{ minutes}}$ and the amenity noise level is defined in terms of an $L_{Aeq, \text{Period}}$, a correction +3dB correction is applied to the project amenity noise level to equate the $L_{Aeq, \text{Period}}$ to $L_{Aeq, 15 \text{ minutes}}$.

3.3 NOMINATED NOISE CRITERIA

As per the approved Noise Management Plan June 2022, the following noise criteria were adopted:

Noise assessment location	Other locations covered	Day	Night ¹	Night ¹
		L_{Aeq} (15 minute)	L_{Aeq} (15 minute)	$LA1$ (1 minute)
1. R9 – Young, Hitchcock Road	R10 Tornatola	39	35	45
2. R5 - Pignataro	R6 Camilleri	42	35	45
3. R3 – Fire station/Jurd	R1 Hammond and R2 Hitchcock	40	35	45
4. R7 – Marrofa Public School	R6 Camilleri and R8 Portelli	36(L_{Aeq} (1 hour))	N/A	N/A

Note 1: Night time is defined as the period between 10.00pm and 7.00am. Activities on the site start at 6.00am and are completed by 6.00pm. There is no activity on the site during the evening period.



4.0 NOISE SURVEYS

4.1 NOISE MONITORING PROCEDURES

All noise methodologies and equipment used, comply with the following Australian Standards:

- *AS IEC 61672.1:2019 "Electroacoustics - Sound Level Meters", and*
- *ISO 1996.2-2017 "Acoustics - Description, measurement and assessment of environmental noise" Part 2: Determination of sound pressure levels.*

4.2 ATTENDED NOISE MONITORING

Attended noise monitoring was conducted on the following days at each monitoring location below:

At Location 1 Tornatola Property Hitchcock Road (@ driveway)

15 th Dec 2023	Night-time hours
14 th Dec 2023	Daytime hours
29 th Feb 2024	Night-time hours
28 th Feb 2024	Daytime hours
30 th April 2024	Night-time hours
30 th April 2024	Daytime hours
15 th July 2024	Night-time hours
15 th July 2024	Daytime hours

At Location 2 Pignataro Property (corner of Wisemans Ferry Road and Old Northern Road)

15 th Dec 2023	Night-time hours
14 th Dec 2023	Daytime hours
29 th Feb 2024	Night-time hours
28 th Feb 2024	Daytime hours
30 th April 2024	Night-time hours
30 th April 2024	Daytime hours
15 th July 2024	Night-time hours
15 th July 2024	Daytime hours



At Location 3 - 4369 Old Northern Rd

15 th Dec 2023	Night-time hours
14 th Dec 2023	Daytime hours
29 th Feb 2024	Night-time hours
28 th Feb 2024	Daytime hours
30 th April 2024	Night-time hours
29 th April 2024	Daytime hours
15 th July 2024	Night-time hours
15 th July 2024	Daytime hours

At Location 4 Maroota Public School (rear of school)

14 th Dec 2023	Daytime hours
28 th Feb 2024	Daytime hours
30 th April 2024	Daytime hours
15 th July 2024	Daytime hours

The noise measurements taken from December 2023 to July 2024 were conducted with a Class 1 Svan 971 S/N 40412 Sound Level Meter and calibrated with a Svantek SV 33 Class 1 Acoustic Calibrator. The noise monitoring was carried out in fine weather with no rain or other events affecting the results.



5.0 NOISE SURVEY RESULTS

Tables 2, 3, 4 and 5 refer to measured noise levels taken at locations 1, 2, 3 and 4 respectively for each monitoring period. At all sites, the measured L_{Aeq} was predominantly environmental sound sources. Quarry activities were generally either inaudible or barely audible. Exceeding levels were generally not from quarry activities.

