

ATTACHMENT 11

NOISE REPORT

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

HITCHCOCK ROAD SAND PROJECT (JULY 2020 - APRIL 2021)

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ANNUAL NOISE COMPLIANCE TESTING
OF PF FORMATION PTY LTD EXTRACTIVE INDUSTRY OPERATIONS
HITCHCOCK ROAD SAND PROJECT
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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 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.

Table 1. Hours of Operation		
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. Jurds property (back of fire shed, adjacent to Old Northern Road), and
4. Maroota Public School (rear of school).

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 $L_{Aeq,15 \text{ minutes}}$ 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 $L_{Aeq, 15 \text{ minutes}}$ 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 January 2016, the following noise criteria were adopted:

Table 9.1 Noise impact assessment monitoring locations and criteria				
Noise assessment location	Other locations covered	Day	Night 1	Night 1
		L_{Aeq} (15 minute)	L_{Aeq} (15 minute)	L_{A1} (1 minute)
1. R9 – Young, Hitchcock Road	R10 Tomatola	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 – Maroota 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:

- *AS1259.2-1990 "Acoustics - Sound Level Meters - Integrating - Averaging", and*
- *ISO 1996.2-2007 "Acoustics – Description, measurement and assessment of environmental noise" Part 2: Determination of environmental noise levels.*

All sound and noise level measurements were 'A' frequency weighted and 'Fast' time response.

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)

3 rd August 2020	Night-time hours
31 st July 2020	Daytime hours
30 th October 2020	Night-time hours
30 th October 2020	Daytime hours
13 th January 2021	Night-time hours
13 th January 2021	Daytime hours
27 th April 2021	Night-time hours
27 th April 2021	Daytime hours

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

3 rd August 2020	Night-time hours
31 st July 2020	Daytime hours
30 th October 2020	Night-time hours
30 th October 2020	Daytime hours
13 th January 2021	Night-time hours
13 th January 2021	Daytime hours
27 th April 2021	Night-time hours
27 th April 2021	Daytime hours

At Location 3 Jurds Property (back of fire shed, adjacent to Old Northern Road)

3 rd August 2020	Night-time hours
31 st July 2020	Daytime hours
30 th October 2020	Night-time hours
30 th October 2020	Daytime hours
13 th January 2021	Night-time hours
13 th January 2021	Daytime hours
27 th April 2021	Night-time hours
27 th April 2021	Daytime hours

At Location 4 Maroota Public School (rear of school)

31 st July 2020	Daytime hours
30 th October 2020	Daytime hours
13 th January 2021	Daytime hours
27 th April 2021	Daytime hours

The noise measurements taken from July 2020 to April 2021 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.

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_{Aeq}	Exceeding Criterion	Note
3 rd August 2020 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	57 $L_{Aeq,15min}$ 51 $L_{A1,1min}$	46 50	22 6	Truck movements and other road traffic dominate background noise.
31 st July 2020 Daytime hours	39 $L_{Aeq,15min}$	57 $L_{Aeq,15min}$	42	18	Birds calling nearby. Truck and other vehicle traffic dominate background noise. Quarry noise not audible.
30 th October 2020 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	51 $L_{Aeq,15min}$ 50 $L_{A1,1min}$	32 31	16 5	Traffic dominates background noise including cars and trucks. Birds calling in background.
30 th October 2020 Daytime hours	39 $L_{Aeq,15min}$	64 $L_{Aeq,15min}$	40	25	Insects dominate background noise (cicadas). Birds calling nearby. Traffic including cars and trucks.

13 th January 2021 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	49 $L_{Aeq,15min}$ 64 $L_{A1,1min}$	41	14 19	Traffic dominates background noise including cars and trucks. Birds and insects calling nearby. Quarry activities were inaudible.
13 th January 2021 Daytime hours	39 $L_{Aeq,15min}$	59 $L_{Aeq,15min}$	56	20	Insects dominate background noise (cicadas). Traffic including cars and trucks. Leaves rustling. Quarry activities were inaudible.
27 th April 2021 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	52 $L_{Aeq,15min}$ 49 $L_{A1,1min}$	40 42	17 4	Traffic dominates background noise including cars and trucks. Quarry activities were inaudible.
27 th April 2021 Daytime hours	39 $L_{Aeq,15min}$	39 $L_{Aeq,15min}$	36	0	Traffic including cars and trucks. Leaves rustling. Quarry noise not audible. Farm machinery audible from Haerses Road.

