



5 March 2018

## **Karuah East Quarry (MP 09\_0175)**

### **Company Report and Overview of Activities**

#### **1. INTRODUCTION OF APPROVED PROJECT**

The Karuah East Quarry is an approved hard rock quarry located at Karuah in the Hunter Region, NSW. Karuah East Quarry was approved by the NSW Planning Assessment Commission as a Part 3A Major Project on 18 June 2014 (Project Approval 09\_0175). The project also received approval from the Australian Government Department of Environment on 20 March 2015 (EPBC 2014/7282).

The key elements of the approved project are as follows:

- Extraction of up to 1.5 million tonnes of andesite material per year from a total resource of approximately 29 million tonnes.
- Removal and stockpiling an estimated 380,000m<sup>3</sup> of overburden from the quarry extraction area. Overburden is not included in the extraction rate of 1.5 million tonnes of andesite per annum.
- Construction of quarry plant (crushing plant, wash plant, pug mill, workshop and weighbridge), stockpile areas, and haulage road.
- Quarry Lands – Pt Lot 12 and Part Lot 13 DP 1024564.
- Disturbance Area of proposed works – 31.63ha (actual vegetation disturbance 28.09ha).
- Environmental Offset Lands – Pt. Lot 13 & 14 DP 1024564 and Lot 5 DP 838128. Total environmental offset 138.22ha. These offset lands were confirmed acceptable by NSW OEH and the Federal Department of Environment.
- Upgrade and extension of Blue Rock Lane (RMS owned land) to provide access to the quarry.
- Haulage of product from site to market by 25 – 30 tonne haul trucks via the Pacific Highway.
- Approximately 216 laden truckloads per day at maximum production.
- Drilling & Blasting Activity.
- Crushing and screening of extracted material.
- Loading and hauling of extracted material.
- Employment of 28 staff to operate the quarry. 56 construction jobs will be created.
- The Karuah East Quarry is a stand-alone operation, separate to the existing Karuah Quarry. All environmental modelling undertaken (eg, air quality and noise) considered the cumulative impacts of both quarries combined and results satisfied legislative goals.

All Project Approval documents and Environmental Reporting are available on the Hunter Quarries website at [www.hunterquarries.com.au](http://www.hunterquarries.com.au) (see 'Karuah East Documents' at the bottom of the web page).

Prior to the commencement of vegetation clearing and construction, the Project Approval and EPBC Approval required the preparation of a number of important management plans inclusive of environmental safeguards. These management plans (prepared by experts endorsed by the NSW DPE) include:

- Biodiversity Offset Area Management Plan.
- Tetratheca Juncea Translocation Management Plan.
- Noise Management Plan.
- Air Quality and Greenhouse Gas Management Plan.
- Blast Management Plan.
- Water Management Plan.
- Traffic Management Plan (including Construction Management and Operational Traffic Management).
- Heritage Management Plan.
- Landscaping and Rehabilitation Management Plan.
- Environmental Management Strategy.

All of the abovementioned Management plans have been endorsed by the NSW DPE. In addition, the Biodiversity Management Plan was also endorsed by the Federal Department of the Environment.

Construction of the Karuah East Quarry began on 27 April 2016 with operations commencing on 16 November 2017.

## 2. PROGRESS OF THE PROJECT

Karuah East Quarry officially commenced operations on 16 November 2017. Material is now being transported offsite via the new Blue Rock Close entry.

Management Area	Task	Status
<b>Construction</b>	Internal site works	<ul style="list-style-type: none"> <li>• Final excavations and surface capping of the stockpile area near Weighbridge was completed in February 2018.</li> <li>• Drains leading into stockpile sediment dam (Dam 3) were improved to prevent excess sediment build up. It is anticipated that this will also improve the water clarity during any discharge events.</li> <li>• Mobile crushers that were being used in the lower extraction area had finished up in November 2017. Mobile crushers are now being used as secondary and tertiary crushing next to the main crushing plant.</li> <li>• Entry gate off Blue Rock Close was completed in November 2017.</li> <li>• Preliminary work on a long term haul road leading from the Quarry's crushing area to the extraction area commenced in February 2018.</li> </ul>
<b>Biodiversity Offset Area</b>	Nest Boxes	Ninety five (95) nest boxes were installed in the Biodiversity Offset Area in February 2018. This was in addition to the 30 nest boxes that were installed in April

