



Grounded in Quality

A proud member of the Hunter Construction Group

Karuah East Quarry

Environmental Monitoring Report:

June 2022



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Appendix 1

Monitoring Locations

1 INTRODUCTION

This report has been completed to meet the requirements of Section 66(6) of the *Protection of the Environment Operations Act 1997* and the NSW Environmental Protection Authority's (EPA) *Requirements for Publishing Pollution Monitoring Data* (EPA, 2013). This report summarises the required monitoring data under *Environmental Protection Licence 20611* (the EPL) (see Table 1) and *Project Approval 09_0175* (the Consent) (see Table 2) for Karuah East Quarry (the Quarry).

Table 1 Environmental Protection Licence 20611 information

| | |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Environmental Protection Licence Number | 20611 |
| Licensee's Name | Karuah East Quarry Pty Limited |
| Licensee's Address | Licensee Postal Address: PO Box 3284 Thornton NSW 2322. Premises Address: Karuah East Quarry, Blue Rock Close, Karuah NSW 2324. |
| Link to Full Licence on the EPA Website | https://apps.epa.nsw.gov.au/prpoeoapp/ |

Table 2 Project Approval 09_0175 information

| | |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Development Application | PA 09_0175 |
| Applicant | Karuah East Quarry Pty Limited |
| Approval Authority | Minister for Planning |
| Link to Full Development Approval on Major Projects Planning Portal | https://www.planningportal.nsw.gov.au/major-projects/project/15026 |

A summary of the environmental monitoring data for June 2022 is covered in this report.

Tables throughout this report provide key monitoring information from the EPL and the Consent, such as:

- location of monitoring;
- pollutant;
- unit of measurement; and
- monitoring frequency required.

Monitoring locations are identified in Appendix 1.

2 AIR QUALITY MONITORING

Dust emissions generated by the Quarry operation must not cause additional exceedances of ambient air quality criterion outlined in *Schedule 3, Condition 13* of the Consent (see Table 3, Table 4 and Table 5). Deposited dust and TSP/PM₁₀ monitoring is undertaken at the locations listed in Table 6.

Table 3 PA 09_0175 Long Term Assessment Criteria for Deposited Dust

| Pollutant | Averaging Period | Maximum Increase in Deposited Dust Level ¹ | Maximum Total Deposited Dust Level ¹ |
|----------------|------------------|-------------------------------------------------------|-------------------------------------------------|
| Deposited dust | Annual | 2 g/m ² /month | 4 g/m ² /month |

Note 1: Deposited dust is assessed as insoluble solids as defined by AS 3580.10.1-2003.

Table 4 PA 09_0175 Long Term Impact Assessment Criteria for Particulate Matter

| Pollutant | Average period | Criterion |
|-----------------------------------------------|----------------|----------------------|
| Total suspended particulate (TSP) matter | Annual | 90 µg/m ³ |
| Particulate matter <10 µm (PM ₁₀) | Annual | 30 µg/m ³ |

Table 5 PA 09_0175 Short Term impact Assessment Criterion for Particulate Matter

| Pollutant | Averaging period | Criterion |
|-----------------------------------------------|------------------|----------------------|
| Particulate matter <10 µm (PM ₁₀) | 24 hour | 50 µg/m ³ |

Table 6 Air quality monitoring locations

| Site ID | EPL ID | Location | Address | GPS Coordinates |
|---------------------------------|--------|----------------------------------|-------------------------------------------|-----------------------------------|
| DDG 1 | MP 4 | South-West of Karuah East Quarry | 5760 Pacific Hwy, Karuah NSW 2324 | 32°38'04"S 151°59'58"E |
| DDG 2 | MP 5 | South-West of Karuah East Quarry | 5770 Pacific Hwy, Karuah NSW 2324 | 32°38'02"S 152°00'09"E |
| DDG 3 | MP 6 | South-West of Karuah East Quarry | DP 1024341, Karuah | 32°37'57"S 151°59'41"E |
| DDG 4 | MP 7 | East of Karuah East Quarry | 21 Halloran Rd North Arm Cove NSW 2324 | 32° 37' 30.87"S 152°01'10.18"E |
| DDG 5 | MP 8 | South-West of Karuah East Quarry | Lot 21 DP 1024341 Karuah NSW 2324 | 32° 37' 55.33"S 152°00'2.74"E |
| HVAS (TSP/PM ₁₀) | MP 9 | South-West of Karuah East Quarry | 5770 Pacific Hwy, Karuah NSW 2324 | 32°38'03"S 152°00'09"E |

All dust monitoring is undertaken in accordance with the *Approved Methods of Sampling and Analysis of Air Pollutants in NSW* (EPA, 2022).

2.1 DEPOSITED DUST MONITORING

Deposited dust results for the twelve months prior to and including June 2022 are shown in Table 7.

Table 7 Deposited dust monitoring results

| Date On | Date Off | DDG 1 | DDG 2 | DDG 3 | DDG 4 | DDG 5 |
|--------------------|-----------|-------|-------|-------|-------|-------|
| 5/07/2021 | 5/08/2021 | 0.5 | 0.4 | 0.5 | 1.0 | 0.2 |
| 5/08/2021 | 6/09/2021 | 2.3 | 0.8 | 1.4 | 0.6 | 1.2 |
| 6/09/2021 | 6/10/2021 | 0.7 | 0.4 | 0.5 | 0.4 | 0.4 |
| 6/10/2021 | 3/11/2021 | 3.6 | 0.1 | 0.5 | 0.1 | 0.5 |
| 3/11/2021 | 3/12/2021 | 0.5 | 0.2 | 0.4 | 0.2 | 0.5 |
| 3/12/2021 | 4/01/2022 | 1.3 | 0.3 | 0.2 | 1.0 | 0.5 |
| 4/01/2022 | 3/02/2022 | 0.9 | 0.7 | 0.3 | 0.4 | 0.8 |
| 3/02/2022 | 7/02/2022 | 1.4 | 0.8 | 1.2 | 0.1 | 0.9 |
| 07/03/2022 | 5/04/2022 | 0.8 | 3.6 | 0.8 | 0.4 | 0.9 |
| 5/04/2022 | 5/05/2022 | 0.1 | 0.3 | 0.1 | 0.2 | 0.2 |
| 5/05/2022 | 3/06/2022 | 0.4 | 0.6 | 0.4 | 0.3 | 0.3 |
| 3/06/2022 | 5/07/2022 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 |
| YTD average | | 1.1 | 0.7 | 0.5 | 0.4 | 0.6 |

