

**Mt Piper Ash Placement Project Lamberts North  
Air Quality Review  
September 2015 – August 2016**

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## Summary

The Lamberts North OEMP includes an Air Quality Management Plan, which contains monitoring and reporting requirements, including the operation of five dust deposition gauges in the vicinity.

The current report presents the dust data collected in the third year of operations of Lamberts North, from September 2015 to August 2016, and similarly reviews the results against the requirements of the OEMP.

Conclusions and recommendations arising from the review of the air quality monitoring data collected during the third year of Lamberts North operations appear below. In undertaking this data review some comments and observations are made on the operation of the air quality management plan.

1. Annual average dust deposition results in the third year of the Mt Piper Ash Repository Lamberts North operations were below the criterion of 3.5 g/m<sup>2</sup>/month at 5 of the 5 Operation Environmental Management Plan (OEMP) gauges.
2. The dust gauge data from the third year of Lamberts North operations does not indicate that Lamberts North operations have resulted in dust deposition above the OEMP levels that trigger the requirement to implement additional control measures.
3. It is recommended that all reportable dust monitors are reviewed to ensure compliance with the Australian Standard.
4. The TEOM at Mt Piper PM<sub>10</sub> annual average maximum of 30µg/m<sup>3</sup> has not been exceeded in the reporting period of September 2015 to August 2016. The PM<sub>10</sub> 24 hour maximum of 50µg/m<sup>3</sup> has not been exceeded during the reporting period.
5. The AQMS at Blackmans Flat PM<sub>10</sub> annual average maximum of 30µg/m<sup>3</sup> has not been exceeded in the reporting period of September 2015 to August 2016. The PM<sub>10</sub> daily average did not exceed the 24 hour maximum of 50µg/m<sup>3</sup> during the reporting period.
6. The guideline PM<sub>2.5</sub> annual average maximum of 8µg/m<sup>3</sup> has not been exceeded in the reporting period of September 2015 to August 2016. The PM<sub>2.5</sub> daily average reached the 24 hour maximum guideline of 25µg/m<sup>3</sup> on 1 occasion during the reporting period and was likely the result of state-wide hazard reduction burns performed by the NPWS and NSW RFS.
7. No complaints regarding dust emissions from Lamberts North were received by either EnergyAustralia NSW or the Lamberts North site contractor during the second year of Lamberts North operations.
8. It is considered that the monitoring and reporting requirements of the OEMP are being met.

## 1. Introduction

In February 2012, EnergyAustralia NSW obtained approval to commence dry ash placement at Lamberts North, to the east of the existing ash placement repository for Mount Piper Power Station, known as Mount Piper Ash Repository referred to as Area 1 within the Environment Assessment (SKM, 2010). Construction commenced at Lamberts North in January 2013 and placement of ash in Lamberts North commenced in September 2013.

Current Lamberts North activities are primarily being managed in accordance with the Operational Environmental Management Plan (OEMP) (CDM Smith, 2013). The OEMP includes an Air Quality Management and Monitoring Plan (AQMMP), which contains monitoring and reporting requirements for air quality. EnergyAustralia NSW has previously reviewed the air quality monitoring data collected during the first two years of operations and reported on the results against the OEMP (EA NSW, 2014; 2015). The current report presents the dust deposition data collected in the second year of Lamberts North operations, from September 2015 to August 2016, and similarly reviews the results against the requirements of the OEMP.

## 2. The Lamberts North Air Quality Management Plan

The key objective of the Lamberts North air quality management plan is *“to manage resources effectively to ensure the prevention of conditions that may lead to visible emission or exceedances of EnergyAustralia NSW’s license limits.”* (CDM Smith, 2013).

The air quality management plan includes the following performance measures.

### Targets:

- The local air quality in the vicinity of the sensitive receivers will not be impacted by Lamberts North Ash Placement operations; and
- Zero incidences of dust-related complaints for Lamberts North Ash Repository.

### Indicators:

- Evidence of continuous improvement of dust suppression systems (including monitoring) in accordance with operational demands and meteorological conditions.
- Complaints register demonstrating zero occurrences of dust related complaints
- That operational results are below the criteria of:
  - Increase in total Suspended Particulates (TSP) by  $> 2 \text{ g/m}^2/\text{month}$  to a maximum of  $3.5 \text{ g/m}^2/\text{month}$  at dust deposition gauges outside the ash placement area; and
  - $\text{PM}_{10}$  annual average  $< 30 \text{ } \mu\text{g/m}^3$  and 24 hour maximum does not exceed  $50 \text{ } \mu\text{g/m}^3$ .

The Plan states that *“Through the use of dust suppression equipment and the implementation of air quality management procedures, dust events can be controlled.”* (CDM Smith, 2013).

The detailed list of management and mitigation measures in the Plan is included in Table 1.

**Table 1 Mitigation measures**

No.	Mitigation measures	Responsibility	Timing	Source/Reference
<b>General work practices</b>				
1.	Water shall be primarily sourced from Lamberts North sediment or catchment ponds. Secondary water supplies maybe sourced from Mt Piper Power Station's existing water ponds located throughout the station precinct.	Contractor	At all times	D3 (d) (v)
2.	Adequate dust suppression shall be ensured on a continuous basis, even outside operational hours.	Contractor	At all times	D3 (d) (iv) OEMP section 2.3.1
3.	The contractor shall use suitable dust suppression equipment/machinery onsite. This equipment/ machinery shall be regularly serviced and maintained. The Contractor shall develop an irrigation operating protocol as detailed below in	Contractor	At all times	D3 (d) (iv) D3 (d) (vi) Irrigation operating protocol (in this plan)
4.	Haul road and auxiliary roads shall be regularly watered to ensure dust suppression is maintained. Speed limits will be enforced by Delta Electricity.	Contractor	At all times	D3 (d) (iv)
5.	In the event of meteorological conditions which increase the risk of a dust episode, additional suppression techniques will be used as per section of this plan.	Contractor	At all times	D3 (d) (iv)
6.	In the event of visible dust emissions, personnel shall notify the Contractor immediately, who will direct the water cart to spray the area and review the location and application rate of the sprinkler system.	All staff	At all times	D3 (d) (iv) and (viii)
7.	In the event of dust complaint, the contractor shall provide site activity log of their daily/ weekly operations as part of Delta Electricity investigations. The log shall include, but is not limited to; sprinkler management, daily water application rates, daily climatic conditions, haulage truck movements and hours of operation.	Contractor	As required	D3 (d) (iv)
8.	In the event of exceeded dust levels at the sensitive receiver locations, Delta Electricity shall carry out an investigation of TSP and/or PM <sub>10</sub> to determine whether operations at Lamberts North were the potential cause of this exceedance. Specific criterion for PM <sub>10</sub> and TSP has been provide in Table 6-24 performance indicators	Delta	As required	D3 (d) (iv)
<b>Vehicle and machinery operations</b>				
9.	Vehicles not directly involved in ash placement or suppression activities will be restricted to haul and auxiliary roads and will obey speed limit at all times.	Contractor	At all times	D3 (d) (iv)
10.	The contractor will ensure that all vehicles are regularly serviced, inspected and cleaned.	Contractor	As required	
<b>Diesel exhaust emissions</b>				
11.	Where necessary, the effect of diesel emissions should be considered as part of air quality. Consequently, Diesel fuelled equipment will be regularly serviced and cleaned to ensure compliance with appropriate design emission standards for in-service vehicles.	Contractor	As required	D3 (d) (iv)
12.	Diesel powered stationary plant will be serviced	Contractor	As required	D3 (d) (iv)

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No.	Mitigation measures	Responsibility	Timing	Source/Reference
	maintained and upgraded as required to minimize air emissions as far as possible and to ensure licensed levels of air emissions are not exceeded.			
<b>Ash placement</b>				
13.	Ash will be placed in layers and the conditioning of fly ash with water shall be undertaken, ensuring that the moisture content sits at a target rate of 15-20% (or as otherwise determined by climatic conditions and compaction requirements).	Contractor	At all times	D3 (d) (iv) D3 (d) (vi)
14.	Optimal moisture content (OMC) for compaction will be maintained to achieve the target compaction ratio.	Contractor	At all times	D3 (d) (iv)
15.	Records of ash moisture content at placement and water usage for ash conditioning will be maintained.	Contractor	Weekly	D3 (d) (iv) D3 (d) (vi)
<b>Capping and Rehabilitation</b>				
16.	To achieve permanent dust suppression on external batters, a permanent capping layer of no less than 0.75m shall be applied. Consequently, capping will occur progressively as each area reaches its design height in accordance with the ash placement strategy.	Contractor	As required	D3 (d) (iv) and Landscape and Rehabilitation Plan
17.	Dust suppression techniques shall be maintained after capping until vegetation has been adequately established.	Contractor	As required	D3 (d) (iv)

These measures are monitored by EnergyAustralia NSW's ash placement contractor, Lend Lease Infrastructure, and are reported at the Monthly Contract Review Meetings.

The measures include:

- Moisture conditioning of ash;
- Temporary capping of ash faces not currently in use and where irrigation systems are not in operation;
- Routine maintenance of truck washes, and washout/surface drainage pits;
- Use of water cart, as required.

## 2.1 Air Quality Monitoring

The AWMMP includes the following monitoring requirements (CDM Smith, 2013):

- *Air quality monitoring will be undertaken during the life of the Project and include the following:*
  - *Air quality monitoring stations and dust gauges indicated in the AQMMP and Figure 1, shall be used to monitor dust emissions at the perimeter of the Lamberts North; and*
  - *Investigations shall be undertaken to assess whether additional monitoring stations are required on the southern perimeter of Lamberts North; this assessment is based on, but not limited to, local weather patterns and sensitivity of surrounding properties.*
- *Dust deposition and TSP will be measured using existing dust deposition gauges situated along the Castlereagh Highway, Boulder Road and at Blackmans Flat, and adjacent to residential properties at Blackmans Flat. The results from these gauges will be used during the operation phase to monitor dust emissions (TSP and dust deposition). TSP will be calculated from dust deposition bottles.*
- *Samples will be removed from the dust deposition gauges on a monthly basis by a NATA approved laboratory and compared to baseline dust deposition monitoring records from Mount Piper, and the DECC amenity based criteria for dust deposition of 3.5 g/m<sup>2</sup>/month (annual). PM<sub>10</sub> will be measured using one*

*Tapered Element Oscillating Microbalance (TEOM) automated continuous particle monitor. The TEOM is located within the Mount Piper Power Station.*

- *PM10 and PM2.5 will be measured using one ambient monitor (high volume) Air Quality Monitoring Station (AQMS). The AQMS is located at Blackmans Flat.*

Seasonal weather monitoring will be also used as a means to verify any project related air quality impacts.

- Regional climatic conditions will be assessed in the early hours of the morning including but not limited to, temperature, humidity, wind speed and rainfall. This will determine water use for the day. Visual inspection of the site throughout the day, will determine if water application rates need adjusting to suit the climatic conditions occurring on site.

## 2.2 Reporting

The AQMMP includes the following reporting requirements (CDM Smith, 2013):

- *Air quality observations will be recorded in the Weekly Environmental Checklist;*
- *Environmental Incident report forms will be completed and forwarded to the Contract Administrator as/when required;*
- *Details of any air quality/dust management, monitoring and complaints will be provided in a Monthly Environmental Report;*
- *An Annual Air Quality review will be undertaken to review the past year's air quality data, analysis of any trends and make recommendations based on investigations. This report will include a review of annual PM<sub>10</sub> exceedances of 20.5 µ/m<sup>3</sup>, which is predicted at sensitive receiver 1 as described in the EA (SKM, 2010). This report will be made available to NSW Public Health Unit and EPA upon request, unless received as part of the Annual Environment Management Report (AEMR) for the project; and*
- *The AEMR will be submitted to the Director-General complete with the Annual Air Quality Data in the Annual Air Quality review and can be completed and/or overseen by the Environmental Representative.*

## 3. The Air Quality Monitoring Program

### 3.1 OEMP dust gauge locations

The locations of the 5 dust deposition gauges existing at the commencement of Lamberts North operations in 2013 required by the OEMP are shown in Figure 1. They are dust gauges number 19, 22 and 23 positioned on the Castlereagh Highway between Boulder Road and Blackmans Flat Village; number 20 on the corner of Boulder Road and Castlereagh Highway and number 21 at the entrance on Boulder Road.

The approximate distance of the gauges from the nearest Lamberts North boundary are presented in Table 2. All gauges are well beyond the perimeter of Lamberts North and from Figure 1, it can be seen that, in some cases the gauges are nearby other potential dust sources, such as disturbed areas, mining activities and other power station operations.

**Table 2 OEMP dust gauges distances from Lamberts North**

Gauge Number	Approximate distance (m) from Lamberts North boundary
19	1200
20	1550
21	1900
22	550
23	250



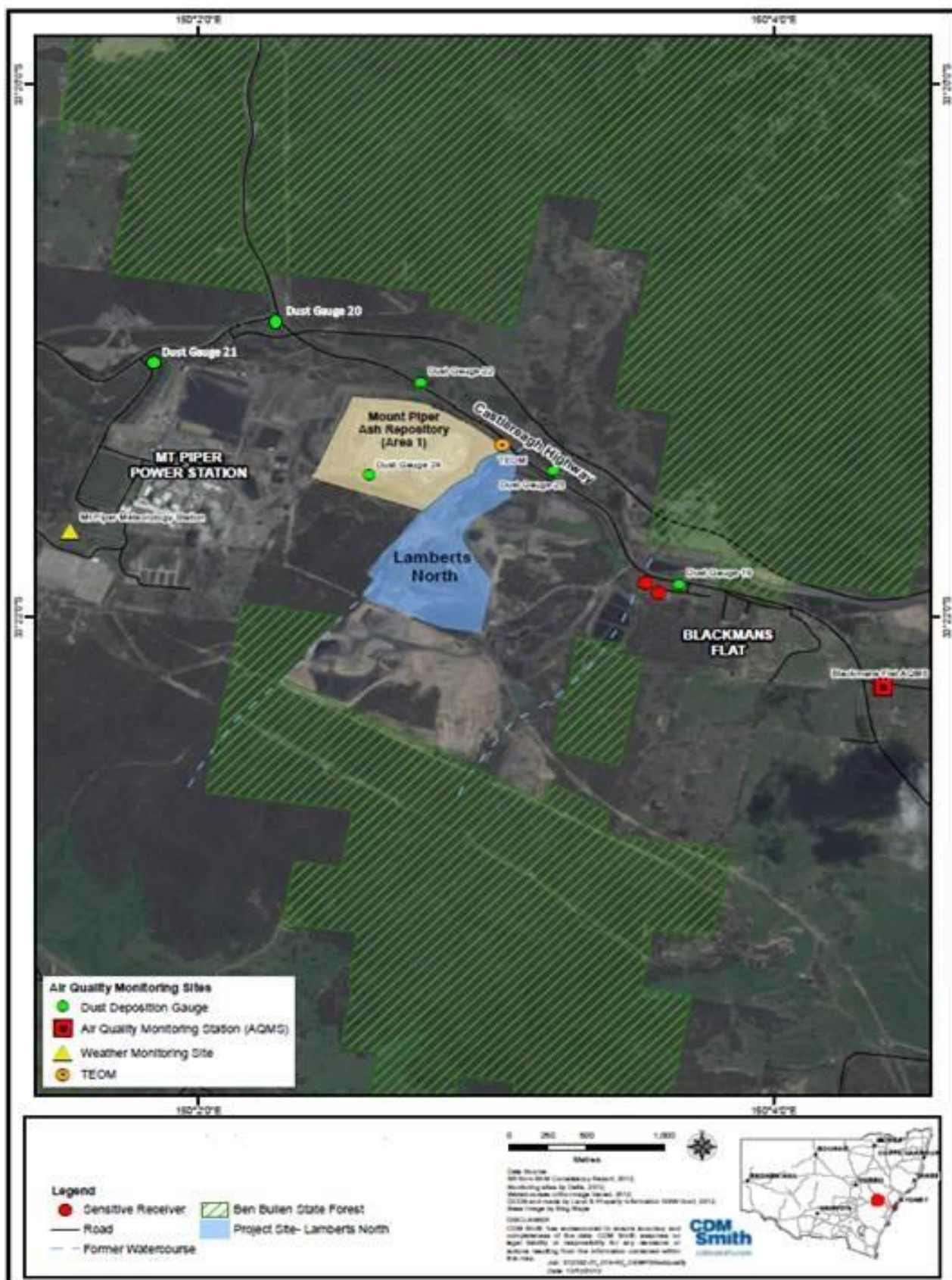


Figure 1 Lamberts North Air Quality Monitoring Points

### 3.2 Lamberts North on-site gauges

In addition to the gauges included in the OEMP, Lend Lease Infrastructure (LLI) maintain a network of 14 dust deposition Gauges located on the perimeter of Lamberts North and Mt Piper ash placement areas. The locations of these gauges are shown in Figure 2.

