

EPA Quarterly Monitoring Report 1st July 2018 to 30th September 2018



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1. Introduction

Sellicks Hill Quarry is a South Australian limestone quarry located on Main South Road operated by Southern Quarries Pty Ltd (SQ), a wholly owned subsidiary of Adelaide Brighton Ltd. (ABL). The quarry produces a range of products including aggregate, road base, sand and agricultural lime.

Actions to reduce the potential impacts on the environment and local community are important to the company and are undertaken at the site, including measures to manage dust, progressive site rehabilitation and improved visual amenity. Southern Quarries maintains an ongoing commitment to improving the sustainability of its operations including in relation to its carbon footprint, energy use, water use and waste oil recycling.

This site is licensed by the Department of Energy and Mines (DEM) and operates in accordance with the environmental objectives and criteria approved in the Mine Operations Plan. In addition, the quarry operates pursuant to a licence issued by the Environment Protection Authority (EPA). In accordance with that EPA licence (#2052), in 2016 Southern Quarries developed a Dust Management Plan (DMP) that establishes protocols to be implemented at the site during stripping and crushing operations to manage the potential generation and emission of dust from the site. Measures in the DMP include the use of continuous dust monitors and dust mitigation and suppression activities, visual observations, management of benching, stockpiles, exposed areas and runoff, progressive rehabilitation and community engagement.

This document comprises the Quarterly Dust Monitoring Report for the period 1st July 2018 to 30th September 2018.

Under EPA licence #2052, section 1.1 DUST MANAGEMENT PLAN (U - 390), the licensee must:

- 1.1.1 *Submit to the EPA by 30 June 2016, an appropriate Dust Management Plan (“DMP”) to the satisfaction of the EPA. The DMP must include, but not limited to the following:*
- a) Identification of all sources of dust emissions that may be generated by the activities at the Premises and their risk assessment;*
 - b) Details of appropriate measures identified in the risk assessment to minimise the dust emissions by applying reasonable and practicable and precautionary principles;*
 - c) Details of dust and meteorological monitoring to be undertaken to measure the dust leaving the Premises including appropriateness of the monitors and their locations within the context of the Premises, methodology of data collection and frequency of measurement;*
 - d) Details of criteria by which the monitoring results will be assessed and interpreted;*
 - e) Details of remedial measures to be implemented to immediately respond to dust level exceedances adopted in sub-clause 1.1.1.d, otherwise known as a Trigger Action Response Plan.*
 - f) Details of the feedback mechanism and interpretation of monitoring information to the risk assessment; and*
 - g) Strategy for community engagement with the affected community members.*
- 1.1.2 *Implement and comply with the DMP (or revised DMP) upon approval in writing by the EPA (referred as “EPA approved DMP”).*
- 1.1.3 *Submit to the satisfaction of the EPA, commencing October 2016 a quarterly monitoring report. The report must be submitted by the 15th day in the month following the quarter and include but not limited to the following:*
- a) The results of dust and meteorological monitoring undertaken in accordance with the EPA approved DMP;*
 - b) An interpretation of the monitoring results assessed in accordance with the criteria specified in sub-clause 1.1.1. d of this condition;*
 - c) Details of the immediate actions implemented as a result of the Trigger Action Response Plan to minimise dust emissions;*
 - d) Details of corrective actions implemented to prevent future exceedance events; and*
 - e) Details on the management of the complaints in accordance with Condition S-1 of this licence and summary of community engagement conducted.*

For this purpose, the following quarterly report is submitted under section 1.1.3 of the EPA licence. This quarterly report commencing 1st July 2018 to 30th September 2018, is a true and accurate account of dust emission monitoring results undertaken by the company at fixed locations around the perimeter of the quarry.

2. Monitoring Plan and Results.

Continuous and real time monitoring of ambient PM₁₀ concentration, using Thermo Scientific ADR-1500 Area Dust Monitors, is being undertaken at three locations around the quarry boundary.

The monitoring locations have been selected, after considering suitable locations that triangulate the site and are reasonably accessible given the topography. The three locations were agreed in consultation with the EPA and DEM and detailed in the DMP.