Monitoring results indicate that for the period from 3 June 2022 to 5 July 2022 the insoluble solid levels recorded at DDG 1 to DDG 5 monitoring locations were below the project criterion of 4 g/m²/month over an annual averaging period.

2.2 HIGH VOLUME AIR SAMPLING

The TSP and PM₁₀ results for June 2022, and a progressive annual average are shown in Table 8. Figure 1 illustrates the year-to-date results for HVAS monitoring.

Table 8 High Volume Air Sampling (µg/m³) results

| Run Date | HVAS TSP (µg/m ³) | HVAS PM ₁₀ (µg/m ³) |
|-----------------------------------------------|-------------------------------|--------------------------------------------|
| 3/06/2022 | 10 | 6 |
| 9/06/2022 | 10 | 3 |
| 15/06/2022 | 13 | 7 |
| 21/06/2022 | 26 | 12 |
| 27/06/2022 | 14 | 6 |
| 24hr Average Criteria¹ | N/A | 50 |
| Annual Average Criteria¹ | 90 | 30 |
| Progressive Annual Average² | 16.8 | 10.3 |

Note: ¹. Criteria as specified in PA 09_0175.

². The progressive annual average is from 01/01/2022 to 27/06/2022, this is not a measure of compliance.

All HVAS monitoring results for June 2022 were compliant with the long term and short term impact assessment criteria outlined in *Schedule 3 Condition 13* of the Consent (see Table 3, Table 4 and Table 5).

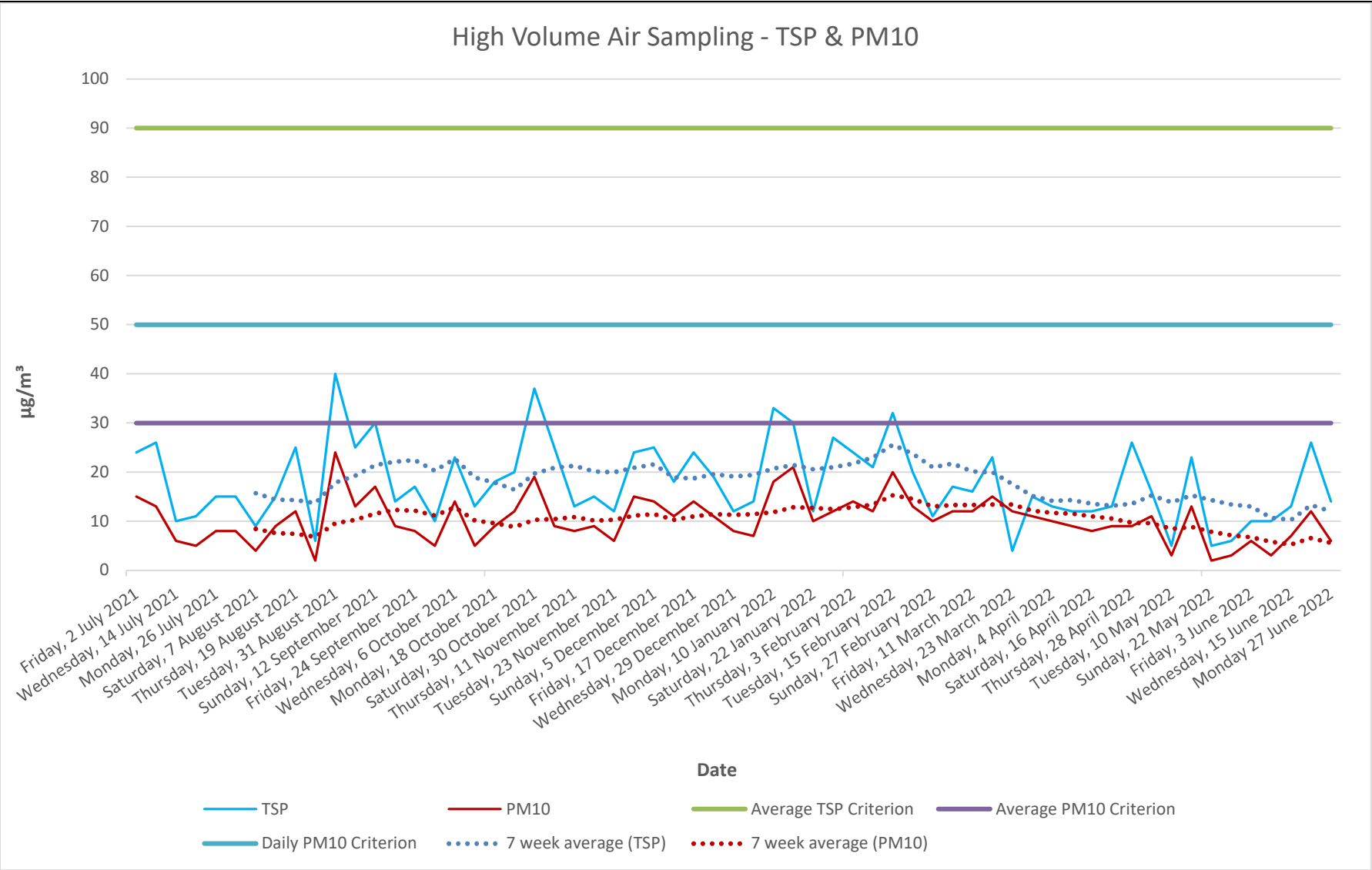


Figure 1 KEQ Meteorological Station - monthly weather summary

3 BLAST MONITORING

Blasting must only be carried out between the hours of 9:00 AM and 4:00 PM Monday to Friday. No blasting is permitted on Saturday, Sundays, or Public Holidays. Blasting outside of the hours specified by the EPL/Consent, can only take place with the written approval of relevant regulatory authorities.

