Department of Energy, Environment and Climate Action

WOODVALE DUST MONITORING REPORT Q4 2023

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	Position	Name	Initials	Date
Prepared by:	Northern Victorian Regional Manager	Rohan Oliver	RO	07/02/2024
Technical Review by:	Victorian Data Manager	Karen Bootland	KB	27/03/2024
Client:	Department of Energy, Environment and Climate Action (DEECA)	Nick Touhey	DEECA	27/03/2024

For further information on this report, contact:

Name: Rohan Oliver
Title: Northern Victorian Regional Manager
Address: 94 Koondrook Rd, Kerang VIC 3579
E-mail: Rohan.Oliver@alsglobal.com

This report is prepared for the Client, Department of Energy, Environment and Climate Action for the purpose of monitoring dust at the former Bendigo Mine Woodvale site which is currently in care and maintenance. An unrestricted copy of this report will be shared with the public via the Earth Resources Regulation website.

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Executive Summary

ALS was engaged by the Department of Energy, Environment and Climate Action (DEECA), Earth Resources Regulator (ERR) to undertake dust monitoring at the Woodvale Evaporation Ponds from the start of January 2021. This report provides results and analysis of data collected from sampling in Q4 October - December 2023.

Department of Energy, Environment and Climate Action (DEECA)inherited the responsibility for care and maintenance and rehabilitation of the former Bendigo Gold Mine sites, when owner Kralcopic Pty Ltd went into liquidation. Prior to inheriting this responsibility, DEECA engaged ALS to undertake depositional dust monitoring at the former Bendigo Mine sites, i.e. Kangaroo Flat and Woodvale, to proactively address ongoing community concerns relating to dust, and in particular the arsenic content of the dust.

This report analyses the data gathered in Q4 2023 for the Woodvale site by comparing the levels to accepted standards (where available) and previous dust monitoring results. The results of dust monitoring in the first half of 2021 were published in a report by CDM Smith. Since Q3 2021, ALS has completed the collection of samples/monitoring, analysis of lab results (Springvale ALS Laboratory - NATA accredited) and drafted the dust monitoring reports.

The Woodvale Evaporation Ponds are located 13 km north of Bendigo. The ponds were formerly used to hold groundwater extracted from dewatering historic underground mine workings at Kangaroo Flat. The site is currently in care and maintenance. DEECA is continuing to monitor the site by regular site visits, observing weather conditions, and proactively applying a range of dust control measures. These measures include covering ponds with water, vegetation cover, mulch application and keeping a water/polymer spray truck on standby, should the need arise to use such control measures. ALS field staff observed that all monitoring sites where in good working order with no obvious variations to sites that would reflect abnormalities in results.

The original scope of dust monitoring works at Woodvale was to operate and maintain six depositional dust gauges and two directional dust deposition gauges. ALS has added a further three monitoring sites to the dust monitoring program at Woodvale, i.e. one control site to obtain background data, and two directional dust deposition gauges at the east and west of the Woodvale site, to provide more complete data from directional dust monitoring. These newly added sites have been in operation since 1 October 2021.

The purpose of dust monitoring is to assure that dust issues are being minimised and managed effectively and to gather baseline data and report exceedances when the site is in care and maintenance, including testing the effectiveness of dust control measures. These results will inform decision making on rehabilitation requirements and measures required to ensure works meet air quality standards (where available).

The results for Q4 2023 recorded consistent results to historical records recorded in 2022 and were comparative to previous reports supplied (Kralcopic Report in 2018), CDM Smith Report for the first half of 2021 and all ALS Reports.

As done previously in historic reports, the following questions are answered for Q4 2023:

- *Did the dust deposition rates recorded in Q4 2023, exceed the adopted dust deposition criteria of 4g/m²/month, measured as Total Insoluble Matter (TIM)?*

  In Q4 2023, there were three exceedances where the dust levels were over the 4 g/m²/month criteria used in this report as follows:

  - WVDD01 (S) during October 2023 (5.4 g/m²/month)
  - WVDD01 (S) during December 2023 (5.3 g/m²/month)
  - WVDD07(**BG**), during December 2023 (7.1 g/m²/month)

There were no observed changes during October and December at site WVDD01 noted by ALS field hydrographers. However, it should be noted that the one exceedance at the background site WVDD07 (BG) during December cannot be attributed to the Woodvale Evaporation Ponds as the purpose of the background site is to provide reference to local environmental conditions. When the data from all source monitoring sites except WVDD07 (BG) (the background reference location) were averaged for Q4 2023, an average of 1.28g/m²/month was recorded. This value is below the 4 g/m²/month criteria and the inferred background plus 2 g/m²/month criteria in the Mining PEM.

The surrounding land use to the north, south and west is predominantly agricultural farmland with reserved parklands to the east of the Woodvale site. ERR conduct daily site inspections to ensure dust control measures (water cover, dampness, foliage) are adequate.

- *Are dust deposition rates recorded in Q4 2023 comparable to available historic results in this area*?

  Overall, results for Q4 were very slightly higher than the previous quarter with three results including one at WVDD07(BG) during Q4 in December recording above the 4.0 g/m²/month.

  Results for Q4 2023 has 2 instances that were outside guidelines set in the PEM excluding the December result for WVDD07(BG) (December). The results averaged were slightly higher than that of Q3 of 2023 and can be seen in Figure 5 - Woodvale - Total Insoluble Matter (TIM) g/m²/month – Q4 2023**Error! Reference source not found.**

- *Are arsenic concentrations recorded in deposited dust in Q4 2023, comparable to available historic results in this area?*

Yes, they are comparable. Arsenic results were consistent throughout the quarter with the two highest values being recorded at WVDD03 (N) (12.7 mg/kg) in October and WVDD04 (E) (16.1 mg/kg) in December, with a mean of 7.3 mg/kg for Q4 2023. This can be reviewed in section 10.1 of this report.

This criteria outlined for exposure to soil is still well below the 100 mg/kg assessment level as referenced in the EPA Publication 1191 – Protocol for Environmental Management – Mining and Extractive Industries (Mining PEM).

1. Introduction

ALS was engaged by the Earth Resource Regulator in the Department of Jobs, Precincts and Regions (DJPR) to undertake dust monitoring at the Woodvale Evaporation Ponds Complex from the start of January 2021. On 1 January 2023 ERR joined a new Government department, the Department of Energy, Environment and Climate Action (DEECA). The ongoing engagement of ALS is now with DEECA Earth Resources Regulator (DEECA(ERR)). This report provides results and analysis of data collected from sampling in Q4 2023. ALS undertook the field component of maintaining dust gauges and replacing sample containers, as well as laboratory analysis of samples collected. Samples were collected from locations specified by DJPR on a routine monthly basis. These locations are displayed in Section 3.1 of this report.

2. Background

In April 2021, ERR inherited the responsibility for care and maintenance and rehabilitation of the former Bendigo Gold Mine sites, as its owner Kralcopic Pty Ltd went into liquidation. Prior to inheriting this responsibility, ERR engaged ALS to undertake depositional dust monitoring at the former Bendigo Mine sites, i.e. Kangaroo Flat and Woodvale, to proactively address ongoing community concerns relating to dust, and in particular the arsenic content of the dust. This report analyses the data gathered in Q4 2023 for the Woodvale site by comparing the levels to accepted standards (where available) and previous dust monitoring results published in:

- ALS Report for Q3 2021 - Present
- CDM Smith Report for the first half of 2021
- Kralcopic Report for Q4 2018.

All reports are referenced in this document. To maintain continuity and comparability of results, this document has been prepared in a similar format to the CDM Smith Report.

The Woodvale Evaporation Ponds are located 13 km north of Bendigo. The ponds were formerly used to hold groundwater extracted from dewatering historic underground mines including Kangaroo Flat and New Moon mines. The site is currently in care and maintenance while DEECA develop the rehabilitation plan for the site. DEECA is continuing to monitor the site by regular site visits, observing weather conditions, and proactively applying a range of dust control measures.

Dust suppression measures include water and vegetation coverage. During Nov/December ponds 1B, 2 & 3 were dried to allow for soil sampling as part of a Detailed Site Investigation (DSI). Other than this exception the ponds always remain wet or covered with water. This is the most effective control measure currently used.

To maintain continuity and comparability of data, monitoring was undertaken at the same locations as previously, and similar methodology and analysis used. This report builds on the previous results and provides baseline information to potentially inform decisions around some aspects of site rehabilitation.

2.1 Scope and Objective

The scope of dust monitoring works at Woodvale is to operate and maintain seven depositional dust gauges and four directional dust deposition gauges including gathering samples and sending off to the laboratory for analysis, analysing the data from the laboratory and producing quarterly dust monitoring reports consolidating results and comparing to historic and guideline levels.

All depositional dust gauges except for the background gauge (WVDD07 (BG)) are located at their historic locations with the following naming conventions since the dates specified below:

- WVDD01 (S) Jan 2021
- WVDD02 (N) Jan 2021
- WVDD03 (N) Jan 2021
- WVDD04 (E) Jan 2021
- WVDD05 (S) Jan 2021
- WVDD06 (W) Jan 2021
- WVDD07 (BG) Sep 2021
- WVDD08 (W) Mar 2023

The location of the six depositional dust gauges at the Woodvale site can be seen in Figure 1. The location of the background depositional dust gauge is in Figure 2 which serves as a control site. A new depositional dust gauge WVDD08, was installed during March which saw the decommissioning of gauge WVDD06.