Management Area	Task	Status
Planning	Section 75(W) Modification 1	<p>2016. The nest boxes were made up of 31 bat boxes, 62 glider boxes and two owl boxes.</p> <ul style="list-style-type: none"> <li>• The initial application was lodged to the Department of Planning and Environment in July 2017 for expanding the disturbance area of 2,500m<sup>2</sup> into an area of Lot 12.</li> <li>• Final Environmental Assessment was submitted to the Department of Planning and Environment in January 2018.</li> <li>• The DPE put the Environmental Assessment on public exhibition between 8 to 22 February 2018. The DPE did not receive any public submissions but received submissions back from 4 authorities (OEH, EPA, Department of Industry (Resource &amp; Energy), Port Stephens Council). No concerns were raised and the OEH were satisfied with the biodiversity and Aboriginal assessments.</li> <li>• The Federal Department of the Environment &amp; Energy (DotEE) were consulted and Karuah East Quarry have committed to the translocation of up to 13 clumps of <i>Tetratheca juncea</i> (Black-eyed Susan). The DotEE has also requested for the Biodiversity Offset Area Management Plan to be updated. Karuah East Quarry has engaged Kleinfelder to update the BOAMP.</li> </ul>

**Photo 1**

*Stockpile area looking back towards Weighbridge. Photo taken February 2018.*



**Photo 2**

*New drain constructed leading into stockpile dam (Dam 3). Photo taken February 2018.*



### Photo 3

One of the two owl boxes installed at 10-12m on a Blackbutt in the Biodiversity Offset Area.



### 3. CONSTRUCTION SCHEDULE

Karuah East Quarry is now operational but construction activities will continue as production output increases. Over the next 6 months, it is anticipated that the following construction activities will commence or continue:

- New internal haul road leading from the crushing area to the extraction will be constructed;
- Construction of stage 2 of the crushing plant will commence; and
- Preliminary work on upgrading the internal haul road will commence.

### 4. MONITORING AND ENVIRONMENTAL PERFORMANCE

Ongoing environmental monitoring will be undertaken during the life of the Karuah East Quarry. Monitoring of groundwater, surface water, noise, blasting, air quality (dust) and ecological monitoring has commenced. Monitoring results are published in the *Monthly Environmental Monitoring Reports*, which can be downloaded from the Hunter Quarries website.

#### 4.1 Air Quality Monitoring

**Insoluble Solids (g/m<sup>2</sup>/month)**

Date	DDG 1	DDG 2	DDG 3	DDG 4	DDG 5
8/1/2016 to 8/2/2016	1.4	0.9	1.1	1.2	-
8/2/2016 to 3/3/2016	4.0	0.7	0.6	0.9	-
3/3/2016 to 4/4/2016	3.1	0.3	1.0	2.0	-
4/4/2016 to 6/5/2016	1.5	1.1	0.4	3.2	-
6/5/2016 to 3/6/2016	1.0	0.9	0.7	0.4	-
3/6/2016 to 4/7/2016	0.4	1.6	0.5	0.3	-
4/7/2016 to 1/8/2016	1.4	0.7	0.3	0.5	-
1/8/2016 to 31/8/2016	2.7	3.0	0.8	0.7	-
31/8/2016 to 28/9/2016	2.1	1.6	0.8	0.8	0.9
28/9/2016 to 26/10/2016	0.8	0.6	0.8	0.5	0.7
26/10/2016 to 23/11/2016	0.7	1.0	1.3	2.3	1.9
23/11/2016 to 21/12/2016	1.3	0.5	0.9	1.0	4.2
21/12/2016 to 18/01/2017	0.4	0.8	0.7	2.5	3.1
18/01/2017 to 16/02/2017	1.3	0.9	1.2	1.2	1.9
16/02/2017 to 20/03/2017	0.4	1.4	0.5	3.8	1.3
20/03/2017 to 21/04/2017	0.6	0.7	0.5	0.8	1.3
21/04/2017 to 23/05/2017	0.6	0.6	1.1	0.8	0.8
23/05/2017 to 20/06/2017	0.5	1.3	0.9	1.6	0.5
20/06/2017 to 18/07/2017	0.4	0.2	0.5	1.2	0.4
18/07/2017 to 17/08/2017	0.6	0.5	0.6	0.5	0.8
17/08/2017 to 14/09/2017	1.4	0.2	1.4	1.5	0.7
14/09/2017 to 12/10/2017	1.1	0.1	1.2	1.8	1.5
12/10/2017 to 9/11/2017	1.7	0.5	0.9	1.0	1.2
9/11/2017 to 7/12/2017	1.0	1.8	0.7	1.8	2.1
7/12/2017 to 8/01/2018	1.3	0.6	1.1	1.7	1.3
8/01/2018 to 5/02/2018	1.5	0.8	1.3	1.0	0.7
<sup>1</sup> Rolling Annual Average	<b>1.3</b>	<b>0.7</b>	<b>1.1</b>	<b>1.5</b>	<b>1.3</b>
<sup>2</sup> Annual Average Criteria	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>