Table 2. Location 1 Tornatola Property Hitchcock Road - Noise Survey Results [dB]					
Date	Applicable Criterion	Measured Noise Level	Measured L_{A90}	Exceeding Criterion	Note
15 th Dec 2023 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	53 $L_{Aeq,15min}$ 57 $L_{A1,1min}$	37 42	18 12	Background noise dominated by traffic including cars and trucks. Birds calling nearby.
14 th Dec 2023 Daytime hours	39 $L_{Aeq,15min}$	66 $L_{Aeq,15min}$	50	27	Background noise dominated by traffic including cars and trucks. Bingo truck delivered a bin to resident at #1304. Cicadas calling nearby. Quarry noise not audible.
29 th Feb 2024 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	54 $L_{Aeq,15min}$ 50 $L_{A1,1min}$	42 43	19 5	Background noise dominated by traffic including cars and trucks.
28 th Feb 2024 Daytime hours	39 $L_{Aeq,15min}$	52 $L_{Aeq,15min}$	38	13	Background noise dominated by traffic including cars and trucks. Birds calling nearby. Quarry noise not audible
30 th April 2024 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	50 $L_{Aeq,15min}$ 48 $L_{A1,1min}$	38 36	15 3	Background noise dominated by traffic including cars and trucks. Birds calling nearby.
30 th April 2024 Daytime hours	39 $L_{Aeq,15min}$	53 $L_{Aeq,15min}$	43	14	Background noise dominated by traffic including cars and trucks. Birds calling nearby.
15 th July 2024 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	53 $L_{Aeq,15min}$ 60 $L_{A1,1min}$	41 40	18 15	Background noise including cars and trucks. Garbage truck passed during the noise survey period
15 th July 2024 Daytime hours	39 $L_{Aeq,15min}$	52 $L_{Aeq,15min}$	42	13	Background noise dominated by traffic including cars and trucks. Birds calling nearby.



Table 3. Location 2 Pignataro Property - Noise Survey Results [dB]

Date	Applicable Criterion	Measured Noise Level	Measured LA90	Exceeding Criterion	Note
15 th Dec 2023 Night-time hours	35 LAeq,15min 45 LA1,1min	65 LAeq,15min 58 LA1,1min	42 44	30 13	Background noise dominated by traffic including cars and trucks. Birds calling nearby.
14 th Dec 2023 Daytime hours	42 LAeq, 15min	67 LAeq, 15min	49	25	Background noise dominated by traffic including cars and trucks. Quarry noise barely audible between traffic lulls.
29 th Feb 2024 Night-time hours	35 LAeq,15min 45 LA1,1min	65 LAeq,15min 65 LA1,1min	44 53	30 20	Background noise dominated by traffic including cars and trucks.
28 th Feb 2024 Daytime hours	42 LAeq, 15min	65 LAeq, 15min	39	23	Background noise dominated by traffic including cars and trucks. Birds calling nearby. Quarry noise barely audible between traffic noise.
30 th April 2024 Night-time hours	35 LAeq,15min 45 LA1,1min	67 LAeq,15min 52 LA1,1min	43 38	32 7	Background noise dominated by traffic including cars and trucks. Birds calling nearby.
30 th April 2024 Daytime hours	42 LAeq, 15min	67 LAeq,15min	42	25	Background noise dominated by traffic including cars and trucks. Birds calling nearby. Quarry noise audible inbetween traffic noise.
15 th July 2024 Night-time hours	35 LAeq,15min 45 LA1,1min	68 LAeq,15min 65 LA1,1min	44 41	33 20	Background noise including cars and trucks. Birds calling nearby. Quarry noise barely audible between traffic noise.
15 th July 2024 Daytime hours	42 LAeq, 15min	68 LAeq,15min	40	26	Background noise dominated by traffic including cars and trucks. Birds calling nearby. Quarry noise barely audible in distance between traffic noise.