As is the case with the on-site gauges at Kerosene Vale, these gauges are primarily used for Workplace Health and Safety monitoring, and inclusion of the results is not part of the project’s CoA or OEMP. However, these data are considered in this report to provide a more comprehensive assessment of potential dust impacts from Lamberts North during investigations (Malfroy, 2012).

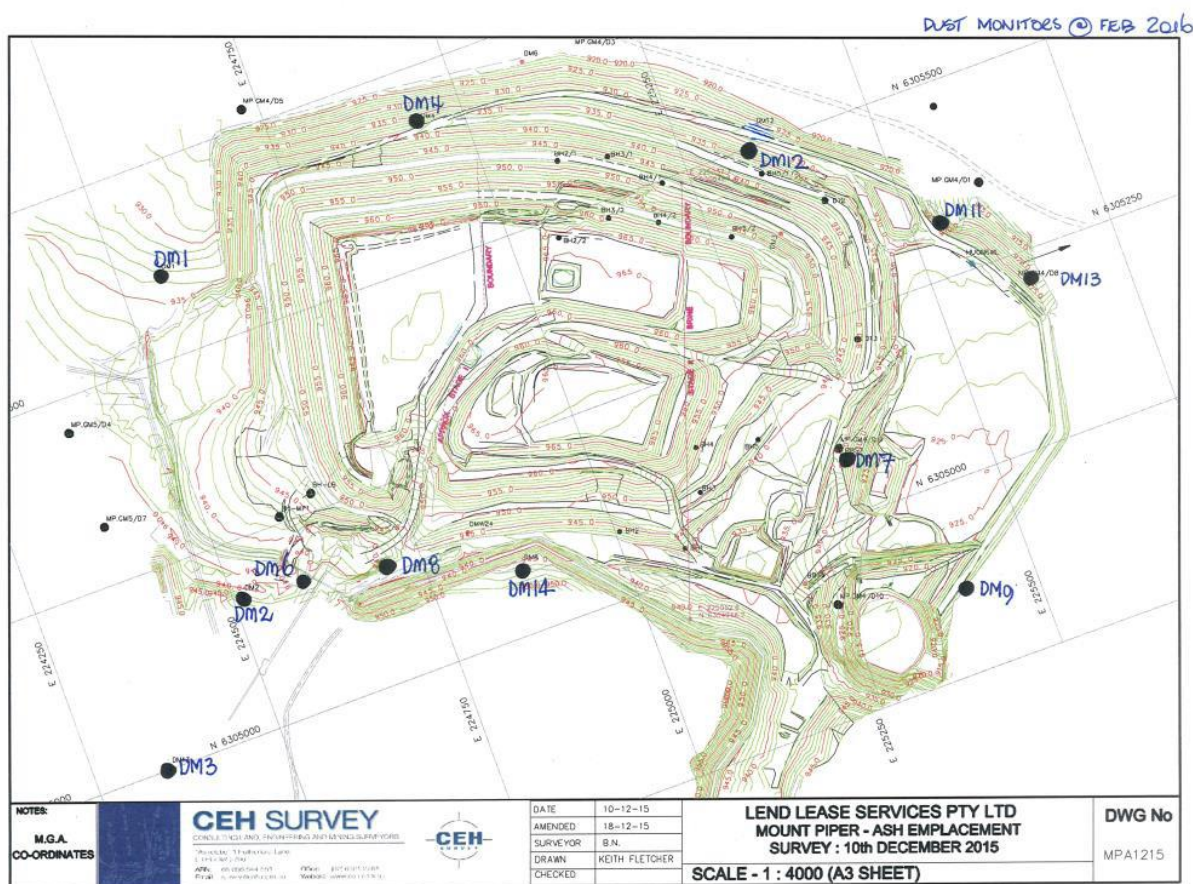


Figure 2 Lend Lease Lamberts North Air Quality Monitoring Points

### 3.3 Frequency and methods

The frequency of dust gauge monitoring is detailed within Table 3.

Table 3 Frequency of measurement and monitoring methods

Parameter	Frequency of Measurement	NSW Approved Methods (AM) and Australia Standard (AS)
Dust Gauges	Monthly	AM-1 Guide for siting of sampling units (AS 2922 – 1987) AM – 10 Particulates – deposited matter-gravimetric method (AS 3580.10.1 1991)

The collected samples are analysed in the laboratory according to AS 3580 for:

- Insoluble solids: this is the matter that does not dissolve in water.
- Incombustible (ash)<sup>1</sup> content: this is the matter that remains after the sample has been combusted in the laboratory.

Results for insoluble solids and incombustible material are expressed as  $g/m^2/month$ .

The insoluble solids and incombustible (ash) content of a collected dust sample can provide information on possible sources of the dust but due to the time-scale over which data are collected (monthly) and the fact that many disparate sources can contribute to deposited dust, it is often not possible to use dust gauge data to positively identify the contributing sources.

### 3.4 PM<sub>10</sub>

The OEMP Air Quality Management Plan also requires the review of the annual PM<sub>10</sub> results. The operational results are required to be below the criteria of an annual average PM<sub>10</sub> of less than  $30 \mu g/m^3$  and the daily maximum should not exceed  $50 \mu g/m^3$ . These criteria were developed as coarse fraction PM<sub>10</sub> has the potential to exacerbate asthma in sensitive people and can result in other adverse health effects, predominantly on respiratory conditions. Any exposure of local residents to particulate emissions should be minimised as much as possible.

PM<sub>10</sub> is measured using a Tapered Element Oscillating Microbalance (TEOM) automated continuous particle monitor. The TEOM is located within the Mount Piper Power Station, approximately 60 m to the north of Lamberts North ash placement operations. PM<sub>10</sub> is also measured using an ambient monitor (high volume) Air Quality Monitoring Station (AQMS), which also measures PM<sub>2.5</sub>. The AQMS is located at Blackmans Flat, approximately 2.5 km south-west of the Lamberts North ash placement area.

Currently, there are no defined criteria for PM<sub>2.5</sub> from DECC to be applied on a project-specific basis and the OEMP only requires that PM<sub>2.5</sub> is measured. As a result, in the absence of criteria for reporting PM<sub>2.5</sub>, the National Environment Protection Council have standards and goals for the maximum ambient concentrations detailed as the National Environment Measure for Ambient Air Quality (NEPM). The air quality NEPM sets the following advisory reporting standards and for particulates of PM<sub>2.5</sub>:

- Maximum daily ambient concentration up to  $25 \mu g/m^3$ : and
- An annual maximum ambient concentration of  $8 \mu g/m^3$ .

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<sup>1</sup> Ash content does not refer to coal ash but could include ash from coal combustion and other mineral matter derived from soil, for example.



## 4. Results

In this section data are presented for the third year of ash placement at Lamberts North between September 2015 and August 2016.

### 4.1 OEMP dust gauges

Dust deposition data collected during monitoring at Mount Piper between January 2010 to September 2012 at dust gauges 19, 20, 21, 22, 23 and 24 provided baseline dust deposition levels as required by CoA D3 (d) (i) (EA NSW, 2014). An average of 1.5 g/m<sup>2</sup>/month for dust deposition was calculated from the data obtained from the six dust gauges around the site. This baseline level will be used for compliance assessment purposes during the operation of the Project. The operation of the Project shall aim to achieve compliance with this limit. In the event of exceedances of 2 g/m<sup>2</sup>/month (or more) above the baseline average of 1.5 g/m<sup>2</sup>/month, investigation will be undertaken to determine the likely cause.

When the dust gauge material is analysed on a monthly basis for insoluble solids, ash and combustible fractions, the analysts provide a description of the collected material, based on visual inspection including colour, size (fine, coarse etc.) and if possible the composition of the collected material, which might typically include the following: bugs, organics, plant material, spiders, bird droppings – as well as the more generic “dust”. The colour of the collected dust is variously described as black, brown, grey and green (perhaps due to biological activity). If coal ash from Lamberts North were making a significant contribution to deposited dust levels, it might be expected that the collected ash would be described as grey (the colour of the coal-ash varies from light to dark grey), on a regular basis.

The monthly dust deposition data for the five OEMP dust gauges during the third year of operation, between September 2015 and August 2016, is shown in Table 4. The annual average dust deposition at 5 of the 5 dust gauges was not greater than the baseline of 1.5 g/m<sup>2</sup>/month. In addition, the annual average dust deposition at 0 of the 5 gauges in the OEMP network was greater than the DECC assessment criteria total dust deposition of 3.5 g/m<sup>2</sup>/month. However, an exceedance of the criteria occurred at one of the dust deposition gauges (Gauge 21) in April 2016.

As can be seen by Figure 1 and Table 2, Gauge 21 is located ~ 1900 m from Lamberts North on Mt Piper Power Station land and in close proximity to a live coal storage area and adjacent to a public road. The April exceedance recorded within dust gauge 21 was significantly and anomalously higher than at the other 4 OEMP dust gauges. Given the location of Gauge 21, i.e. adjacent to a public road, human interference in the operation of the dust gauge cannot be ruled however it is considered to be unlikely.

Investigations found that throughout the month of April, the wind blew from a predominantly South-Westerly direction with a total of 10.2 mm of rain recorded at the Mt Piper Power Station Weather Station over the month. Lend Lease operations for the aforementioned period were focused at Lamberts North and use of the southern boundary road for ash haulage; however no dust events were logged within their reporting system.

**Table 4 Dust gauge data from OEMP for the third year of operations at Lamberts North (September 2015 - August 2016). N.B.: Insol. - Insoluble solids, g/m<sup>2</sup>/month are reported limit of detection, in which case incombustible fraction is not determined.**

Gauge	19		20		21		22		23	
Month	Insol.	Frac.	Insol.	Frac.	Insol.	Frac.	Insol.	Frac.	Insol.	Frac.
Sep-15	0.8	0.1	0.6	0.3	1.1	0.5	0.8	0.3	0.7	0.2
Oct-15	1.2	0.4	0.5	0.2	2.6	0.9	1.0	0.4	1.2	0.5
Nov-15	0.4	0.1	0.3	0.1	1.1	0.3	0.9	0.3	0.5	0.2
Dec-15	0.8	0.5	0.7	0.3	1.3	0.6	0.6	0.2	0.8	0.4
Jan-16	0.4	0.1	0.4	0.1	1.2	0.2	0.6	0.1	1.4	0.6
Feb-16	0.5	0.2	0.2	0.1	2.1	0.8	0.8	0.3	0.7	0.4
Mar-16	0.8	0.5	2.3	1.3	1.2	0.4	1.3	0.6	0.8	0.4
Apr-16	0.7	0.3	1.2	0.3	4.1	1.4	0.5	0.2	NS	NS
May-16	0.5	0.2	0.2	0.1	2.2	0.7	0.4	0.1	0.8	0.4
Jun-16	0.6	0.3	1.2	0.1	0.4	0.2	0.3	0.1	0.3	0.2
Jul-16	0.5	0.2	0.8	0.1	0.7	0.4	0.3	0.1	0.6	0.2
Aug-16	0.2	<0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1
Average <sup>1</sup>	0.6	0.2	0.7	0.2	1.5	0.5	0.6	0.2	0.7	0.3
Months > 3.5*	0	-	0	-	1	-	0	-	0	-
Months > 1.5 <sup>#</sup>	0	-	1	-	4	-	0	-	0	-
<sup>1</sup> Annual average of monthly records *DECC assessment criteria of total dust deposition of 2 g/m <sup>2</sup> /month as a maximum monthly increase above baseline <sup>#</sup> Baseline level (g/m <sup>2</sup> /month)										

Table 5 shows the monthly deposition rates of the incombustible ("ash") component of the deposited dust at the 5 OEMP gauges for April 2016 and two Lend Lease dust deposition gauges (11 and 13), which are situated at the northern end of Lamberts North. Additionally, the monthly deposition rates for Lend Lease dust deposition gauges 7 and 9 have been included for comparison with results taken from Dust Gauge 21 and are located to the west and east of Lamberts North, respectively. The "ash" component is included on the understanding that if emissions from Lamberts North were impacting the local area, these impacts would appear in increased deposition of incombustible (ash) material.

Table 5 also shows that the bulk of the gauges show lower rates of insoluble material depositions than that at gauge 21, with the exception of Lend Lease gauge 7 which had similar results to that of Gauge 21. Of particular note is that:

- Gauge 22, located within 600 m north of Lamberts North, recorded a deposition rate almost an order of magnitude less ( $0.5 \text{ g/m}^2/\text{month}$ ) of insoluble material in April compared to that found in gauge 21 ( $4.1 \text{ g/m}^2/\text{month}$ ), with a very low incombustible fraction of less than  $0.5 \text{ g/m}^2/\text{month}$ .
- Lend Lease Gauge 7, located on the boundary between Mt Piper Ash Placement and Lamberts North Ash placement areas, to the West of Lamberts North, recorded the same reading as that recorded in Gauge 21 (i.e.  $4.1 \text{ g/m}^2/\text{month}$ ) but had a higher incombustible (ash) content than that seen in Gauge 21.
- Lend Lease operations during April 2016 mainly consisted of brine in ash co-placement within the Northern side of Mt Piper Ash Placement area and fresh ash placement within Lamberts North. No capping was performed by Lend Lease throughout the month of April and therefore the potential for soil disturbance by Lamberts North Operations can be discounted as the potential source of the exceedance.
- It is noted that Centennial Coal undertook some soil removal and reshaping within the Lamberts area. However, since the wind was blowing from the south-west, any exceedances resulting from these works would most likely have been recorded within OEMP gauge 23 and Lend Lease gauges 11 and 13.

