

EPA Quarterly Monitoring Report 1st April 2018 to 30th June 2018



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Contents

1. Introduction
2. Monitoring Plan and Results
3. Description and Analysis of Monitoring Results
4. Corrective Actions and Planned Initiatives
5. Management of Community Feedback
6. Community Engagement

Figures

Figure 1 ADR Location Map

Appendices

Appendix A 24hr Daily Average PM₁₀

Appendix B Dust Monitoring TARP Trigger Events

Appendix C Community Feedback

Appendix D LSA Air Quality Monitoring Report (SH20180406_005 R2)

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 April 2018 to 30th June 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 April 2018 to 30th June 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 the DEM. (See Figure 1- ADR location map).



Figure 1: Sellicks Hill Quarry and ADR Monitor locations

Note: ADR locations are not available to the public for security reasons

Each of the monitors is designed for continuous real-time data transmission to a central location and data logger.

Data is continuously generated in real time, 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 PM_{10}). There was one recorded 24-hour average exceedance ($> 50 \mu\text{g}/\text{m}^3$) at ADR2, but this can be contributed to precipitation and low lying cloud.

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 – 44.0%
- ADR 2 – 98.9%
- ADR 3 – 69.2%

Poor availability on ADR1 was due to the data logger being faulty and requiring replacement. LSA suggest the likely cause of this failure was due to close electrical discharges during thunderstorms. After unsuccessful onsite and remote investigations into the issue, the complete ADR unit was sent to Melbourne in early June for

diagnoses and repair. The existing failed logger is now obsolete and required replacement with a new logger. ADR1 was back operational on the 13th July 2018.

Suggested availability issues with ADR3 are similar to ADR1 with close electrical activity or low supply voltage during extended periods of cloudy skies, when the solar charging is not effective. Both of these issues cause the ADR or Logger to stop. LSA are able to remotely connect to the logger and restart it. Once the logger is restarted, the logger can start the ADR. During the period while the ADR off, there is no data recorded. As an action to improve availability, new loggers will be purchased for ADR2 and ADR3 as the existing loggers are now obsolete. Potential low supply voltage issues will be monitored and actioned as required (solar panel / batteries).

3. Description and Analysis of Monitoring Results

Majority of the TARP triggers during the quarter occurred from ADR 2, with two triggers recorded at ADR3. High readings at ADR3 were a result of Quarry operations under an Easterly wind direction, with the source of dust coming from the Central Crushing plant. Once notification was received and source of dust investigated, appropriate action in both these instances was to increase dust suppression activities in this area. This includes turning on additional water sprays, under plant sprinklers and deploying the water truck.

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 determine from this data.

4. Corrective Actions and Planned Initiatives

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

- Infrastructure installation for the supply of 50ML of recycled water through the Willunga Basin Water Company (WBWC) to Sellicks Hill Quarry is on track for completion for September/October 2018. This supply will feed directly into the 375KL tank (installed in January 2018), 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 include: Top soil cover on the Western screening mound (exposed western faces) and Eastern Quarry development. Approximately 3 tonnes of Rye Corn seed were spread on these area's during Quarter 2 with another 5 tonnes planned to be spread during Quarter 3. The Rye corn grass will provide a cover to minimise dust generation from loose soils and enhance the visual amenity of these areas.
- Delivery confirmed of 2,500 seedling's which will be planted around the site during the 3rd Quarter of 2018. Native seedling's are purchased and planted through a local Landcare group. These trees will replace previously planted trees that have not survived and also in filling in areas of previous plantings.
- Calibration of the all ADR units were undertaken by LSA on the 17th May 2018.
- Remote view of the Central Crushing Plant PLC system now allows management to view and operate water sprays and Polo Citrus dust suppression systems. This was completed during Quarter 2.
- The revised Mine Operation Plan was approved by DEM on the 24th May 2018.
- Engaged a Blasting Consultant to review blasting operations at the site. Actions from this review to reduce dust from blasting, include applying water to the blasting floor and surrounding faces prior to firing.
- Operational decision on increasing the number of visible development blast over the winter / spring period, while there is increased moisture in the top surface. The increased moisture will help reduce dust generation during blasting. The predominate wind direction during this period is also from the West, which will directed any dust produced from a visible blast away from the Sellicks Beach area and sensitive receptors.

