

Holcim Dunloe Sand Quarry Quarterly Environmental Report

July to September 2017

1. Introduction

Dunloe Sand Quarry is located on Mooball Rd, Pottsville. The development application number 06-0030 was approved by the NSW Minister for Planning in November 2008, subject to the conditions listed in the project approval document. Schedule 5, condition number 11 states:

During the project, the Proponent shall:

(a) make a summary of monitoring results required under this approval publicly available at the Proponent's regional office; and

(b) update these results regularly (at least every 3 months), to the satisfaction of the Director-General.

This report is available on the proponent's website in satisfaction of this clause.

2. Water Quality

2.1. Surface Water – Dredge Pond

The following tables contain the monthly and quarterly results for the Dredge Pond, along with the Water Quality Objectives (WQO) documented in Schedule 3, condition 9.

Table 1. Monthly Surface Water Results

| Reference | Site | Date | pH | Electrical Conductivity | Dissolved Oxygen | Turbidity | Oil & Grease |
|-----------|------|------------|-----------|-------------------------|------------------|-----------|--------------|
| Units | | | pH Units | µS/cm | mg/L | NTU | mg/L |
| WQO | | | 6.5 - 8.5 | 3000 | >6 | 5 - 20 | 10 |
| 4548/1 | SW1 | 12/07/2017 | 4.3 | 153 | 9.2 | 5.5 | <5.0 |
| 4653/1 | SW1 | 9/08/2017 | 4.2 | 171 | 9.9 | 3.4 | <5.0 |
| 4746/1 | SW1 | 6/09/2017 | 4.2 | 183 | 6.6 | 3.2 | <5.0 |

Table 2. Monthly Surface Water Algae Tests

| Reference | Site | Date | Blue Green Algae Cyanophytes | Total Algae Count |
|-----------|------|------------|------------------------------|-------------------|
| Units | | | cells/ml | cells/ml |
| WQO | | | <50,000 | |
| 4548/1 | SW1 | 12/07/2017 | <5 | 5260 |
| 4653/1 | SW1 | 9/08/2017 | <5 | 41500 |
| 4746/1 | SW1 | 6/09/2017 | <5 | 99800 |

Table 3. Quarterly Surface Water Results

| | Units | WQO | SW1 |
|---------------------------------------|-------------------|--------|----------|
| Reference | | | 4746/1 |
| Date | | | 6/9/2017 |
| Aluminium | mg/L | 0.5 | 0.35 |
| Arsenic | mg/L | | <0.001 |
| Dissolved Iron | mg/L | 20 | 0.09 |
| Dissolved Manganese | mg/L | | 0.18 |
| Chloride | mg/L | 1000 | 11 |
| Sulphate | mg/L | 800 | 47 |
| Total Alkalinity as CaCO ₃ | mg/L | 400 | <5 |
| Magnesium | mg/L | 100 | 2 |
| Sodium | mg/L | 500 | 8 |
| Potassium | mg/L | 40 | 2 |
| Ammonia | mg/L | 20 | <0.005 |
| Total Nitrogen | mg/L | | 0.3 |
| Total Phosphorus | mg/L | | <0.05 |
| Chlorophyll a | mg/m ³ | 2 - 10 | 10 |
| Faecal Coliforms | CFU/100mL | <1000 | <1 |
| Enterococci | CFU/100mL | <230 | ~2 |

2.2. Surface Water – Local Creeks

The following table contains the quarterly results for the creeks from the surrounding environment.

Table 4. Waters from the Surrounding Environment – Quarterly Results

| Description | Units | South Creek | North Creek |
|-------------------------|----------|-------------|-------------|
| Reference | | 4747/1 | 4747/2 |
| Date | | 6/9/2017 | 6/9/2017 |
| pH | pH Units | 6.7 | 7.1 |
| Electrical Conductivity | µS/cm | 2,210 | 26,800 |
| Dissolved Oxygen | mg/L | 8.4 | 7.5 |
| Total Suspended Solids | mg/L | 8 | 1 |
| Total Nitrogen | mg/L | 0.6 | 0.4 |
| Total Phosphorus | mg/L | <0.05 | <0.05 |

2.3. Groundwaters

The following tables contain the monthly and quarterly results for the monitoring bores, along with the Water Quality Objectives (WQO) documented in Schedule 3, condition 9.

Table 5. Groundwater Monthly Results

| Reference | Site | Date | Depth to Water from top of cap | pH | Electrical Conductivity |
|-----------|------|------------|--------------------------------|-----------|-------------------------|
| Units | | | m | pH Units | µS/cm |
| WQO | | | | 6.5 - 8.5 | 3000 |
| 4547/1 | DLP1 | 12/07/2017 | 1.69 | 4.1 | 137 |
| 4652/1 | DLP1 | 9/08/2017 | 1.83 | 4.3 | 123 |
| 4745/1 | DLP1 | 6/09/2017 | 1.90 | 4.0 | 124 |
| 4547/2 | DLP3 | 12/07/2017 | 1.52 | 6.2 | 7060 |
| 4652/2 | DLP3 | 9/08/2017 | 1.60 | 6.2 | 7490 |
| 4745/2 | DLP3 | 6/09/2017 | 1.61 | 6.1 | 7490 |
| 4547/3 | DLP5 | 12/07/2017 | 1.60 | 5.2 | 189 |
| 4652/3 | DLP5 | 9/08/2017 | 1.68 | 5.1 | 200 |
| 4745/3 | DLP5 | 6/09/2017 | 1.67 | 5.2 | 179 |
| 4547/4 | DLP6 | 12/07/2017 | 1.54 | 3.9 | 1100 |
| 4652/4 | DLP6 | 9/08/2017 | 1.77 | 3.9 | 1050 |
| 4745/4 | DLP6 | 6/09/2017 | 1.85 | 3.7 | 977 |
| 4547/5 | DLP7 | 12/07/2017 | 1.47 | 7.0 | 3360 |
| 4652/5 | DLP7 | 9/08/2017 | 1.69 | 7.0 | 3480 |
| 4745/5 | DLP7 | 6/09/2017 | 1.80 | 7.0 | 3380 |