As no other monitors located in the immediate vicinity of Gauge 21 recorded elevated levels and the wind was blowing in the opposite direction to enable dust from Lamberts North operations to reach gauge 21, the high dust recorded within the gauge for the month of April 2016 was determined to not be the result of operations at Lamberts North.

**Table 5 dust Deposition Gauge data from Lamberts North OEMP and Lend Lease dust deposition gauge data for April 2016**

DATE FROM	DATE TO	GAUGE NO.	INSOL.	ASH	COMBUSTS	COMMENTS
<b>EnergyAustralia NSW</b>						
18/03/2016	15/04/2016	19	0.7	0.3	0.4	Clear, insects, organic matter, fine grey/green dust & coarse black/grey/green dust
18/03/2016	15/04/2016	20	1.2	0.3	0.9	Clear, insects, organic matter, fine grey dust & coarse brown/black dust
18/03/2016	15/04/2016	21	4.1	1.4	2.7	Slightly cloudy, insects, organic matter, fine grey/green dust & coarse black/green dust
18/03/2016	15/04/2016	22	0.5	0.2	0.3	Clear, insects, organic matter, fine grey dust & coarse brown/black dust
18/03/2016	15/04/2016	23	NS	NS	NS	No Sample, Broken Bottle
<b>Lend Lease</b>						
1/04/2016	2/05/16	7	4.1	3.1	1.0	Clear, insects, fine green dust & coarse brown dust
1/04/2016	2/05/16	9	1.2	1.0	0.2	Clear, insects, fine brown dust & coarse brown dust
1/04/2016	2/05/16	11	0.6	0.4	0.2	Clear, insects, fine brown dust & coarse brown dust
1/04/2016	2/05/16	13	0.6	0.3	0.3	Clear, insects, fine brown dust & coarse brown dust

## 4.2 Lamberts North on-site gauges

While the OEMP does not require that results from LLI's on-site gauges be included in the annual report, the results for the third year of operations are included for completeness. This data demonstrates that 1 out of 5 gauges (Gauge 7) located at the perimeter of Lamberts North and Mt Piper Ash Placement Area 1 recorded annual average deposition rates above 3.5 g/m<sup>2</sup>/month, and one gauge (Gauge 7) recorded monthly results for gauges located close to Lamberts North (11 & 13 to the north, and 7 to the west & 9 to the east) exceeding 3.5 g/m<sup>2</sup>/month on six occasions. While elevated values in single onsite monitors are indicative of potential fugitive dust events, it is how the site performs on a whole that is considered to be of the most importance. As none of the other gauges situated around Lamberts North recorded high monthly results throughout the reporting period (Table 6), it is highly unlikely that Lamberts North is the source of the high dust levels recorded within dust gauge 7.

**Table 6 Dust gauge data from the on-site gauges for the third year of Lamberts North operations (September 2015 - August 2016). N.B: Insol. - Insoluble, g/m<sup>2</sup>/month, Frac. - Incombustible (ash/mineral) fraction of insoluble solids**

Month	7		9		11		13		Site Average	
	Insol.	Frac.	Insol.	Frac.	Insol.	Frac.	Insol.	Frac.	Insol.	Frac.
September 2015	NS	NS	0.3	0.1	<0.1	<0.1	0.6	0.1	<b>0.32</b>	<b>0.08</b>
October	12.2	10.8	1.8	1.3	0.6	0.5	1.6	1.1	<b>4.05</b>	<b>3.43</b>
November	1.9	1.7	0.3	0.2	<0.1	<0.1	0.1	<0.1	<b>0.59</b>	<b>0.50</b>
December	5.4	3.8	0.4	0.3	0.2	<0.1	0.6	0.3	<b>1.65</b>	<b>1.11</b>
January 2016	0.6	<0.1	0.6	0.4	0.8	0.5	0.2	0.1	<b>0.55</b>	<b>0.26</b>
February	5.9	4.8	0.3	0.1	1.0	0.8	1.7	0.7	<b>2.23</b>	<b>1.60</b>
March	4.0	2.8	1.0	0.7	0.8	0.6	1.1	0.7	<b>1.73</b>	<b>1.20</b>
April	4.1	3.1	1.2	1	0.6	1.4	0.6	0.3	<b>1.63</b>	<b>1.45</b>
May	3.2	2.1	0.5	0.3	0.2	0.2	0.2	0.1	<b>1.03</b>	<b>0.68</b>
June	0.9	0.7	NS	NS	NS	NS	NS	NS	<b>0.90</b>	<b>0.70</b>
July	3.0	2.5	1.1	0.9	0.1	<0.1	1.2	1	<b>1.35</b>	<b>1.11</b>
August	6.6	5.4	0.9	0.7	0.3	0.2	0.8	0.6	<b>2.15</b>	<b>1.73</b>
<b>Average</b>	<b>4.4</b>	<b>3.4</b>	<b>0.8</b>	<b>0.6</b>	<b>0.4</b>	<b>0.4</b>	<b>0.8</b>	<b>0.5</b>	<b>1.5</b>	<b>1.2</b>
<b>Months &gt;3.5</b>	<b>6</b>	<b>4</b>	-	-	-	-	-	-	<b>1</b>	<b>0</b>

Dust gauge 7 is located in the middle of the repository (i.e. between the Mt Piper Ash Placement Area and Lamberts North). The gauge has been placed in a recognised high risk area and is used to identify potential off site fugitive dust and any possible issues associated with furnace bottom ash placement, as well as monitor the working conditions and effectiveness of equipment operations. Background residual atmospheric dust for gauge 7 typically consists of insects, organic matter, fine green dust and coarse brown / black dust, as recorded in January 2016 (Table 7).

It is important to note that Centennial Coal own and operate a large area with exposed soil and a coal stock pile located directly to the south of the Lamberts North ash placement area. The wind blew predominately from the south for the majority of the months in which dust gauge 7 recorded high dust deposition results, and therefore traversed the Centennial area before reaching dust gauge 7 and the ash placement area. Therefore it is highly unlikely that the high dust results recorded within on-site dust gauge 7 are the result of operations at Lamberts North and may be the result of operations within the Centennial Coal area.

**Table 7 Dust gauge data from on-site gauge 7 for the reporting period (September 2015 - August 2016). N.B: Insol. - Insoluble, g/m<sup>2</sup>/month, Frac. - Incombustible (ash/mineral) fraction of insoluble solids**

Month	Insol.	Combust.	Frac.	Comments
September 2015	NS	NS	NS	No sample due to dust gauge being removed to MPA1 boundary
October	12.2	1.4	10.8	Clear, bugs, plant matter, organic matter, bird droppings, glass, fine grey dust & coarse black/grey/green dust
November	1.9	0.2	1.7	Clear, bugs, organic matter, fine brown/grey dust & coarse brown/black/white dust
December	5.4	4.1	3.8	Clear, bugs, organic matter, fine green dust & coarse grey/white dust
January 2016	0.6	0.6	<0.1	Clear, insects, organic matter, fine green dust & coarse brown/black dust
February	5.9	1.1	4.8	Cloudy, organic matter, fine grey/green dust & coarse brown/black dust
March	4.0	1.2	2.8	Cloudy, insects, fine green dust & coarse brown/black/grey dust
April	4.1	1	3.1	Clear, insects, fine green dust & coarse brown dust
May	3.2	1.1	2.1	Clear, insects, organic matter, fine green dust & coarse brown/green dust
June	0.9	0.2	0.7	Clear, insects, organic matter, fine green dust & coarse brown/black/green
July	3.0	0.5	2.5	Clear, insects, fine grey/green/white dust & coarse black/red dust
August	6.6	1.2	5.4	Slightly cloudy, insects, organic matter, fine grey dust & coarse grey dust

### 4.3 PM<sub>10</sub> and PM<sub>2.5</sub>

As required by the OEMP Air Quality Management Plan, the review of the annual PM<sub>10</sub> results has been performed within this section.

TEOM data shows that the PM<sub>10</sub> annual average maximum of 30 µg/m<sup>3</sup> was not exceeded during the reporting period of September 2015 to August 2016, with the annual average recorded as 6.1 µg/m<sup>3</sup>. In addition, the PM<sub>10</sub> 24 hour maximum of 50 µg/m<sup>3</sup> was not exceeded on any day during the reporting period (Figure 3; Appendix B).

PM<sub>10</sub> is also measured using an ambient monitor (high volume) Air Quality Monitoring Station (AQMS) located at Blackmans Flat (Figure 4), which also measures PM<sub>2.5</sub>. The PM<sub>10</sub> annual average maximum of 30 µg/m<sup>3</sup> was not been exceeded at the Blackmans Flat site during the reporting period of September 2015 to August 2016, with the annual average at 11 µg/m<sup>3</sup> (Figure 4). In addition, the PM<sub>10</sub> 24 hour maximum of 50 µg/m<sup>3</sup> was not exceeded on any day during the September 2015 to August 2016 reporting period.



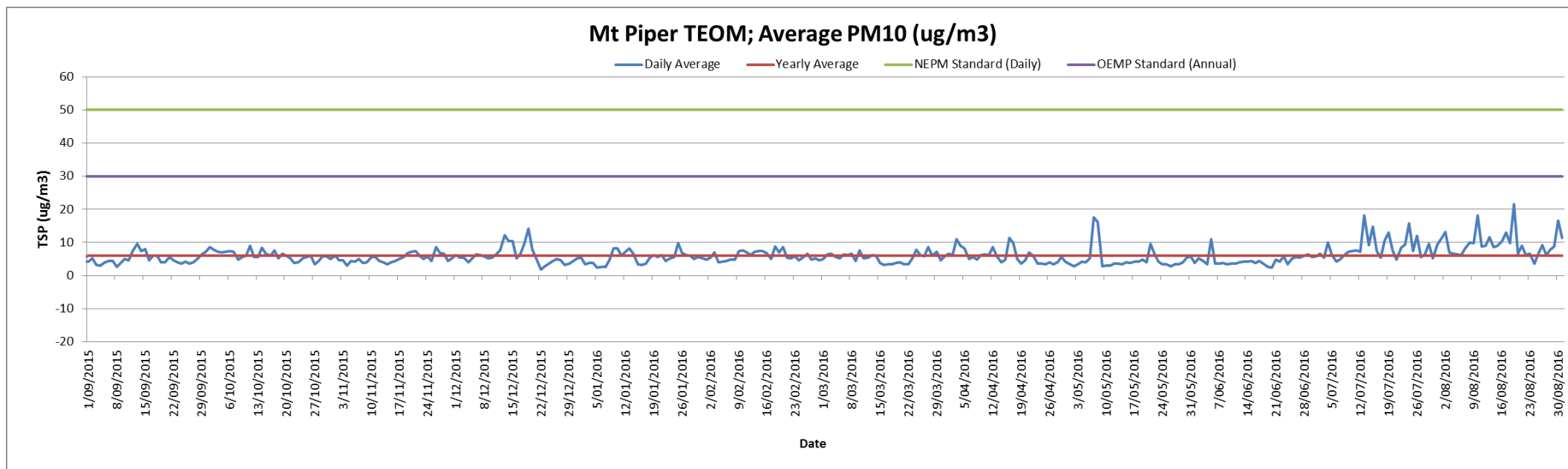


Figure 3 PM10 data from TEOM Mt Piper from September 2015 to August 2016

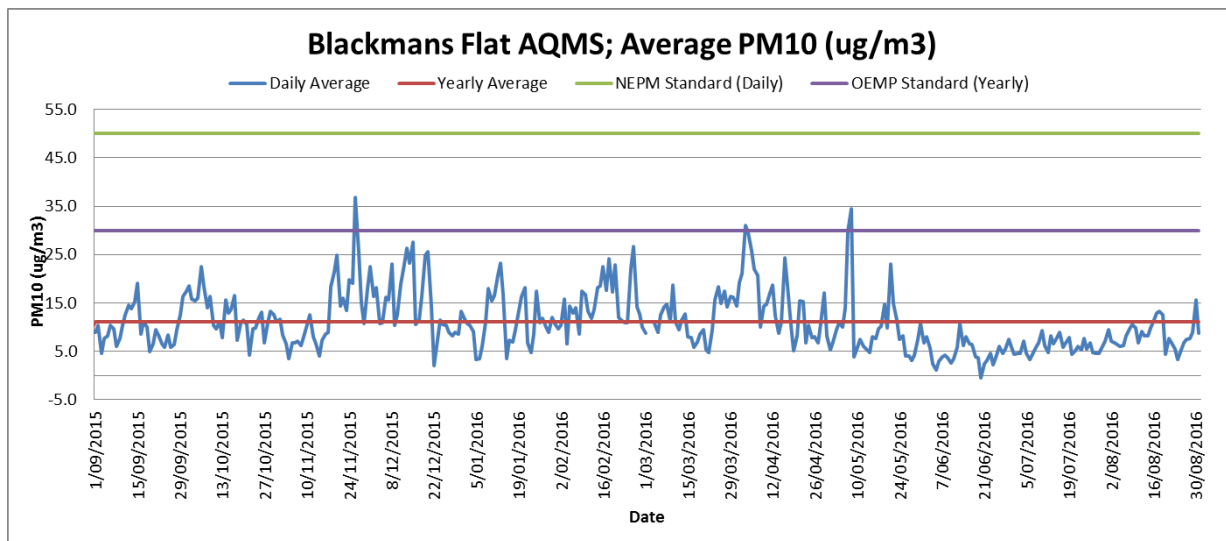


Figure 4 PM<sub>10</sub> data from AQMS Blackmans Flat for September 2015 to August 2016

The PM<sub>2.5</sub> annual average maximum of 8 µg/m<sup>3</sup> has not been exceeded in the reporting period of September 2015 to August 2016, with the annual average at 3.2 µg/m<sup>3</sup>. The PM<sub>2.5</sub> 24 hour maximum of 25 µg/m<sup>3</sup> was not exceeded on any day during the reporting period, but was reached on 1 day during the reporting period on the 8<sup>th</sup> of May, 2016 (Figure 5; Appendix B).

On the 8<sup>th</sup> May, 2016, ash placement was occurring on the south-east side of the Lamberts North Ash Repository. The sprinklers were in operation and no dust events were logged within the reporting system during the month of May. Wind data recorded by Lend Lease also indicate that it was a still day with wind gusts reaching 12 km/hr and wind blowing from the north east, i.e. from the Blackmans Flat site towards Lamberts North. It is therefore unlikely that operations at Lamberts North are the cause for the high PM<sub>2.5</sub> levels recorded at Blackmans Flat on this day.