Table 3. Location 2 Pignataro Property - Noise Survey Results [dB]					
Date	Applicable Criterion	Measured Noise Level	Measured LA90	Exceeding Criterion	Note
3 rd August 2020 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	62 $L_{Aeq,15min}$ 52 $L_{A1,1min}$	57 51	27 7	Trucks and other vehicle traffic dominate background noise.
31 st July 2020 Daytime hours	42 $L_{Aeq,15min}$	60 $L_{Aeq,15min}$	54	21	Truck and other vehicle traffic dominate background noise. Birds calling nearby. Quarry noise barely audible in background.
30 th October 2020 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	58 $L_{Aeq,15min}$ 55 $L_{A1,1min}$	37 43	23 10	Traffic dominates background noise including cars and trucks and motorbikes.
30 th October 2020 Daytime hours	42 $L_{Aeq,15min}$	61 $L_{Aeq,15min}$	38	22	Truck and other vehicle traffic dominate background noise. Birds calling nearby. Quarry noise barely audible in background.
13 th January 2021 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	60 $L_{Aeq,15min}$ 67 $L_{A1,1min}$	56 43	25 22	Traffic dominates background noise including cars and trucks. Birds and insects calling nearby. Quarry activities were barely audible, not measurable.
13 th January 2021 Daytime hours	42 $L_{Aeq,15min}$	61 $L_{Aeq,15min}$	56	19	Background noise dominated by insects (cicadas). Birds calling nearby. Truck and other vehicle traffic dominate background noise. Quarry activities were barely audible, not measurable.
27 th April 2021 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	60 $L_{Aeq,15min}$ 55 $L_{A1,1min}$	42 45	25 10	Traffic dominates background noise including cars and trucks. Quarry activities were inaudible.
27 th April 2021 Daytime hours	42 $L_{Aeq,15min}$	61 $L_{Aeq,15min}$	46	19	Truck and other vehicle traffic dominate background noise. Quarry noise audible in background during lulls of traffic noise.

Table 4. Location 3 Jurds Property - Noise Survey Results [dB]					
Date	Applicable Criterion Level	Measured Noise Level	Measured L_{A90}	Exceeding Criterion	Note
3 rd August 2021 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	54 $L_{Aeq,15min}$ 46 $L_{A1,1min}$	53 44	19 1	Truck and other traffic dominate background noise.
31 st July 2021 Daytime hours	40 $L_{Aeq,15min}$	56 $L_{Aeq,15min}$	42	16	Truck and other traffic dominate background noise. Birds calling nearby. Quarry noise not audible.
30 th October 2020 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	60 $L_{Aeq,15min}$ 54 $L_{A1,1min}$	39 36	25 9	Constant buzzing noise from mobile phone tower. Traffic dominated background noise including cars. Birds calling nearby. Machinery noise barely audible.
30 th October 2020 Daytime hours	40 $L_{Aeq,15min}$	59 $L_{Aeq,15min}$	37	19	Traffic dominates background noise including cars and trucks. Birds calling nearby. Quarry noise barely audible.
13 th January 2021 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	61 $L_{Aeq,15min}$ 68 $L_{A1,1min}$	39 36	26 23	Constant buzzing noise from mobile phone tower. Traffic dominated background noise including cars and trucks. Birds and insects calling nearby. Quarry activities were barely audible, not measurable.
13 th January 2021 Daytime hours	40 $L_{Aeq,15min}$	57 $L_{Aeq,15min}$	45	27	Background noise dominated by insects (cicadas). Birds calling nearby. Traffic noise including cars and trucks. Quarry activities were inaudible.
27 th April 2021 Night-time hours	35 $L_{Aeq,15min}$ 45 $L_{A1,1min}$	58 $L_{Aeq,15min}$ 56 $L_{A1,1min}$	38 42	23 11	Traffic dominated background noise including cars. Quarry activities were inaudible.
27 th April 2021 Daytime hours	40 $L_{Aeq,15min}$	61 $L_{Aeq,15min}$	39	21	Traffic noise including cars and trucks. Quarry activities were barely audible, not measurable.

Table 5. Location 4 Maroota Public School - Noise Survey Results					
Date	Applicable Criterion Level	Measured Noise Level	Measured L_{A90}	Exceeding Criterion	Note
31 st July 2020 Night-time hours	36 $L_{Aeq,15min}$	48 $L_{Aeq,15min}$	46	12	Quarry noise audible. Traffic noise in background. Birds calling nearby.
30 th October 2020 Daytime hours		47 $L_{Aeq,15min}$	40	11	Insects calling nearby dominate background noise (cicadas). Birds calling nearby. Traffic noise includes cars and trucks. Quarry noise barely audible. Occasional loud noises from the school (children yelling) School lunchtime bell (musical ascending).