Table 4. Location 3 - 4369 Old Northern Rd - Noise Survey Results [dB]

Date	Applicable Criterion Level	Measured Noise Level	Measured LA90	Exceeding Criterion	Note
15 th Dec 2023 Night-time hours	35 LAeq,15min 45 LA1,1min	63 LAeq,15min 64 LA1,1min	37 41	28 19	Background noise dominated by traffic including cars and trucks. Birds calling nearby
14 th Dec 2023 Daytime hours	40 LAeq,15min	62 LAeq,15min	55	22	Background noise dominated by traffic including cars and trucks. Cicadas calling nearby. Quarry noise not audible.
29 th Feb 2024 Night-time hours	35 LAeq,15min 45 LA1,1min	60 LAeq,15min 63 LA1,1min	43 45	25 18	Background noise dominated by traffic including cars and trucks. Quarry noise audible
28 th Feb 2024 Daytime hours	40 LAeq,15min	58 LAeq,15min	39	18	Background noise dominated by traffic including cars and trucks. Quarry noise audible
30 th April 2024 Night-time hours	35 LAeq,15min 45 LA1,1min	58 LAeq,15min 62 LA1,1min	35 40	23 17	Background noise dominated by traffic including cars and trucks. Birds calling nearby. Quarry noise audible.
29 th April 2024 Daytime hours	40 LAeq,15min	63 LAeq,15min	43	23	Background noise dominated by traffic including cars and trucks. Birds calling nearby. Quarry noise audible.
15 th July 2024 Night-time hours	35 LAeq,15min 45 LA1,1min	63 LAeq,15min 59 LA1,1min	41 41	28 14	Background noise including cars and trucks. Birds calling nearby. Quarry noise barely audible between traffic noise.
15 th July 2024 Daytime hours	40 LAeq,15min	63 LAeq,15min	43	23	Background noise including cars and trucks. Birds calling nearby. Quarry noise barely audible between traffic noise.



Table 5. Location 4 Maroota Public School - Noise Survey Results

Date	Applicable Criterion Level	Measured Noise Level	Measured L ₉₀	Exceeding Criterion	Note
14 th Dec 2023 Daytime hours	36 L ₉₀ , 1-hour	54 L ₉₀ , 1-hour	48	18	Traffic noise including cars and trucks. School noises from Children including loud voices and music. Quarry noise audible in background with banging heard. Leaves rustling as wind speed increased.
28 th Feb 2024 Daytime hours		51 L ₉₀ , 1-hour	39	15	Quarry noise audible. Traffic noise including cars and trucks. Birds calling nearby.
30 th April 2024 Daytime hours		54 L ₉₀ , 1-hour	46	18	Background noise dominated by traffic including cars and trucks. Birds calling nearby. Quarry noise audible in the background. Noises from the school including loud voices and music.
15 th July 2024 Daytime hours		54 L ₉₀ , 1-hour	49	18	Quarry noise barely audible. Traffic noise in background including cars and trucks. Birds calling nearby. Leaves rustling nearby.

As a result of the distance between the extraction sites and the residential / sensitive receiver points, the noise activities generated by the quarry are often not measurable because the noise is below the measured background ambience. Even with falls in traffic levels, quarry activities were often inaudible. Even though the extraction sites were audible, these are expected to comply with EPA-nominated criteria. Measured noise levels (predominantly those of traffic and natural sound sources) are producing the dominant background levels, above the nominated noise criteria.



6.0 CONCLUSIONS

Koikas Acoustics was requested to undertake noise measurements around the Hitchcock Road Sand Project sand quarrying extraction and processing quarry (from December 2023 to July 2024) and ascertain whether the quarry activities, (which include the extraction and processing works), exceed the nominated noise criteria as nominated by EPA licence 3407 and the project approval.

The results of the noise surveys show that the site extraction and processing work complies with the EPA-nominated noise criteria.

At most sites, quarry activities are either barely audible or inaudible and in most cases, the noise emanating from the site was found not to be measurable on account of the ambient background noise. The ambient background noise included birds chirping, insects singing, the rustling of leaves, cars and trucks traversing along the main roads, machinery utilised by residents and other domestic activities.

Based on the survey results and observations, there are no noise mitigation measures necessary to be implemented for any of the subject quarry sites.

Koikas Acoustics, therefore, certifies that the subject quarries currently comply with the EPA-nominated noise criteria despite that the measured noise levels (predominantly that of traffic and other natural sound sources) are currently producing sound levels above the nominated noise criteria on most days.