Each of the monitors is designed for continuous real-time data transmission to a central location and data logger. Data is web hosted and SMS alerts relayed to Quarry Management. An alert is sent to selected staff phones if the instantaneous reading exceeds 60 micrograms per cubic metre ($\mu\text{g}/\text{m}^3$), hourly average reading exceeds 50 $\mu\text{g}/\text{m}^3$ and 24 hour reading exceeds 35 $\mu\text{g}/\text{m}^3$. Each dust monitor is equipped with a meteorological unit which measures wind speed and direction and can be used for analysis. Real time data can be accessed via the website at any time.

Southern Quarries management discuss operating conditions of the quarry to all employees at daily pre-start meetings. This includes an assessment of the forecasted meteorological conditions and the risks that they may present to the daily operations. From this daily assessment, a trigger level is determined from the DMP Trigger Action Response Planning (TARP) and applied.

Southern Quarries has engaged Lear Siegler Australasia (LSA) to provide ongoing maintenance, calibration of the units and to provide monitoring data reports on a quarterly basis. The LSA Air Quality Report for the quarter is presented in Appendix D.

ADR unit data showing the 24hr daily mean for the reporting period is attached (see Appendix A – 24hr Daily Average PM₁₀). There were three recorded exceedances above the regulatory limit of 50 µg /m³ per 24-hour period (mid-night to mid-night) at ADR2 during the quarter. These exceedances were due to low cloud and precipitation, with water droplets recorded as PM₁₀ fragments in the air stream. This is common at ADR2 during the winter months.

A summary of the Dust Monitoring TARP trigger events for the reporting period has been detailed (See Appendix B – Dust Monitoring TARP Trigger Events).

ADR unit availability for the reporting period is as follows:

- ADR 1 – 89.1%
- ADR 2 – 97.8%
- ADR 3 – 68.5%

The wind sensing equipment on ADR1 has not been operational since the data logger was replaced on the 13th July. The existing wind sensor was not compatible with the new data logger. Delays in LSA sourcing a new wind sensor, has resulted in no wind data being recorded during the quarter. A new wind sensor was installed on the 3rd October while LSA were on site to complete the October calibrations.

ADR1 availability during the 3rd Quarter improved from the 2nd quarter after replacement of the data logger. ADR3's availability continues to be lower than the target of 90%. LSA have suggested the loss of data is due to 'freezing' of the Embedded logger and being out of service for software maintenance. Upgrading of the loggers for ADR2 and ADR3 have been suggested to help resolve these issues.

3. Description and Analysis of Monitoring Results

Majority of the TARP triggers during the quarter occurred from ADR 2. Consideration of meteorological conditions concluded that the increased readings at ADR2 at the time were a result of low cloud cover and precipitation. ADR 2 is positioned at a height of 355 m above sea level and low cloud occurrences below this RL are common during the winter months at Sellicks Hill. In this situation, water droplets contained in the monitored air stream can be recorded as PM₁₀ sized particles (e.g. dust).

Some of these events also occurred outside of normal operating hours. SMS alert notifications to site management can prompt investigation via the website to analyse the concentration and wind direction at the time. Appropriate action (if any) can be determined from this data.

One trigger recorded at ADR3 was a result of dust from the Central Crushing plant during start up, in low wind speeds. Another trigger recorded at ADR2 outside of Quarry operations was determined to be from the Eastern Quarry development. At the time, severe wind speeds were being recorded.

4. Corrective Actions and Planned Initiatives

The following corrective actions or initiatives were identified or completed during the reporting period:

- Connection of the supply of 50ML of recycled water through the Willunga Basin Water Company (WBWC) to Sellicks Hill Quarry is now expected for completion by the end of November 2018. Council have now approved the booster pump station required, with the installation works beginning in October. This supply will feed directly into the sites 375KL water tank, reducing the reliance on main water and increasing the amount of available water to the site for dust suppression.
- Progressive rehabilitation activities across the site included: top soil cover on the Western screening mound (exposed western faces) and Eastern Quarry development. Another 3-4 tonnes of Rye Corn seed was spread on these areas.

during Quarter. The Rye corn grass provides a cover to minimise dust generation from loose soils and enhance the visual amenity of these areas.