13 th January 2021 Daytime hours		54 Leaves rustle	51	18	Insects calling nearby dominate background noise (cicadas). Birds calling nearby. Traffic noise includes cars and trucks. Leaves rustling. Quarry activities were barely audible, not measurable.
27 th April 2021 Daytime hours		47 Leaves rustle	40	11	Traffic noise in the background. Birds calling nearby. On account of there being many sounds occurring, it is difficult to differentiate the noise contribution of the quarry extraction activities. Quarry noise audible. Sounds like hammering possibly coming from Dixon sandstone quarry.

On account of the large distances between the sand quarrying extraction activities to the surrounding residential premises and the distant vehicular and other environmental sound sources, quarry activities are either inaudible or barely audible. When the noise in question is inaudible or barely audible, it is not possible to quantify the contribution of the noise source at those receiver locations. The noise criteria nominated by EPA Licence 3407, Minister of Planning approval and Table 9.1 of the approved Noise Management Plan January 2016 for the hours of operation were therefore not exceeded with the exception at 4 Maroota (Public School) on 31st July 2020 and 27th April 2021.

6.0 CONCLUSIONS

Koikas Acoustics was requested to undertake noise measurements around the Hitchcock Road Sand Project sand quarrying extraction and processing quarry (from July 2020 to April 2021) 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 subject site extraction works generally complied currently comply with the nominated noise criteria.

At most receiver site locations, quarry activities are either barely audible or inaudible. The noise emanating from the quarry activities were not measurable on account of the higher noise contribution of environmental noise (birds chirping, insects, the rustling of leaves) and unnatural noise sources (distant cars and trucks traversing along the main roads).

Noise mitigation measures are therefore not warranted to be implemented for the subject quarry sites.

Koikas Acoustics, therefore, certifies that the subject Maroota Hitchcock Road Sand Project currently complies with the nominated noise criteria.