KEQ conduct monitoring at the nearest residential location (EPL 20611 EPA identification no. 11) to ensure that airblast overpressure level and ground vibration peak particle velocity do not exceed the EPL and Consent criteria (see Table 9).

Table 9 Blasting criteria

| Location | Airblast Overpressure (Decibels (Linear Peak)) | Ground Vibration Peak Particle Velocity (Millimetres/second) | Allowable exceedance |
|-----------------------------------|---------------------------------------------------|--------------------------------------------------------------------|--------------------------------------|
| Private residence (Location B) | 120 | 10 | 0% |
| | 115 | 5 | 5% of total blasts over 12 months |

There were 2 blasts conducted in June 2022, see Table 10 for monitoring results.

Table 10 Blast monitoring results

| Date | Time | Location | Overpressure (dB(L)) | Vibration (mm/s) |
|------------------------|---------|----------------|----------------------|------------------|
| Wednesday, 8 June 2022 | 12:01pm | Bench (RL) 105 | 103.3 | 1.14 |
| Thursday, 23 June 2022 | 10:58am | Bench (RL) 120 | 106.1 | 1.12 |

The monitoring results demonstrate compliance with blasting criteria of the Consent and the EPL.

4 NOISE MONITORING

Noise monitoring is undertaken in accordance with the approved *Karuah East Quarry Noise Management Plan* (April, 2022).

As the Quarry is operational with no construction activities being completed, construction noise is not being considered. Table 11 summarises the operational noise criteria.

Noise generated by the Quarry operation must not exceed the criteria specified in *Schedule 3, Condition 3* of the Consent at each location outlined in Table 11.

Table 11 Operational noise criteria

| Monitoring Location ID | Description | Easting (MGA) | Northing (MGA) | Applicable noise limit, dB | | |
|------------------------|----------------------|---------------|----------------|-----------------------------------------------------------|-------------------------------------|-----------------------------------------|
| | | | | Morning Shoulder $L_{Aeq}(15 \text{ minute})/L_{Amax}$ | Day $L_{Aeq}(15 \text{ minute})$ | Evening $L_{Aeq}(15 \text{ minute})$ |
| A | Mill Hill Close West | 406623 | 6388704 | 35/52 | 42 | 40 |
| B | Mill Hill Close West | 406405 | 6388859 | 35/52 | 40 | 40 |
| F | The Branch Lane West | 405639 | 6389782 | 35/52 | 40 | 35 |
| G | Halloran Road South | 408154 | 6389523 | 35/52 | 43 | 39 |
| H | Halloran Road West | 407795 | 6389868 | 35/52 | 44 | 46 |

In accordance with the Consent, a noise monitoring program has been implemented. A summary of this monitoring program is outlined in Table 12.

Table 12 Noise monitoring locations

| Monitoring Method | Location | Frequency | Criteria |
|---------------------------|---------------|-----------|-------------------|
| Attended noise monitoring | A, B, F, G, H | Quarterly | Refer to Table 11 |

4.1 ATTENDED MONITORING

The most recent results for attended monitoring, undertaken 16 June 2022 and 28 June 2022 (see Table 13), show ambient noise levels include noise sources such as traffic from the nearby Pacific Highway and wildlife such as insects and birds. The Quarry operations were audible at locations G and H during day and evening periods. Monitoring for all locations across all periods was compliant with the criteria.

4.2 UNATTENDED NOISE MONITORING

A review of the historical unattended noise monitoring data by expert noise consultants (EMM) found no evident trends associated with Karuah East Quarry operations. As a result of this review, Karuah East Quarry has decided to cease the unattended noise monitoring component of the quarterly compliance noise monitoring program.

Table 13 Attended noise monitoring results (extracted from quarterly noise monitoring report prepared by EMM, July 2022)