- Planting of 2,500 seedling's throughout the site was completed during the 3rd Quarter of 2018. These trees replaced previously planted trees that have not survived and in filling in areas of previous plantings.
- Calibration of the all ADR units were undertaken by LSA on the 13th July 2018.
- Installation of 1km of water line and additional water storage capacity to supply water along the length of the Western Screen Mound, adjacent to Main South Road. This allows a series of sprinklers to operate and manage dust control in this area.
- Installation of additional conveyor water sprays for dust suppression at transfer points.
- The Atkinson water truck (15,000L) was sent off site for major repairs in September to ensure reliability for the upcoming summer as the site's second water truck.
- Reviewed and updated the Dust Management Plan, as per licence conditions. The EPA approved this document on 31st August 2018. The updated document was reviewed by all site employees at the September Toolbox meeting. Updates included the following, but not limited to:
 - Updated Community Engagement Plan (CEP) as an appendix to the DMP
 - Wetting the blasting floor 30 minutes prior to a blast to help in the reduction of dust
 - Limit the conducting of visible blasting in wind conditions above 50km/hr with an Easterly direction
 - Irrigation system operating on the Western Screening mound

5. Management of Community Feedback

There were three community complaints received during the quarter, one observation received from the EPA and one letter of positive feedback. Details of all feedback is entered into the site complaints register, including the date, time the complaint was made, specific details of the complaint, contact details of the complainant if available and details of any action taken in response to the complaint.

The company also received a letter from Leon Bignell (Member for Mawson) regarding concerns raised by residents about the impact exposure from dust to their health, and damage to properties and engines.

A summary of Community Feedback is listed in Appendix C. The three complaints and EPA observation were all related to dust. One of the complaints was general in nature, with the others specific to an event with photographic evidence provided. The investigation results and corrective actions are also detailed in Appendix C.

6. Community Engagement

The company has been actively engaging with the community and regulatory bodies during the quarter. A summary of the engagement is discussed below. The companies Community Engagement Strategy document was updated during the quarter and is now an appendix under the DMP.

The company meet and corresponded with the EPA on several occasions during the quarter to discuss dust management control and initiatives, including the update and approval of the DMP.

A meeting was held with members from the Friends of Sellicks (FoS) on the 27th July 2018. The purpose of the meeting was to provide a general update on environmental activities and in particular on recent monitoring results, update on plans for the coming summer and the Western mound development and associated revegetation plans.

This information was then summarised at a FoS public meeting held on the 9th August 2018. A follow up meeting is planned for December 2018, prior to the summer.

The company received correspondence from DEM on the 1st August 2018, regarding site operations on the 7th June 2018, which resulted in a community complaint. DEM requested the company provide details of corrective actions and the timeframe in which these actions were completed.

DEM and EPA conducted a joint site inspection on the 10th August 2018. The purpose of this visit was for the DPC and EPA to conduct their routine quarterly site inspection.