Similarly, four directional dust deposition gauges were installed since the dates specified below at the following locations:

- WVDG03 (N) Jan 2021
- WVDG04 (E) Oct 2021
- WVDG05 (S) Jan 2021
- WVDG06 (W) Oct 2021

These directional gauges are located next to the depositional dust gauges: WVDD03 (N), WVDD04 (E), WVDD05 (S) and WVDD006 (W).

Laboratory analysis requirements were provided by DEECA and were in line with historical requirements during the previous monitoring program undertaken by Kralcopic to meet its legislative requirements. This alignment maintains continuity and comparability of results.

The purpose of dust monitoring is to assure that dust issues are being minimised and managed effectively and to gather baseline data when the site is in care and maintenance, including testing the effectiveness of dust control measures. These results will potentially inform decisions around some aspects of site rehabilitation and any measures required to ensure works meet air quality standards (where available).

As done previously, the following considerations were included in assessment of Q4 2023 data:

- *Did the dust deposition rates recorded in Q4 2023, exceed the adopted dust deposition criteria of 4g/m^2/month, measured as Total Insoluble Matter (TIM)?*
- *Are dust deposition rates recorded in Q4 2023, comparable to available historic results in this area?*
- *Are arsenic concentrations recorded in deposited dust in Q4 2023, comparable to available historic results in this area?*

2.2 Regulatory Environment

The Environment Protection Authority (EPA) has overarching responsibility for administering legislation related to the air quality across Victoria. The EPA administers the *Environment Protection Act 2017* and the *Environment Protection Regulations 2021* under which Environmental Reference Standards (ERS) and related Guidelines are provided.

The purpose of ERS is to support the protection of human health and the environment from harms posed by pollution and waste. The ERS does this by providing benchmarks to assess and report on environmental conditions in the whole or any part of Victoria.
Lab results collected and analysed by ALS may give some indication to nuisance dust and potential amenity. Observations collected in the field that include visible site changes are noted and reported quarterly. Any exceedance recorded is checked by ALS against weather station data and reviewed against site locations that may contributing factors resulting in the exceedance.

The ERS seeks to achieve this purpose by:

(a) identifying environmental values to be achieved or maintained in the whole or any part of Victoria; and
(b) specifying indicators and objectives to be used to measure, determine or assess whether those environmental values are being achieved, maintained or threatened.

The ERS provides guidance, objectives and levels on values where the environment may be impacted and incorporates the Ambient Air Quality National Environment Protection Measure (NEPM AAQ).

The main guidance document used for the purpose of this report is EPA Publication 1191 – Protocol for Environmental Management – Mining and Extractive Industries (Mining PEM). The criteria in the Mining PEM used for this report has been carried over to the EPA's latest Guideline for Assessing and Minimising Air Pollution in Victoria, Publication 1961, February 2022. As stated in PEM, Results of monitoring should not exceed 4g/m^2/month (no more than 2g/m^2/month above background) as a monthly average.

Under the new EPA legislation, duty holders have responsibility under the general environmental duty to apply controls to eliminate or minimise risks to human health and the environment as far as reasonably practicable. This means that the primary focus is on applying effective elimination, minimisation and control measures. Monitoring is for the purpose of determining the effectiveness of control measures.

2.3 What is Dust

Dust is typically not classified due to its composition but based on its particle size, as follows:

- Deposited matter - any particles that fall out of suspension in the atmosphere.
- Total Suspended Particles (TSP) - particles suspended or entrained in the air. Typically, this is particles of 30 µm (0.03 mm) equivalent aerodynamic diameter or less. Larger particles tend not to become suspended.
- PM_{10} - particles 10 µm equivalent aerodynamic diameter or less.
- $PM_{2.5}$ - particles 2.5 µm equivalent aerodynamic diameter or less.

Dust particle size is an important consideration influencing dispersion and transport in the atmosphere and potential effects on human health. Human activities (e.g. energy use, transport, industrial activities etc) can affect the air quality, in particular airborne dust.

Potential sources of dust are:

- natural sources such as dust storms, agricultural dust, bushfires, vegetation, pollen and fungi; and
- anthropogenic sources such as mines sites, industry, roads and vehicles, construction sites, domestic and diffuse sources (CDM Smith, 2021).

3. Measurement of Dust

3.1 Site Locations

Locations of depositional dust gauges are as presented in Figure 1 and Figure 2. Directional depositional dust gauges WVDG03 (N), WVDG04 (E), WVDG05 (S) and WVDG06 (W) have been installed next to the respective depositional gauges as mentioned above.

Figure 1 - Monitoring Locations at Woodvale Ponds Yellow pins = active sites, Red pin = decommissioned site

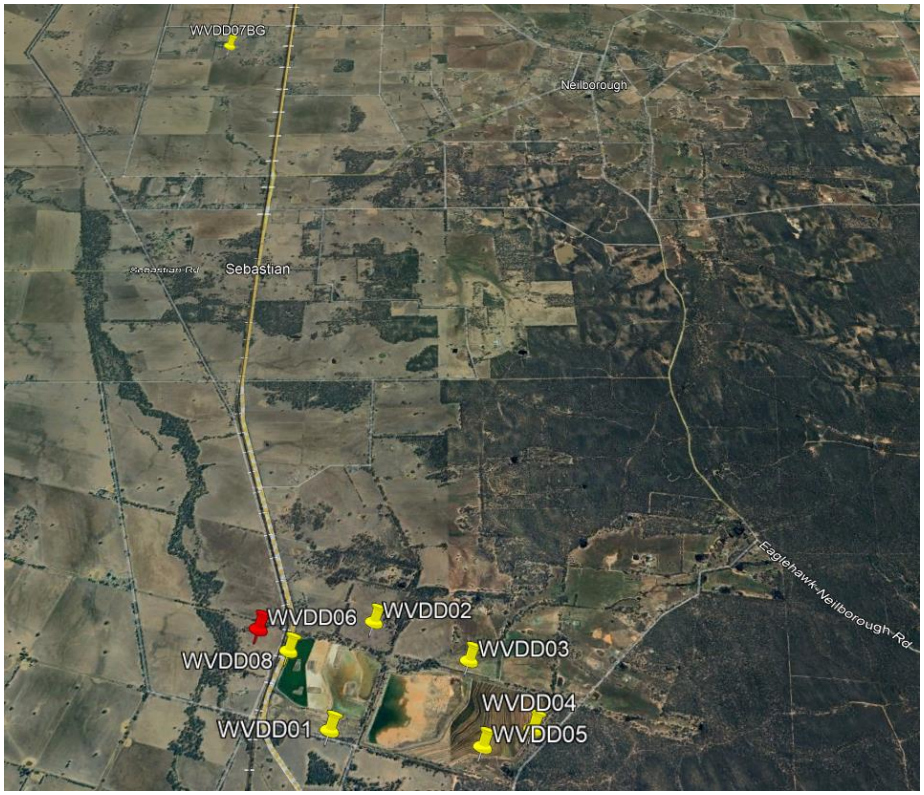

Figure 2 - Control Site Location WVDD07 (BG)

Samples were collected in accordance with the Standard AS/NZS 3580.10.1 - Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method and ALS Dust Sampling and Depositional Dust Gauge Work Procedure MAT-MAP1000 (See Appendix A).

ALS Laboratory in Springvale analysed the samples for the following:

- Total deposited matter
- Total ash content
- Metals/metalloids, in the soluble, insoluble and ash content fraction of dust.

3.2 Deposited Matter

The Standard (AS/NZS 3580.10.1:2016) sets out a method (used in this report) for sampling particulate matter that is deposited from the atmosphere. This Standard also sets out procedures for the gravimetric (i.e. by weighing) determination of the mass deposition rate of insoluble/soluble solids, ash/combustible matter, and total solids from ambient air.

The method provides an estimate of the mean surface concentration of deposited matter settling from the air over a sampling period, typically of one month. Particulate matter deposition rates of 0.1 g/m^2/month and above may be determined using a monthly sampling period. The sample obtained by the sampling procedure specified may be subjected to physical or chemical analysis.

Over a given sampling period, particles that settle from the ambient air are collected in a vessel (see sampling bottle in Figure 3 below) and retained together with any rainwater. The sample is passed through a sieve to remove any extraneous matter (e.g. leaves, insects), and the sieved sample containing the deposited matter is transferred to a filtration apparatus. The insoluble and soluble materials are separated by filtration, and the mass of the dried insoluble solids is gravimetrically determined.

The ash and combustible matter content are determined by loss on ignition of the insoluble solids. Soluble solids are determined from the filtrate. The total solids are obtained by the addition of the insoluble solids and the soluble solids. The mass deposition rate of deposited matter is then calculated from the mass of solids obtained, the funnel cross-sectional area and the exposure period. (AS/NZS 3580.10:2016)

New depositional gauges were installed as part of a renewals program for Woodvale. Gauges were replaced at all locations to meet standards for dust collection.