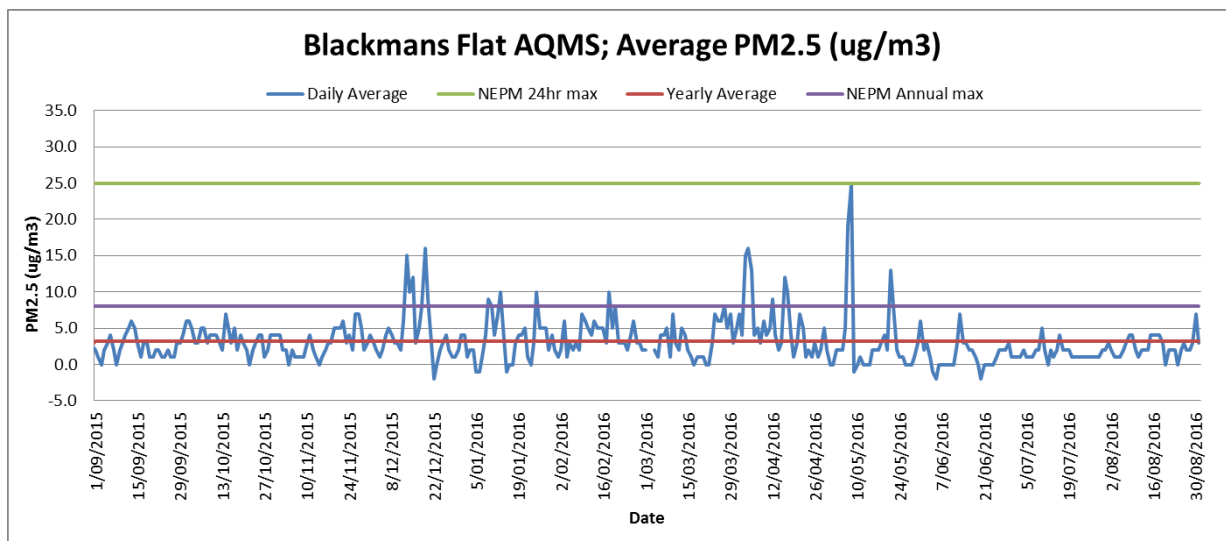


Figure 5 PM<sub>2.5</sub> data from AQMS Blackmans Flat for September 2015 to August 2016

During the same timeframe, all dust deposition gauges reported results below the OEMP criteria. It is therefore reasonable to conclude that the high PM<sub>2.5</sub> recorded at Blackmans Flat AQMS on the 8<sup>th</sup> May, 2016 was not the result of ash placement, but from other sources.

DATE FROM	DATE TO	GAUGE NO.	INSOL.	ASH	COMBUSTS	COMMENTS
<b>EnergyAustralia NSW</b>						
15/04/2016	16/05/2016	19	0.5	0.2	0.3	Clear, insects, organic matter, fine grey dust & coarse brown/black/grey/green dust
15/04/2016	16/05/2016	20	0.2	<0.1	0.2	Clear, insects, fine grey dust & coarse brown/black/grey dust
15/04/2016	16/05/2016	21	2.2	0.7	1.5	Slightly cloudy, insects, organic matter, fine grey/green dust & coarse black/green dust
15/04/2016	16/05/2016	22	0.4	0.1	0.3	Clear, insects, organic matter, fine grey dust & coarse black/grey dust
15/04/2016	16/05/2016	23	0.8	0.4	0.4	Clear, insects, organic matter, fine grey dust & coarse brown/grey dust
<b>Lend Lease</b>						
2/05/2016	3/06/2016	7	3.20	2.1	1.1	Clear, insects, organic matter, fine green dust & coarse brown/green dust
2/05/2016	3/06/2016	9	0.50	0.3	0.2	Clear, insects, organic matter, fine brown/grey dust & coarse brown/black dust
2/05/2016	3/06/2016	11	0.20	0.2	<0.1	Clear, insects, organic matter, fine grey dust & coarse brown/grey dust
2/05/2016	3/06/2016	13	0.20	0.1	0.1	Clear, insects, organic matter, fine grey dust & coarse brown/grey dust

## 5. Discussion

Dust gauges are often positioned adjacent to dust generating activities to assess possible nuisance impacts at nearby receptors. As a passive collection system they are inexpensive to install and maintain but are subject to a number of limitations (Malfroy, 2012):

- They are more effective in collecting coarse particles than fine particles;
- Results are often influenced by things like insects, bird droppings and occasionally human interference;
- The collection period of a month makes the assessment of short-term, individual events impossible;
- Without further analysis, it is difficult, if not impossible, to use dust gauge results to discriminate between a number of possible sources.

Notwithstanding these limitations, dust gauge data, have the potential to provide some relevant information regarding the potential dust impacts arising from Lamberts North when used cautiously. It is noted that in relation to dust gauge samples, “ash” refers to the incombustible, inorganic fraction of the sample and the “ash” fraction of a sample cannot be directly related to coal-ash.

Related to this is the OEMP’s requirement to undertake an investigation to determine the likely cause in the event of exceedances of 2 g/m<sup>2</sup>/month (or more) above the baseline average of 1.5 g/m<sup>2</sup>/month (CDM Smith, 2013). This requirement appears to be based on the simplistic assumption that any measured increase in dust deposition at the 5 OEMP gauges is the result of emissions from Lamberts North Operation. However, a diverse range of source (including regional dust storms) can contribute to the dust gauge results. Care must therefore be exercised in attempting to relate dust deposition results to potential dust sources as the contributing source, or sources, to an elevated result cannot always be simply or easily identified.

As noted above, dust gauges are most commonly placed adjacent to, or in close proximity to, potential “dusty” activities. In respect to the location of the OEMP gauges, it should be noted that data located at some distance from Lamberts North are unlikely to provide robust, useful information regarding potential impacts of operations at Lamberts North. Of the existing 5 OEMP gauges it is considered that Gauge 23, which is adjacent to Lamberts North, and Gauges 19 and 22 (Figure 1) are likely to provide the most useful information in assessing the potential impacts associated with Lamberts North Ash Repository. In 2015 – 2016 the annual average deposition at these 3 sites was 0.6 g/m<sup>2</sup>/month and the criteria of 2 g/m<sup>2</sup>/month (or more) above the baseline average of 1.5 g/m<sup>2</sup>/month was not exceeded in any individual month at any of these sites.

The exceedance of the monthly dust deposition criteria in April 2016 at dust deposition gauge 21, which is located approximately 2 km WNW of the Lamberts North Ash Repository, was significantly and anomalously higher than at the other 4 OEMP dust gauges.

Investigations into this exceedance found that throughout the month of April, the wind blew from a predominantly South-Westerly direction with a total of 10.2 mm of rain recorded at the Mt Piper Power Station Weather Station over the month. The dust within dust deposition gauge 21 was found to contain insects, organic matter, fine grey/green dust and coarse black/green dust. During the same period, Lend Lease dust deposition gauges 7, 9, 11 and 13, which are all located on the boundary of the Lamberts North Ash Repository, reported fine green or brown dust and coarse brown dust. These results are typically not indicative of ash as it would be expected that the collected dust from the gauges would be described as grey (since the colour of the coal-ash placed within Lamberts North varies from light to dark grey). Lend Lease operations for the aforementioned period were focused at Lamberts North and use of the southern boundary road for ash haulage; however no dust events were logged within their reporting system. As a result it is reasonable to conclude that the exceedance at dust deposition gauge 21 was not the result of Lamberts North ash placement but from other unknown sources.

In accordance with the OEMP Air Quality Monitoring Program, PM<sub>10</sub> results were also reviewed as part of this report. According to the National Environment Protection Council, the National Environment Measure for Ambient Air Quality (NEPM) is that the PM<sub>10</sub> 24 hour maximum of 50µg/m<sup>3</sup> can have five allowable exceedances per year. Both the PM<sub>10</sub> TEOM and the PM<sub>10</sub> AQMS results indicated no exceedances of the 24 hour maximum results.

Although it's not required by the OEMP, PM<sub>2.5</sub> is recorded at the Blackmans Flat AQMS and reported upon within this report. The PM<sub>2.5</sub> annual average maximum of 8 µg/m<sup>3</sup> was not exceeded in the reporting period of September 2015 to August 2016, with the annual average at 3.2 µg/m<sup>3</sup>. The PM<sub>2.5</sub> 24 hour maximum of 25 µg/m<sup>3</sup> was not exceeded on any day during the reporting period, but was reached on 1 day during the reporting period on the 8<sup>th</sup> of May, 2016.

On the 8<sup>th</sup> May, 2016, ash placement was occurring on the south-east side of the Lamberts North Ash Repository. Wind data recorded by Lend Lease indicate that it was a still day with wind gusts reaching 12 km/hr and wind blowing from the north east, i.e. from the Blackmans Flat site towards Lamberts North, therefore it is unlikely that operations at Lamberts North are the cause for the high PM<sub>2.5</sub> levels recorded at Blackmans Flat on this day.

Investigations into the potential cause of the elevated PM<sub>2.5</sub> levels found that early in May 2016, the National Parks and Wildlife Service (NPWS) and NSW Rural Fire Service (NSW RFS) performed two large hazard reduction burns in the Blue Mountains National Park near Leura and Glenbrook (NSW RFS, 2016). Smoke from these and several other successful hazard reduction burns impacted Sydney and many other locations in NSW, with daily PM<sub>2.5</sub> levels being recorded at Richmond (83.4 µg/m<sup>3</sup>), St Marys (93.2 µg/m<sup>3</sup>) and Prospect (84.9 µg/m<sup>3</sup>), and is the most likely cause for the high PM<sub>10</sub> and PM<sub>2.5</sub> levels recorded at the beginning of May 2016.

## 6. Conclusions

1. Annual average dust deposition results in the third year of the Mt Piper Ash Repository Lamberts North operations were below the criterion of 3.5 g/m<sup>2</sup>/month at 5 of the 5 Operation Environmental Management Plan (OEMP) gauges.
2. The dust gauge data from the third year of Lamberts North operations does not indicate that Lamberts North operations have resulted in dust deposition above the OEMP levels that trigger the requirement to implement additional control measures.
3. It is recommended that all reportable dust monitors are reviewed to ensure compliance with the Australian Standard.
4. The TEOM at Mt Piper PM<sub>10</sub> annual average maximum of 30µg/m<sup>3</sup> has not been exceeded in the reporting period of September 2015 to August 2016. The PM<sub>10</sub> 24 hour maximum of 50µg/m<sup>3</sup> has not been exceeded during the reporting period.
5. The AQMS at Blackmans Flat PM<sub>10</sub> annual average maximum of 30µg/m<sup>3</sup> has not been exceeded in the reporting period of September 2015 to August 2016. The PM<sub>10</sub> daily average did not exceed the 24 hour maximum of 50µg/m<sup>3</sup> during the reporting period.
6. The guideline PM<sub>2.5</sub> annual average maximum of 8µg/m<sup>3</sup> has not been exceeded in the reporting period of September 2015 to August 2016. The PM<sub>2.5</sub> daily average reached the 24 hour maximum guideline of 25µg/m<sup>3</sup> on 1 occasion during the reporting period and was likely the result of state-wide hazard reduction burns performed by the NPWS and NSW RFS.
7. No complaints regarding dust emissions from Lamberts North were received by either EnergyAustralia NSW or the Lamberts North site contractor during the second year of Lamberts North operations.
8. It is considered that the monitoring and reporting requirements of the OEMP are being met.

## References

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NSW RFS. (2016). *Bush Fire Bulletin 2015-16*. NSW Rural Fire Service.

SKM. (2010). *Mt Piper Ash Placement Project Environmental Assessment*. NSW: Sinclair Knight Merz Ltd.

## Appendix A

### Air Quality data and summary for Lamberts North OEMP dust gauges September 2015 – August 2016

DATE FROM	DATE TO	GAUGE NO.	INSOLUBLES	ASH	COMBUSTS	COMMENTS
21-08-15	21-09-15	19	0.8	0.1	0.7	Clear, bugs, organic matter, fine green dust & coarse brown/black/green dust
21-09-15	22-10-15	19	1.2	0.4	0.8	Clear, bugs, plant matter, organic matter, fine grey/green dust & coarse black/green dust
22-10-15	23-11-15	19	0.4	0.1	0.3	Clear, bugs, fine brown dust & coarse brown dust
23-11-15	21-12-15	19	0.8	0.5	0.3	Clear, bugs, fine grey dust & coarse black dust
22-12-15	19-01-16	19	0.4	0.1	0.3	Clear, insects, organic matter, fine brown/grey dust & coarse brown/black dust
19-01-16	19-02-16	19	0.5	0.2	0.3	Clear, insects, fine brown dust & coarse brown/black dust
19-02-16	18-03-16	19	0.8	0.5	0.3	Clear, insects, organic matter, fine brown/grey dust & coarse brown/black/grey dust
18-03-16	15-04-16	19	0.7	0.3	0.4	Clear, insects, organic matter, fine grey/green dust & coarse black/grey/green dust
15-04-16	16-05-16	19	0.5	0.2	0.3	Clear, insects, organic matter, fine grey dust & coarse brown/black/grey/green dust
16-05-16	15-06-16	19	0.6	0.3	0.3	Clear, insects, organic matter, fine brown/green dust & coarse black/green dust
15-06-16	15-07-16	19	0.5	0.2	0.3	Clear, insects, organic matter, fine grey dust & coarse brown/black/green dust
15-07-16	16-08-16	19	0.2	<0.1	0.2	Clear, insects, organic matter, fine grey dust & coarse black dust
21-08-15	21-09-15	20	0.6	0.3	0.3	Clear, bugs, organic matter, fine grey dust & coarse black/grey dust
21-09-15	22-10-15	20	0.5	0.2	0.3	Clear, bugs, fine grey dust & coarse brown/grey dust
22-10-15	23-11-15	20	0.3	0.1	0.2	Clear, bugs, organic matter, fine brown dust & coarse brown dust
23-11-15	21-12-15	20	0.7	0.3	0.4	Clear, bugs, plant matter, fine brown dust & coarse black dust
22-12-15	19-01-16	20	0.4	<0.1	0.4	Clear, insects, organic matter, fine grey dust & coarse brown/black/grey dust
19-01-16	19-02-16	20	0.2	0.1	0.1	Clear, organic matter, fine brown/grey dust & coarse brown/black/red dust
19-02-16	18-03-16	20	2.3	1.3	1	Clear, insects, fine green dust & coarse black/grey/green dust
18-03-16	15-04-16	20	1.2	0.3	0.9	Clear, insects, organic matter, fine grey dust & coarse brown/black dust
15-04-16	16-05-16	20	0.2	<0.1	0.2	Clear, insects, fine grey dust & coarse brown/black/grey dust
16-05-16	15-06-16	20	1.2	0.1	1.1	Slightly cloudy, insects, organic matter, fine brown dust & coarse black dust
15-06-16	15-07-16	20	0.8	0.1	0.7	Clear, insects, organic matter, fine brown dust & coarse brown/black dust
15-07-16	16-08-16	20	<0.1	<0.1	<0.1	Clear, insects, organic matter, fine grey dust & coarse black dust
21-08-15	21-09-15	21	1.1	0.5	0.6	Clear, bugs, plant matter, organic matter, bird droppings, fine black/grey/green dust & coarse brown/black/grey/green dust