Note <sup>1</sup>: Rolling annual average from EPL 20611 anniversary date of 26 August.

Note <sup>2</sup>: Maximum criteria as specified in EPL 20611.

### High Volume Air Sampling (TSP & PM10) Results

Date	TSP ( $\mu\text{g}/\text{m}^3$ )	PM10 ( $\mu\text{g}/\text{m}^3$ )	Comments
29/04/2016	23	18	
05/05/2016	20	18	
11/05/2016	17	8	
17/05/2016	25	19	
23/05/2016	35	20	
29/05/2016	11	5	
04/06/2016	9	8	
10/06/2016	11	4	
16/06/2016	10	8	
22/06/2016	11	4	
28/06/2016	11	6	
04/07/2016	20	5	
10/07/2016	10	6	
16/07/2016	10	8	
22/07/2016	14	7	
28/07/2016	9	5	

Date	TSP ( $\mu\text{g}/\text{m}^3$ )	PM10 ( $\mu\text{g}/\text{m}^3$ )	Comments
03/08/2016	27	14	
09/08/2016	11	6	
15/08/2016	18	12	
21/08/2016	10	5	
27/08/2016	9	4	
02/09/2016	11	7	
08/09/2016	15	8	
14/09/2016	11	6	
20/09/2016	16	9	
26/09/2016	<i>Breakdown</i>	<i>Breakdown</i>	Power failure
02/10/2016	18	7	
08/10/2016	35	21	
14/10/2016	12	8	
20/10/2016	19	11	
24/10/2016	21	12	Catch up sample for 26/9/2016
26/10/2016	21	12	
01/11/2016	19	9	
07/11/2016	74	50	Bushfires in vicinity
13/11/2016	27	14	
19/11/2016	40	24	
25/11/2016	28	13	
01/12/2016	25	12	
07/12/2016	16	14	
13/12/2016	41	21	
19/12/2016	41	23	
25/12/2016	19	13	
31/12/2016	34	22	
06/01/2017	30	14	
12/01/2017	42	24	
18/01/2017	44	18	
24/01/2017	40	21	
30/01/2017	34	18	
05/02/2017	40	24	
11/02/2017	54	36	
17/02/2017	41	20	
23/02/2017	30	16	
01/03/2017	13	11	
07/03/2017	30	16	
13/03/2017	30	18	
19/03/2017	21	15	
25/03/2017	25	17	
31/03/2017	25	14	
06/04/2017	12	7	
12/04/2017	13	6	
18/04/2017	17	11	
24/04/2017	18	10	
30/04/2017	15	10	
12/05/2017	23	14	
18/05/2017	20	10	
24/05/2017	23	9	