| Location | Date | Start time (Period) | Total noise levels, dB | | | | | | | Site contribution, dB | | | EPL / PA Limits, dB | | Meteorological conditions ² EPL limits apply (Y/N) | Exceedance, dB | Comments |
|----------|------|------------------------|------------------------|------------------|------------------|------------------|-----------------|-------------------|------------------|-----------------------------|------------------|-------------------|------------------------|-------------------|------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | L _{Amin} | L _{A90} | L _{Aeq} | L _{A10} | L _{A1} | L _{Amax} | L _{Ceq} | Mod. Factor ¹ | L _{Aeq} | L _{Amax} | L _{Aeq} | L _{Amax} | | | |
| F | 16/6 | 05:00 MS | 41 | 46 | 52 | 55 | 57 | 60 | 60 | Nil | IA | IA | NS / 35 | 52 | 0.6 m/s @ 326° F stability class Y | Nil | Karuah East Quarry inaudible. Distant traffic on the Pacific Highway consistently audible. Bird noise occasionally audible. |
| A | 16/6 | 05:19 MS | 48 | 53 | 64 | 68 | 75 | 79 | 72 | Nil | IA | IA | NS / 35 | 52 | 0.6 m/s @ 298° E stability class Y | Nil | Karuah East Quarry inaudible. Distant traffic on the Pacific Highway consistently audible. Bird noise and a traffic passby occasionally audible. |
| B | 16/6 | 05:36 MS | 48 | 54 | 62 | 65 | 69 | 71 | 69 | Nil | IA | IA | NS / 35 | 52 | 0.8 m/s @ 300° E stability class Y | Nil | Karuah East Quarry inaudible. Distant traffic on the Pacific Highway consistently audible. Bird noise occasionally audible. |
| G | 16/6 | 06:06 MS | 39 | 41 | 54 | 50 | 65 | 79 | 60 | Nil | IA | IA | NS / 35 | 52 | 0.6 m/s @ 289° F stability class Y | Nil | Karuah East Quarry inaudible. Distant traffic on the Pacific Highway, insects and frogs consistently audible. Bird noise and resident noise occasionally audible. |
| H | 16/6 | 06:24 MS | 36 | 39 | 43 | 44 | 50 | 57 | 54 | Nil | IA | IA | NS / 35 | 52 | 0.6 m/s @ 306° E stability class Y | Nil | Karuah East Quarry inaudible. Distant traffic on the Pacific Highway consistently audible. Bird noise frequently audible. Aircraft noise occasionally audible. |
| G | 16/6 | 07:00 Day | 39 | 42 | 45 | 47 | 50 | 55 | 60 | Nil | 38 | N/A | 38 / 43 | N/A | 0.9 m/s @ 308° B stability class Y | Nil | Karuah East Quarry processing plant and engine revs consistently audible. Distant traffic on the Pacific Highway consistently audible. Bird noise frequently audible. Aircraft noise, local traffic and livestock occasionally audible. |

| Location | Date | Start time (period) | Total noise levels, dB | | | | | | | Site contribution, dB | | | EPL / PA Limits, dB | | Meteorological conditions ² EPL limits apply (Y/N) | Exceedance, dB | Comments |
|----------|------|------------------------|------------------------|------------------|------------------|------------------|-----------------|-------------------|------------------|-----------------------------|------------------|-------------------|------------------------|-------------------|------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | L _{Amin} | L _{A90} | L _{Aeq} | L _{A10} | L _{A1} | L _{Amax} | L _{Ceq} | Mod. Factor ¹ | L _{Aeq} | L _{Amax} | L _{Aeq} | L _{Amax} | | | |
| H | 16/6 | 07:21 Day | 39 | 44 | 52 | 56 | 61 | 66 | 60 | 2 dB | 44 (42+2) | N/A | NS / 44 | N/A | 0.8 m/s @ 303° B stability class Y | Nil | Karuah East Quarry processing plant and engine revs consistently audible. Distant traffic on the Pacific Highway consistently audible. Bird noise and dogs barking frequently audible. Aircraft noise occasionally audible. |
| F | 16/6 | 07:47 Day | 49 | 52 | 55 | 58 | 62 | 66 | 63 | Nil | IA | N/A | 35 / 40 | N/A | 0.9 m/s @ 313° B stability class Y | Nil | Karuah East Quarry inaudible. Distant traffic on the Pacific Highway consistently audible. Bird noise frequently audible. Aircraft noise and local traffic occasionally audible. |
| A | 16/6 | 08:16 Day | 47 | 51 | 54 | 56 | 58 | 69 | 67 | Nil | IA | N/A | 40 / 42 | N/A | 0.3 m/s @ 297° A stability class Y | Nil | Karuah East Quarry inaudible. Distant traffic on the Pacific Highway consistently audible. Bird noise frequently audible. Dogs barking occasionally audible. |
| B | 16/6 | 08:38 Day | 52 | 59 | 63 | 66 | 69 | 71 | 71 | Nil | IA | N/A | 37 / 40 | N/A | 0.3 m/s @ 307° A stability class Y | Nil | Karuah East Quarry inaudible. Traffic on the Pacific Highway consistently audible. Bird noise and resident noise occasionally audible. |
| A | 28/6 | 18:00 Eve. | 41 | 47 | 52 | 55 | 59 | 66 | 64 | Nil | IA | N/A | NS / 40 | N/A | 0.4 m/s @ 2° F stability class Y | Nil | Karuah East Quarry inaudible. Distant traffic on the Pacific Highway and insects consistently audible. Dogs barking frequently audible. Bird noise occasionally audible. |
| B | 28/6 | 18:17 Eve. | 51 | 56 | 64 | 67 | 70 | 73 | 71 | Nil | IA | N/A | NS / 40 | N/A | 0.6 m/s @ 332° F stability class Y | Nil | Karuah East Quarry inaudible. Traffic on the Pacific Highway consistently audible. Bird noise occasionally audible. |

| Location | Date | Start time (Period) | Total noise levels, dB | | | | | | | Site contribution, dB | | | EPL / PA Limits, dB | | Meteorological conditions ² EPL limits apply (Y/N) | Exceedance, dB | Comments |
|----------|------|------------------------|------------------------|------------------|------------------|------------------|-----------------|-------------------|------------------|-----------------------------|------------------|-------------------|------------------------|-------------------|------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | L _{Amin} | L _{A90} | L _{Aeq} | L _{A10} | L _{A1} | L _{Amax} | L _{Ceq} | Mod. Factor ¹ | L _{Aeq} | L _{Amax} | L _{Aeq} | L _{Amax} | | | |
| F | 28/6 | 18:36 Eve. | 42 | 48 | 58 | 56 | 59 | 89 | 64 | Nil | IA | N/A | NS / 35 | N/A | 0.6 m/s @ 342° F stability class Y | Nil | Karuah East Quarry inaudible. Distant traffic on the Pacific Highway, insects and frogs consistently audible. Distant dogs barking and traffic passbys occasionally audible. |
| G | 28/6 | 19:00 Eve. | 37 | 40 | 44 | 47 | 48 | 52 | 56 | Nil | ≤30 | N/A | NS / 39 | N/A | 0.4 m/s @ 341° F stability class Y | Nil | Karuah East Quarry hum and engine revs occasionally audible. Distant traffic on the Pacific Highway, insects and frogs consistently audible. |
| H | 28/6 | 19:17 Eve. | 38 | 41 | 43 | 45 | 48 | 56 | 57 | Nil | ≤30 | N/A | NS / 46 | N/A | 0.6 m/s @ 340° F stability class Y | Nil | Karuah East Quarry hum and engine revs occasionally audible. Distant traffic on the Pacific Highway, insects, frogs and hum from nearby shed (unrelated to Karuah East Quarry) consistently audible. |