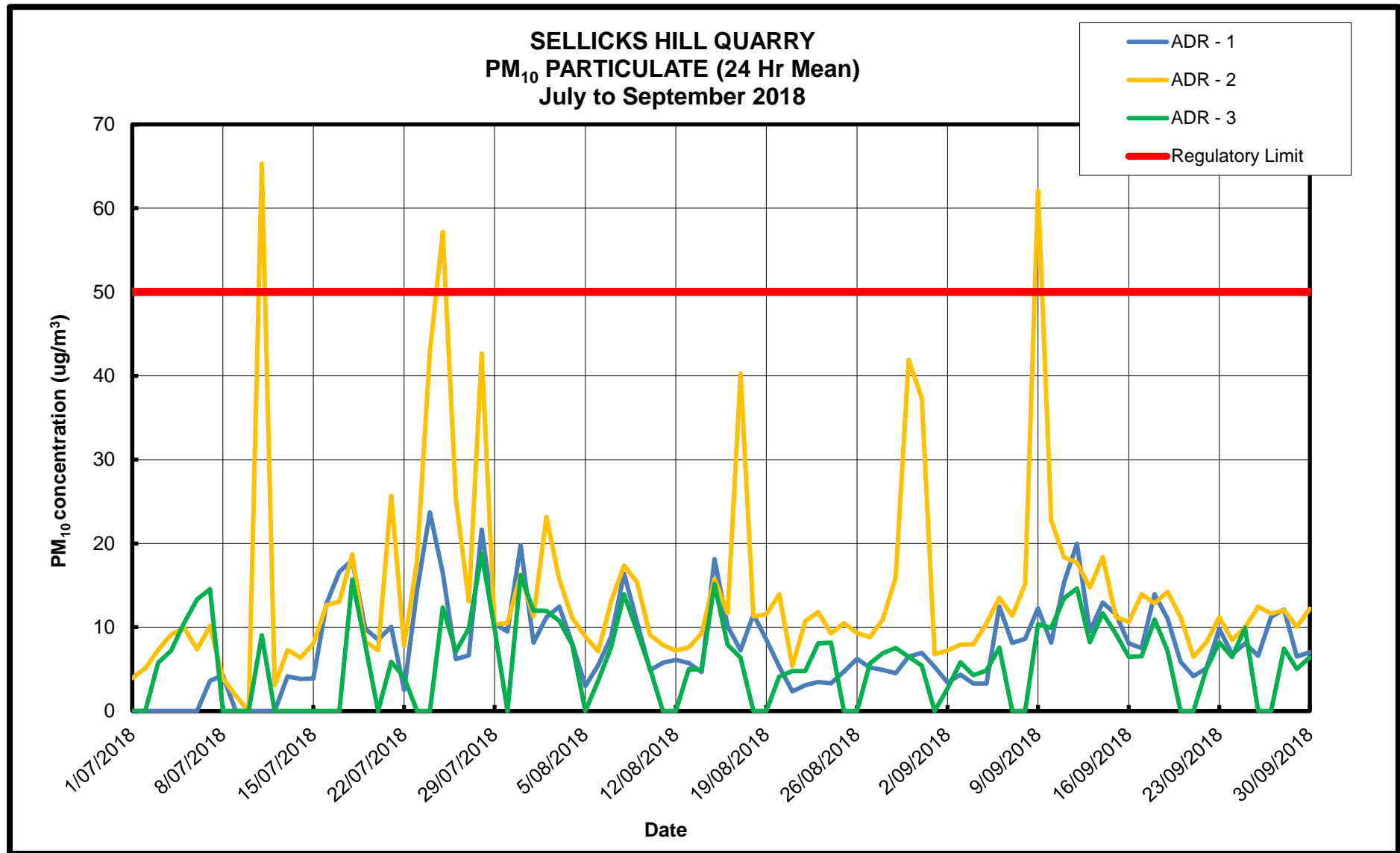
The company finalised updating its website to include a dedicated environmental page during the quarter. Details of current environmental initiatives and links to relevant report and community updates has been included.

Communication and notifications are continuing to be provided to the two local community social media groups – Friends of Sellicks and Sellicks and Surrounds. Primary focus of these notifications is to inform the community when visible blasts are planned. These updates include details of the location of the blast and expected weather conditions. These notifications are then being circulated on social media and also placed on the company's website.

A letter was received from the EPA regarding the dust observed over the quarry operations on the 5th September 2018. EPA requested a written response on operational activities at the time and assessment and controls against the DMP.

A letterbox drop to the Sellicks area was completed on the 20th September 2018. The company is now receiving the feedback from people who have responded, which will assist the company on the best way to inform and respond to the community.