ATTACHMENT 12

AIR QUALITY REPORT

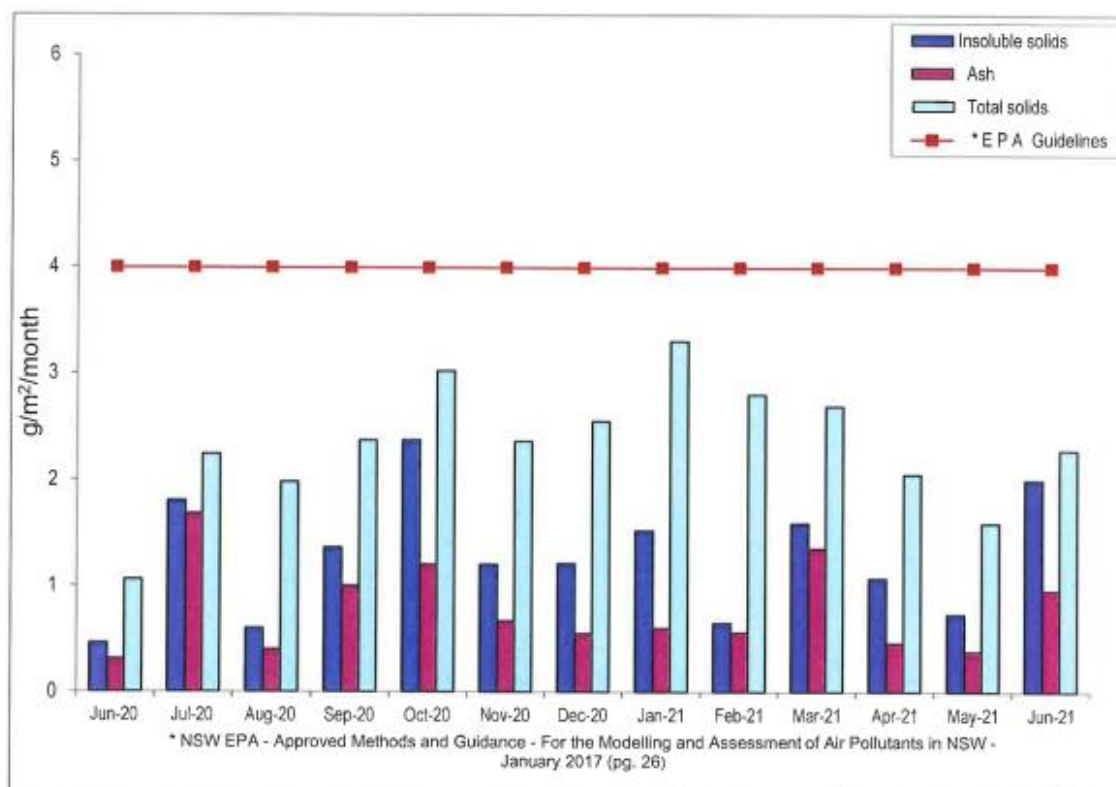


Boral Construction Materials
Boral Materials Technical Services

Dust Monitoring

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

	Insoluble solids	Ash	* E P A Guidelines	Total solids
Jun-20	0.46	0.31	4	1.06
Jul-20	1.80	1.68	4	2.24
Aug-20	0.60	0.40	4	1.98
Sep-20	1.36	1.00	4	2.37
Oct-20	2.37	1.20	4	3.02
Nov-20	1.20	0.67	4	2.36
Dec-20	1.21	0.55	4	2.55
Jan-21	1.52	0.60	4	3.30
Feb-21	0.65	0.56	4	2.80
Mar-21	1.59	1.35	4	2.69
Apr-21	1.07	0.46	4	2.05
May-21	0.73	0.38	4	1.59
Jun-21	2.00	0.96	4	2.28