Notes:

1. Modifying factor correction for LFN in accordance with Fact sheet C of the NPfI.
2. Meteorological data were taken as an average over 15 minutes from the Karuah East Quarry on-site weather station (Refer to Section 5.1).
3. IA = inaudible.
4. N/A = not applicable.
5. NS = not specified.

5 SURFACE WATER MONITORING

5.1 MONTHLY SURFACE WATER MONITORING PROGRAM

Monthly water monitoring was undertaken on 3 June 2022 in accordance with the *Surface Water Monitoring Program* outlined in the *KEQ Water Management Plan (2015)*. Results are displayed in Table 14 along with the EPL discharge criterion and ANZECC (2000) Guidelines. These results do not determine compliance, they are used to analyse trends and assist with water management.

Table 14 Water monitoring results

| Parameter | Units of measure | EPL 20611 concentration limit during discharge | Dam 1 | Dam 2 | Dam 3 | SW 2 | SW 3 (Not flowing) |
|----------------------------------------|----------------------|------------------------------------------------------|---------|---------|---------|---------|-----------------------|
| Oil and grease | Milligrams per litre | 5 and/or non-visible | <5 | <5 | <5 | <5 | - |
| pH | pH | 6.5 – 8.5 | 7.32 | 7.20 | 7.39 | 6.77 | - |
| Total suspended solids | Milligrams per litre | 40 | 140 | 36 | 29 | 183 | - |
| | | ANZECC Guidelines¹ | | | | | |
| Conductivity | µS/cm | 125 – 2200 | 638 | 428 | 463 | 436 | - |
| Total dissolved solids | mg/L | -- | 586 | 383 | 378 | 661 | - |
| Total phosphorus | mg/L | 0.025 | 0.16 | 0.08 | 0.11 | 0.16 | - |
| Ammonia | mg/L | 0.2 | 0.04 | 0.04 | 0.11 | 0.03 | - |
| Nitrogen (Nitrate) | mg/L | 0.350 | 13.8 | 0.32 | 2.3 | 4.41 | - |
| Total hardness (as CaCO ₃) | mg/L | -- | 55 | 93 | 67 | 41 | - |
| Arsenic | mg/L | 0.024 | 0.001 | <0.001 | 0.001 | 0.002 | - |
| Cadmium | mg/L | 0.0002 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | - |
| Calcium | mg/L | -- | 9 | 29 | 17 | 17 | - |
| Chromium | mg/L | 0.001 | 0.008 | 0.004 | 0.005 | 0.012 | - |
| Copper | mg/L | 0.0014 | 0.011 | 0.004 | 0.006 | 0.016 | - |
| Lead | mg/L | 0.0034 | 0.005 | 0.002 | 0.003 | 0.009 | - |
| Magnesium | mg/L | -- | 8 | 5 | 6 | 6 | - |
| Manganese | mg/L | 1.9 | 0.292 | 0.124 | 0.154 | 0.302 | - |
| Nickel | mg/L | 0.011 | 0.007 | 0.002 | 0.005 | 0.01 | - |

| | | | | | | | |
|-----------|------|--------|-------|-------|------|-------|---|
| Potassium | mg/L | -- | 2 | <1 | 1 | 1 | - |
| Sodium | mg/L | -- | 96 | 35 | 58 | 58 | - |
| Vanadium | mg/L | -- | 0.03 | 0.01 | 0.02 | 0.04 | - |
| Zinc | mg/L | 0.0312 | 0.045 | 0.016 | 0.02 | 0.064 | - |

Note 1 – Key default trigger values presented in ANZECC 2000 for slightly disturbed upland rivers in NSW. Heavy metals based on hard water (120-179 mg CaCO³/L).

SW3 creek not flowing.

5.2 DISCHARGE MONITORING

Condition L2 of the EPL outlines the requirement to monitor water discharges from the Quarry via the licensed discharge points (LDP1, LDP2 and LDP3), see Table 15.

Table 15 EPL20611 - Pollutant concentration limits

| Pollutant | Units of Measure | Concentration Limit |
|------------------------|----------------------|---------------------|
| Oil and Grease | Visible | 5 &/or none visible |
| pH | pH units | 6.5 – 8.5 |
| Total suspended solids | Milligrams per litre | 40 |

5.2.1 Dam 1 (LDP1)

Dam 1 had zero days of discharging during the month of June (see Table 16).

Table 16 Discharge monitoring – LDP1

| Date | pH | Total suspended solids | Oil and grease | Controlled |
|------|----|------------------------|----------------|------------|
| - | - | - | - | - |

5.2.2 Dam 2 (LDP2)

Dam 2 had one day of controlled discharging during the month of June. Daily monitoring during discharge was conducted and results during discharge were compliant with pollution concentration limits (see Table 17).

Table 17 Discharge monitoring – LDP2

| Date | pH | Total suspended solids | Oil and grease | Controlled |
|----------------------|-----|------------------------|----------------|------------|
| Tuesday, 7 June 2022 | 7.3 | 22 | None visible | Yes |

5.2.3 Dam 3 (LDP3)

Dam 3 had zero days of controlled discharging during the month of June (see Table 18).

