Holcim Dunloe Sand Quarry Quarterly Environmental Report

April to June 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.

Please note that there was record rainfall recorded in the region during April and June 2017.

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*
4136/1	SW1	19/04/2017	6.5	84	7.6	400	<5.0
4263/1	SW1	17/05/2017	5.9	101	8.1	230	<5.0
4373/1	SW1	14/06/2017	4.8	115	9.5	100	<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*	
4136/1	SW1	19/04/2017	<5	600
4263/1	SW1	17/05/2017	<5	2820
4373/1	SW1	14/06/2017	<5	1830

Table 3. Quarterly Surface Water Results

	Units	*WQO*	SW1
Reference			4373/1
Date			14/6/2017
Aluminium	mg/L	*0.5*	0.17
Arsenic	mg/L		<0.001
Dissolved Iron	mg/L	*20*	0.04
Dissolved Manganese	mg/L		0.12
Chloride	mg/L	*1000*	8
Sulphate	mg/L	*800*	25
Total Alkalinity as $CaCO_3$	mg/L	*400*	<5
Magnesium	mg/L	*100*	2
Sodium	mg/L	*500*	7
Potassium	mg/L	*40*	2
Ammonia	mg/L	*20*	0.03
Total Nitrogen	mg/L		0.7
Total Phosphorus	mg/L		0.1
Chlorophyll a	mg/m3	*2 - 10*	<1
Faecal Coliforms	CFU/100mL	*<1000*	~6
Enterococci	CFU/100mL	*<230*	62

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		3960/1	3960/2
Date		14/6/2017	14/6/2017
pH	pH Units	6	5.4
Electrical Conductivity	µS/cm	109	435
Dissolved Oxygen	mg/L	7.2	8.1
Total Suspended Solids	mg/L	29	23
Total Nitrogen	mg/L	0.8	1
Total Phosphorus	mg/L	0.09	0.06

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.

Flooding restricted access to the bores in April and June. DLP7 was not accessible in either April or June, and DLP3 and DLP5 were also not accessible in June.

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*
4137/1	DLP1	19/04/2017	1.53	4.2	180
4264/1	DLP1	17/05/2017	1.64	4.4	135
4372/1	DLP1	14/06/2017	0.89	4.3	197
4137/2	DLP3	19/04/2017	1.46	5.9	7660
4264/2	DLP3	17/05/2017	1.44	5.9	7410
4137/3	DLP5	19/04/2017	1.51	5.1	203
4264/3	DLP5	17/05/2017	1.54	5.1	226
4137/4	DLP6	19/04/2017	1.26	3.9	1540
4264/4	DLP6	17/05/2017	1.51	3.8	1580
4372/4	DLP6	14/06/2017	1.08	3.7	1380
4264/5	DLP7	17/05/2017	1.51	6.9	3440

Table 6. Groundwater Quarterly Results

Site	Units	*WQO*	DLP1	DLP6
Reference			4372/1	4372/4
Date			14/06/2017	14/06/2017
Oil & Grease	mg/L	*10*	<5.0	<5.0
Aluminium	mg/L	*0.5*	1.6	43
Arsenic	mg/L		<0.001	0.003
Dissolved Iron	mg/L	*20*	13	300
Dissolved Manganese	mg/L		0.04	1.40
Chloride	mg/L	*1000*	22	17
Sulphate	mg/L	*800*	39	990
Total Alkalinity as $CaCO_3$	mg/L	*400*	<5	<5
Magnesium	mg/L	*100*	1	17
Sodium	mg/L	*500*	14	14
Potassium	mg/L	*40*	1	11
Ammonia	mg/L	*20*	0.04	0.59
Total Nitrogen	mg/L		0.5	1.6
Total Phosphorus	mg/L		<0.05	0.2