Appendix A – 24 hr Daily Average PM₁₀



Appendix B - Dust Monitoring TARP Trigger Events

Dust Monitoring TARP Trigger Events - Report Period 1 st July 2018 - 30th September 2018												
Date	Time Start	Time Finish	ADR Monitor	TARP Level	Hours of Exceedance	Wind Direction	Wind Speed	Analysis	Immediate Actions	Resolution	Corrective Actions	Complaints Received
11/07/2018	5:00	8:00	ADR 2	3	3	NE	12 - 19 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
21/07/2018	4:00	6:00	ADR 1/2	1	1	NE	10 - 14 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
23/07/2018	15:00	16:00	ADR 2	1	1	NE	18 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
24/07/2018	1:00	9:00	ADR 2	3	8	NE	30 - 36 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
25/07/2018	4:00	6:00	ADR 1/2	3	8	NE	10 - 15 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
28/07/2018	17:00	20:00	ADR 1/2/3	3	3	NE	10 - 14 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
1/08/2018	7:00	8:00	ADR 3	1	1	SE	2 - 4 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Increased readings determined to be coming from the Quarry operations. Increase dust suppression activities on Central Crushing Plant	None	No
2/08/2018	23:00	0:00	ADR 2	1	1	NE	25 - 29 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
3/08/2018	1:00	2:00	ADR 2	1	1	NE	25 - 29 km/hr	Outside of Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
8/08/2018	1:00	2:00	ADR 2	1	1	NE	25 - 29 km/hr	Outside of Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
17/08/2018	5:00	9:00	ADR 2	3	4	NE	19 - 22 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
20/08/2018	23:00	0:00	ADR 2	1	1	NE	5 - 7 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
30/08/2018	1:00	2:00	ADR 2	1	1	N-NW	50 - 60 km/hr	Outside of Quarry activities	Review real time data and determine source of increased PM10 readings	Data suggests severe wind gusts may have contributed to high PM10 reading from the Eastern Quarry development. No sensitive receptors in this area	None	No
30/08/2018	20:00	23:00	ADR 2	1	2	N-NW	30 - 50 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	After strong winds the rain front hit with low cloud level and moisture determined as the cause of increased PM10 readings	None	No
31/08/2018	1:00	8:00	ADR 2	3	6	N-NW	25 - 30 km/hr	Outside of Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
6/09/2018	6:00	7:00	ADR 2	1	1	NW	18 - 22 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
8/09/2018	23:00	0:00	ADR 2	1	1	NW	18 - 21 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
9/09/2018	5:00	9:00	ADR 2	3	4	N	12 - 15 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
10/09/2018	1:00	6:00	ADR 2	1	2	N-NE	10 - 12 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No
19/09/2018	23:00	0:00	ADR 2	1	1	N-NE	8 - 11 km/hr	During Quarry activities	Review real time data and determine source of increased PM10 readings	Low cloud level and moisture determined as the cause of increased PM10 readings	None	No

Appendix C - Community Feedback

2018 COMMUNITY FEEDBACK - SELICKS HILL QUARRY							
Date	Type	Name	Description / Detail	Investigation	Corrective actions	Responsible	Completed
13/08/2018	General Dust Complaint	Leon Bignell (Member for Mawson)	Environmental - Letter received from Leon Bignell (Member for Mawson) regarding dust levels from the Sellicks Hill and requested meeting with Company CEO. Letter states a resident has made contact about ongoing dust issue and residents are very concerned about the impact exposure to the dust on their health, property and engines.	Unable to investigate as complaint is general in nature	Update complaints register. Provide senior management a briefing note on Sellicks with details of recent community communication, Dust Management Plan, recent dust initiatives and EPA community dust monitoring reports.	Michael Close	20/08/2018
5/09/2018	Dust Observation	Peter Bond	Environmental - EPA rang to advise they could see a dust plume coming from the Quarry at 10am on the 5th September which dissipated within 10mins. EPA followed up with a letter with accompanying photograph regarding the dust observed requesting a response to the specific questions regarding site operations at 10.00am and assessment against the current DMP both before and after SQ became aware	Wind direction for the morning of the 5/09 was Northerly, with a change in direction to NNW at 10am and speeds increasing to over 20km/hr blowing away from Sellicks Beach sensitive receptors. The change in weather conditions was coinciding with a forecasted rain front coming in the afternoon. As per the DMP, based on wind speed and direction, T ARP level was 1. ADR levels did not trigger at the time. At 10am the main crushing plant was operating. Site personnel had identified increased dust generation as a result of changing weather conditions prior to 10am. As a temporary control, were in the process of running additional water lines to increase crushing plant dust suppression on conveyors belts. The decision at the time was to continue operating, while running additional water lines, in preference to shutting down and re-starting the crushing plant for a short period. The additional water supply began shortly after 10am.	Update complaints register. As a permanent action, fixed lines were installed (Saturday 8th) to install multiple water sprays on the starting transfer points of the conveyor belts. These new sprays will be in addition to head box sprays already installed at the discharge end of each product conveyor.	Michael Close and Trevor Smith	8/09/2018