Table 18 Discharge monitoring – LDP3

| Date | pH | Total suspended solids | Oil and grease | Controlled |
|------|----|------------------------|----------------|------------|
| - | - | - | - | - |

6 WEATHER MONITORING

Karuah East Quarry has a permanent meteorological station to monitor various weather parameters including temperature, wind speed/direction, solar radiation, and rainfall. Figure 2 shows the recorded results for the local weather during June 2022.

A wind rose is a graphic tool used to depict the average direction and speed of the wind over a recorded period. Figure 3 shows the wind rose generated from data gathered during June 2022.

Monthly Weather Summary



Site: **Karuah Quarry**

Month: **June 2022**

| Date | Day | Temperature @ 2m | | | Temperature @ 10m | | | Winds | | | Solar Radiation | | Rain ² mm |
|--------------|-----|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------------|--------------------------------|-----------------------------|--------------------------------------|--------------------------------------|-------------------------|
| | | Max ¹ °C | Min ² °C | Ave ¹ °C | Max ¹ °C | Min ² °C | Ave ¹ °C | Max Gust ¹ km/h | Ave Speed ¹ km/h | Dir Ave ¹ deg | Max ¹ W/m ² | Ave ¹ W/m ² | |
| 1 | Wed | 14.7 | 9.3 | 9.7 | 13.6 | 9.9 | 10.3 | 52.1 | 10.4 | 274 | 168.3 | 117.2 | |
| 2 | Thu | 15.6 | 3.1 | 8.0 | 14.4 | 4.6 | 8.3 | 21.3 | 2.6 | 205 | 172.5 | 104.2 | |
| 3 | Fri | 17.1 | 3.3 | 10.6 | 15.7 | 4.3 | 10.7 | 29.6 | 3.2 | 201 | 180.8 | 86.5 | |
| 4 | Sat | 16.6 | 7.4 | 9.4 | 15.7 | 8.3 | 10.2 | 45.0 | 5.1 | 203 | 149.2 | 89.9 | 6.4 |
| 5 | Sun | 18.6 | 4.4 | 9.4 | 17.4 | 5.8 | 10.0 | 41.4 | 4.1 | 204 | 178.3 | 70.0 | |
| 6 | Mon | 17.1 | 3.3 | 10.1 | 16.2 | 3.6 | 11.3 | 58.0 | 8.2 | 232 | 120.8 | 60.3 | |
| 7 | Tue | 16.3 | 3.9 | 11.3 | 15.5 | 5.8 | 11.6 | 47.3 | 10.0 | 273 | 124.1 | 62.3 | |
| 8 | Wed | 15.4 | 6.0 | 9.0 | 14.4 | 7.4 | 9.9 | 35.5 | 7.2 | 271 | 125.0 | 71.1 | |
| 9 | Thu | 15.3 | 3.3 | 11.0 | 14.2 | 6.2 | 11.2 | 46.1 | 9.9 | 272 | 130.8 | 67.2 | |
| 10 | Fri | 17.1 | 8.1 | 11.2 | 16.0 | 9.1 | 11.9 | 35.5 | 7.3 | 266 | 110.8 | 59.6 | |
| 11 | Sat | 17.2 | 4.6 | 12.0 | 15.9 | 8.0 | 12.2 | 42.6 | 10.9 | 273 | 114.2 | 61.1 | |
| 12 | Sun | 17.2 | 8.5 | 9.8 | 16.2 | 9.3 | 10.9 | 42.6 | 6.1 | 262 | 120.0 | 66.3 | |
| 13 | Mon | 18.5 | 2.4 | 8.6 | 16.2 | 3.9 | 9.1 | 26.0 | 2.8 | 210 | 116.7 | 63.2 | |
| 14 | Tue | 19.3 | 2.7 | 8.8 | 17.8 | 4.0 | 9.4 | 11.8 | 1.9 | 195 | 128.3 | 60.8 | |
| 15 | Wed | 20.1 | 3.3 | 9.9 | 19.4 | 4.3 | 10.8 | 20.1 | 2.6 | 222 | 128.3 | 57.8 | |
| 16 | Thu | 21.5 | 5.0 | 11.5 | 20.2 | 5.8 | 13.2 | 24.9 | 3.2 | 222 | 103.3 | 56.0 | |
| 17 | Fri | 20.1 | 5.7 | 12.3 | 18.1 | 8.0 | 12.7 | 26.0 | 4.4 | 218 | 100.0 | 58.9 | |
| 18 | Sat | 17.2 | 6.9 | 12.6 | 16.4 | 8.0 | 12.8 | 20.1 | 3.7 | 224 | 109.2 | 64.8 | 5.4 |
| 19 | Sun | 18.4 | 10.3 | 12.5 | 17.1 | 10.7 | 12.8 | 17.8 | 3.0 | 185 | 90.8 | 55.0 | 9.8 |
| 20 | Mon | 20.9 | 9.2 | 10.5 | 18.3 | 9.9 | 10.9 | 18.9 | 2.4 | 214 | 99.2 | 43.9 | 5.4 |
| 21 | Tue | 20.6 | 5.4 | 11.7 | 20.0 | 5.8 | 12.8 | 13.0 | 2.2 | 191 | 115.0 | 2.3 | |
| 22 | Wed | 18.9 | 5.1 | 8.7 | 17.3 | 6.3 | 9.3 | 26.0 | 3.2 | 215 | 0.0 | 0.0 | |
| 23 | Thu | 18.3 | 2.6 | 8.7 | 17.3 | 3.8 | 9.6 | 20.1 | 2.5 | 187 | 0.0 | 0.0 | |
| 24 | Fri | 19.3 | 3.4 | 10.6 | 18.4 | 4.5 | 12.2 | 33.1 | 4.4 | 260 | 0.0 | 0.0 | |
| 25 | Sat | 20.9 | 5.4 | 10.7 | 19.9 | 6.6 | 11.7 | 28.4 | 2.9 | 183 | 191.7 | 19.1 | |
| 26 | Sun | 21.4 | 5.0 | 11.4 | 19.8 | 6.2 | 12.6 | 14.2 | 2.3 | 201 | 290.8 | 122.3 | |
| 27 | Mon | 17.2 | 5.5 | 10.5 | 15.3 | 8.5 | 10.9 | 37.9 | 6.5 | 205 | 141.7 | 86.0 | |
| 28 | Tue | 12.2 | 6.9 | 9.2 | 12.1 | 7.4 | 9.6 | 16.6 | 2.7 | 246 | 130.8 | 5.8 | 9.4 |
| 29 | Wed | 15.4 | 5.5 | 11.1 | 14.8 | 6.2 | 11.4 | 11.8 | 1.9 | 198 | 0.0 | 0.0 | 2.2 |
| 30 | Thu | 18.8 | 9.1 | 11.9 | 17.7 | 9.5 | 12.1 | 18.9 | 2.0 | 217 | 0.0 | 0.0 | |
| Ave or Total | | 17.9 | 5.5 | 10.4 | 16.7 | 6.7 | 11.1 | 29.4 | 4.7 | 224.3 | 114.7 | 53.7 | 38.6 |
| High | | 21.5 | 10.3 | 12.6 | 20.2 | 10.7 | 13.2 | 58.0 | 10.9 | | 290.8 | 122.3 | 9.8 |
| Low | | 12.2 | 2.4 | 8.0 | 12.1 | 3.6 | 8.3 | 11.8 | 1.9 | | 0.0 | 0.0 | |