Figure 3 - Dust Deposition Gauge WVDD01

3.3 Directional Deposited Dust Monitoring

The Standard (AS/NZS 3580.10.2:2013) states that over a given period, particles which impinge on the vertical, internal surface of four collecting cylinders of the directional dust gauge are sampled in collecting pots at the bases of the cylinders. Refer to Figure 4.

The samples are passed through a sieve to remove any extraneous matter (e.g. leaves, insects), with the sieved sample containing the impinged matter subsequently transferred to a filtration apparatus. The insoluble and soluble materials are separated by filtration, and the mass of dried insoluble solids determined gravimetrically. Soluble solids are determined by evaporation of the filtrate and gravimetric analysis.

The ash and combustible matter content are determined by loss on combustion of the insoluble solids. Total solids are obtained by the addition of the insoluble solids and the soluble solids. The mass flux rate of impinged matter for each collecting cylinder is calculated from the mass of solids obtained, the slot cross-sectional area and the exposure period.

A directional dust gauge consists of four vertical collecting cylinders, each with a slot of dimensions 45 mm by 340 mm, commencing approximately 10 mm from the top of the cylinder. The edges of each slot shall be at right angles to the width of the slot and not radial (see Figure 4). The cylinders shall be mounted at 90° to each other with the slots facing outwards. An easily detachable collecting pot shall be fitted to the bottom of each collecting cylinder. The combined length of a collecting cylinder and its attached collecting pot shall be at least 640 mm, with the collecting pot having a capacity of approx. 1 L.

The collecting cylinders and pots shall be constructed of chemically resistant material such as polyvinyl chloride. The external diameter of the collecting cylinders shall be 75 mm. The collecting cylinders shall be located with their axes at the corners of a 150 mm square mounting plate. (AS/NZS 3580.10.2:2013)

Figure 4 - Directional Dust Deposition Gauge WVDG08

3.4 Metals/Metalloids Monitoring in Dust

The inclusion of the analysis of metals/metalloids in the dust samples assist in identify possible sources of contamination if present.

Analysis for insoluble matter, soluble matter and ash content was undertaken for the following:

- Arsenic
- Barium
- Manganese

It is understood that there are no specific threshold values for metals and metalloids in deposited dust either in the former Mining Licence or within the ERS. (CDM Smith, 2021). ALS' current sampling and monitoring is in accordance to the scope of works and guideline.

3.5 Ash Content

Ash Content is the remaining material after the sample has been combusted in the laboratory. Ash content provides an indication of the mineral content (or soil dust) of the sample. The mineral content may be attributable to on site contributions, but may also be attributable to other sources such as agriculture, unsealed roads, etc.

3.6 Dust Monitoring Standards

Results were compared against relevant dust deposition rate criteria described by EPA Publication 1191 (2007) as shown below which has been adopted in EPA Publication 1961 (2022):

Averaging period	Maximum increase above background (2g/m^2/month) in deposited dust level	Maximum total deposited dust level
Annual	2g/m^2/month	4g/m^2/month

The following points apply to the criteria:

- Results of monitoring should not exceed 4 g/m^2/month (no more than 2 g/m^2/month above background) as a monthly average.
- The 2 g/m^2/month criteria are used when baseline data on deposited dust levels exist, while the 4 g/m^2/month criteria is used when no baseline data exists.
- If dust levels exceed this value, then site management practices should be reviewed, and dust controls implemented to reduce dust levels to within these guidelines.
- The criteria refer to all sources of deposited matter (including sources from mines, agriculture, unsealed roads, etc) and cumulative impacts.
- The criteria states that in some cases, a mine may increase deposited dust levels by up to 2 g/m^2/month. However, the total deposited dust level (including sources from mines, agriculture, unsealed roads, etc) must not exceed 4 g/m^2/month.

Deposited matter (dust) can be used as an indicator of the effectiveness of site management practices and the potential for offsite nuisance (fugitive dust). Deposited dust monitoring, when conducted over a set time period, is useful for examining trends and evaluating deviation from long term trends with respect to site activities.

3.7 Dust Monitoring Program

The current method of undertaking depositional dust monitoring is considered sufficient as the site is in care and maintenance i.e. no new pollution is being introduced to the site from industry. There is a considerable body of knowledge about the contamination level at the site, so all that is required at this stage is to determine whether this contamination is becoming air borne and becoming a health hazard or problem to the nearby landholders. Depositional dust monitoring provides a range of useful information to be able to understand what's happening at this site and its surrounds.

Depositional dust monitoring can provide the following invaluable information:

- test the effectiveness of dust minimisation, control and management measures
- identify key problematic sources, or groups of sources on larger more complex sites
- identify where dust sensitivities may occur
- characterise temporal or spatial trends
- metallic/metalloid concentrations are useful for health effect considerations.

4. Dust Deposition Results

4.1 Woodvale Evaporation Ponds – Q4 2023

Dust deposition analysis results are presented in Table 1 - Woodvale Dust Deposition Analysis Results and the accompanying Laboratory Certificates of Analysis are presented in Appendix B - Laboratory Reports.

Where results were reported as "less than" (<) a specified number (laboratory reporting limit) the number reported was adopted for use in the graphical displays. This approach adopts a conservative value for the number being reported.

4.1.1 Deposition of Total Insoluble Matter

Total Insoluble Matter (TIM) met the recommended criteria of less than 4 g/m²/month on 18 of 21 samples during Q4 2023. See Figure 5 below.

Dust deposition rate exceeded the assessment criteria at the sites below:

- WVDD01 (S), during October 2023 (5.4 g/m²/month)
- WVDD01 (S), during October 2023 (5.3 g/m²/month)
- WVDD07(**BG**), during December 2023 (7.1 g/m²/month)

When the data from all source monitoring sites except WVDD07 (BG) (the background reference location) were averaged for Q4 2023, an average of 1.28 g/m²/month was recorded. This value is below the 4 g/m²/month criteria and the inferred background plus 2 g/m²/month criteria in the Mining PEM.

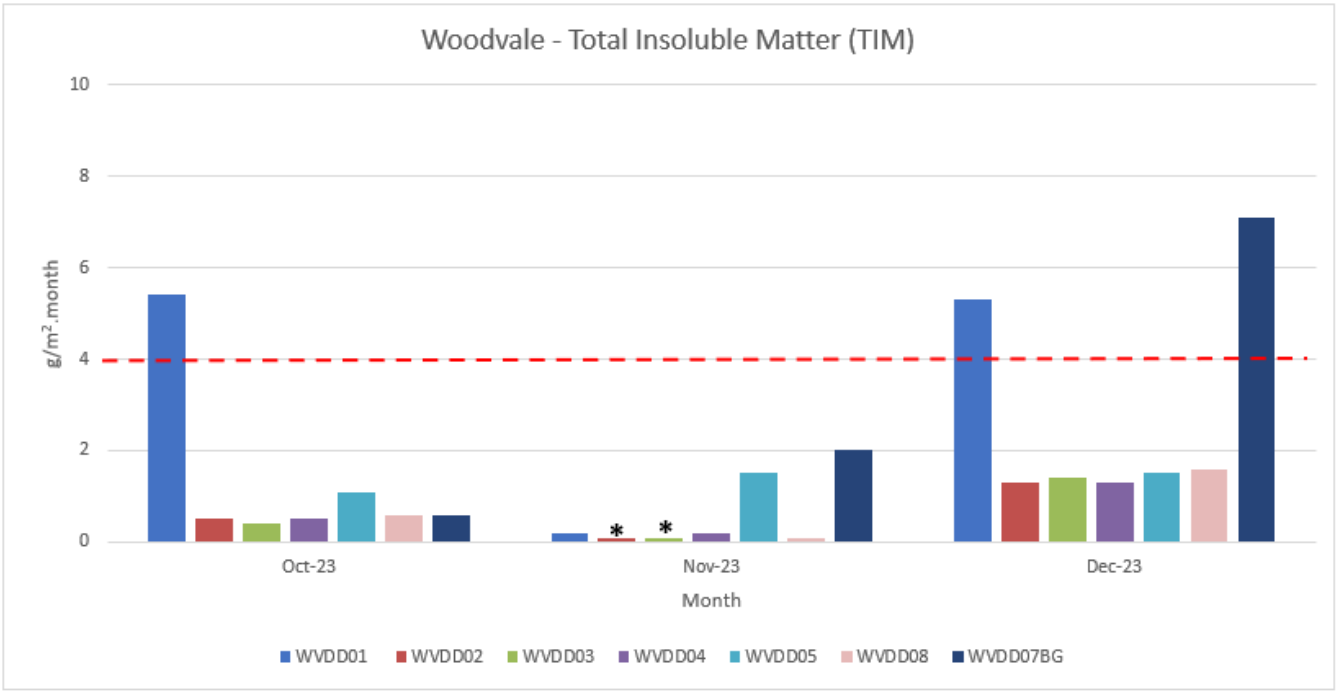

Figure 5 - Woodvale - Total Insoluble Matter (TIM) g/m²/month – Q4 2023
Red dotted line is the criteria used for the purpose of this report.

TIM results for October and December 2023 show the prevailing wind direction was predominantly from the south which is unlikely to result in the exceedance recorded at WVDD01 during October and December. Onsite control measures include regular water coverage in the ponds which is the most utilised form of dust control at the site. The ponds started to receive water again in mid Dec after the DSI work.