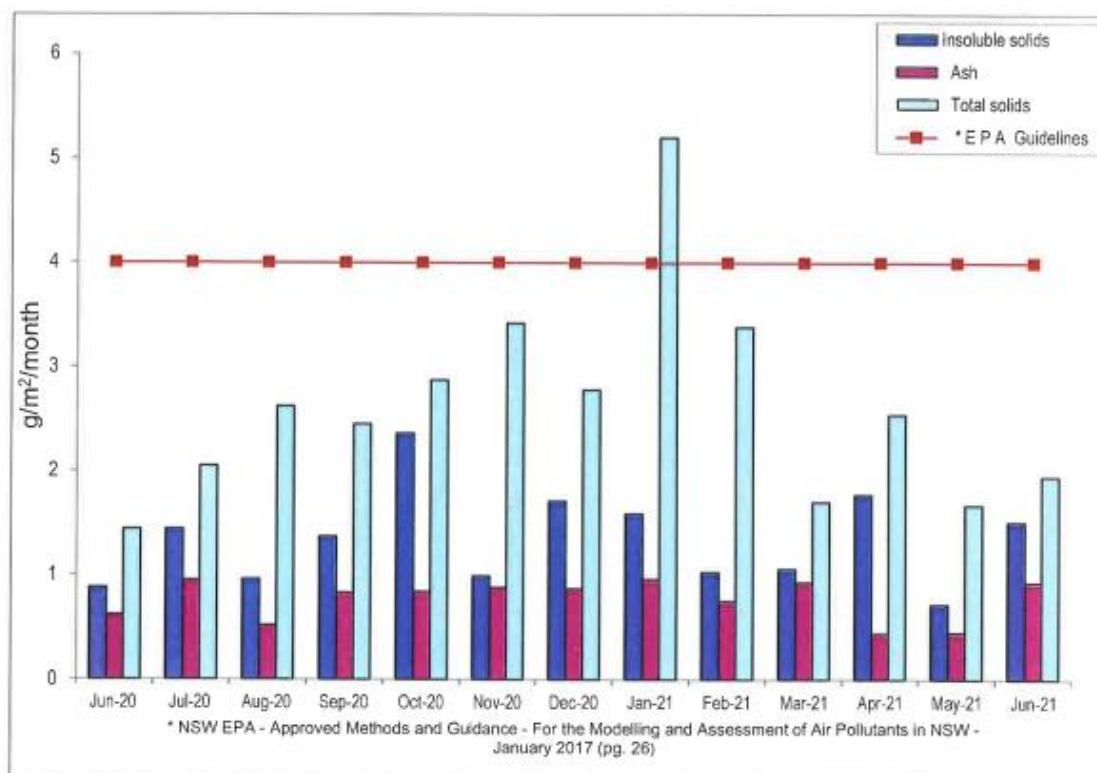


Boral Construction Materials
Boral Materials Technical Services

Dust Monitoring

P.F. Formation - Maroota Site 2
Hitchcock Road

	Insoluble solids	Ash	* E P A Guidelines	Total solids
Jun-20	0.88	0.62	4	1.44
Jul-20	1.44	0.95	4	2.05
Aug-20	0.96	0.52	4	2.62
Sep-20	1.37	0.83	4	2.45
Oct-20	2.36	0.84	4	2.87
Nov-20	0.99	0.88	4	3.42
Dec-20	1.71	0.87	4	2.78
Jan-21	1.59	0.96	4	5.20
Feb-21	1.03	0.75	4	3.38
Mar-21	1.06	0.93	4	1.70
Apr-21	1.77	0.44	4	2.54
May-21	0.72	0.45	4	1.67
Jun-21	1.51	0.93	4	1.95



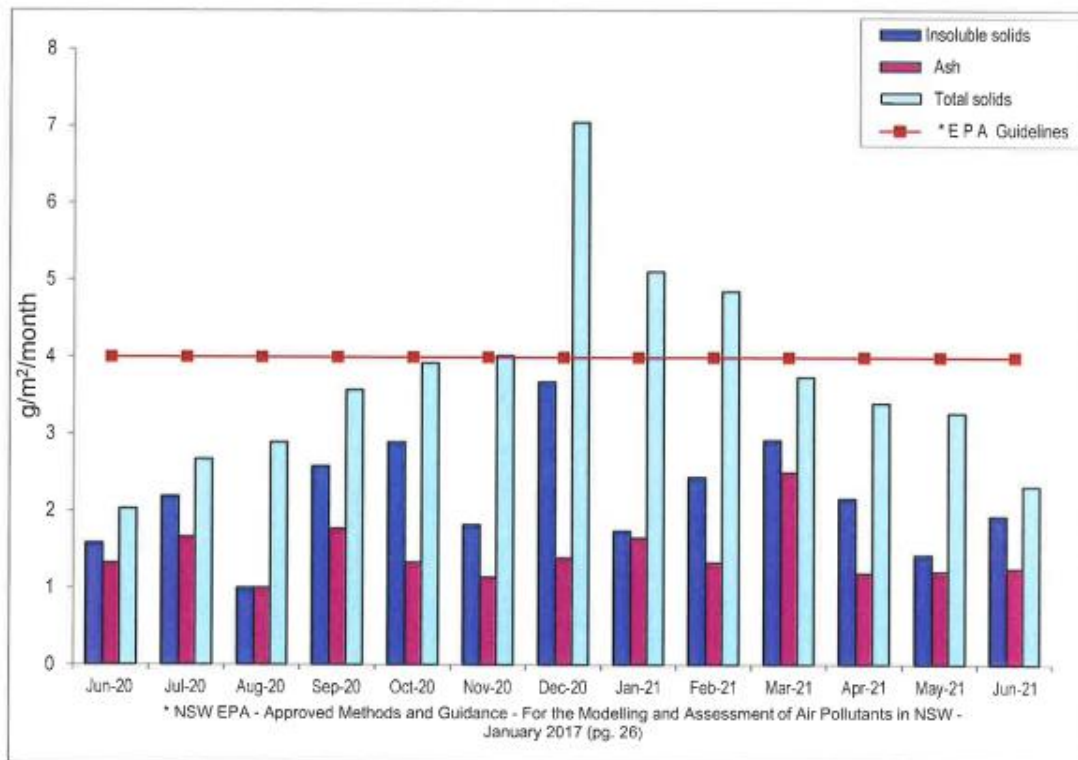


Boral Construction Materials
Boral Materials Technical Services

Dust Monitoring

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

	Insoluble solids	Ash	* E P A Guidelines	Total solids
Jun-20	1.58	1.32	4	2.03
Jul-20	2.19	1.66	4	2.67
Aug-20	1.00	1.00	4	2.89
Sep-20	2.58	1.77	4	3.57
Oct-20	2.89	1.33	4	3.92
Nov-20	1.82	1.14	4	4.02
Dec-20	3.68	1.39	4	7.05
Jan-21	1.74	1.65	4	5.11
Feb-21	2.44	1.33	4	4.85
Mar-21	2.92	2.50	4	3.74
Apr-21	2.16	1.19	4	3.40
May-21	1.43	1.21	4	3.27
Jun-21	1.93	1.26	4	2.32



ATTACHMENT 13

GROUND WATER MANAGEMENT REPORT