Notes: 1. Values are for the 24 hour period from 9am to 9am next day.

2. Values are for the 24 hours to 9am.

No. rain days >1mm: 6

Figure 2 Monthly weather summary – June 2022

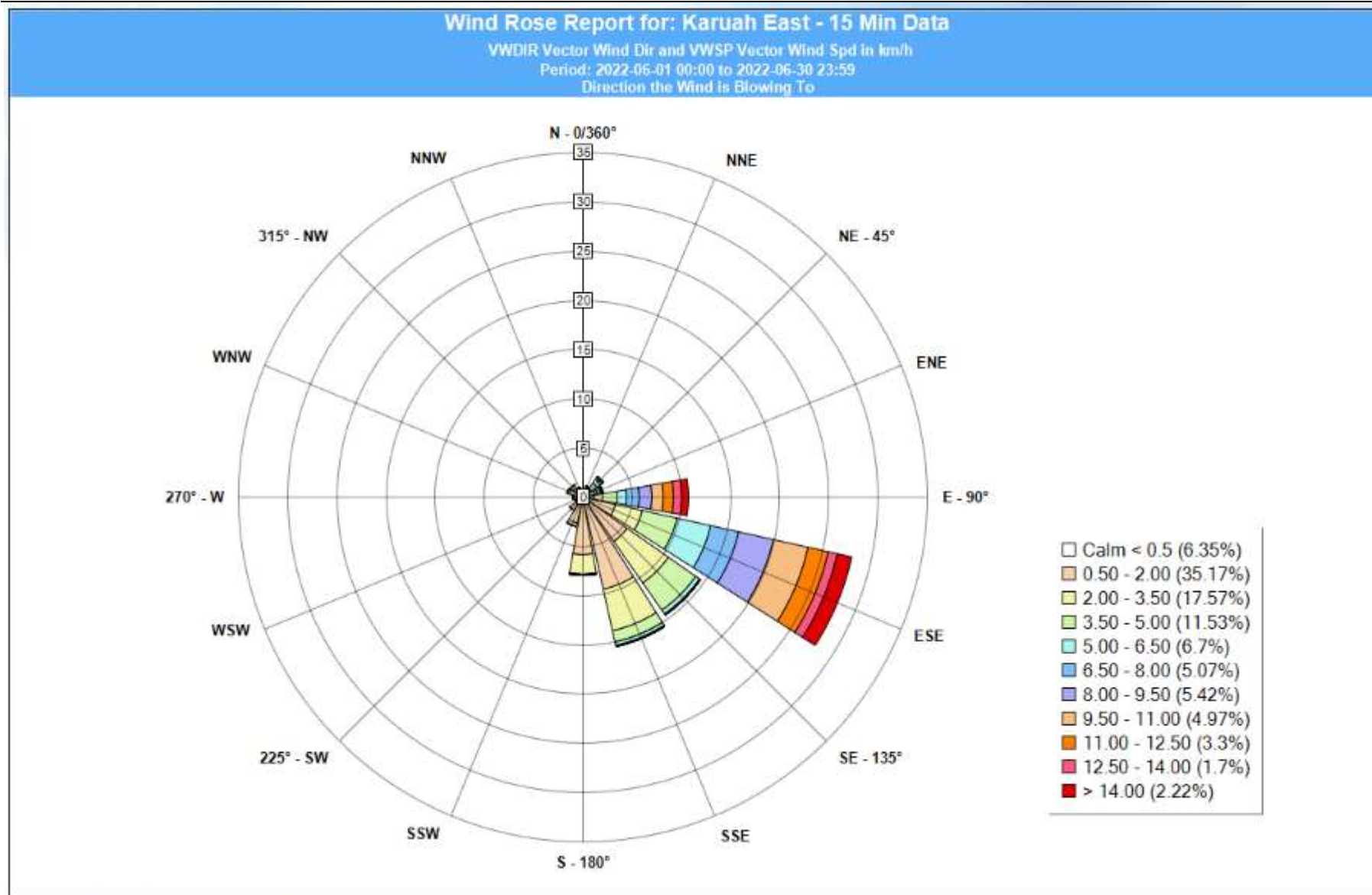


Figure 3 Wind rose report – June 2022

7 REPORTING

7.1 COMMUNITY CONSULTATIVE COMMITTEE

The purpose of a Community Consultative Committee (CCC) is to provide a forum for discussion between a proponent (KEQPL) and representatives of the community, stakeholder groups and the local council on issues directly relating to a specific State Significant Project (KEQ).