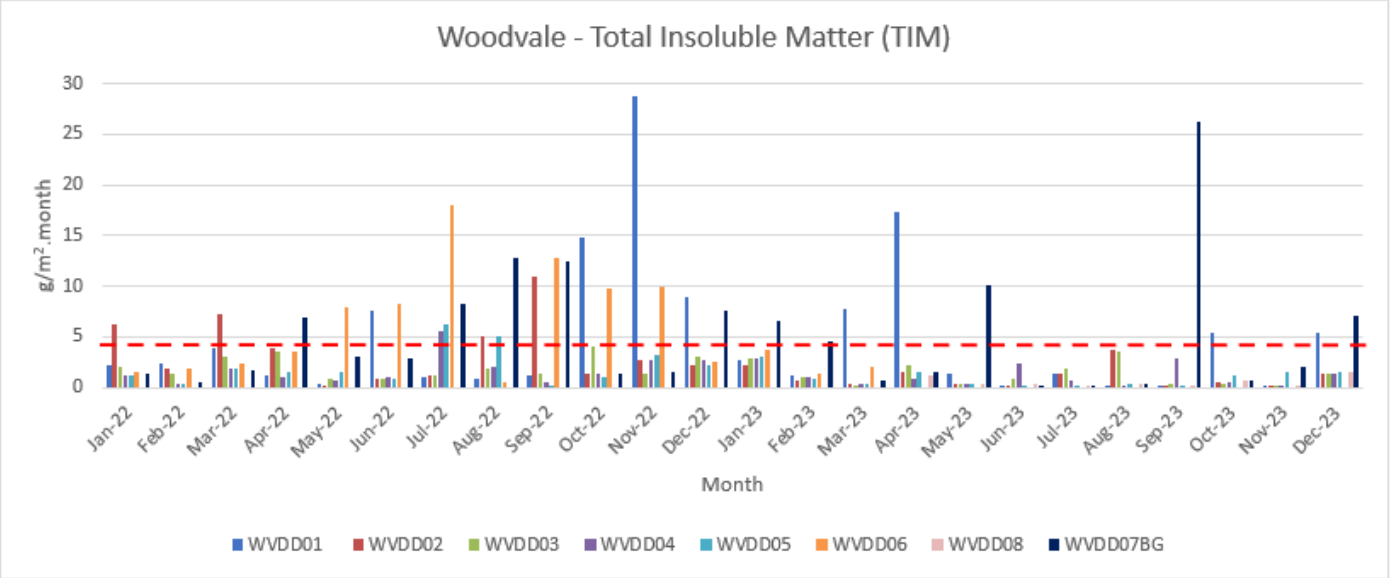

Figure 6 - Woodvale - Total Insoluble Matter (TIM) - 2022-2023

Figure 6 shows TIM for all months in 2022 and 2023. The review of Q4 2023 data shows one higher reading during September at WVDD07BG. High results during December were also recorded at WVDD01 although all other monitoring locations remained under the 4.0g/m²/month. The overall average from all monitoring locations was lower being 1.28g/m²/month for Q4 2023 (excluding the background control site), compared to 0.97 g/m²/month for Quarter 3, 2023.

4.1.2 Mineral Content in Dust

The fraction of dust measured as ash content is displayed below in Figure 7. As expected, the increased levels in TIM (Figure 5) generally corresponds with total ash content in Figure 7.

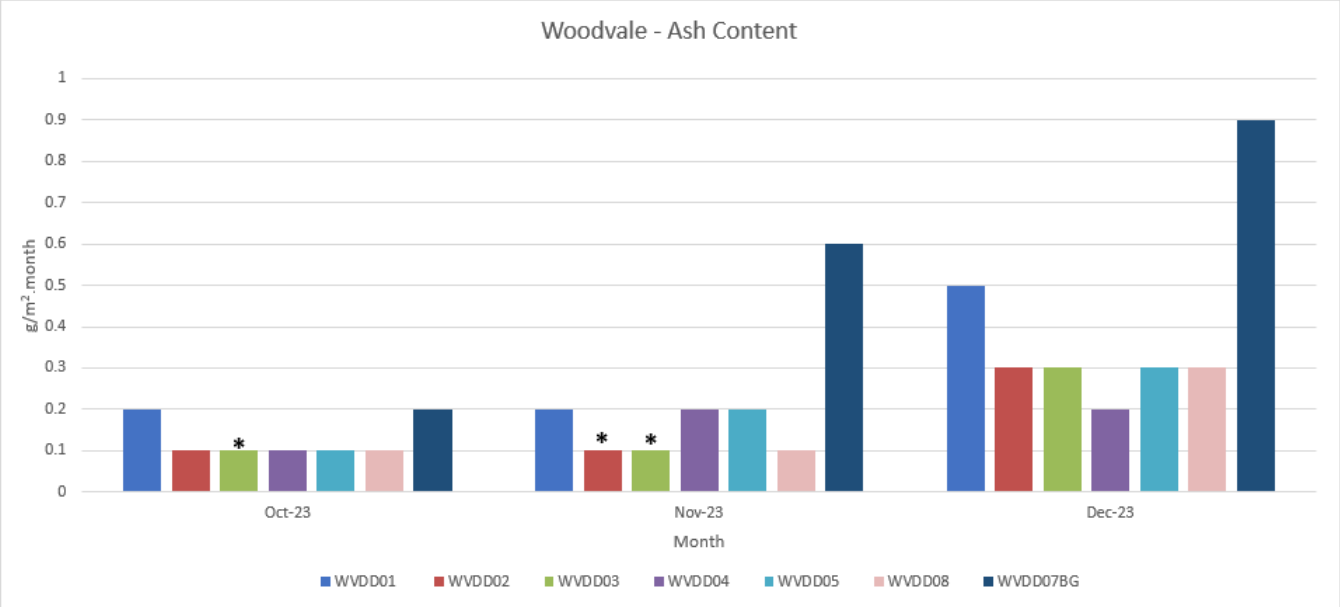

Figure 7 - Woodvale - Total Ash Content g/m2/month – Q4 2023

To gain a general understanding of what proportion of the sample is ash content i.e., mineral dust, the ratio of total ash content and TIM has been plotted in Figure 8.

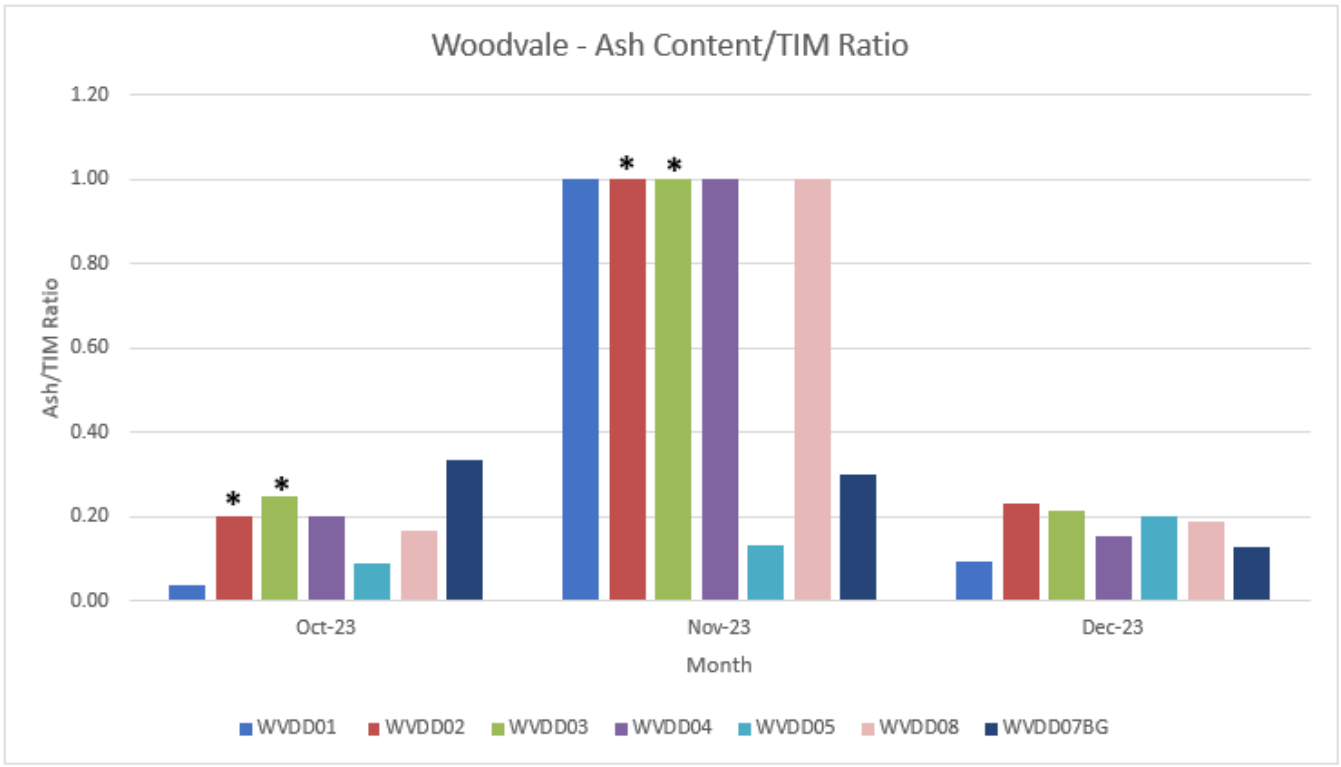

Figure 8 - Woodvale - Ash Content/TIM Ratio – Q4 2023

4.1.3 Metals/Metalloids in Dust

Graphical presentations of soluble and insoluble metals (arsenic, barium and manganese) are provided in Section 9 of this report. Arsenic, Barium and Manganese concentrations for Q4 2023 were consistent with historical ranges and results were comparable to results reported in the CDM Smith Report for the first half of 2021 and in the ALS Reports for Q3 2021 to present.