2018 COMMUNITY FEEDBACK - SELICKS HILL QUARRY							
Date	Type	Name	Description / Detail	Investigation	Corrective actions	Responsible	Completed
11/09/2018	Dust Complaint	Anonymous	Environmental - EPA received a video and photo of dust at Sellicks Hill Quarry. The first complaint was a video was taken at 9:17am by a very concerned Sellicks Beach resident. The dust was first noted at about 8am. The second complaint was a photo taken at 8:50am	Conditions at the time were strong N-NW winds blowing away from the sensitive receptors at Sellicks Beach, with gusts above 50km/hr. As forecasted, the morning change resulted in light rain during the afternoon. Operations during the day included load and haul from the Southern Pit and crushing at the MGO Primary and Secondary Plants. At approximately 8am, the plant operator at the secondary contacted the leading hand to notify him of increased dust generation, as the wind changed direction and increased in speed. All crushing plant dust suppression was operating, including under-plant sprinklers. The leading hand assessed the situation and identified the dust source as accumulated fines under the screen structures being pickup into the air by the strong wind, despite the under plant sprinklers in full operation. The action to resolve this was to organise two personnel to apply additional water with hoses to suppress the dust underneath the screen structures. The A40 Water truck use was also concentrated around the crushing plant floor away from the quarry areas. These additional actions reduced the dust generation in crushing plant area.	Update complaints register and provide a response to the EPA	Michael Close	14/09/2018
17/09/2018	Dust Complaint	Anonymous	Environmental - EPA received a dust complaint from a local Sellicks resident. They are very concerned for the coming spring/summer season. They say that the 'past year is the worst ever' (in their years of experience) and therefore doesn't think SQ are doing enough to control dust. They have been cleaning gutters which are choked with fine dust and needed to be done several times over Winter. There vegetables and plants have a fine film of dust over them. They say that there are a group of up to 20 local people that are very worried about the dust from SQ and the impact on their lifestyle especially with Summer approaching.	Unable to investigate as complaint is general in nature	Update complaints register and provide a response to the EPA	Michael Close	17/09/2018

2018 COMMUNITY FEEDBACK - SELICKS HILL QUARRY

Date	Type	Name	Description / Detail	Investigation	Corrective actions	Responsible	Completed
24/09/2018	Dust Complaint	Anonymous	Environmental - EPA received anonymous photos and video from the morning (about 9.00am) on Thursday 30th August of dust leaving the site. EPA requested comment on TARP level for the day, sources of dust and what control measures were being implemented at the time.	<p>Details from the 30th August. Winds for the day were very strong N-NW winds, blowing away from sensitive receptors in Sellicks Beach. ADR data does show an increase in PM10 from around 9am, particularly at ADR2, consistent with the wind direction. Data also suggests there were extreme wind gusts around 9am. As the complaint was from previous month, unable to access BOM data for Sellicks Hill (access is limited to 4 days), but Parawa states NNW winds with max gusts up to 63 km/hr and Noarlunga with 83km/hr. Rain did come in the afternoon. Operations at the time were load and haul coming from the Eastern development with the MGO Primary Crushing. All plant suppression operating.</p> <p>Operations restricted to one water truck as the Atkinson truck left site the previous day for the repairs prior to summer. A second hired water truck couldn't be sourced at the time the Atkinson left site (arrived 1 week later). From the photos and video footage, the sources of dust look to be coming from the eastern development and central crushing area.</p>	Update complaints register and provide a response to the EPA.	Michael Close	25/09/2018
25/09/2018	Positive Feedback	JP	Letter received (as a result of Community Letter box drop) commending the quarry on remedial work on the hills face	Resident has lived in Sellicks Beach for over 35 years and has never had any reason to complain about the quarry, the workings, transport drivers and commended the operations for the remedial works to the hills face.	Update complaints register and respond to letter.	Michael Close	25/09/2018

Appendix D – LSA Air Quality Monitoring Report (SH20180709_006 R1)

Attached