ATTACHMENT 13

AIR QUALITY REPORT



TEST REPORT

Boral Construction Materials
Materials Technical Services

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Baulkham Hills NSW 2153 Australia
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Winston Hills NSW 2153

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boral.com.au

CLIENT: P.F. Formation - Maroota
PROJECT: Gravimetric Dust Monitoring at Maroota for June 2024

FILE No.: 250 / 24
REQUEST No.: 113470

TEST PROCEDURE: AS 3580.10.1 - Methods for Sampling and Analysis of Ambient Air - Method 10.1 - Determination of Particulate Matter, Deposited Matter - Gravimetric Method

Laboratory Sample Number:	306224	306225	306226	306227	306228
Site Location Number:	1	2	3	4	5
Sample Description:	Dust, Maroota Public School	Dust, Hitchcock Road	Dust, Jurd's House	Dust, Josh's House (Lot 2 DP 510812)	Dust, Maroota Lodge
Sampling Period:	31/5/24, 7:45am - 1/7/24, 8:20am	31/5/24, 12:45am - 1/7/24, 11:10am	31/5/24, 8:45am - 1/7/24, 9:30am	31/5/24, 8:10am - 1/7/24, 8:45am	31/5/24, 10:35am - 1/7/24, 10:00am
Date Received:	5/7/24				
Date Tested:	From 10/7/24 to 22/7/24				

TEST RESULTS:

Volume of Liquid in the Gauge (mL):	2000	2000	2000	2000	2000
Total Solids (g/m ² month):	1.53	2.00	5.88	1.81	1.43
Insoluble Solids (g/m ² month):	1.08	1.31	5.63	1.54	1.08
Soluble Matter (g/m ² month):	0.44	0.69	0.25	0.27	0.35
Ash (g/m ² month):	1.00	0.83	5.44	1.07	0.67
Combustible Matter (g/m ² month):	0.08	0.47	0.19	0.47	0.42

Uncertainty - 95%
Confidence @ Factor 2

± 0.08
± 0.05
± 0.04

Samples were provided by the Client and tested as received.
Refer to attached graphs.

Joshua Graham, Mat.File, File.

Approved signatory  Muans Abdulnebe
Date 1-23-24 Serial no. CHEM113470.MA.1

Accredited for compliance with ISO/IEC 17025 – Testing
This report shall not be reproduced in full without the approval of the Boral MTS Laboratory.
Test results in this Test Report relate only to the samples tested.