To provide an understanding of total arsenic concentrations measured in dust relative to concentrations measured in soils within the region, total arsenic concentration has been displayed below Figure 9 in mg/kg. This is calculated by adding soluble and insoluble arsenic µg/m^2/month dividing by the total solids g/m^2/month.

This ratio has been plotted as this provides a value which could be compared to the figures quoted in the guideline, Contaminated Sites Management Series - Assessment Levels for Soil, Sediment and Water. The assessment level for soil for arsenic is 100 mg/kg for standard residential areas in this guideline.

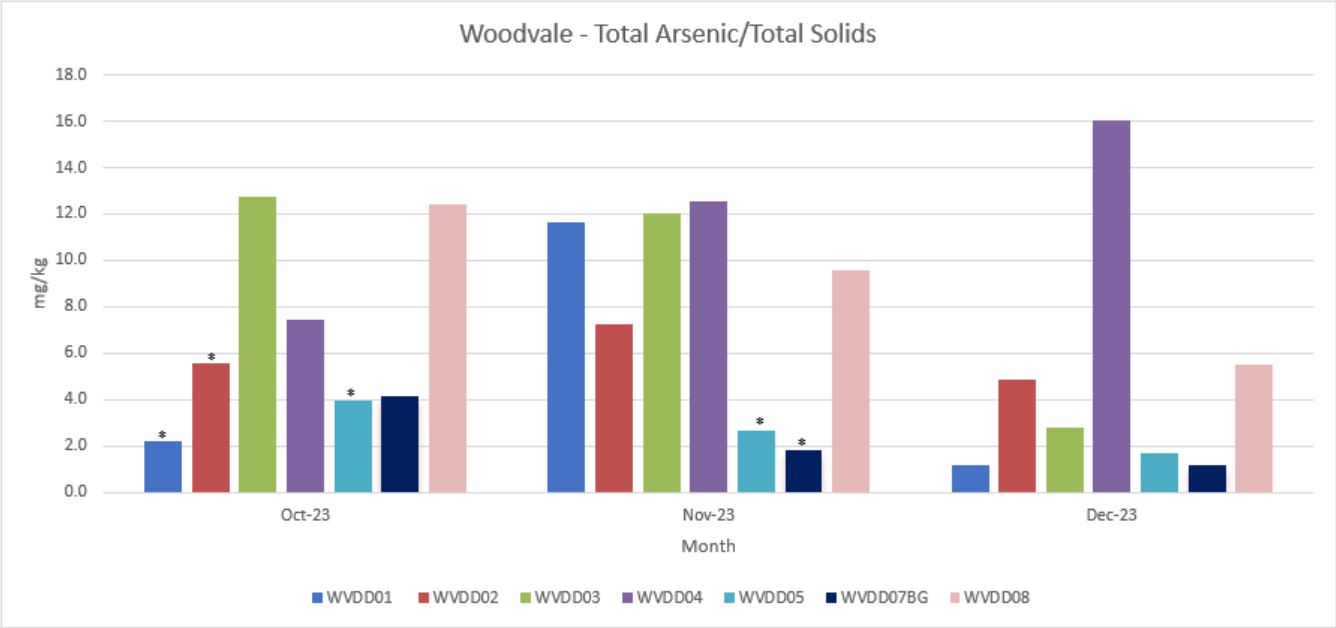

Figure 9 - Woodvale - Total Arsenic/Total Solids mg/kg – Q4 2023
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

Total arsenic concentrations for Q4 ranged from 1.2 to 16.1 mg/kg with a mean of 7.3 mg/kg for Q4 2023 not including the background site.

Highest concentrations were recorded in December 2023, 16.1 mg/kg at WVDD04 (E). Results for Q4 were consistent across all sites with no outliers. This can be seen in Figure 9 graph above. All values recorded well below the 100 mg/kg assessment level mentioned above.

4.1.4 Woodvale Directional Dust Deposition

Results for directional dust deposition gauges are summarised in Table 2 - Woodvale Directional Dust Deposition Analysis Results, with Laboratory Analytical Results attached in Appendix B. As mentioned previously, for the purpose of continuity, the same approach for review of dust from the directional dust deposition gauges as in the CDM Smith Report has been applied here for Q4 2023 results.

The results from the northerly and southerly facing quadrants at the two directional dust deposition gauges WVDG03 (N) and WVDG05 (S) have been compared in Figure 10. Figure 10 shows the net gain or loss in dust deposition downwind of the site compared to upwind of the site, for both north and south facing quadrants in the two directional dust deposition gauges being considered here. The figures can be seen in Table 2 - Woodvale Directional Dust Deposition Analysis Results Q4, 2023.

To undertake this analysis, the Northern quadrant dust gauge at WVDG03 is assumed to measure dust coming onto the site in Northerly winds. This is then compared to the Northern quadrant dust gauge at WVDG05. The variance is then used to indicate dust contributions to the air from the site. A positive variance indicates an increase in dust to the atmosphere from the ponds. A negative variance indicates the ponds have removed more dust from the air than they contribute. This theoretical analysis is repeated for the site from each axis for directional dust gauge locations.

From the graph below (**Error! Reference source not found.**10) it can be seen that there is both net gain and loss in dust observed through the Q4 2023 monitoring period.

Small gains as seen on the south facing gauges can be expected and may be influenced by the Woodvale site and environmental conditions. Note that there is agricultural farmland to the north, south and west of the Woodvale site and reserved parklands to the east of the Woodvale site, which can all contribute to the dust levels at these sampling locations.

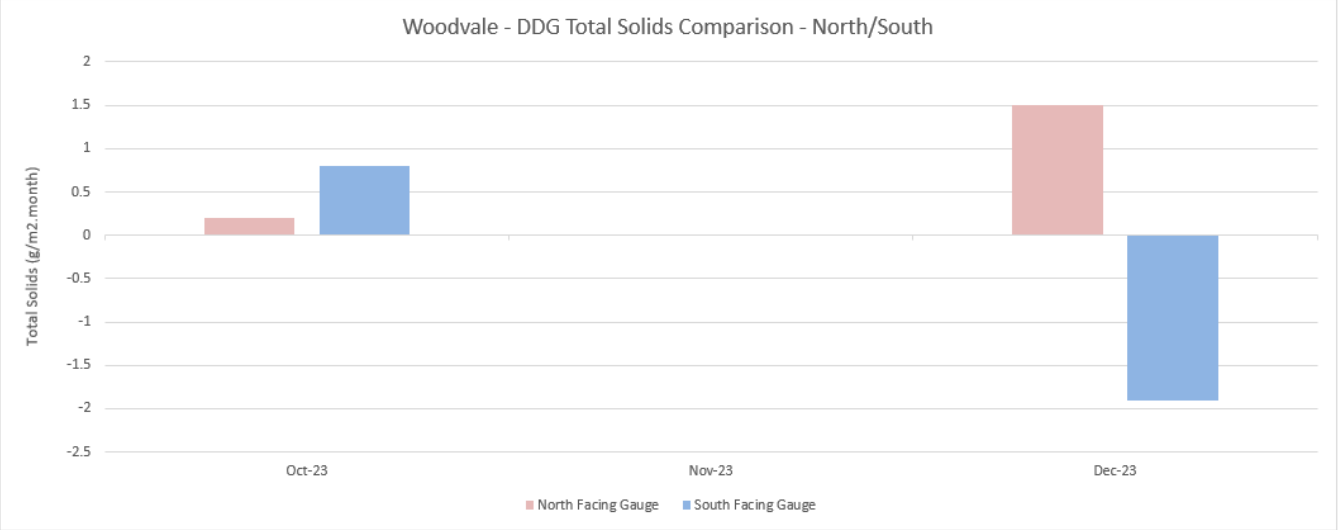

Figure 10 - Woodvale - Directional Dust Deposition Results - Total Solids g/m2/month – Q4 2022 (North/South)

Similarly, the concentration of arsenic was compared using the same methodology as above, and it was found that low net gains and losses occurred for 4 of the 6 values recorded during Q4 2023.

Error! Reference source not found.1 presents the net gain and loss in total arsenic. Downwind of the site compared to upwind of the site, for both north and south facing quadrants in the two directional dust deposition gauges being considered here.