The KEQ CCC generally meets biannually (twice a year). Meeting minutes can be found at Hunter Quarries website <<https://hunterquarries.com.au/>>.

On 14 March, the first KEQ CCC meeting for 2022 was held, below are the key details:

- A site inspection was undertaken with two KEQPL representatives and one community representative.
- The meeting was facilitated at the Karuah RSL with one chairperson, four community representatives and two KEQPL representatives.
- The next CCC meeting is scheduled for September 2022.

7.2 PRODUCTION

For the month of June 81,408 tonnes of various quarry products were produced.

7.3 NON-COMPLIANCE

There were nil non-compliance events during June 2022 to report (see **Table 19**).

Table 19 Non-compliance Register

| Date | Nature of Incident | Action |
|-----------|--------------------|---------------------|
| June 2022 | Nil incidents | Nil action required |

7.4 COMPLAINTS

There were nil complaints received during June 2022 (see **Table 20**).

Table 20 Complaints Register

| Date | Nature of Complaint | Action |
|-----------|-------------------------|---------------------|
| June 2022 | Nil complaints received | Nil action required |

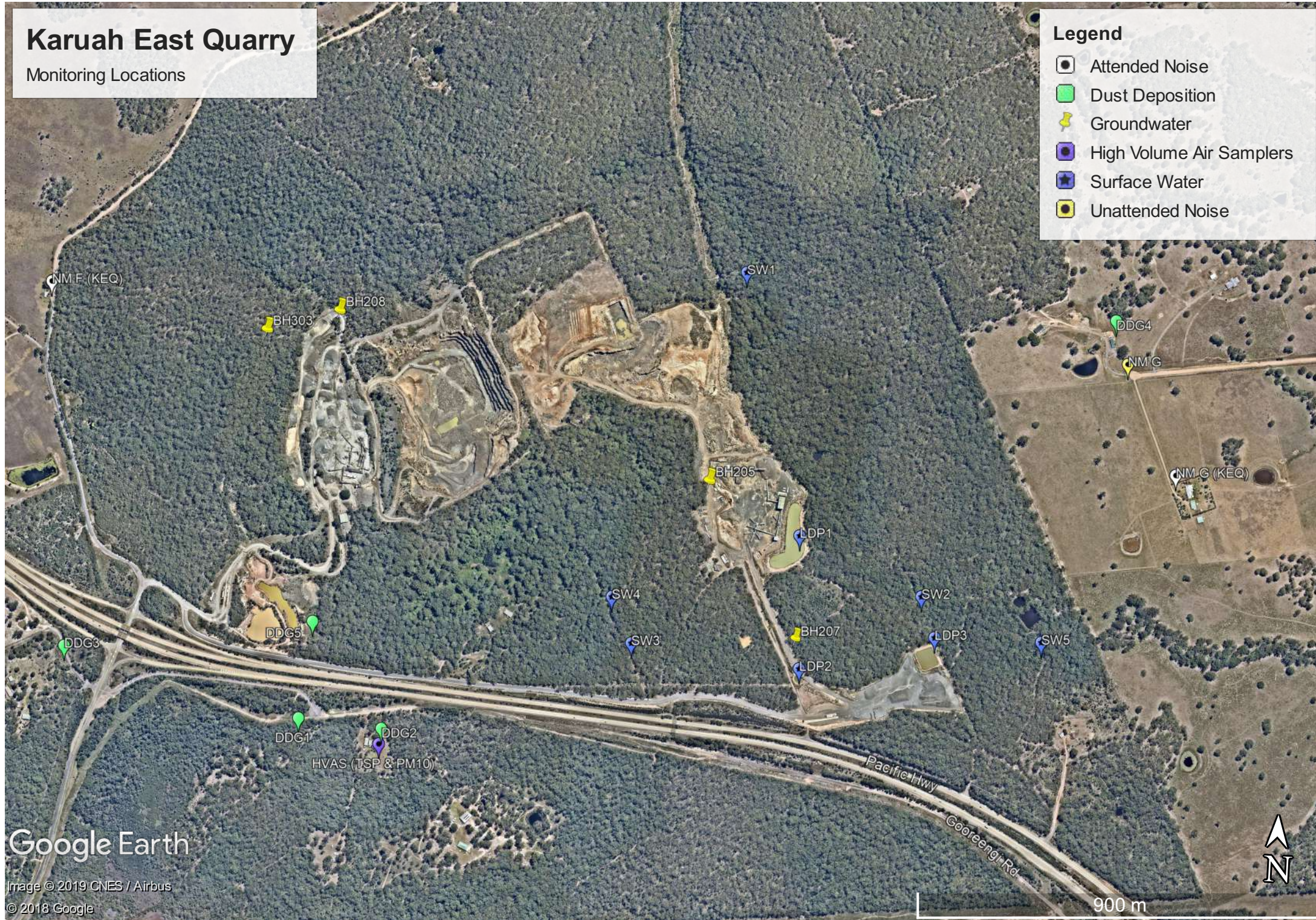
Appendix 1 – Monitoring Locations

Karuah East Quarry

Monitoring Locations

Legend

- Attended Noise
- Dust Deposition
- Groundwater
- High Volume Air Samplers
- Surface Water
- Unattended Noise



Google Earth

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