NATA Accredited Laboratory
Number: 9968

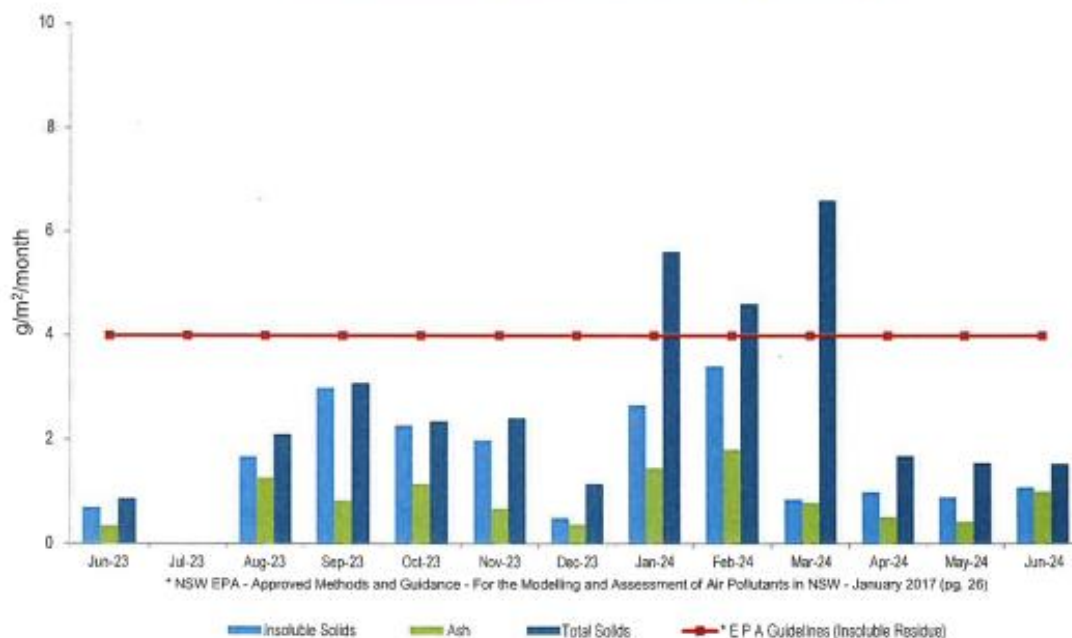


Boral Construction Materials
Boral Materials Technical Services

Dust Monitoring

P.F. Formation - Maroota
Maroota Public School
Site 1

Month	Insoluble Solids	Ash	* E P A Guidelines (Insoluble Residue)	Total Solids
Jun-23	0.69	0.34	4	0.86
Jul-23	0.00	0.00	4	0.00
Aug-23	1.67	1.27	4	2.10
Sep-23	2.99	0.82	4	3.08
Oct-23	2.27	1.14	4	2.35
Nov-23	1.98	0.67	4	2.41
Dec-23	0.49	0.37	4	1.14
Jan-24	2.66	1.45	4	5.61
Feb-24	3.41	1.81	4	4.61
Mar-24	0.85	0.78	4	6.60
Apr-24	0.99	0.51	4	1.68
May-24	0.89	0.42	4	1.55
Jun-24	1.08	1.00	4	1.53