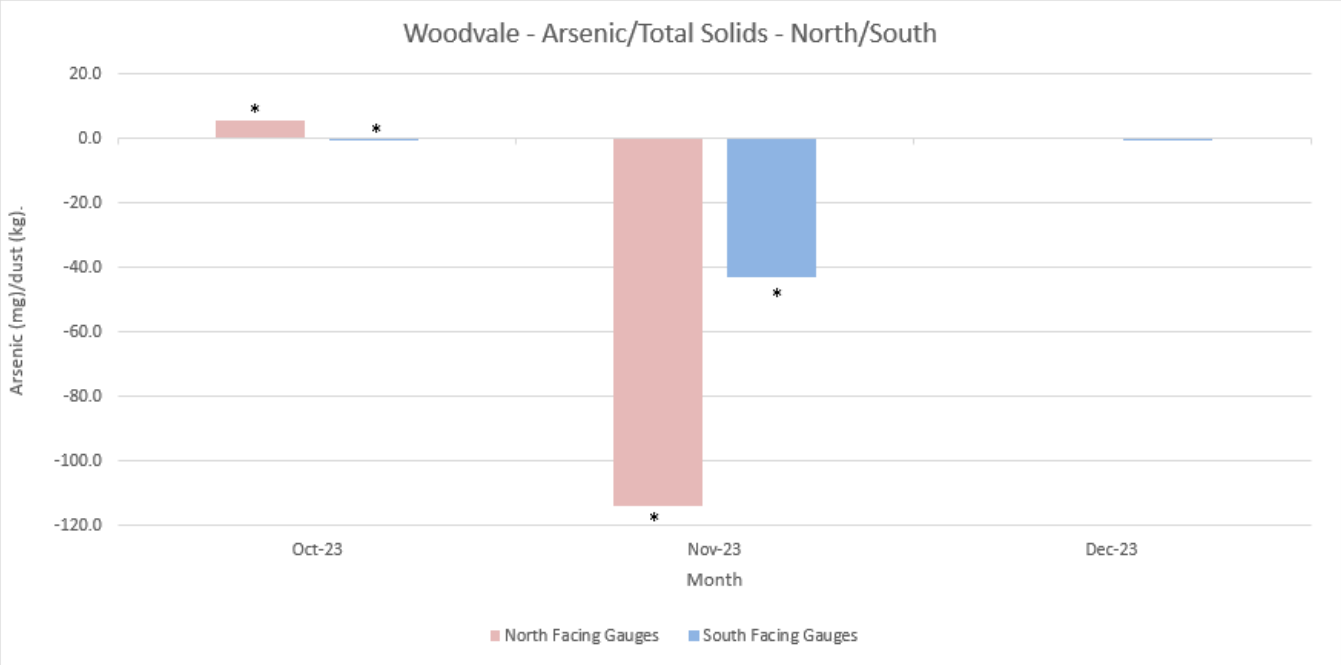

Figure 11 - - Woodvale - Directional Dust Results – Arsenic (mg)/dust(kg) – Q4 2022 (North/South)
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

Error! Reference source not found.1 - Slightly higher values for Arsenic were recorded in WVDG03N , this value is biased by a low total solids reading (0.1 g/ m^2) exaggerating the ratio used for the calculation.

Error! Reference source not found.2 below displays the net gain or loss both upwind and downwind from east and west and no clear pattern is identified during Q4 2023 with both gains and losses occurring throughout the period.

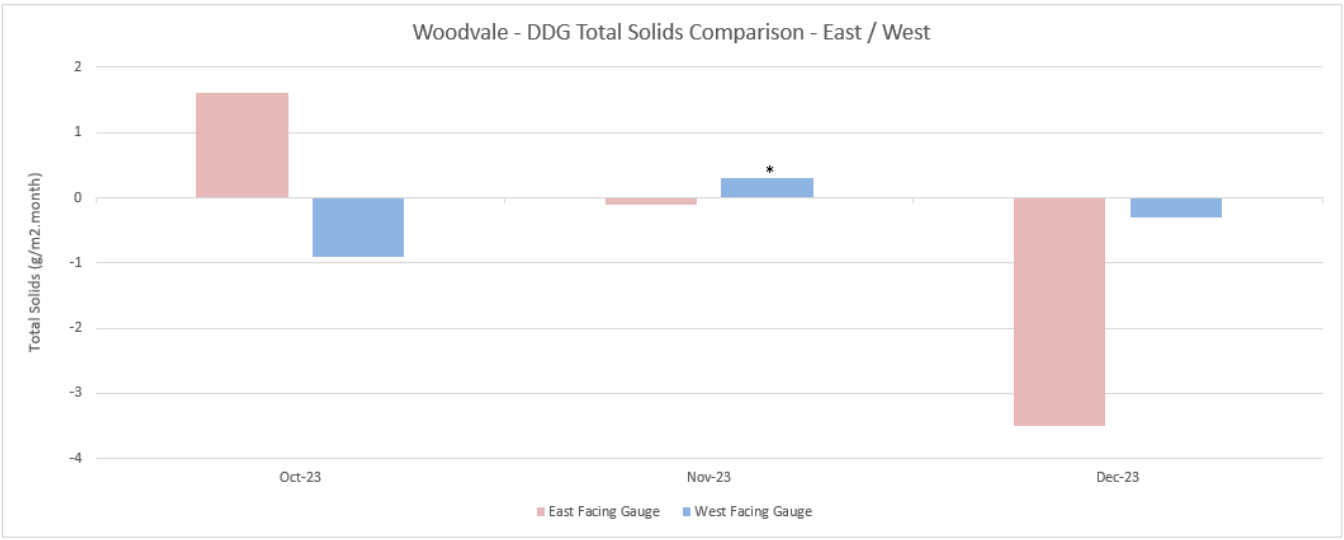

Figure 12 - Woodvale - Directional Dust Deposition Results - Total Solids g/m2/month – Q4 2023 (East/West)

Error! Reference source not found.3 presents the net gains and losses in total arsenic downwind of the site compared to upwind of the site, for both east and west facing quadrants.
For the purpose of providing an understanding of total arsenic concentrations measured in dust relative to arsenic concentrations measured in soils in the assessment region, total arsenic is presented as mg/kg (based on the sum of soluble and insoluble arsenic µg/m^2.month divided by total solids g/ m^2.month).

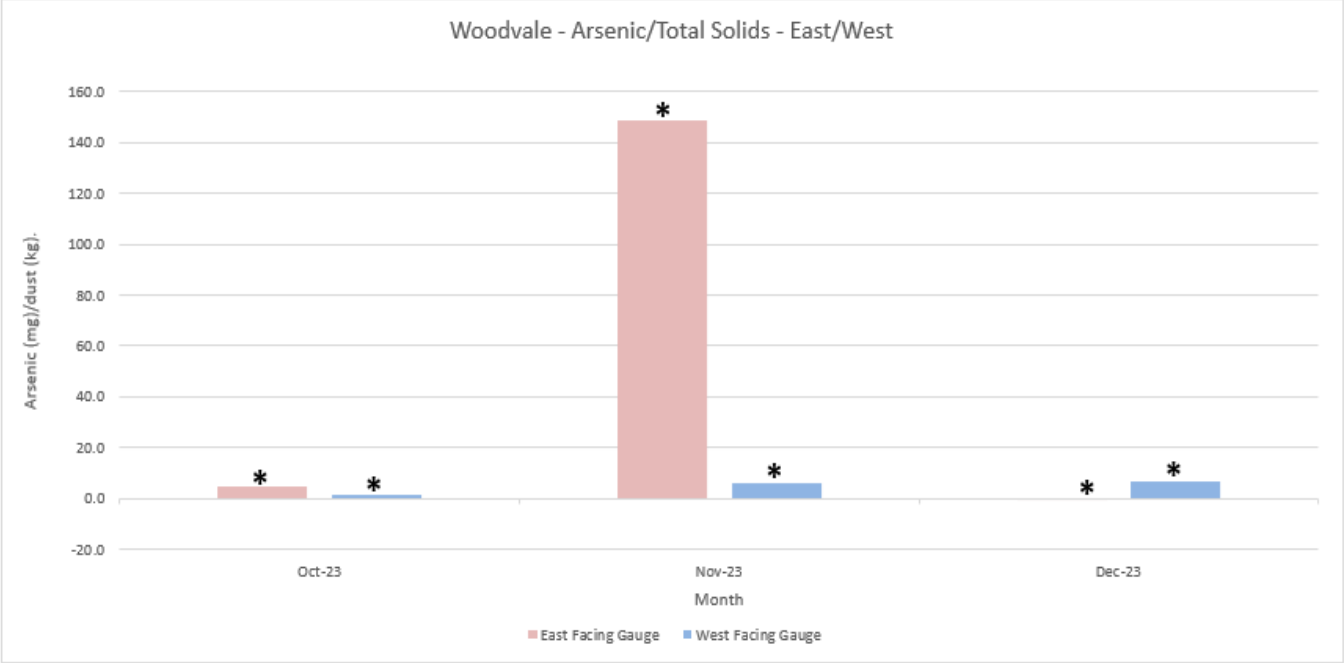

Figure 13 - Woodvale - Directional Dust Results - Arsenic (mg/dust kg) – Q4 2023 (East/West)
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

4.2 Review of Quality Assurance and Quality Control

Field sampling was undertaken in accordance with the following Standards:

- Australian Standard AS/NZS 3580.10.1 (2016), Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter – Deposited Matter – Gravimetric Method. **(AS/NZS 3580.10.1)**

- Australian Standard AS/NZS 3580.10.2 (2013), Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter – Impinged Matter – Gravimetric Method. **(AS/NZS 3580.10.2)**

Sampling methodology and locations are consistent with sampling previously undertaken to maintain continuity and comparability of results.