- Increased the frequency of the street sweeper to clean and remove build-up on the Quarry entrance and Main South Road. The frequency has increased from 3 days per to 5 days per week. The increase will help further minimise any ‘drag out’ from the quarry that has the potential to create airborne dust in this area from passing traffic.
- Ongoing maintenance of on-site sprinkler systems and sprays.
- Planning of the installation 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 initiative will allow the quarry operations to install times sprinkler systems to manage dust control in this area.
- Engaged consultants Golder Associates to review and update of the companies Community Engagement Strategy.
- Engaged Golder Associates to conduct an operational review of dust sources around the site and assist in revising and updating the Dust Management Plan as per licence conditions.

5. *Management of Community Feedback*

There were 4 complaints received during the quarter, all were related to dust. Details of the complaints were entered into the 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.

A summary of complaints is listed in Appendix C – Community Complaints. Three of the complaints were related to specific events with photographic evidence provided, including date and time. The investigation results and corrective actions are detailed in Appendix C.

The company’s ADR data is also being provided to the EPA on a weekly basis. This data is being used to compare against an independent EPA dust monitor setup at a residence located on Country Road. Along with this independent dust monitor, a camera has been positioned from this property to capture any imagery of quarry

related dust leaving the boundary. It is the intention of the EPA to share and feedback the results of the independent community based monitoring.

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 is currently under review.

The company hosted site tours on the 14th April for the community and interested stakeholders. The community was able to see firsthand details of the quarry operations, the dust control measures in place and the progressive rehabilitation being undertaken at the site. Management were available to discuss all aspects of the operations. Long term quarry plans were also available for the community to review and raise any concerns to Quarry Management. Local community groups were involved in planning for this day. This day was attended by approximately 70 people.

The company meet with the EPA on several occasions during the quarter to discuss dust management control and initiatives, including the annual update of the DMP. EPA provided correspondence regarding requests to engage independent consultants to review blasting and operational dust control.

DEM and EPA conducted a joint site inspection on the 24th May 2018. The purpose of this visit was for the DPC and EPA to conduct their routine quarterly site inspection.