DATE FROM	DATE TO	GAUGE NO.	INSOLUBLES	ASH	COMBUSTS	COMMENTS
21-09-15	22-10-15	21	2.6	0.9	1.7	Slightly cloudy, bugs, plant matter, organic matter, fine brown dust & coarse brown dust
22-10-15	23-11-15	21	1.1	0.3	0.8	Clear, bugs, plant matter, organic matter, fine brown/black dust & coarse brown/black dust
23-11-15	21-12-15	21	1.3	0.6	0.7	Clear, bugs, plant matter, fine brown/grey dust & coarse black dust
22-12-15	19-01-16	21	1.2	0.2	1.0	Clear, insects, organic matter, fine grey/green dust & coarse black/grey/green dust
19-01-16	19-02-16	21	2.1	0.8	1.3	Cloudy, organic matter, fine brown dust & coarse brown/black dust
19-02-16	18-03-16	21	1.2	0.4	0.8	Clear, insects, organic matter, fine brown dust & coarse brown/black/grey dust
18-03-16	15-04-16	21	4.1	1.4	2.7	Slightly cloudy, insects, organic matter, fine grey/green dust & coarse black/green dust
15-04-16	16-05-16	21	2.2	0.7	1.5	Slightly cloudy, insects, organic matter, fine grey/green dust & coarse black/green dust
16-05-16	15-06-16	21	0.4	0.2	0.2	Clear, insects, fine brown/grey dust & coarse black/green/brown dust
15-06-16	15-07-16	21	0.7	0.4	0.3	Clear, insects, organic matter, fine grey dust & coarse black/grey dust
15-07-16	16-08-16	21	<0.1	<0.1	<0.1	Clear, insects, organic matter, fine grey dust & coarse brown/black dust
21-08-15	21-09-15	22	0.8	0.3	0.5	Clear, bugs, plant matter, organic matter, fine grey/green dust & coarse black/grey/green dust
21-09-15	22-10-15	22	1	0.4	0.6	Clear, bugs, organic matter, fine grey/brown dust & coarse black/brown dust
22-10-15	23-11-15	22	0.9	0.3	0.6	Clear, bugs, organic matter, fine brown/black dust & coarse brown/black dust
23-11-15	21-12-15	22	0.6	0.2	0.4	Clear, bugs, plant matter, fine brown/grey dust & coarse black dust
22-12-15	19-01-16	22	0.6	<0.1	0.6	Clear, insects, organic matter, fine brown/grey dust & coarse brown/black/grey dust
19-01-16	19-02-16	22	0.8	0.3	0.5	Slightly cloudy, insects, organic matter, fine brown dust & coarse brown/black dust
19-02-16	18-03-16	22	1.3	0.6	0.7	Clear, insects, organic matter, fine brown/grey dust & coarse brown/black dust
18-03-16	15-04-16	22	0.5	0.2	0.3	Clear, insects, organic matter, fine grey dust & coarse brown/black dust
15-04-16	16-05-16	22	0.4	0.1	0.3	Clear, insects, organic matter, fine grey dust & coarse black/grey dust
16-05-16	15-06-16	22	0.3	0.1	0.2	Clear, insects, fine grey dust & coarse black dust
15-06-16	15-07-16	22	0.3	0.1	0.2	Clear, insects, organic matter, fine grey dust & coarse brown/black/green dust
15-07-16	16-08-16	22	<0.1	<0.1	<0.1	Clear, organic matter, fine grey dust & coarse black dust
21-08-15	21-09-15	23	0.7	0.2	0.5	Clear, bugs, fine grey/green dust & coarse brown/black/grey/green dust
21-09-15	22-10-15	23	1.2	0.5	0.7	Clear, bugs, organic matter, fine grey/brown dust & coarse brown/grey dust
22-10-15	23-11-15	23	0.5	0.2	0.3	Clear, bugs, organic matter, fine brown dust & coarse brown dust
23-11-15	21-12-15	23	0.8	0.4	0.4	Clear, bugs, plant matter, fine brown/grey dust & coarse brown dust
22-12-15	19-01-16	23	1.4	0.6	0.8	Clear, insects, organic matter, fine brown/grey/green dust & coarse brown/black/green dust

DATE FROM	DATE TO	GAUGE NO.	INSOLUBLES	ASH	COMBUSTS	COMMENTS
19-01-16	19-02-16	23	0.7	0.4	0.3	Slightly cloudy, organic matter, fine brown/grey dust & coarse brown/black/blue dust
19-02-16	18-03-16	23	0.8	0.4	0.4	Clear, insects, organic matter, fine brown/grey dust & coarse brown/black/grey dust
18-03-16	15-04-16	23	NS	NS	NS	No Sample, Broken Bottle
15-04-16	16-05-16	23	0.8	0.4	0.4	Clear, insects, organic matter, fine grey dust & coarse brown/grey dust
16-05-16	15-06-16	23	0.3	0.2	0.1	Clear, insects, fine grey dust & coarse black dust
15-06-16	15-07-16	23	0.6	0.2	0.4	Clear, insects, fine grey dust & coarse grey dust
15-07-16	16-08-16	23	0.3	<0.1	0.3	Clear, insects, fine grey/green dust & coarse black/red dust

## Appendix B

### *Air Quality data and summary for Lamberts North TEOM PM10 September 2015 – August 2016*

Date	Mount Piper TEOM; Average TSP ( $\mu\text{g}/\text{m}^3$ )				
	Daily	Monthly	Annual	Maximum Daily conc.	Maximum Annual conc.
01-09-15	4	4.7	6.1	50	30
02-09-15	5	4.7	6.1	50	30
03-09-15	3	4.7	6.1	50	30
04-09-15	3	4.7	6.1	50	30
05-09-15	4	4.7	6.1	50	30
06-09-15	4	4.7	6.1	50	30
07-09-15	4	4.7	6.1	50	30
08-09-15	3	4.7	6.1	50	30
09-09-15	4	4.7	6.1	50	30
10-09-15	5	4.7	6.1	50	30
11-09-15	5	4.7	6.1	50	30
12-09-15	7	4.7	6.1	50	30
13-09-15	9	4.7	6.1	50	30
14-09-15	7	4.7	6.1	50	30
15-09-15	8	4.7	6.1	50	30
16-09-15	5	4.7	6.1	50	30
17-09-15	6	4.7	6.1	50	30
18-09-15	6	4.7	6.1	50	30
19-09-15	4	4.7	6.1	50	30
20-09-15	4	4.7	6.1	50	30
21-09-15	6	4.7	6.1	50	30
22-09-15	5	4.7	6.1	50	30
23-09-15	4	4.7	6.1	50	30
24-09-15	4	4.7	6.1	50	30
25-09-15	4	4.7	6.1	50	30
26-09-15	4	4.7	6.1	50	30
27-09-15	4	4.7	6.1	50	30
28-09-15	5	4.7	6.1	50	30
29-09-15	6	4.7	6.1	50	30
30-09-15	7	4.7	6.1	50	30
01-10-15	9	5.0	6.1	50	30
02-10-15	8	5.0	6.1	50	30
03-10-15	7	5.0	6.1	50	30
04-10-15	7	5.0	6.1	50	30
05-10-15	7	5.0	6.1	50	30
06-10-15	7	5.0	6.1	50	30
07-10-15	7	5.0	6.1	50	30
08-10-15	5	5.0	6.1	50	30
09-10-15	6	5.0	6.1	50	30

Date	Mount Piper TEOM; Average TSP ( $\mu\text{g}/\text{m}^3$ )				
	Daily	Monthly	Annual	Maximum Daily conc.	Maximum Annual conc.
10-10-15	6	5.0	6.1	50	30
11-10-15	9	5.0	6.1	50	30
12-10-15	6	5.0	6.1	50	30
13-10-15	6	5.0	6.1	50	30
14-10-15	8	5.0	6.1	50	30
15-10-15	7	5.0	6.1	50	30
16-10-15	6	5.0	6.1	50	30
17-10-15	8	5.0	6.1	50	30
18-10-15	5	5.0	6.1	50	30
19-10-15	7	5.0	6.1	50	30
20-10-15	6	5.0	6.1	50	30
21-10-15	5	5.0	6.1	50	30
22-10-15	4	5.0	6.1	50	30
23-10-15	4	5.0	6.1	50	30
24-10-15	5	5.0	6.1	50	30
25-10-15	6	5.0	6.1	50	30
26-10-15	6	5.0	6.1	50	30
27-10-15	3	5.0	6.1	50	30
28-10-15	4	5.0	6.1	50	30
29-10-15	6	5.0	6.1	50	30
30-10-15	6	5.0	6.1	50	30
31-10-15	5	5.0	6.1	50	30
01-11-15	6	6.1	6.1	50	30
02-11-15	5	6.1	6.1	50	30
03-11-15	5	6.1	6.1	50	30
04-11-15	3	6.1	6.1	50	30
05-11-15	4	6.1	6.1	50	30
06-11-15	4	6.1	6.1	50	30
07-11-15	5	6.1	6.1	50	30
08-11-15	4	6.1	6.1	50	30
09-11-15	4	6.1	6.1	50	30
10-11-15	6	6.1	6.1	50	30
11-11-15	6	6.1	6.1	50	30
12-11-15	4	6.1	6.1	50	30
13-11-15	4	6.1	6.1	50	30
14-11-15	3	6.1	6.1	50	30
15-11-15	4	6.1	6.1	50	30
16-11-15	4	6.1	6.1	50	30
17-11-15	5	6.1	6.1	50	30
18-11-15	6	6.1	6.1	50	30
19-11-15	7	6.1	6.1	50	30
20-11-15	7	6.1	6.1	50	30
21-11-15	7	6.1	6.1	50	30

Date	Mount Piper TEOM; Average TSP ( $\mu\text{g}/\text{m}^3$ )				
	Daily	Monthly	Annual	Maximum Daily conc.	Maximum Annual conc.
22-11-15	6	6.1	6.1	50	30
23-11-15	5	6.1	6.1	50	30
24-11-15	6	6.1	6.1	50	30
25-11-15	4	6.1	6.1	50	30
26-11-15	9	6.1	6.1	50	30
27-11-15	7	6.1	6.1	50	30
28-11-15	7	6.1	6.1	50	30
29-11-15	4	6.1	6.1	50	30
30-11-15	5	6.1	6.1	50	30
01-12-15	6	5.2	6.1	50	30
02-12-15	5	5.2	6.1	50	30
03-12-15	5	5.2	6.1	50	30
04-12-15	4	5.2	6.1	50	30
05-12-15	5	5.2	6.1	50	30
06-12-15	6	5.2	6.1	50	30
07-12-15	6	5.2	6.1	50	30
08-12-15	6	5.2	6.1	50	30
09-12-15	5	5.2	6.1	50	30
10-12-15	5	5.2	6.1	50	30
11-12-15	6	5.2	6.1	50	30
12-12-15	8	5.2	6.1	50	30
13-12-15	12	5.2	6.1	50	30
14-12-15	10	5.2	6.1	50	30
15-12-15	10	5.2	6.1	50	30
16-12-15	5	5.2	6.1	50	30
17-12-15	7	5.2	6.1	50	30
18-12-15	10	5.2	6.1	50	30
19-12-15	14	5.2	6.1	50	30
20-12-15	8	5.2	6.1	50	30
21-12-15	5	5.2	6.1	50	30
22-12-15	2	5.2	6.1	50	30
23-12-15	3	5.2	6.1	50	30
24-12-15	4	5.2	6.1	50	30
25-12-15	4	5.2	6.1	50	30
26-12-15	5	5.2	6.1	50	30
27-12-15	5	5.2	6.1	50	30
28-12-15	3	5.2	6.1	50	30
29-12-15	4	5.2	6.1	50	30
30-12-15	4	5.2	6.1	50	30
31-12-15	5	5.2	6.1	50	30
01-01-16	5	6.1	6.1	50	30
02-01-16	3	6.1	6.1	50	30
03-01-16	4	6.1	6.1	50	30

Date	Mount Piper TEOM; Average TSP ( $\mu\text{g}/\text{m}^3$ )				
	Daily	Monthly	Annual	Maximum Daily conc.	Maximum Annual conc.
04-01-16	4	6.1	6.1	50	30
05-01-16	2	6.1	6.1	50	30
06-01-16	3	6.1	6.1	50	30
07-01-16	3	6.1	6.1	50	30
08-01-16	5	6.1	6.1	50	30
09-01-16	8	6.1	6.1	50	30
10-01-16	8	6.1	6.1	50	30
11-01-16	6	6.1	6.1	50	30
12-01-16	7	6.1	6.1	50	30
13-01-16	8	6.1	6.1	50	30
14-01-16	7	6.1	6.1	50	30
15-01-16	3	6.1	6.1	50	30
16-01-16	3	6.1	6.1	50	30
17-01-16	4	6.1	6.1	50	30
18-01-16	5	6.1	6.1	50	30
19-01-16	6	6.1	6.1	50	30
20-01-16	6	6.1	6.1	50	30
21-01-16	6	6.1	6.1	50	30
22-01-16	4	6.1	6.1	50	30
23-01-16	5	6.1	6.1	50	30
24-01-16	6	6.1	6.1	50	30
25-01-16	10	6.1	6.1	50	30
26-01-16	7	6.1	6.1	50	30
27-01-16	6	6.1	6.1	50	30
28-01-16	6	6.1	6.1	50	30
29-01-16	5	6.1	6.1	50	30
30-01-16	6	6.1	6.1	50	30
31-01-16	5	6.1	6.1	50	30
01-02-16	5	5.4	6.1	50	30
02-02-16	5	5.4	6.1	50	30
03-02-16	7	5.4	6.1	50	30
04-02-16	4	5.4	6.1	50	30
05-02-16	4	5.4	6.1	50	30
06-02-16	4	5.4	6.1	50	30
07-02-16	5	5.4	6.1	50	30
08-02-16	5	5.4	6.1	50	30
09-02-16	7	5.4	6.1	50	30
10-02-16	8	5.4	6.1	50	30
11-02-16	7	5.4	6.1	50	30
12-02-16	6	5.4	6.1	50	30
13-02-16	7	5.4	6.1	50	30
14-02-16	7	5.4	6.1	50	30
15-02-16	7	5.4	6.1	50	30