ALS Environmental Laboratory has NATA accreditation for the following Ambient Air Parameters:

ISO/IEC 17025 (2017)
Environment

SERVICE	PRODUCT	DETERMINANT	TECHNIQUE	PROCEDURE
Analysis for physical and chemical characteristics	Air - Ambient	Particulate matter	Gravimetric	AS 3580.10.2 and in-house EA120I, EA125I, EA139I, EA141I and EA142I
		Deposited matter	Gravimetric	AS 3580.10.1 and in-house EA120-142

ALS currently does not have NATA accreditation for metals analysis of ambient air but is in the process of gaining accreditation. Nevertheless, ALS is operating as though this accreditation is in place and expects to finalise the accreditation process in 2022.

Internal laboratory quality control measures note the following:

- No Method Blank value outliers occurred.
- No laboratory control outliers occurred.
- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) results reported.
- No laboratory duplicate results reported.
- No holding time outliers occurred.
- No quality control sample frequency outliers occurred (based on NEPM 2013 B3 quality control specification).

5. Weather Station Results Woodvale Q4

During February 2023, ALS installed a new weather station at the Woodvale site. The purpose for the weather station installation at Woodvale is to provide data for Rainfall, Wind Direction, Wind Speed, Air Temperature, Relative Humidity and Solar radiation.

The new Weather Station at the Woodvale site is known as Site Number - 407810A Woodvale weather station. Data for these parameters are reported below and includes October, November and December 2023 data. RF totals for October 2023 recorded 55.0 mm, November 2023 47.0 mm and December 2023 97.6 mm. The maximum wind velocity measured in meters/second was recorded on the 24/10/2023 with a recorded value of 10.310 M/s.

ALS data analysts typically review weather station data and can monitor the effects of seasonal changes such as air temperature, wind direction and rainfall, recorded at a monitoring location over a larger period of time to accurately comment on site specific affects observed in the data collected. The Woodvale weather station has less than one year of data record and with the unprecedented rainfall across most of Victoria during 2022-2023 an assessment of site impacts may be limited. ALS can review wind direction in relation to site location and based on land usage and make comment to potential impacts.