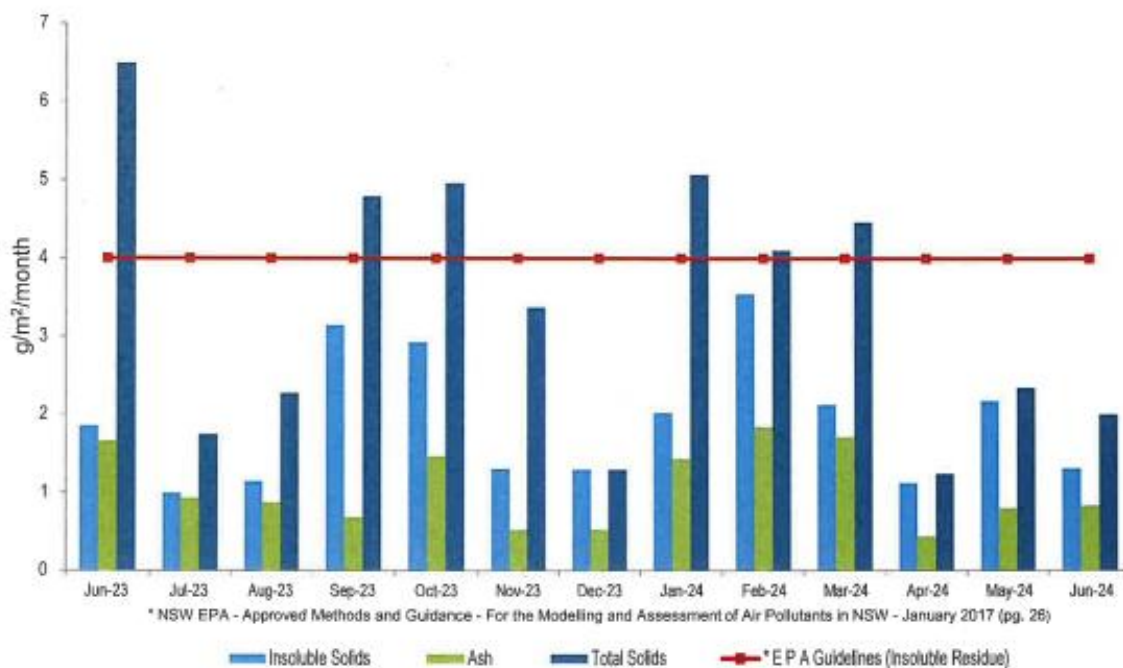


Boral Construction Materials
Boral Materials Technical Services

Dust Monitoring

P.F. Formation - Maroota
Hitchcock Road
Site 2

Month	Insoluble Solids	Ash	* E P A Guidelines (Insoluble Residue)	Total Solids
Jun-23	1.85	1.66	4	6.49
Jul-23	0.99	0.93	4	1.74
Aug-23	1.14	0.87	4	2.27
Sep-23	3.14	0.68	4	4.79
Oct-23	2.92	1.46	4	4.96
Nov-23	1.30	0.52	4	3.37
Dec-23	1.29	0.52	4	1.29
Jan-24	2.02	1.43	4	5.07
Feb-24	3.54	1.84	4	4.1
Mar-24	2.12	1.71	4	4.48
Apr-24	1.12	0.44	4	1.24
May-24	2.17	0.80	4	2.34
Jun-24	1.31	0.83	4	2.00



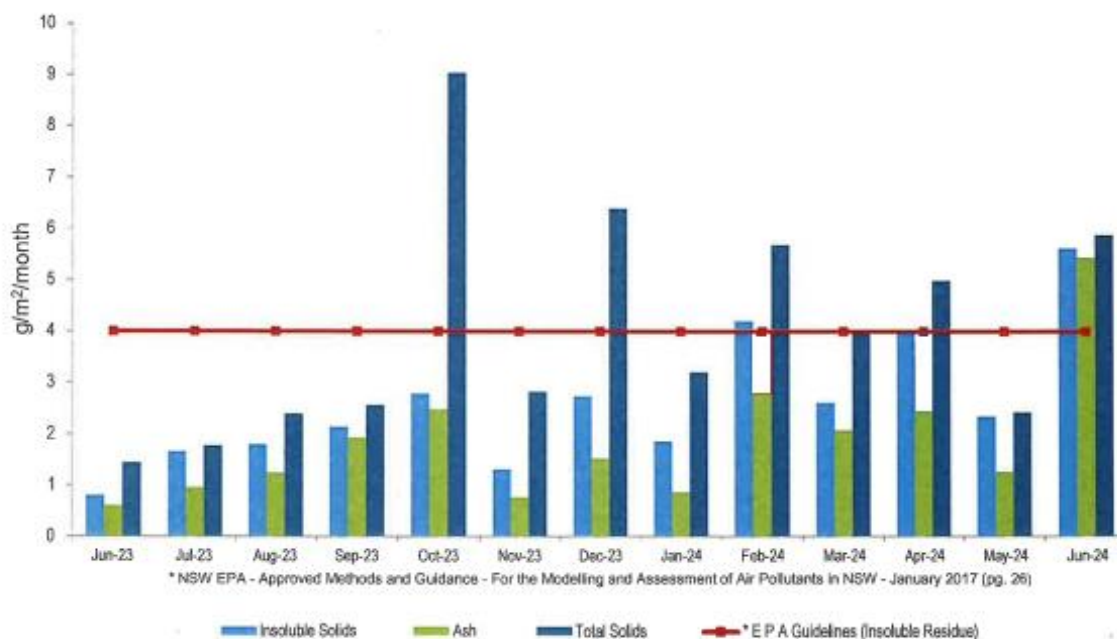


Boral Construction Materials
Boral Materials Technical Services

Dust Monitoring

P.F. Formation - Maroota
Jurd's House
Site 3

Month	Insoluble Solids	Ash	* E P A Guidelines (Insoluble Residue)	Total Solids
Jun-23	0.79	0.60	4	1.43
Jul-23	1.65	0.95	4	1.77
Aug-23	1.79	1.24	4	2.39
Sep-23	2.13	1.92	4	2.56
Oct-23	2.78	2.48	4	9.05
Nov-23	1.30	0.78	4	2.82
Dec-23	2.73	1.52	4	6.40
Jan-24	1.85	0.86	4	3.20
Feb-24	4.2	2.8	4	5.69
Mar-24	2.8	2.07	4	3.99
Apr-24	4	2.44	4	4.99
May-24	2.34	1.26	4	2.42
Jun-24	5.63	5.44	4	5.88