Table 6. Groundwater Quarterly Results

| Site | Units | WQO | DLP1 | DLP3 | DLP5 | DLP6 | DLP7 |
|---------------------------------------|-------|------|-----------|-----------|-----------|-----------|-----------|
| Reference | | | 4745/1 | 4745/2 | 4745/3 | 4745/4 | 4745/5 |
| Date | | | 6/09/2017 | 6/09/2017 | 6/09/2017 | 6/09/2017 | 6/09/2017 |
| Oil & Grease | mg/L | 10 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| Aluminium | mg/L | 0.5 | 0.73 | 0.04 | 0.54 | 17 | 0.33 |
| Arsenic | mg/L | | <0.001 | <0.001 | <0.001 | 0.002 | <0.001 |
| Dissolved Iron | mg/L | 20 | 3.40 | 2.80 | 0.23 | 180 | 1.30 |
| Dissolved Manganese | mg/L | | 0.02 | 0.60 | <0.005 | 0.93 | 0.07 |
| Chloride | mg/L | 1000 | 18 | 2000 | 26 | 16 | 640 |
| Sulphate | mg/L | 800 | 10 | 140 | 18 | 370 | 350 |
| Total Alkalinity as CaCO ₃ | mg/L | 400 | <5 | 140 | 8 | <5 | 390 |
| Magnesium | mg/L | 100 | <0.5 | 120 | <0.5 | 11 | 38 |
| Sodium | mg/L | 500 | 11 | 1600 | 35 | 12 | 940 |
| Potassium | mg/L | 40 | 1 | 55 | 1 | 8 | 31 |
| Ammonia | mg/L | 20 | 0.03 | 2.00 | 0.06 | 0.51 | 0.67 |
| Total Nitrogen | mg/L | | 1.2 | 3.0 | 1.3 | 1.6 | 2.9 |
| Total Phosphorus | mg/L | | <0.05 | <0.05 | <0.05 | <0.05 | 0.1 |

3. Ambient Air Monitoring

3.1. Dust Depositional Gauges

The following table contains the results of the monthly dust deposition results, along with the Long Term Impact Assessment Criteria for Particulate Matter, as documented in Schedule 3, condition 6, table 4. It should be noted that this criteria is relevant to the annual average and not the monthly results.

| Reference | Description | Date On | Date Off | Insoluble Solids | Ash | Combustible Matter |
|-----------------|----------------|------------|------------|-----------------------|-----------------------|-----------------------|
| Units | | | | g/m ² /mth | g/m ² /mth | g/m ² /mth |
| <i>Criteria</i> | | | | 4 | | |
| 4549/1 | D1 Sugar Shed | 14/06/2017 | 12/07/2017 | 0.3 | 0.2 | 0.1 |
| 4650/1 | D1 Sugar Shed | 12/07/2017 | 9/08/2017 | 0.1 | <0.1 | 0.1 |
| 4743/1 | D1 Sugar Shed | 9/08/2017 | 6/09/2017 | 0.5 | 0.3 | 0.2 |
| | Annual Average | | | 0.3 | | |
| 4549/2 | D2 Black Rocks | 14/06/2017 | 12/07/2017 | <0.1 | <0.1 | <0.1 |
| 4650/2 | D2 Black Rocks | 12/07/2017 | 9/08/2017 | <0.1 | <0.1 | <0.1 |
| 4743/2 | D2 Black Rocks | 9/08/2017 | 6/09/2017 | 0.2 | 0.2 | <0.1 |
| | Annual Average | | | 0.3 | | |
| 4549/3 | D3 Windmill | 14/06/2017 | 12/07/2017 | 0.2 | <0.1 | 0.2 |
| 4650/3 | D3 Windmill | 12/07/2017 | 9/08/2017 | 0.2 | 0.1 | 0.1 |
| 4743/3 | D3 Windmill | 9/08/2017 | 6/09/2017 | 0.5 | 0.2 | 0.3 |
| | Annual Average | | | 0.9 | | |
| 4549/4 | D4 Haul Rd | 14/06/2017 | 12/07/2017 | 0.3 | 0.1 | 0.2 |
| 4650/4 | D4 Haul Rd | 12/07/2017 | 9/08/2017 | 0.5 | 0.4 | 0.1 |
| 4743/4 | D4 Haul Rd | 9/08/2017 | 6/09/2017 | 0.5 | 0.3 | 0.2 |
| | Annual Average | | | 0.4 | | |

4. Monitoring Locations