Date	TSP ( $\mu\text{g}/\text{m}^3$ )	PM10 ( $\mu\text{g}/\text{m}^3$ )	Comments
30/05/2017	20	9	
05/06/2017	11	7	
11/06/2017	9	7	
17/06/2017	18	9	48 hour runtime - 17/6 and 23/6/2017
26/06/2017	12	9	Catch up for 23/6/2017
29/06/2017	9	6	
05/07/2017	16	6	
11/07/2017	11	5	
17/07/2017	10	4	
23/07/2017	10	2	
29/07/2017	9	3	
04/08/2017	6	1	
10/08/2017	14	2	
16/08/2017	25	9	
22/08/2017	14	9	
28/08/2017	16	6	
03/09/2017	15	9	
09/09/2017	14	6	
15/09/2017	20	6	
21/09/2017	26	15	
27/09/2017	55	22	
3/10/2017	14	6	
9/10/2017	31	16	
15/10/2017	12	7	
21/10/2017	26	12	
27/10/2017	13	8	
2/11/2017	28	14	
8/11/2017	11	7	
14/11/2017	17	6	
20/11/2017	11	8	
26/11/2017	9	5	
2/12/2017	32	19	72 hour runtime (2, 8 and 14th)
8/12/2017			Overrun from 2/12
14/12/2017			Overrun from 2/12
20/12/2017	58	29	
26/12/2017	25	16	
1/01/2018	31	22	
7/01/2018	31	20	
13/01/2018	40	23	
19/01/2018			Power failure
25/01/2018	22	14	
31/01/2018	36	17	
<b><sup>1</sup>24hr Max Criteria</b>	<b>N/A</b>	<b>50</b>	
<b>Year-to-date Average</b>	<b>24.7</b>	<b>10.7</b>	
<b><sup>1</sup>Annual Average</b>	<b>90</b>	<b>30</b>	
<b>Criteria</b>			

**Note** <sup>1</sup>: Maximum criteria as specified in PA 09\_0175

**Note** <sup>2</sup>: Year-to-date average from EPL 20611 anniversary date of 26 August.



## 4.2 Blast Monitoring

Two blasts were performed in the past three months.

Date and time	Overpressure and vibration	<sup>1</sup> Monitor 1 (Front Gate)	<sup>2</sup> Monitor 2 (Nearest Residence)
02/02/2018	Overpressure dB(L)	114.8	103.9
12:53 pm	Vibration (mm/s)	0.88	0.42
02/03/2018	Overpressure dB(L)	115.7	<i>Below detection limit</i>
10:00 am	Vibration (mm/s)	0.71	<i>Below detection limit</i>

**Note** <sup>1</sup>: Front gate is defined as the approved public entry to the Karuah East Quarry site from Blue Rock Close.

**Note** <sup>2</sup>: Nearest resident is also known as receiver location "B", 5770 Pacific Hwy and EPL Monitoring Point 11.

The blasting event that occurred on the 2 February 2018 was below the EPL criterion. On the 2 March 2018, the overpressure and vibration was not detected at Monitor 2 as it was below the minimum trigger levels. The monitor's trigger levels were set at 108 dB(L) for overpressure and 0.37mm/s for vibration.

## 4.3 Noise Monitoring

Operator attended noise monitoring was undertaken on 13 December 2017 with unattended noise monitoring conducted from 4 to 11 December 2017 at location G. Results shown in the tables below.

### Operator Attended Noise Monitoring Results

Location	Date/Start Time/ Weather	Primary Noise Descriptor (dBA re 20 µPa)					Description of Noise Emissions and Typical Maximum Noise Levels (dBA)
		L <sub>Amax</sub>	L <sub>A1</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	
F Lot 50 DP 103	13/12/2017 15:39 W = 4.5m/s NE Temp = 31°C	78	66	51	46	56	Local road traffic 75 to 78 dBA Pacific Highway 38 to 49 dBA <b>Karuah East Project inaudible</b>
G Lot 3 DP 1032636	13/12/2017 14:45 W = 4 m/s NE Temp = 31°C	66	48	44	41	43	Pacific Highway 32 to 38 dBA Insects 35 to 39 dBA Birds 34 to 66 dBA Wind gusts 33 to 35 dBA Residential construction 35 to 42 dBA <b>Karuah East Project inaudible</b>

### Unattended Noise Monitoring Results

INP Period	Units	L <sub>A1</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>
<b>Location G (western end of Halloran Road, North Arm Cover)</b>					
Daytime <sup>1</sup>	dBA	69	66	54	67
Evening <sup>2</sup>	dBA	66	64	51	59
Night <sup>3</sup>	dBA	67	64	52	62

The attended noise monitoring conducted on 13 December 2017 showed that the contributed noise relating to the Karuah East Quarry were within the relevant noise goals. It was found that the noise generated by traffic on the Pacific Highway and Branch Lane dominated ambient noise levels during the

attended noise monitoring at location F. Noise generated by the Pacific Highway, insects, birds and nearby construction dominated the ambient noise levels at location G.