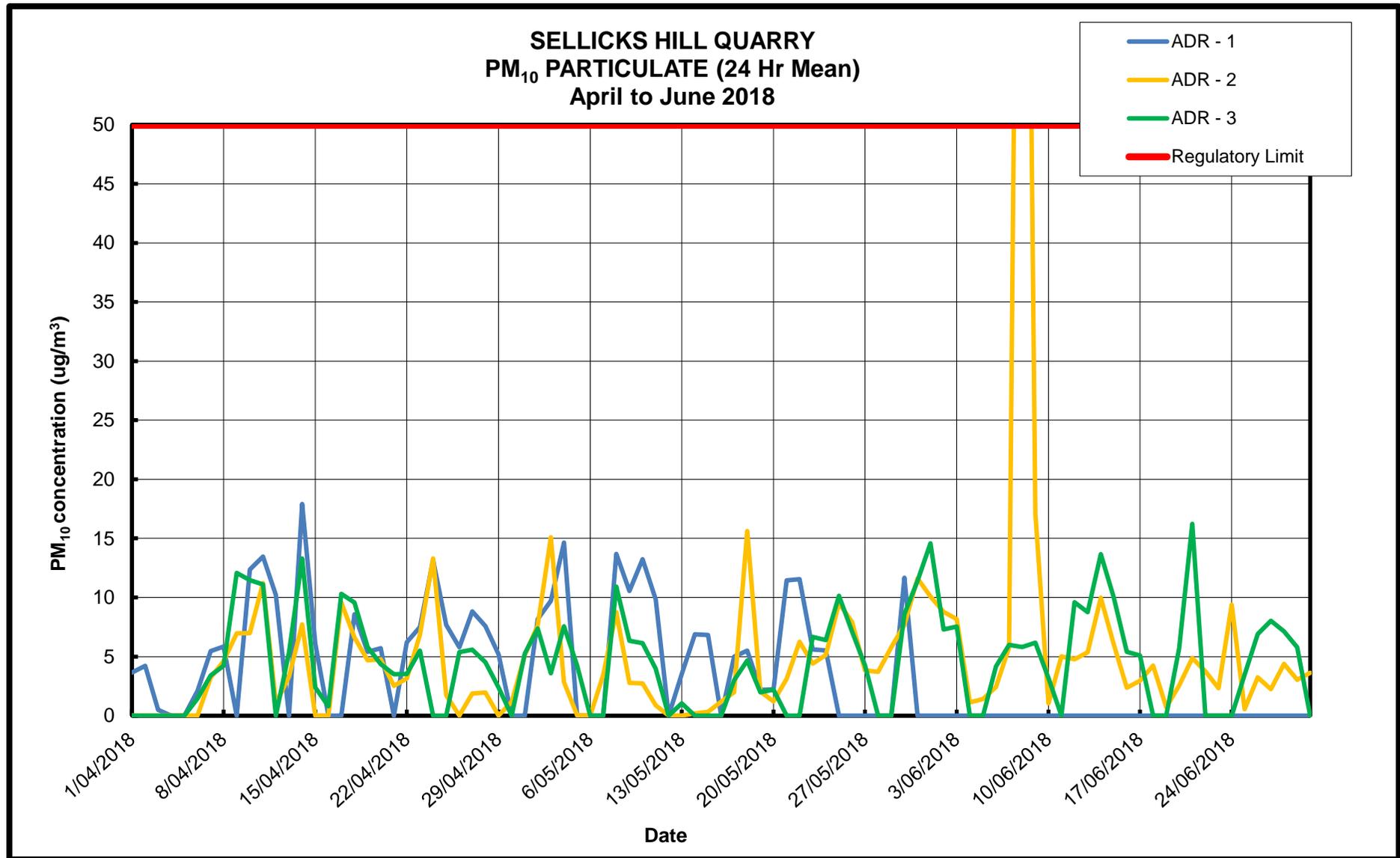
The company is working through updating it's website to include a dedicated environmental page. This update should be completed by the end of August. Contact details have been updated on the company's website including the dedicate email address for community feedback.

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. Rehabilitation initiatives and actions have also been communicated at times.

A letter box drop is being planned for the 3rd quarter 2018 to assist the company to design a tailored approach to inform and respond to the community in the way in which the community wishes to be engaged. This may enable the company to develop a key stakeholder list with contact details that will enable more targeted communication going forward.

Appendix A – 24 hr Daily Average PM₁₀



Appendix B - Dust Monitoring TARP Trigger Events

Dust Monitoring TARP Trigger Events - Report Period 1 st April 2018 - 30th June 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
9/04/2018	6:20	7:30	ADR 3	1	1	N-NE	4 - 6 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
24/04/2018	7:30	8:30	ADR 2	1	1	N-NE	10 - 31 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
3/05/2018	1:50	2:10	ADR 2	1	1	E	18 km/hr	Outside of Quarry activities	Review real time data	Forecasted weather conditions (rain) determined as the cause of increased PM10 readings	None	No
3/05/2018	6:40	7:10	ADR 2	1	1	E	36 - 43 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
18/05/2018	7:00	8:00	ADR 2	1	1	W - NW	14 - 16 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
8/06/2018	0:00	0:00	ADR 2	3	12	W - NW	11 - 21 km/hr	Outside and 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
21/06/2018	8:20	8:50	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

Appendix C - Community Feedback - Note: names should be not be made available to the public