Date	Mount Piper TEOM; Average TSP ( $\mu\text{g}/\text{m}^3$ )				
	Daily	Monthly	Annual	Maximum Daily conc.	Maximum Annual conc.
16-02-16	7	5.4	6.1	50	30
17-02-16	5	5.4	6.1	50	30
18-02-16	9	5.4	6.1	50	30
19-02-16	7	5.4	6.1	50	30
20-02-16	9	5.4	6.1	50	30
21-02-16	5	5.4	6.1	50	30
22-02-16	5	5.4	6.1	50	30
23-02-16	6	5.4	6.1	50	30
24-02-16	5	5.4	6.1	50	30
25-02-16	6	5.4	6.1	50	30
26-02-16	7	5.4	6.1	50	30
27-02-16	5	5.4	6.1	50	30
28-02-16	5	5.4	6.1	50	30
29-02-16	5	5.4	6.1	50	30
01-03-16	5	6.0	6.1	50	30
02-03-16	6	6.0	6.1	50	30
03-03-16	7	6.0	6.1	50	30
04-03-16	6	6.0	6.1	50	30
05-03-16	5	6.0	6.1	50	30
06-03-16	6	6.0	6.1	50	30
07-03-16	6	6.0	6.1	50	30
08-03-16	7	6.0	6.1	50	30
09-03-16	4	6.0	6.1	50	30
10-03-16	8	6.0	6.1	50	30
11-03-16	5	6.0	6.1	50	30
12-03-16	5	6.0	6.1	50	30
13-03-16	6	6.0	6.1	50	30
14-03-16	6	6.0	6.1	50	30
15-03-16	4	6.0	6.1	50	30
16-03-16	3	6.0	6.1	50	30
17-03-16	3	6.0	6.1	50	30
18-03-16	3	6.0	6.1	50	30
19-03-16	4	6.0	6.1	50	30
20-03-16	4	6.0	6.1	50	30
21-03-16	3	6.0	6.1	50	30
22-03-16	3	6.0	6.1	50	30
23-03-16	5	6.0	6.1	50	30
24-03-16	8	6.0	6.1	50	30
25-03-16	6	6.0	6.1	50	30
26-03-16	6	6.0	6.1	50	30
27-03-16	9	6.0	6.1	50	30
28-03-16	6	6.0	6.1	50	30
29-03-16	7	6.0	6.1	50	30

Date	Mount Piper TEOM; Average TSP ( $\mu\text{g}/\text{m}^3$ )				
	Daily	Monthly	Annual	Maximum Daily conc.	Maximum Annual conc.
30-03-16	5	6.0	6.1	50	30
31-03-16	6	6.0	6.1	50	30
01-04-16	7	5.5	6.1	50	30
02-04-16	6	5.5	6.1	50	30
03-04-16	11	5.5	6.1	50	30
04-04-16	9	5.5	6.1	50	30
05-04-16	8	5.5	6.1	50	30
06-04-16	5	5.5	6.1	50	30
07-04-16	6	5.5	6.1	50	30
08-04-16	5	5.5	6.1	50	30
09-04-16	6	5.5	6.1	50	30
10-04-16	6	5.5	6.1	50	30
11-04-16	6	5.5	6.1	50	30
12-04-16	9	5.5	6.1	50	30
13-04-16	6	5.5	6.1	50	30
14-04-16	4	5.5	6.1	50	30
15-04-16	5	5.5	6.1	50	30
16-04-16	11	5.5	6.1	50	30
17-04-16	10	5.5	6.1	50	30
18-04-16	5	5.5	6.1	50	30
19-04-16	4	5.5	6.1	50	30
20-04-16	5	5.5	6.1	50	30
21-04-16	7	5.5	6.1	50	30
22-04-16	6	5.5	6.1	50	30
23-04-16	4	5.5	6.1	50	30
24-04-16	4	5.5	6.1	50	30
25-04-16	3	5.5	6.1	50	30
26-04-16	4	5.5	6.1	50	30
27-04-16	3	5.5	6.1	50	30
28-04-16	4	5.5	6.1	50	30
29-04-16	6	5.5	6.1	50	30
30-04-16	4	5.5	6.1	50	30
01-05-16	3	5.9	6.1	50	30
02-05-16	3	5.9	6.1	50	30
03-05-16	3	5.9	6.1	50	30
04-05-16	4	5.9	6.1	50	30
05-05-16	4	5.9	6.1	50	30
06-05-16	5	5.9	6.1	50	30
07-05-16	18	5.9	6.1	50	30
08-05-16	16	5.9	6.1	50	30
09-05-16	3	5.9	6.1	50	30
10-05-16	3	5.9	6.1	50	30
11-05-16	3	5.9	6.1	50	30



Date	Mount Piper TEOM; Average TSP ( $\mu\text{g}/\text{m}^3$ )				
	Daily	Monthly	Annual	Maximum Daily conc.	Maximum Annual conc.
12-05-16	4	5.9	6.1	50	30
13-05-16	4	5.9	6.1	50	30
14-05-16	3	5.9	6.1	50	30
15-05-16	4	5.9	6.1	50	30
16-05-16	4	5.9	6.1	50	30
17-05-16	4	5.9	6.1	50	30
18-05-16	4	5.9	6.1	50	30
19-05-16	5	5.9	6.1	50	30
20-05-16	4	5.9	6.1	50	30
21-05-16	10	5.9	6.1	50	30
22-05-16	7	5.9	6.1	50	30
23-05-16	4	5.9	6.1	50	30
24-05-16	3	5.9	6.1	50	30
25-05-16	3	5.9	6.1	50	30
26-05-16	3	5.9	6.1	50	30
27-05-16	3	5.9	6.1	50	30
28-05-16	3	5.9	6.1	50	30
29-05-16	4	5.9	6.1	50	30
30-05-16	5	5.9	6.1	50	30
31-05-16	6	5.9	6.1	50	30
01-06-16	4	4.9	6.1	50	30
02-06-16	5	4.9	6.1	50	30
03-06-16	4	4.9	6.1	50	30
04-06-16	3	4.9	6.1	50	30
05-06-16	11	4.9	6.1	50	30
06-06-16	4	4.9	6.1	50	30
07-06-16	4	4.9	6.1	50	30
08-06-16	4	4.9	6.1	50	30
09-06-16	3	4.9	6.1	50	30
10-06-16	4	4.9	6.1	50	30
11-06-16	4	4.9	6.1	50	30
12-06-16	4	4.9	6.1	50	30
13-06-16	4	4.9	6.1	50	30
14-06-16	4	4.9	6.1	50	30
15-06-16	4	4.9	6.1	50	30
16-06-16	4	4.9	6.1	50	30
17-06-16	4	4.9	6.1	50	30
18-06-16	4	4.9	6.1	50	30
19-06-16	3	4.9	6.1	50	30
20-06-16	2	4.9	6.1	50	30
21-06-16	5	4.9	6.1	50	30
22-06-16	4	4.9	6.1	50	30
23-06-16	6	4.9	6.1	50	30

Date	Mount Piper TEOM; Average TSP ( $\mu\text{g}/\text{m}^3$ )				
	Daily	Monthly	Annual	Maximum Daily conc.	Maximum Annual conc.
24-06-16	3	4.9	6.1	50	30
25-06-16	5	4.9	6.1	50	30
26-06-16	6	4.9	6.1	50	30
27-06-16	5	4.9	6.1	50	30
28-06-16	6	4.9	6.1	50	30
29-06-16	6	4.9	6.1	50	30
30-06-16	6	4.9	6.1	50	30
01-07-16	6	4.5	6.1	50	30
02-07-16	7	4.5	6.1	50	30
03-07-16	5	4.5	6.1	50	30
04-07-16	10	4.5	6.1	50	30
05-07-16	6	4.5	6.1	50	30
06-07-16	4	4.5	6.1	50	30
07-07-16	5	4.5	6.1	50	30
08-07-16	6	4.5	6.1	50	30
09-07-16	7	4.5	6.1	50	30
10-07-16	7	4.5	6.1	50	30
11-07-16	8	4.5	6.1	50	30
12-07-16	7	4.5	6.1	50	30
13-07-16	18	4.5	6.1	50	30
14-07-16	9	4.5	6.1	50	30
15-07-16	15	4.5	6.1	50	30
16-07-16	7	4.5	6.1	50	30
17-07-16	5	4.5	6.1	50	30
18-07-16	11	4.5	6.1	50	30
19-07-16	13	4.5	6.1	50	30
20-07-16	8	4.5	6.1	50	30
21-07-16	5	4.5	6.1	50	30
22-07-16	8	4.5	6.1	50	30
23-07-16	9	4.5	6.1	50	30
24-07-16	16	4.5	6.1	50	30
25-07-16	7	4.5	6.1	50	30
26-07-16	12	4.5	6.1	50	30
27-07-16	6	4.5	6.1	50	30
28-07-16	6	4.5	6.1	50	30
29-07-16	9	4.5	6.1	50	30
30-07-16	5	4.5	6.1	50	30
31-07-16	9	4.5	6.1	50	30
01-08-16	11	8.3	6.1	50	30
02-08-16	13	8.3	6.1	50	30
03-08-16	7	8.3	6.1	50	30
04-08-16	7	8.3	6.1	50	30
05-08-16	6	8.3	6.1	50	30

Date	Mount Piper TEOM; Average TSP ( $\mu\text{g}/\text{m}^3$ )				
	Daily	Monthly	Annual	Maximum Daily conc.	Maximum Annual conc.
06-08-16	6	8.3	6.1	50	30
07-08-16	8	8.3	6.1	50	30
08-08-16	10	8.3	6.1	50	30
09-08-16	10	8.3	6.1	50	30
10-08-16	18	8.3	6.1	50	30
11-08-16	9	8.3	6.1	50	30
12-08-16	9	8.3	6.1	50	30
13-08-16	12	8.3	6.1	50	30
14-08-16	9	8.3	6.1	50	30
15-08-16	9	8.3	6.1	50	30
16-08-16	10	8.3	6.1	50	30
17-08-16	13	8.3	6.1	50	30
18-08-16	10	8.3	6.1	50	30
19-08-16	22	8.3	6.1	50	30
20-08-16	7	8.3	6.1	50	30
21-08-16	9	8.3	6.1	50	30
22-08-16	6	8.3	6.1	50	30
23-08-16	7	8.3	6.1	50	30
24-08-16	4	8.3	6.1	50	30
25-08-16	7	8.3	6.1	50	30
26-08-16	9	8.3	6.1	50	30
27-08-16	6	8.3	6.1	50	30
28-08-16	8	8.3	6.1	50	30
29-08-16	9	8.3	6.1	50	30
30-08-16	17	8.3	6.1	50	30
31-08-16	11	8.3	6.1	50	30

**Air Quality data and summary for Lamberts North AQMS PM<sub>2.5</sub> and PM<sub>10</sub> September 2015 – August 2016.**

Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
01-09-15	2.0	2.4	3.2	25	8	8.9	9.7	11.0	50	30
02-09-15	1.0	2.4	3.2	25	8	10.3	9.7	11.0	50	30
03-09-15	0.0	2.4	3.2	25	8	4.5	9.7	11.0	50	30
04-09-15	2.0	2.4	3.2	25	8	7.7	9.7	11.0	50	30
05-09-15	3.0	2.4	3.2	25	8	8.2	9.7	11.0	50	30
06-09-15	4.0	2.4	3.2	25	8	10.3	9.7	11.0	50	30
07-09-15	2.0	2.4	3.2	25	8	9.7	9.7	11.0	50	30
08-09-15	0.0	2.4	3.2	25	8	6.0	9.7	11.0	50	30
09-09-15	2.0	2.4	3.2	25	8	7.7	9.7	11.0	50	30
10-09-15	3.0	2.4	3.2	25	8	10.4	9.7	11.0	50	30
11-09-15	4.0	2.4	3.2	25	8	12.6	9.7	11.0	50	30
12-09-15	5.0	2.4	3.2	25	8	14.6	9.7	11.0	50	30
13-09-15	6.0	2.4	3.2	25	8	13.9	9.7	11.0	50	30
14-09-15	5.0	2.4	3.2	25	8	15.3	9.7	11.0	50	30
15-09-15	3.0	2.4	3.2	25	8	19.0	9.7	11.0	50	30
16-09-15	1.0	2.4	3.2	25	8	8.5	9.7	11.0	50	30
17-09-15	3.0	2.4	3.2	25	8	11.1	9.7	11.0	50	30
18-09-15	3.0	2.4	3.2	25	8	10.1	9.7	11.0	50	30
19-09-15	1.0	2.4	3.2	25	8	4.9	9.7	11.0	50	30
20-09-15	1.0	2.4	3.2	25	8	6.6	9.7	11.0	50	30
21-09-15	2.0	2.4	3.2	25	8	9.5	9.7	11.0	50	30
22-09-15	2.0	2.4	3.2	25	8	8.4	9.7	11.0	50	30
23-09-15	1.0	2.4	3.2	25	8	6.5	9.7	11.0	50	30
24-09-15	1.0	2.4	3.2	25	8	5.9	9.7	11.0	50	30
25-09-15	2.0	2.4	3.2	25	8	8.4	9.7	11.0	50	30

Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
26-09-15	1.0	2.4	3.2	25	8	5.9	9.7	11.0	50	30
27-09-15	1.0	2.4	3.2	25	8	6.4	9.7	11.0	50	30
28-09-15	3.0	2.4	3.2	25	8	9.4	9.7	11.0	50	30
29-09-15	3.0	2.4	3.2	25	8	12.5	9.7	11.0	50	30
30-09-15	4.0	2.4	3.2	25	8	16.3	9.7	11.0	50	30
01-10-15	6.0	3.6	3.2	25	8	17.5	12.8	11.0	50	30
02-10-15	6.0	3.6	3.2	25	8	18.6	12.8	11.0	50	30
03-10-15	5.0	3.6	3.2	25	8	15.9	12.8	11.0	50	30
04-10-15	3.0	3.6	3.2	25	8	15.4	12.8	11.0	50	30
05-10-15	3.0	3.6	3.2	25	8	16.0	12.8	11.0	50	30
06-10-15	5.0	3.6	3.2	25	8	22.5	12.8	11.0	50	30
07-10-15	5.0	3.6	3.2	25	8	18.4	12.8	11.0	50	30
08-10-15	3.0	3.6	3.2	25	8	14.0	12.8	11.0	50	30
09-10-15	4.0	3.6	3.2	25	8	16.4	12.8	11.0	50	30
10-10-15	4.0	3.6	3.2	25	8	10.4	12.8	11.0	50	30
11-10-15	4.0	3.6	3.2	25	8	9.6	12.8	11.0	50	30
12-10-15	3.0	3.6	3.2	25	8	11.1	12.8	11.0	50	30
13-10-15	2.0	3.6	3.2	25	8	7.9	12.8	11.0	50	30
14-10-15	7.0	3.6	3.2	25	8	15.6	12.8	11.0	50	30
15-10-15	5.0	3.6	3.2	25	8	12.9	12.8	11.0	50	30
16-10-15	3.0	3.6	3.2	25	8	13.7	12.8	11.0	50	30
17-10-15	5.0	3.6	3.2	25	8	16.5	12.8	11.0	50	30
18-10-15	2.0	3.6	3.2	25	8	7.3	12.8	11.0	50	30
19-10-15	4.0	3.6	3.2	25	8	10.7	12.8	11.0	50	30
20-10-15	3.0	3.6	3.2	25	8	11.4	12.8	11.0	50	30
21-10-15	2.0	3.6	3.2	25	8	10.6	12.8	11.0	50	30
22-10-15	0.0	3.6	3.2	25	8	4.2	12.8	11.0	50	30

Report Title: Mt Piper Ash Placement Project Lamberts North Annual Air Quality Monitoring Report 2015-2016