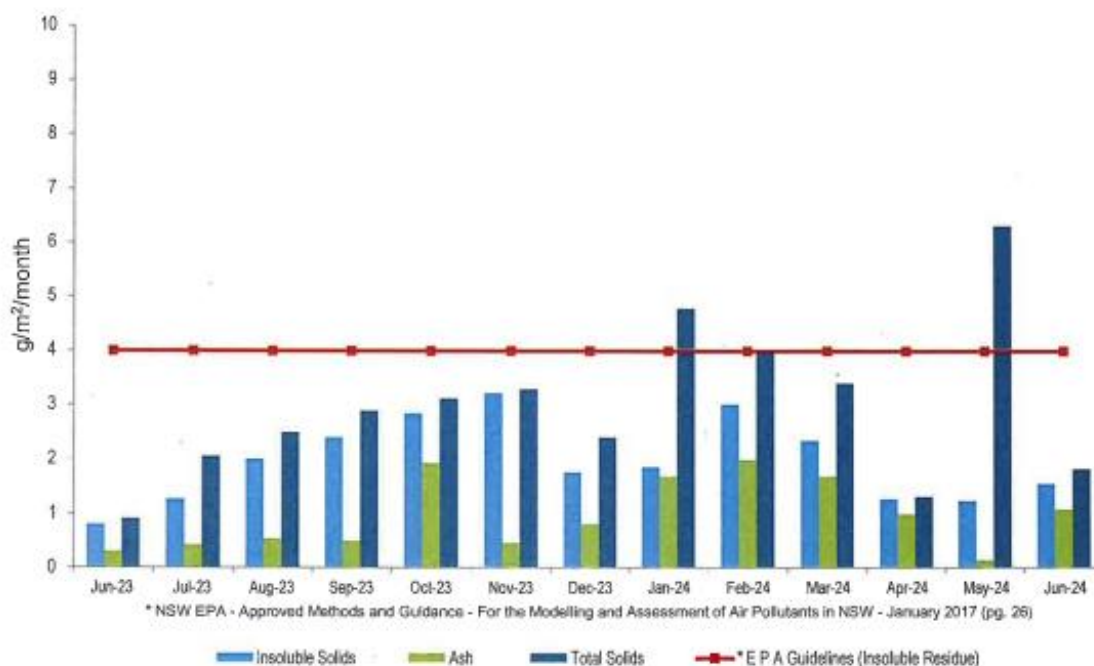


Boral Construction Materials
Boral Materials Technical Services

Dust Monitoring

P.F. Formation - Maroota
Josh's House (Lot 2 DP 510812)
Site 4

Month	Insoluble Solids	Ash	* E P A Guidelines (Insoluble Residue)	Total Solids
Jun-23	0.79	0.30	4	0.90
Jul-23	1.26	0.42	4	2.05
Aug-23	2.00	0.53	4	2.49
Sep-23	2.40	0.49	4	2.89
Oct-23	2.84	1.92	4	3.12
Nov-23	3.22	0.45	4	3.29
Dec-23	1.75	0.80	4	2.40
Jan-24	1.85	1.68	4	4.78
Feb-24	3.01	1.99	4	4.01
Mar-24	2.34	1.68	4	3.40
Apr-24	1.26	0.98	4	1.30
May-24	1.23	0.14	4	6.31
Jun-24	1.54	1.07	4	1.81





Boral Construction Materials
Boral Materials Technical Services

Dust Monitoring

P.F. Formation - Maroota
Maroota Lodge
Site 5

Month	Insoluble Solids	Ash	* E P A Guidelines (Insoluble Residue)	Total Solids
Jun-23	0.71	0.29	4	0.74
Jul-23	0.78	0.31	4	1.08
Aug-23	1.54	0.83	4	1.60
Sep-23	1.46	0.55	4	1.86
Oct-23	3.30	1.14	4	5.01
Nov-23	0.75	0.64	4	1.46
Dec-23	1.04	0.57	4	2.00
Jan-24	1.89	1.03	4	3.63
Feb-24	4.46	3.07	4	8.02
Mar-24	0.81	0.65	4	2.78
Apr-24	1.03	0.18	4	2.26
May-24	0.57	0.49	4	0.78
Jun-24	1.08	0.67	4	1.43