Given the observations made during the unattended noise monitoring at location G, it is likely that the daytime noise levels recorded in the unattended noise monitoring survey were dominated by road traffic noise from the Pacific Highway and natural sources (i.e., birdsong, livestock).

## 4.4 Water Monitoring

### Surface Water Monitoring - Monthly Results

Date	LDP001 (Dam 1)				LDP002 (Dam 2)				LDP003 (Dam 3)			
	pH (Lab)	TSS	Oil & Grease	EC	pH (Lab)	TSS	Oil & Grease	EC	pH (Lab)	TSS	Oil & Grease	EC
19/01/2016	-	-	-	-	-	-	-	-	-	-	-	-
25/07/2016	6.60	<5	<5	107	-	-	-	-	-	-	-	-
30/08/2016	6.07	<5	<5	74	-	-	-	-	-	-	-	-
19/10/2016	5.57	96	<5	317	-	-	-	-	-	-	-	-
29/11/2016	5.89	63	<5	305	5.39	72	<5	520	5.22	<5	34	260
19/12/2016	4.97	570	<5	335	4.75	119	<5	559	4.75	58	<5	284
22/02/2017	5.90	145	8	349	-	-	-	-	5.28	8	<5	323
01/03/2017	5.28	40	<5	533	-	-	-	-	5.32	883	<5	216
21/03/2017	5.97	383	18	612	-	-	-	-	4.78	890	16	286
21/04/2017	6.48	21	<5	586	-	-	-	-	7.09	54	8	431
19/05/2017	6.81	11	<5	907	-	-	-	-	6.97	169	14	500
16/06/2017	5.94	220	22	457	-	-	-	-	5.95	1180	25	482
14/07/2017	6.50	82	<5	462	-	-	-	-	6.51	228	<5	452
18/08/2017	6.81	47	8	515	-	-	-	-	6.73	190	12	487
22/09/2017	6.98	18	10	492	6.61	26	8	444	6.80	122	10	520
23/10/2017	6.78	90	<5	438	6.73	336	15	382	6.63	164	10	475
21/11/2017	6.92	71	39	511	6.10	18	<5	490	7.28	15	31	694
15/12/2017	6.55	5	<5	580	5.55	7	<5	455	7.10	28	6	838
19/01/2018	7.29	9	<5	665	7.29	37	<5	434	7.08	10	6	925

Units: pH in pH units, Total Suspended Solids (TSS) in mg/L, Oil & Grease in mg/L, Electrical Conductivity (EC) in  $\mu\text{S}/\text{cm}$   
*Values outside of EPL limits highlighted in red.*

Date	SW1 (Bulga Creek)				SW2 (Bulga Creek)				SW4 (Yalimbah Creek)			
	pH (Lab)	TSS	Oil & Grease	EC	pH (Lab)	TSS	Oil & Grease	EC	pH (Lab)	TSS	Oil & Grease	EC
19/01/2016	5.60	<5	9	204	4.66	<5	<5	173	5.70	13	<5	201
25/07/2016	-	-	-	-	5.97	7	<5	158	-	-	-	-
30/08/2016	-	-	-	-	5.70	<5	<5	207	-	-	-	-
19/10/2016	-	-	-	-	5.84	7	<5	172	-	-	-	-
29/11/2016	-	-	-	-	-	-	-	-	-	-	-	-
19/12/2016	-	-	-	-	-	-	-	-	-	-	-	-
21/03/2017	4.90	<5	<5	313	4.76	12	<5	309	-	-	-	-
31/03/2017	-	-	-	-	5.70	86	34	319	5.79	9	97	263
21/04/2017	-	-	-	-	5.76	12	<5	369	-	-	-	-
19/05/2017	-	-	-	-	5.89	7	<5	414	-	-	-	-
16/06/2017	5.47	6	<5	329	5.54	65	8	313	5.29	6	24	259
14/07/2017	-	-	-	-	5.81	47	<5	348	-	-	-	-
18/08/2017	-	-	-	-	6.04	22	<5	385	-	-	-	-
22/09/2017	-	-	-	-	6.34	10	<5	406	-	-	-	-
23/10/2017	-	-	-	-	6.42	29	6	323	-	-	-	-
21/11/2017	-	-	-	-	6.01	33	17	466	-	-	-	-
15/12/2017	-	-	-	-	6.10	23	<5	520	-	-	-	-