Objective ID: A895102

Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
23-10-15	2.0	3.6	3.2	25	8	9.6	12.8	11.0	50	30
24-10-15	3.0	3.6	3.2	25	8	9.8	12.8	11.0	50	30
25-10-15	4.0	3.6	3.2	25	8	12.0	12.8	11.0	50	30
26-10-15	4.0	3.6	3.2	25	8	13.1	12.8	11.0	50	30
27-10-15	1.0	3.6	3.2	25	8	6.8	12.8	11.0	50	30
28-10-15	2.0	3.6	3.2	25	8	11.0	12.8	11.0	50	30
29-10-15	4.0	3.6	3.2	25	8	13.2	12.8	11.0	50	30
30-10-15	4.0	3.6	3.2	25	8	12.6	12.8	11.0	50	30
31-10-15	4.0	3.6	3.2	25	8	11.2	12.8	11.0	50	30
01-11-15	4.0	2.9	3.2	25	8	11.6	12.8	11.0	50	30
02-11-15	2.0	2.9	3.2	25	8	8.4	12.8	11.0	50	30
03-11-15	2.0	2.9	3.2	25	8	6.6	12.8	11.0	50	30
04-11-15	0.0	2.9	3.2	25	8	3.5	12.8	11.0	50	30
05-11-15	2.0	2.9	3.2	25	8	6.8	12.8	11.0	50	30
06-11-15	1.0	2.9	3.2	25	8	6.7	12.8	11.0	50	30
07-11-15	1.0	2.9	3.2	25	8	7.1	12.8	11.0	50	30
08-11-15	1.0	2.9	3.2	25	8	6.3	12.8	11.0	50	30
09-11-15	1.0	2.9	3.2	25	8	8.0	12.8	11.0	50	30
10-11-15	3.0	2.9	3.2	25	8	10.6	12.8	11.0	50	30
11-11-15	4.0	2.9	3.2	25	8	12.6	12.8	11.0	50	30
12-11-15	2.0	2.9	3.2	25	8	8.0	12.8	11.0	50	30
13-11-15	1.0	2.9	3.2	25	8	6.6	12.8	11.0	50	30
14-11-15	0.0	2.9	3.2	25	8	4.1	12.8	11.0	50	30
15-11-15	1.0	2.9	3.2	25	8	7.3	12.8	11.0	50	30
16-11-15	2.0	2.9	3.2	25	8	8.6	12.8	11.0	50	30
17-11-15	3.0	2.9	3.2	25	8	9.0	12.8	11.0	50	30
18-11-15	3.0	2.9	3.2	25	8	18.4	12.8	11.0	50	30

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Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
19-11-15	5.0	2.9	3.2	25	8	21.4	12.8	11.0	50	30
20-11-15	5.0	2.9	3.2	25	8	24.8	12.8	11.0	50	30
21-11-15	5.0	2.9	3.2	25	8	14.4	12.8	11.0	50	30
22-11-15	6.0	2.9	3.2	25	8	16.0	12.8	11.0	50	30
23-11-15	3.0	2.9	3.2	25	8	13.4	12.8	11.0	50	30
24-11-15	4.0	2.9	3.2	25	8	19.8	12.8	11.0	50	30
25-11-15	2.0	2.9	3.2	25	8	19.0	12.8	11.0	50	30
26-11-15	7.0	2.9	3.2	25	8	36.8	12.8	11.0	50	30
27-11-15	7.0	2.9	3.2	25	8	25.5	12.8	11.0	50	30
28-11-15	5.0	2.9	3.2	25	8	15.0	12.8	11.0	50	30
29-11-15	2.0	2.9	3.2	25	8	10.8	12.8	11.0	50	30
30-11-15	3.0	2.9	3.2	25	8	18.0	12.8	11.0	50	30
01-12-15	4.0	4.4	3.2	25	8	22.6	15.0	11.0	50	30
02-12-15	3.0	4.4	3.2	25	8	16.4	15.0	11.0	50	30
03-12-15	2.0	4.4	3.2	25	8	18.2	15.0	11.0	50	30
04-12-15	1.0	4.4	3.2	25	8	10.7	15.0	11.0	50	30
05-12-15	2.0	4.4	3.2	25	8	11.0	15.0	11.0	50	30
06-12-15	4.0	4.4	3.2	25	8	16.2	15.0	11.0	50	30
07-12-15	5.0	4.4	3.2	25	8	15.6	15.0	11.0	50	30
08-12-15	4.0	4.4	3.2	25	8	23.1	15.0	11.0	50	30
09-12-15	3.0	4.4	3.2	25	8	10.3	15.0	11.0	50	30
10-12-15	3.0	4.4	3.2	25	8	12.6	15.0	11.0	50	30
11-12-15	2.0	4.4	3.2	25	8	18.9	15.0	11.0	50	30
12-12-15	6.0	4.4	3.2	25	8	22.0	15.0	11.0	50	30
13-12-15	15.0	4.4	3.2	25	8	26.3	15.0	11.0	50	30
14-12-15	10.0	4.4	3.2	25	8	23.2	15.0	11.0	50	30
15-12-15	12.0	4.4	3.2	25	8	27.6	15.0	11.0	50	30

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Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
16-12-15	3.0	4.4	3.2	25	8	10.5	15.0	11.0	50	30
17-12-15	5.0	4.4	3.2	25	8	11.5	15.0	11.0	50	30
18-12-15	8.0	4.4	3.2	25	8	16.4	15.0	11.0	50	30
19-12-15	16.0	4.4	3.2	25	8	24.9	15.0	11.0	50	30
20-12-15	9.0	4.4	3.2	25	8	25.6	15.0	11.0	50	30
21-12-15	3.0	4.4	3.2	25	8	14.2	15.0	11.0	50	30
22-12-15	-2.0	4.4	3.2	25	8	2.0	15.0	11.0	50	30
23-12-15	0.0	4.4	3.2	25	8	6.0	15.0	11.0	50	30
24-12-15	2.0	4.4	3.2	25	8	11.4	15.0	11.0	50	30
25-12-15	3.0	4.4	3.2	25	8	10.6	15.0	11.0	50	30
26-12-15	4.0	4.4	3.2	25	8	10.4	15.0	11.0	50	30
27-12-15	2.0	4.4	3.2	25	8	9.0	15.0	11.0	50	30
28-12-15	1.0	4.4	3.2	25	8	8.2	15.0	11.0	50	30
29-12-15	1.0	4.4	3.2	25	8	9.0	15.0	11.0	50	30
30-12-15	2.0	4.4	3.2	25	8	8.5	15.0	11.0	50	30
31-12-15	4.0	4.4	3.2	25	8	13.2	15.0	11.0	50	30
01-01-16	4.0	3.5	3.2	25	8	11.6	11.4	11.0	50	30
02-01-16	1.0	3.5	3.2	25	8	10.8	11.4	11.0	50	30
03-01-16	2.0	3.5	3.2	25	8	10.4	11.4	11.0	50	30
04-01-16	2.0	3.5	3.2	25	8	9.2	11.4	11.0	50	30
05-01-16	-1.0	3.5	3.2	25	8	3.3	11.4	11.0	50	30
06-01-16	-1.0	3.5	3.2	25	8	3.5	11.4	11.0	50	30
07-01-16	1.0	3.5	3.2	25	8	6.0	11.4	11.0	50	30
08-01-16	4.0	3.5	3.2	25	8	11.2	11.4	11.0	50	30
09-01-16	9.0	3.5	3.2	25	8	18.0	11.4	11.0	50	30
10-01-16	8.0	3.5	3.2	25	8	15.5	11.4	11.0	50	30
11-01-16	4.0	3.5	3.2	25	8	16.6	11.4	11.0	50	30

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Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
12-01-16	7.0	3.5	3.2	25	8	20.8	11.4	11.0	50	30
13-01-16	10.0	3.5	3.2	25	8	23.2	11.4	11.0	50	30
14-01-16	5.0	3.5	3.2	25	8	16.7	11.4	11.0	50	30
15-01-16	-1.0	3.5	3.2	25	8	3.5	11.4	11.0	50	30
16-01-16	0.0	3.5	3.2	25	8	7.3	11.4	11.0	50	30
17-01-16	0.0	3.5	3.2	25	8	6.9	11.4	11.0	50	30
18-01-16	3.0	3.5	3.2	25	8	9.5	11.4	11.0	50	30
19-01-16	4.0	3.5	3.2	25	8	13.5	11.4	11.0	50	30
20-01-16	4.0	3.5	3.2	25	8	16.4	11.4	11.0	50	30
21-01-16	5.0	3.5	3.2	25	8	18.2	11.4	11.0	50	30
22-01-16	1.0	3.5	3.2	25	8	6.7	11.4	11.0	50	30
23-01-16	0.0	3.5	3.2	25	8	4.7	11.4	11.0	50	30
24-01-16	3.0	3.5	3.2	25	8	8.5	11.4	11.0	50	30
25-01-16	10.0	3.5	3.2	25	8	17.5	11.4	11.0	50	30
26-01-16	5.0	3.5	3.2	25	8	10.9	11.4	11.0	50	30
27-01-16	5.0	3.5	3.2	25	8	11.8	11.4	11.0	50	30
28-01-16	5.0	3.5	3.2	25	8	10.1	11.4	11.0	50	30
29-01-16	2.0	3.5	3.2	25	8	9.0	11.4	11.0	50	30
30-01-16	4.0	3.5	3.2	25	8	12.1	11.4	11.0	50	30
31-01-16	2.0	3.5	3.2	25	8	10.8	11.4	11.0	50	30
01-02-16	1.0	4.1	3.2	25	8	9.7	15.1	11.0	50	30
02-02-16	2.0	4.1	3.2	25	8	10.3	15.1	11.0	50	30
03-02-16	6.0	4.1	3.2	25	8	15.9	15.1	11.0	50	30
04-02-16	1.0	4.1	3.2	25	8	6.5	15.1	11.0	50	30
05-02-16	3.0	4.1	3.2	25	8	14.4	15.1	11.0	50	30
06-02-16	2.0	4.1	3.2	25	8	13.0	15.1	11.0	50	30
07-02-16	3.0	4.1	3.2	25	8	14.0	15.1	11.0	50	30

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Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
08-02-16	2.0	4.1	3.2	25	8	8.6	15.1	11.0	50	30
09-02-16	7.0	4.1	3.2	25	8	17.4	15.1	11.0	50	30
10-02-16	6.0	4.1	3.2	25	8	16.8	15.1	11.0	50	30
11-02-16	5.0	4.1	3.2	25	8	13.2	15.1	11.0	50	30
12-02-16	4.0	4.1	3.2	25	8	11.8	15.1	11.0	50	30
13-02-16	6.0	4.1	3.2	25	8	13.7	15.1	11.0	50	30
14-02-16	5.0	4.1	3.2	25	8	18.2	15.1	11.0	50	30
15-02-16	5.0	4.1	3.2	25	8	18.6	15.1	11.0	50	30
16-02-16	5.0	4.1	3.2	25	8	22.5	15.1	11.0	50	30
17-02-16	3.0	4.1	3.2	25	8	17.7	15.1	11.0	50	30
18-02-16	10.0	4.1	3.2	25	8	24.2	15.1	11.0	50	30
19-02-16	5.0	4.1	3.2	25	8	17.3	15.1	11.0	50	30
20-02-16	8.0	4.1	3.2	25	8	22.9	15.1	11.0	50	30
21-02-16	3.0	4.1	3.2	25	8	12.1	15.1	11.0	50	30
22-02-16	3.0	4.1	3.2	25	8	11.4	15.1	11.0	50	30
23-02-16	3.0	4.1	3.2	25	8	11.0	15.1	11.0	50	30
24-02-16	2.0	4.1	3.2	25	8	10.9	15.1	11.0	50	30
25-02-16	4.0	4.1	3.2	25	8	22.2	15.1	11.0	50	30
26-02-16	6.0	4.1	3.2	25	8	26.7	15.1	11.0	50	30
27-02-16	3.0	4.1	3.2	25	8	14.1	15.1	11.0	50	30
28-02-16	3.0	4.1	3.2	25	8	12.8	15.1	11.0	50	30
29-02-16	2.0	4.1	3.2	25	8	10.1	15.1	11.0	50	30
01-03-16	2.0	3.3	3.2	25	8	8.8	11.7	11.0	50	30
02-03-16		3.3	3.2	25	8		11.7	11.0	50	30
03-03-16		3.3	3.2	25	8		11.7	11.0	50	30
04-03-16	2.0	3.3	3.2	25	8	10.8	11.7	11.0	50	30
05-03-16	1.0	3.3	3.2	25	8	9.0	11.7	11.0	50	30

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Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
06-03-16	4.0	3.3	3.2	25	8	12.6	11.7	11.0	50	30
07-03-16	4.0	3.3	3.2	25	8	14.2	11.7	11.0	50	30
08-03-16	5.0	3.3	3.2	25	8	14.7	11.7	11.0	50	30
09-03-16	1.0	3.3	3.2	25	8	11.3	11.7	11.0	50	30
10-03-16	7.0	3.3	3.2	25	8	18.7	11.7	11.0	50	30
11-03-16	3.0	3.3	3.2	25	8	11.1	11.7	11.0	50	30
12-03-16	2.0	3.3	3.2	25	8	9.4	11.7	11.0	50	30
13-03-16	5.0	3.3	3.2	25	8	11.5	11.7	11.0	50	30
14-03-16	4.0	3.3	3.2	25	8	12.8	11.7	11.0	50	30
15-03-16	2.0	3.3	3.2	25	8	8.0	11.7	11.0	50	30
16-03-16	1.0	3.3	3.2	25	8	7.8	11.7	11.0	50	30
17-03-16	0.0	3.3	3.2	25	8	5.9	11.7	11.0	50	30
18-03-16	1.0	3.3	3.2	25	8	6.9	11.7	11.0	50	30
19-03-16	1.0	3.3	3.2	25	8	8.5	11.7	11.0	50	30
20-03-16	1.0	3.3	3.2	25	8	9.5	11.7	11.0	50	30
21-03-16	0.0	3.3	3.2	25	8	5.3	11.7	11.0	50	30
22-03-16	0.0	3.3	3.2	25	8	4.8	11.7	11.0	50	30
23-03-16	3.0	3.3	3.2	25	8	9.4	11.7	11.0	50	30
24-03-16	7.0	3.3	3.2	25	8	15.6	11.7	11.0	50	30
25-03-16	6.0	3.3	3.2	25	8	18.4	11.7	11.0	50	30
26-03-16	6.0	3.3	3.2	25	8	14.9	11.7	11.0	50	30
27-03-16	8.0	3.3	3.2	25	8	17.5	11.7	11.0	50	30
28-03-16	5.0	3.3	3.2	25	8	14.2	11.7	11.0	50	30
29-03-16	7.0	3.3	3.2	25	8	16.3	11.7	11.0	50	30
30-03-16	3.0	3.3	3.2	25	8	16.1	11.7	11.0	50	30
31-03-16	5.0	3.3	3.2	25	8	14.4	11.7	11.0	50	30
01-04-16	7.0	5.3	3.2	25	8	19.3	15.0	11.0	50	30

Report Title: Mt Piper Ash Placement Project Lamberts North Annual Air Quality Monitoring Report 2015-2016