3. Ambient Air Monitoring

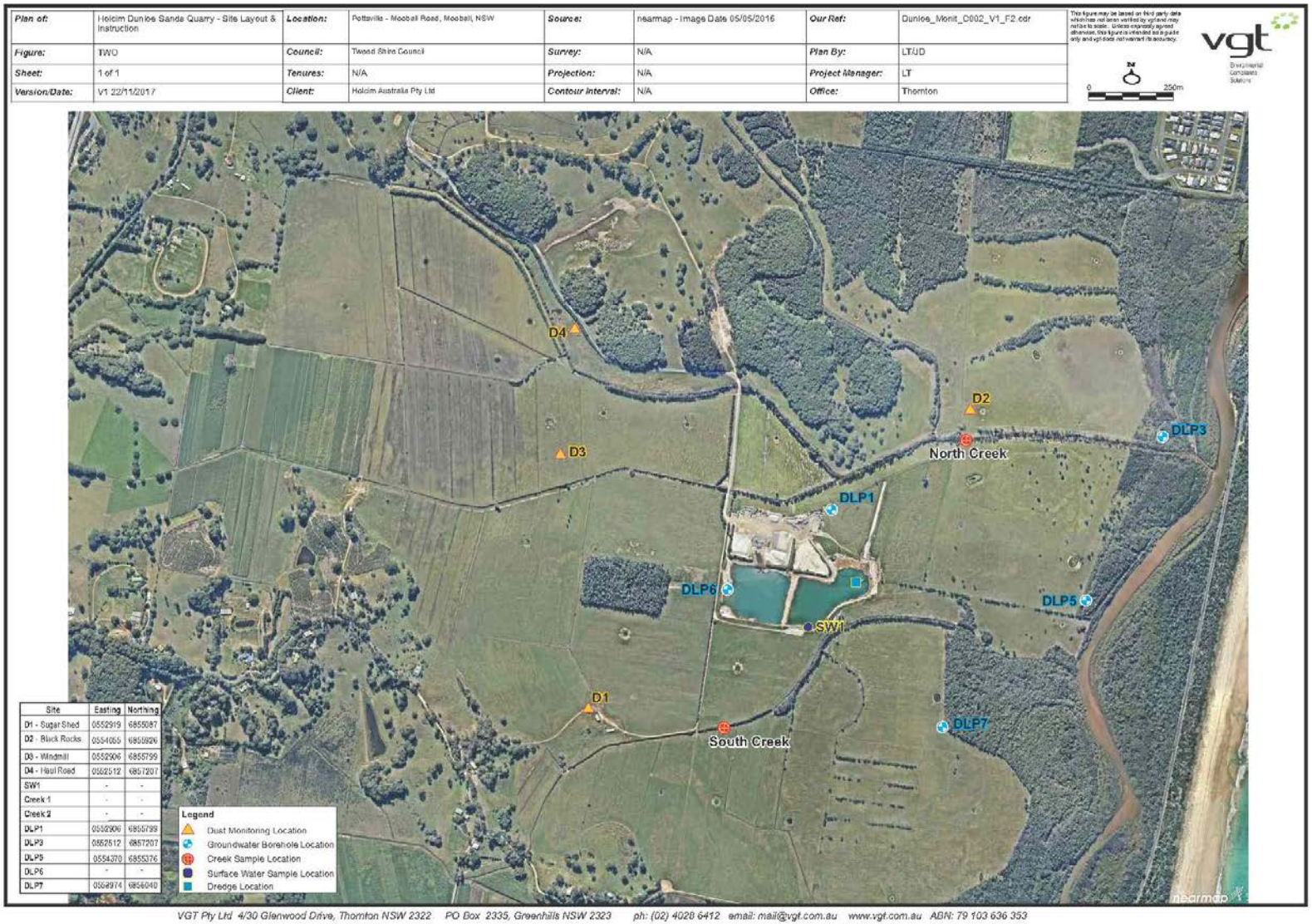
3.1. Dust Depositional Gauges

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				$g/m^2/mth$	$g/m^2/mth$	$g/m^2/mth$
Criteria				*4*		
4129/1	D1 Sugar Shed	22/03/2017	19/04/2017	0.2	0.1	0.1
4260/1	D1 Sugar Shed	19/04/2017	17/05/2017	0.8	0.4	0.4
4375/1	D1 Sugar Shed	17/05/2017	14/06/2017	0.2	<0.1	0.2
	Annual Average			0.4		
4129/2	D2 Black Rocks	22/03/2017	19/04/2017	0.9	0.8	0.1
4260/2	D2 Black Rocks	19/04/2017	17/05/2017	0.8	0.4	0.5
4375/2	D2 Black Rocks	17/05/2017	14/06/2017	0.2	<0.1	0.2
	Annual Average			0.4		
4129/3	D3 Windmill	22/03/2017	19/04/2017	1	0.7	0.3
4260/3	D3 Windmill	19/04/2017	17/05/2017	1.4	0.7	0.7
4375/3	D3 Windmill	17/05/2017	14/06/2017	0.2	0.1	0.1
	Annual Average			0.9		
4129/4	D4 Haul Rd	22/03/2017	19/04/2017	0.3	0.1	0.1
4260/4	D4 Haul Rd	19/04/2017	17/05/2017	0.7	0.3	0.4
4375/4	D4 Haul Rd	17/05/2017	14/06/2017	0.2	<0.1	0.2
	Annual Average			0.4		

4. Monitoring Locations

Plan of:	Holcim Dunloe Sands Quarry - Site Layout & Instruction	**Location:**	Pottsville - Mooball Road, Mooball, NSW	**Source:**	nearmap - Image Date 05/05/2016	**Our Ref:**	Dunloe_Monit_C002_V1_F2.cdr
Figure:	TWO	**Council:**	Tweed Shire Council	**Survey:**	N/A	**Plan By:**	LT/JD
Sheet:	1 of 1	**Tenures:**	N/A	**Projection:**	N/A	**Project Manager:**	LT
Version/Date:	V1 22/11/2017	**Client:**	Holcim Australia Pty Ltd	**Contour Interval:**	N/A	**Office:**	Thornton



Site	Easting	Northing
D1 - Sugar Shed	0552919	6855087
D2 - Black Rocks	0554055	6855926
D3 - Windmill	0552906	6855799
D4 - Haul Road	0552512	6857207
SW1	-	-
Creek 1	-	-
Creek 2	-	-
DLP1	0552906	6855799
DLP3	0552512	6857207
DLP5	0554370	6855376
DLP6	-	-
DLP7	0554974	6856040

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