Date	SW1 (Bulga Creek)				SW2 (Bulga Creek)				SW4 (Yalimbah Creek)			
	pH (Lab)	TSS	Oil & Grease	EC	pH (Lab)	TSS	Oil & Grease	EC	pH (Lab)	TSS	Oil & Grease	EC
19/10/2018	-	-	-	-	-	-	-	-	-	-	-	-

**Units:** pH in pH units, Total Suspended Solids (TSS) in mg/L, Oil & Grease in mg/L, Electrical Conductivity (EC) in  $\mu\text{S}/\text{cm}$   
*Values outside of EPL limits highlighted in red.*

### Surface Water Monitoring - Discharges

A controlled discharge was performed on Dam 3 from the 7 to 8 February 2018. Approximately 500,000 litres was discharged in this event. As shown in the results below, the pH, Total Suspended Solids and oil & grease were within the EPL limits.

Date	LDP003 (Dam 3)			
	pH (Lab)	TSS mg/L	Oil & Grease mg/L	EC $\mu\text{S}/\text{cm}$
<b>EPL Criterion</b>	<b>6.5-8.5</b>	<b>40</b>	<b>&lt;5</b>	-
07/02/2018	7.8	28	<5	1060
08/02/2018	7.8	26	<5	1050

### Groundwater Levels

Date	Unit	<sup>2</sup> BH205	<sup>3</sup> BH207	BH208	BH303
30/03/2016	<sup>1</sup> metres	22.83	12.38	19.54	29.93
04/10/2016	<sup>1</sup> metres	24.00	9.61	19.77	30.45
04/04/2017	<sup>1</sup> metres	25.30	9.39	19.99	30.66
05/10/2017	<sup>1</sup> metres	22.87	8.88	19.90	30.60
17/01/2018	<sup>1</sup> metres	21.98	9.12	20.27	30.67

- Note:**
1. Groundwater levels are measured in metres below ground level.
  2. BH205 was relocated on 26 September 2016.
  3. BH207 was relocated on 13 March 2017.

## 5. COMMUNITY COMPLAINTS & COMPANY RESPONSE TO COMPLAINTS

No complaints have been received in the last three months.

Complaints relating to the Karuah East project can be made via telephone or through the Hunter Quarries website. Once a complaint has been received, the following procedure is followed:

- The details of the complaint will be recorded and investigated once received;
- Acknowledgement of the complaint will be made to the complainant within 24 hours of receiving the complaint;
- The complainant will receive notification within 3 working days of the outcome of the investigation; and
- Where applicable, a written response will be provided within 10 working days.

All complaints are recorded and kept for at least 4 years in accordance with Condition M5 of the EPL. A complaints register is also provided on the website, which is updated quarterly in accordance with the Project Approval.

## **6. INFORMATION PROVIDED TO THE COMMUNITY AND ANY FEEDBACK**

Since Project Approval, the following information has been made publicly available:

- Notice of expressions of interest to join the CCC (December 2015 – January 2016 and June 2016).
- Information available on the Karuah East Quarry website include:
  - Approvals.
  - Environmental Management Plans.
  - Environmental Assessment Reports.
  - Complaints Register.
  - Environmental Monitoring Reports.
  - Annual Reviews.
  - Independent Environmental Audits.
  - Quarterly Community Consultative Committee meeting minutes and related documents.