2018 COMMUNITY COMPLAINTS - SELICKS HILL QUARRY							
Date	Type	Name	Description / Detail	Investigation	Corrective actions	Responsible	Completed
4/04/2018	Dust Complaint	Anonymous	Environmental - EPA receive a complaint from a resident at Bluewater Estate (Arcadia Crescent) complaining of the fine white/grey filmy dust that afflicts there home. The complainant is asking if SQ are prepared to pay for cleaning of his, and everyone else's, solar panels, roof, verandah and outdoor furniture. They are particularly disappointed with the ongoing (years) dust issue and it is the worst it has been, particularly in the past 4-6 months	Unable to investigate without specific time. Discussed complaint with EPA	Update complaints register	Michael Close and Trevor Smith	5/04/2018
7/06/2018	Dust Complaint	Anonymous	Environmental - EPA received a dust complaint from a local Sellicks Beach resident regarding the Sellicks Hill quarry on Thursday 7th June at 10.30am. Photos were provided showing visible dust in the air.	SQ investigation concluded the following: • Wind direction during the day and at the time the photos were taken was NNW, blowing away from the sensitive receptors at Sellicks Beach. • Wind speed during the morning had increased and started gusting over 50km/hr at around 10am. • The dust source shown in the photos was coming from the bottom floor plant area. • The under-plant sprinklers could not be operated at the time as there was a break in the copper piping feeding the plant with plan to repair. In normal circumstances, the under-plant sprinklers would be operating to dampen and contain the settled fines around the crushing plant. As the site had experienced a small period of dry weather, there was an accumulation of dry fines underneath the plant, which the wind gusts have picked up and travelled in a southerly direction as shown in the photos. • To mitigate the dust without the under-plant sprinklers operating, the water truck was operating around the bottom floor, utilising the on-board cannon to reach area's underneath and around the plant. • It is acknowledged the site didn't act quick enough in this situation, with the wind speed increasing during the morning, to allow the water truck to target this area sooner.	Update complaints register. Repair broken water line	Trevor Smith	9/06/2018

2018 COMMUNITY COMPLAINTS - SELICKS HILL QUARRY

Date	Type	Name	Description / Detail	Investigation	Corrective actions	Responsible	Completed
7/06/2018 (notification by EPA provided on 25/06/2018)	Dust Complaint	Anonymous	Environmental - EPA receive a complaint from a resident with video taken on Thursday 7th June 2018. It shows dust being blown offsite from the Western Screening Mound and across the Main South Road.	Evidence shows fresh dry fine -5mm sand blowing of the southern end of the screening mound. Dry material has be tipped and sufficient water or suitable material has not been applied to minimise air borne dust blowing off the mound in windy conditions.	Update complaints register. Actions to mitigate the source of airborne dust - ensure water truck and cannon is operating to ensure dry material is not tipped on the Western Screening Mound (immediate) - Cap fine material (<5mm) with waste material (20mm) scalps. This will provide a cover for this material not allowing it to dry out and potentially be picked up with the wind (immediate) - Install a series of timed sprinklers operating at the southern tipping location on the mound to mitigate any airborne dust blowing off the mound, which includes installing a water line of suitable size (50mm) to ensure there is enough water flow to the end of the mound (by end of Qtr 4 2018)	Michael Close and Trevor Smith	26/06/2018 (water line by end of Qtr 4)
11/06/2018 (notification by EPA provided on 25/06/2018)	Dust Complaint	Anonymous	Environmental - EPA receive a complaint from a resident with photo taken on Monday 11th June 2018 at 10:41am. It shows dust being blown offsite from the Western Screening Mound and across the Main South Road.	Evidence shows fresh dry fine -5mm sand blowing of the southern end of the screening mound. Dry material has be tipped and sufficient water has not been applied to minimise air borne dust blowing off the mound in windy conditions.	Update complaints register. Actions as above. Show video at the July toolbox meeting to show operator the incident.	Michael Close and Trevor Smith	26/06/2018 (July Toolbox to be held on the 24/07/2018)

Appendix D – LSA Air Quality Monitoring Report (SH20180406_005 R2)

Attached