Objective ID: A895102

Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
02-04-16	4.0	5.3	3.2	25	8	21.0	15.0	11.0	50	30
03-04-16	15.0	5.3	3.2	25	8	31.1	15.0	11.0	50	30
04-04-16	16.0	5.3	3.2	25	8	29.5	15.0	11.0	50	30
05-04-16	13.0	5.3	3.2	25	8	25.7	15.0	11.0	50	30
06-04-16	4.0	5.3	3.2	25	8	22.0	15.0	11.0	50	30
07-04-16	5.0	5.3	3.2	25	8	20.7	15.0	11.0	50	30
08-04-16	3.0	5.3	3.2	25	8	10.1	15.0	11.0	50	30
09-04-16	6.0	5.3	3.2	25	8	14.4	15.0	11.0	50	30
10-04-16	4.0	5.3	3.2	25	8	14.8	15.0	11.0	50	30
11-04-16	5.0	5.3	3.2	25	8	17.0	15.0	11.0	50	30
12-04-16	9.0	5.3	3.2	25	8	18.7	15.0	11.0	50	30
13-04-16	4.0	5.3	3.2	25	8	12.3	15.0	11.0	50	30
14-04-16	2.0	5.3	3.2	25	8	8.8	15.0	11.0	50	30
15-04-16	3.0	5.3	3.2	25	8	11.1	15.0	11.0	50	30
16-04-16	12.0	5.3	3.2	25	8	24.3	15.0	11.0	50	30
17-04-16	10.0	5.3	3.2	25	8	18.5	15.0	11.0	50	30
18-04-16	4.0	5.3	3.2	25	8	10.4	15.0	11.0	50	30
19-04-16	1.0	5.3	3.2	25	8	5.2	15.0	11.0	50	30
20-04-16	3.0	5.3	3.2	25	8	8.3	15.0	11.0	50	30
21-04-16	7.0	5.3	3.2	25	8	15.5	15.0	11.0	50	30
22-04-16	5.0	5.3	3.2	25	8	15.2	15.0	11.0	50	30
23-04-16	1.0	5.3	3.2	25	8	6.7	15.0	11.0	50	30
24-04-16	2.0	5.3	3.2	25	8	10.4	15.0	11.0	50	30
25-04-16	1.0	5.3	3.2	25	8	7.9	15.0	11.0	50	30
26-04-16	3.0	5.3	3.2	25	8	8.0	15.0	11.0	50	30
27-04-16	1.0	5.3	3.2	25	8	6.8	15.0	11.0	50	30
28-04-16	2.0	5.3	3.2	25	8	10.7	15.0	11.0	50	30

Report Title: Mt Piper Ash Placement Project Lamberts North Annual Air Quality Monitoring Report 2015-2016

Objective ID: A895102

Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
29-04-16	5.0	5.3	3.2	25	8	17.0	15.0	11.0	50	30
30-04-16	2.0	5.3	3.2	25	8	8.3	15.0	11.0	50	30
01-05-16	0.0	3.4	3.2	25	8	5.4	10.1	11.0	50	30
02-05-16	0.0	3.4	3.2	25	8	6.9	10.1	11.0	50	30
03-05-16	2.0	3.4	3.2	25	8	9.5	10.1	11.0	50	30
04-05-16	2.0	3.4	3.2	25	8	11.0	10.1	11.0	50	30
05-05-16	2.0	3.4	3.2	25	8	10.1	10.1	11.0	50	30
06-05-16	5.0	3.4	3.2	25	8	14.0	10.1	11.0	50	30
07-05-16	19.0	3.4	3.2	25	8	29.8	10.1	11.0	50	30
08-05-16	<b>25.0</b>	3.4	3.2	25	8	34.4	10.1	11.0	50	30
09-05-16	-1.0	3.4	3.2	25	8	3.8	10.1	11.0	50	30
10-05-16	0.0	3.4	3.2	25	8	5.8	10.1	11.0	50	30
11-05-16	1.0	3.4	3.2	25	8	7.4	10.1	11.0	50	30
12-05-16	0.0	3.4	3.2	25	8	6.1	10.1	11.0	50	30
13-05-16	0.0	3.4	3.2	25	8	5.5	10.1	11.0	50	30
14-05-16	0.0	3.4	3.2	25	8	4.8	10.1	11.0	50	30
15-05-16	2.0	3.4	3.2	25	8	8.0	10.1	11.0	50	30
16-05-16	2.0	3.4	3.2	25	8	7.6	10.1	11.0	50	30
17-05-16	2.0	3.4	3.2	25	8	9.6	10.1	11.0	50	30
18-05-16	3.0	3.4	3.2	25	8	10.2	10.1	11.0	50	30
19-05-16	4.0	3.4	3.2	25	8	14.8	10.1	11.0	50	30
20-05-16	2.0	3.4	3.2	25	8	9.9	10.1	11.0	50	30
21-05-16	13.0	3.4	3.2	25	8	23.1	10.1	11.0	50	30
22-05-16	8.0	3.4	3.2	25	8	14.9	10.1	11.0	50	30
23-05-16	2.0	3.4	3.2	25	8	11.4	10.1	11.0	50	30
24-05-16	1.0	3.4	3.2	25	8	7.5	10.1	11.0	50	30
25-05-16	1.0	3.4	3.2	25	8	8.2	10.1	11.0	50	30

Report Title: Mt Piper Ash Placement Project Lamberts North Annual Air Quality Monitoring Report 2015-2016

Objective ID: A895102

Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
26-05-16	0.0	3.4	3.2	25	8	4.1	10.1	11.0	50	30
27-05-16	0.0	3.4	3.2	25	8	4.0	10.1	11.0	50	30
28-05-16	0.0	3.4	3.2	25	8	3.2	10.1	11.0	50	30
29-05-16	1.0	3.4	3.2	25	8	4.3	10.1	11.0	50	30
30-05-16	3.0	3.4	3.2	25	8	7.4	10.1	11.0	50	30
31-05-16	6.0	3.4	3.2	25	8	10.7	10.1	11.0	50	30
01-06-16	2.0	1.1	3.2	25	8	6.7	4.7	11.0	50	30
02-06-16	3.0	1.1	3.2	25	8	8.1	4.7	11.0	50	30
03-06-16	1.0	1.1	3.2	25	8	5.6	4.7	11.0	50	30
04-06-16	-1.0	1.1	3.2	25	8	2.4	4.7	11.0	50	30
05-06-16	-2.0	1.1	3.2	25	8	1.1	4.7	11.0	50	30
06-06-16	0.0	1.1	3.2	25	8	2.9	4.7	11.0	50	30
07-06-16	0.0	1.1	3.2	25	8	3.8	4.7	11.0	50	30
08-06-16	0.0	1.1	3.2	25	8	4.2	4.7	11.0	50	30
09-06-16	0.0	1.1	3.2	25	8	3.7	4.7	11.0	50	30
10-06-16	0.0	1.1	3.2	25	8	2.6	4.7	11.0	50	30
11-06-16	0.0	1.1	3.2	25	8	3.5	4.7	11.0	50	30
12-06-16	3.0	1.1	3.2	25	8	5.9	4.7	11.0	50	30
13-06-16	7.0	1.1	3.2	25	8	10.7	4.7	11.0	50	30
14-06-16	3.0	1.1	3.2	25	8	6.2	4.7	11.0	50	30
15-06-16	3.0	1.1	3.2	25	8	8.0	4.7	11.0	50	30
16-06-16	2.0	1.1	3.2	25	8	6.5	4.7	11.0	50	30
17-06-16	2.0	1.1	3.2	25	8	6.4	4.7	11.0	50	30
18-06-16	1.0	1.1	3.2	25	8	3.8	4.7	11.0	50	30
19-06-16	0.0	1.1	3.2	25	8	3.7	4.7	11.0	50	30
20-06-16	-2.0	1.1	3.2	25	8	-0.5	4.7	11.0	50	30
21-06-16	0.0	1.1	3.2	25	8	2.5	4.7	11.0	50	30

Report Title: Mt Piper Ash Placement Project Lamberts North Annual Air Quality Monitoring Report 2015-2016

Objective ID: A895102

Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
22-06-16	0.0	1.1	3.2	25	8	3.1	4.7	11.0	50	30
23-06-16	0.0	1.1	3.2	25	8	4.6	4.7	11.0	50	30
24-06-16	0.0	1.1	3.2	25	8	2.2	4.7	11.0	50	30
25-06-16	1.0	1.1	3.2	25	8	4.3	4.7	11.0	50	30
26-06-16	2.0	1.1	3.2	25	8	6.1	4.7	11.0	50	30
27-06-16	2.0	1.1	3.2	25	8	4.6	4.7	11.0	50	30
28-06-16	2.0	1.1	3.2	25	8	5.5	4.7	11.0	50	30
29-06-16	3.0	1.1	3.2	25	8	7.5	4.7	11.0	50	30
30-06-16	1.0	1.1	3.2	25	8	5.9	4.7	11.0	50	30
01-07-16	1.0	1.5	3.2	25	8	4.4	6.0	11.0	50	30
02-07-16	1.0	1.5	3.2	25	8	4.5	6.0	11.0	50	30
03-07-16	1.0	1.5	3.2	25	8	4.5	6.0	11.0	50	30
04-07-16	2.0	1.5	3.2	25	8	7.1	6.0	11.0	50	30
05-07-16	1.0	1.5	3.2	25	8	4.5	6.0	11.0	50	30
06-07-16	1.0	1.5	3.2	25	8	3.3	6.0	11.0	50	30
07-07-16	1.0	1.5	3.2	25	8	4.4	6.0	11.0	50	30
08-07-16	2.0	1.5	3.2	25	8	5.8	6.0	11.0	50	30
09-07-16	2.0	1.5	3.2	25	8	6.7	6.0	11.0	50	30
10-07-16	5.0	1.5	3.2	25	8	9.3	6.0	11.0	50	30
11-07-16	2.0	1.5	3.2	25	8	6.2	6.0	11.0	50	30
12-07-16	0.0	1.5	3.2	25	8	4.7	6.0	11.0	50	30
13-07-16	2.0	1.5	3.2	25	8	8.2	6.0	11.0	50	30
14-07-16	1.0	1.5	3.2	25	8	6.5	6.0	11.0	50	30
15-07-16	2.0	1.5	3.2	25	8	7.9	6.0	11.0	50	30
16-07-16	4.0	1.5	3.2	25	8	8.9	6.0	11.0	50	30
17-07-16	2.0	1.5	3.2	25	8	5.8	6.0	11.0	50	30
18-07-16	2.0	1.5	3.2	25	8	6.7	6.0	11.0	50	30

Report Title: Mt Piper Ash Placement Project Lamberts North Annual Air Quality Monitoring Report 2015-2016

Objective ID: A895102

Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
19-07-16	2.0	1.5	3.2	25	8	7.8	6.0	11.0	50	30
20-07-16	1.0	1.5	3.2	25	8	4.4	6.0	11.0	50	30
21-07-16	1.0	1.5	3.2	25	8	5.2	6.0	11.0	50	30
22-07-16	1.0	1.5	3.2	25	8	6.0	6.0	11.0	50	30
23-07-16	1.0	1.5	3.2	25	8	5.3	6.0	11.0	50	30
24-07-16	1.0	1.5	3.2	25	8	7.6	6.0	11.0	50	30
25-07-16	1.0	1.5	3.2	25	8	5.5	6.0	11.0	50	30
26-07-16	1.0	1.5	3.2	25	8	6.8	6.0	11.0	50	30
27-07-16	1.0	1.5	3.2	25	8	4.8	6.0	11.0	50	30
28-07-16	1.0	1.5	3.2	25	8	4.5	6.0	11.0	50	30
29-07-16	1.0	1.5	3.2	25	8	4.5	6.0	11.0	50	30
30-07-16	2.0	1.5	3.2	25	8	6.0	6.0	11.0	50	30
31-07-16	2.0	1.5	3.2	25	8	7.1	6.0	11.0	50	30
01-08-16	3.0	2.5	3.2	25	8	9.4	8.4	11.0	50	30
02-08-16	2.0	2.5	3.2	25	8	7.1	8.4	11.0	50	30
03-08-16	1.0	2.5	3.2	25	8	6.7	8.4	11.0	50	30
04-08-16	1.0	2.5	3.2	25	8	6.4	8.4	11.0	50	30
05-08-16	1.0	2.5	3.2	25	8	6.1	8.4	11.0	50	30
06-08-16	2.0	2.5	3.2	25	8	6.2	8.4	11.0	50	30
07-08-16	3.0	2.5	3.2	25	8	8.2	8.4	11.0	50	30
08-08-16	4.0	2.5	3.2	25	8	9.7	8.4	11.0	50	30
09-08-16	4.0	2.5	3.2	25	8	10.6	8.4	11.0	50	30
10-08-16	2.0	2.5	3.2	25	8	9.8	8.4	11.0	50	30
11-08-16	1.0	2.5	3.2	25	8	6.7	8.4	11.0	50	30
12-08-16	2.0	2.5	3.2	25	8	9.1	8.4	11.0	50	30
13-08-16	2.0	2.5	3.2	25	8	8.3	8.4	11.0	50	30
14-08-16	2.0	2.5	3.2	25	8	8.2	8.4	11.0	50	30

Report Title: Mt Piper Ash Placement Project Lamberts North Annual Air Quality Monitoring Report 2015-2016

Objective ID: A895102



Date	Blackmans AQMS; Average PM <sub>2.5</sub> (ug/m3)					Blackmans AQMS; Average PM <sub>10</sub> (ug/m3)				
	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.	Daily	Monthly	Annual	Max. daily conc.	Max. yearly conc.
15-08-16	4.0	2.5	3.2	25	8	9.9	8.4	11.0	50	30
16-08-16	4.0	2.5	3.2	25	8	11.2	8.4	11.0	50	30
17-08-16	4.0	2.5	3.2	25	8	13.0	8.4	11.0	50	30
18-08-16	4.0	2.5	3.2	25	8	13.2	8.4	11.0	50	30
19-08-16	3.0	2.5	3.2	25	8	12.5	8.4	11.0	50	30
20-08-16	0.0	2.5	3.2	25	8	4.4	8.4	11.0	50	30
21-08-16	2.0	2.5	3.2	25	8	7.6	8.4	11.0	50	30
22-08-16	2.0	2.5	3.2	25	8	6.8	8.4	11.0	50	30
23-08-16	2.0	2.5	3.2	25	8	5.5	8.4	11.0	50	30
24-08-16	0.0	2.5	3.2	25	8	3.3	8.4	11.0	50	30
25-08-16	2.0	2.5	3.2	25	8	5.3	8.4	11.0	50	30
26-08-16	3.0	2.5	3.2	25	8	6.7	8.4	11.0	50	30
27-08-16	2.0	2.5	3.2	25	8	7.4	8.4	11.0	50	30
28-08-16	2.0	2.5	3.2	25	8	7.6	8.4	11.0	50	30
29-08-16	3.0	2.5	3.2	25	8	9.0	8.4	11.0	50	30
30-08-16	7.0	2.5	3.2	25	8	15.7	8.4	11.0	50	30
31-08-16	3.0	2.5	3.2	25	8	8.7	8.4	11.0	50	30

## Appendix C

Monthly wind rose graphs at Mt Piper Weather Station from September 2015 to August 2016