5.1 Stacked data plot October 2023

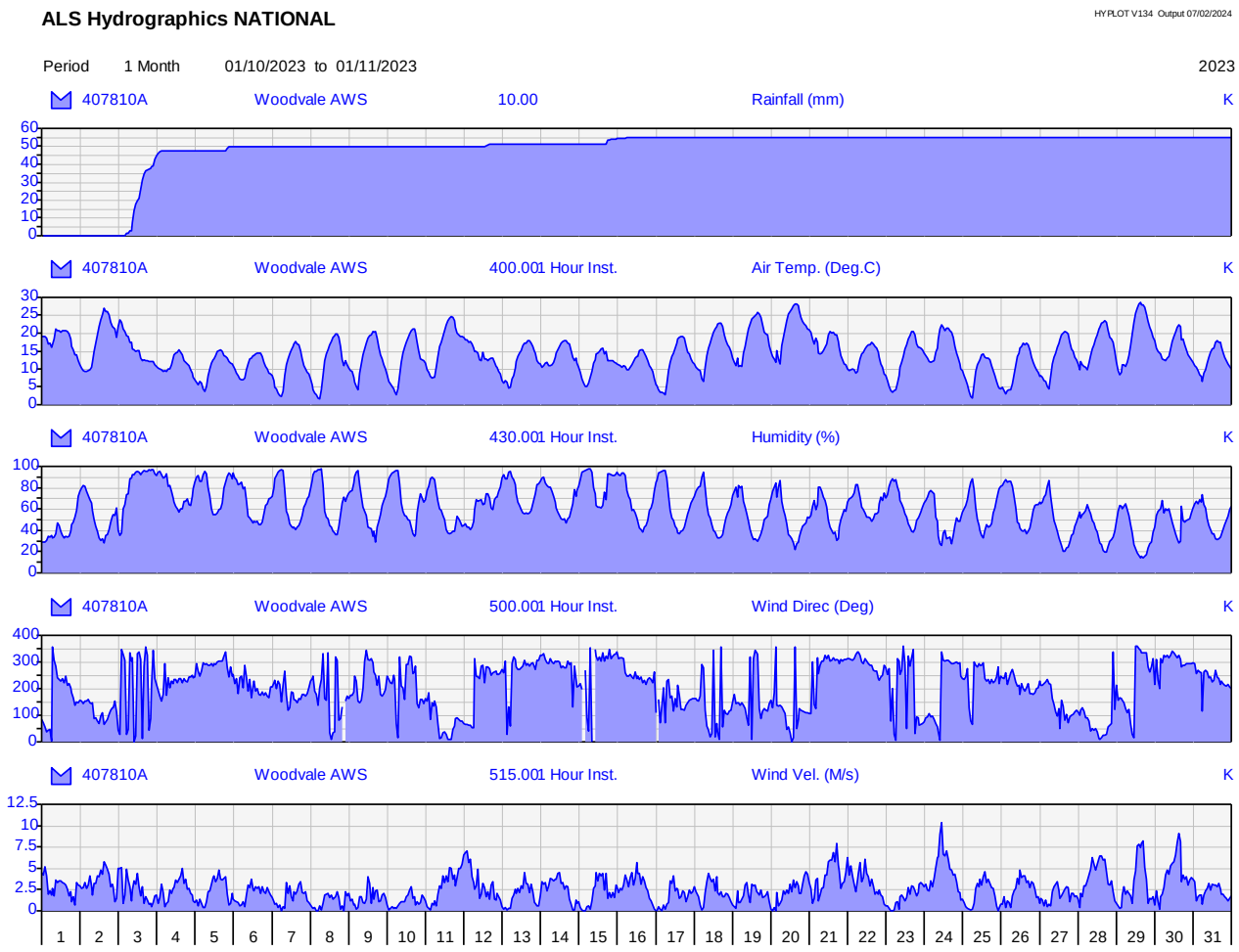

Figure 14 - Stacked data plot October 2023, 407810A Weather Station

5.2 Wind Rose plot October 2023

Figure 15 - Woodvale Wind Rose plot October 2023

5.3 Stacked data plot November 2023

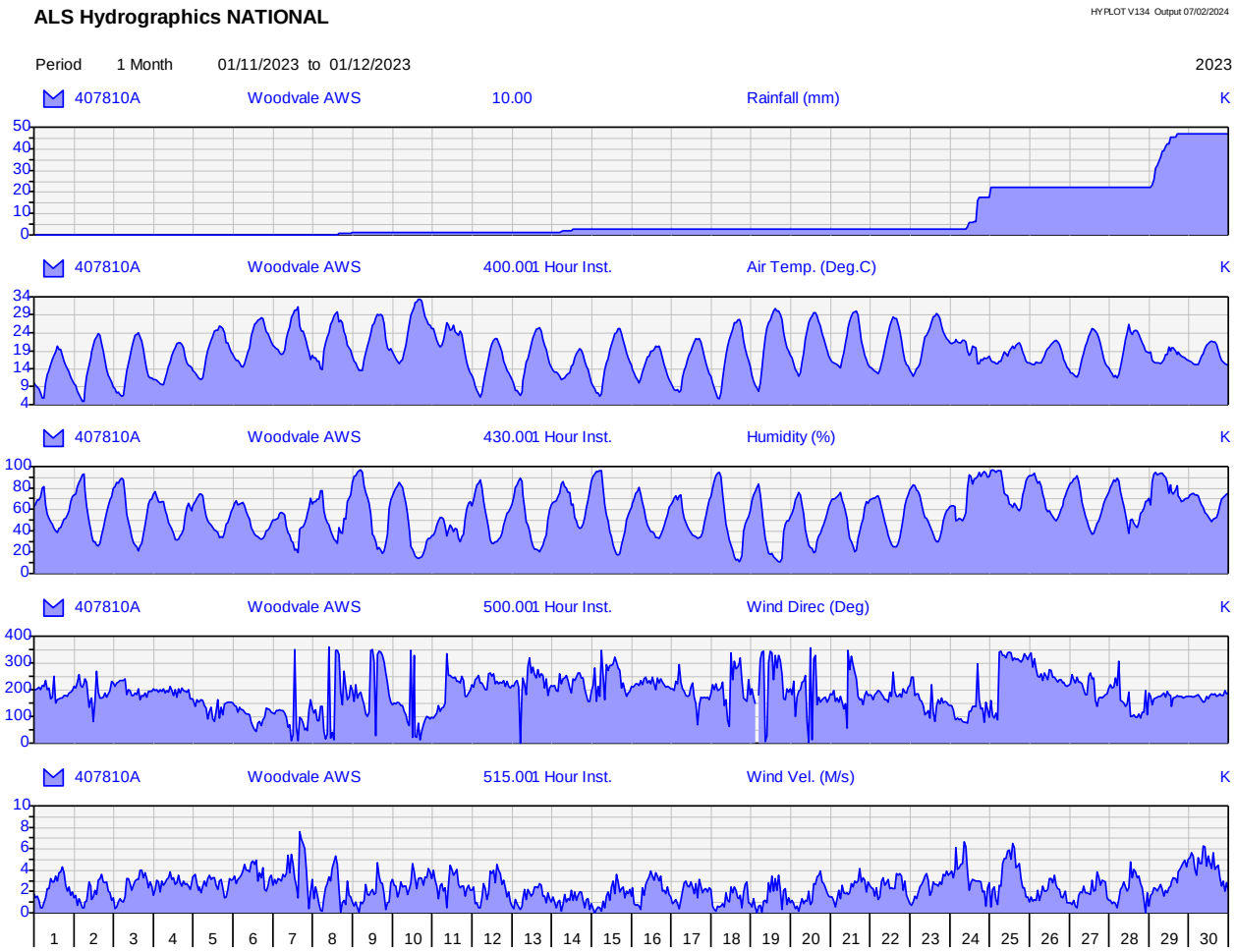

Figure 16 - Stacked data plot November 2023, 407810A Weather Station

5.4 Wind Rose plot November 2023

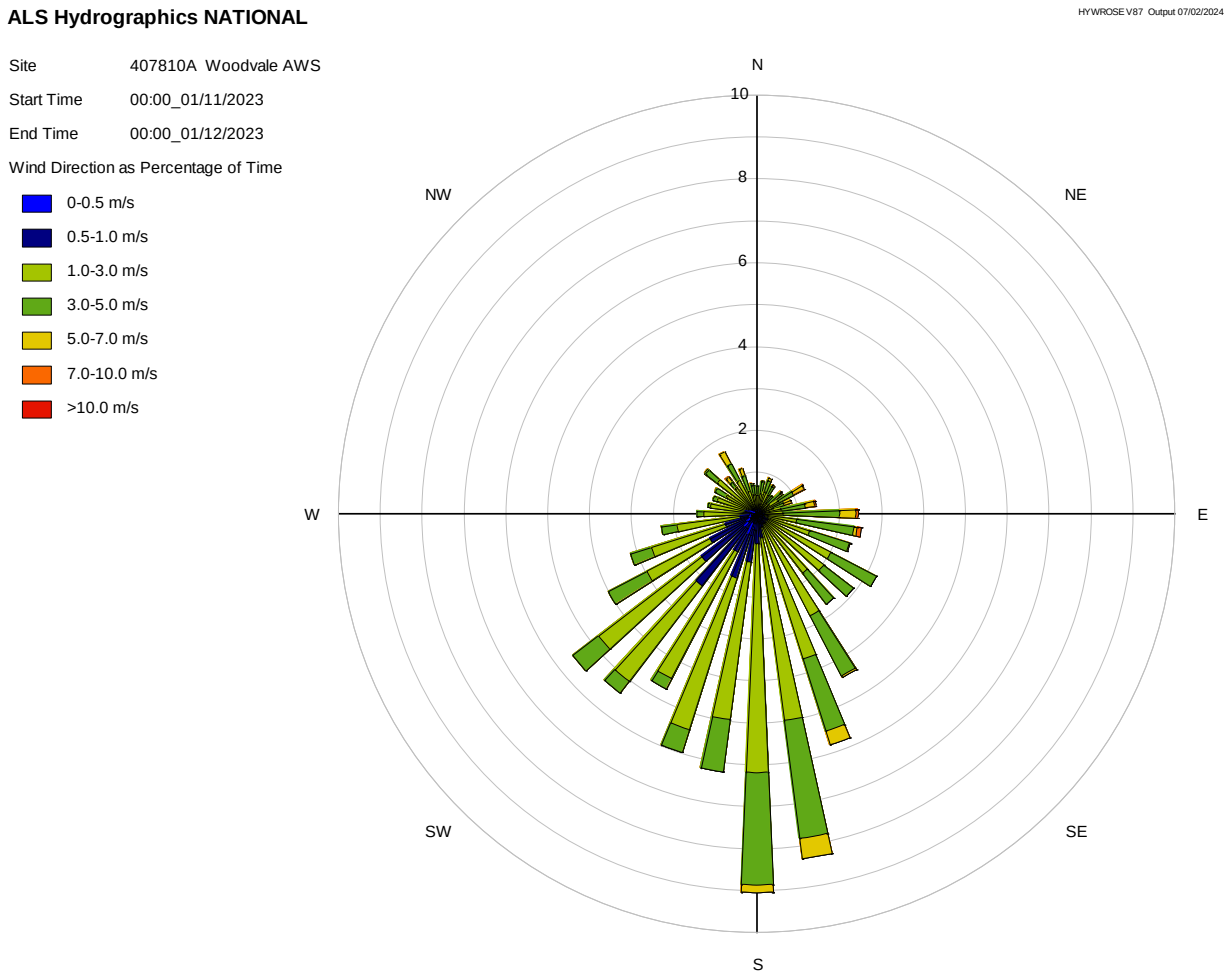

Figure 17 - Woodvale Wind Rose plot November 2023

5.5 Stacked data plot December 2023

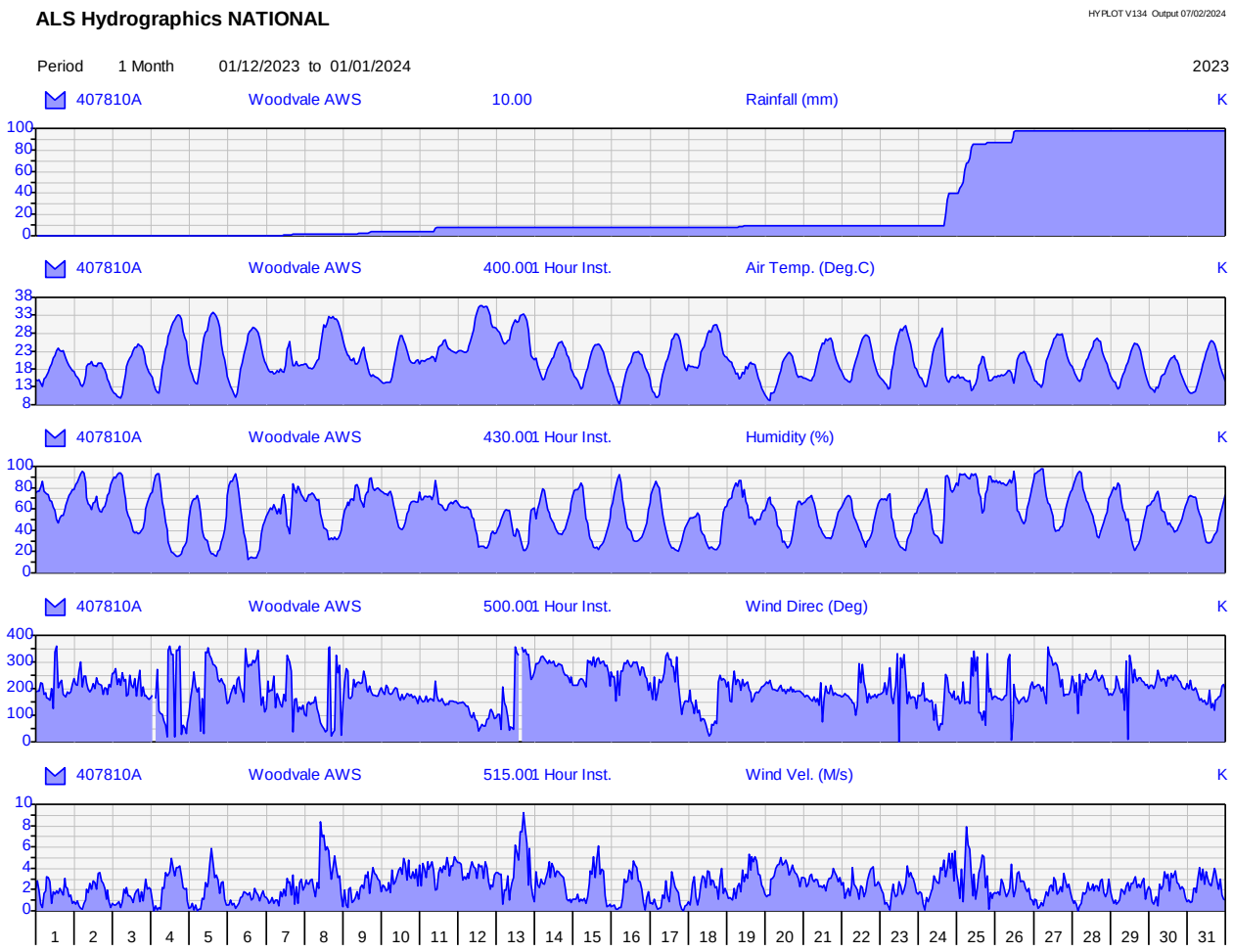

Figure 18 - Stacked data plot December 2023, 407810A Weather Station

5.6 Wind Rose plot December 2023

Figure 19 - Woodvale Wind Rose plot December 2023

5.7 Stacked data plot – Full Data Set

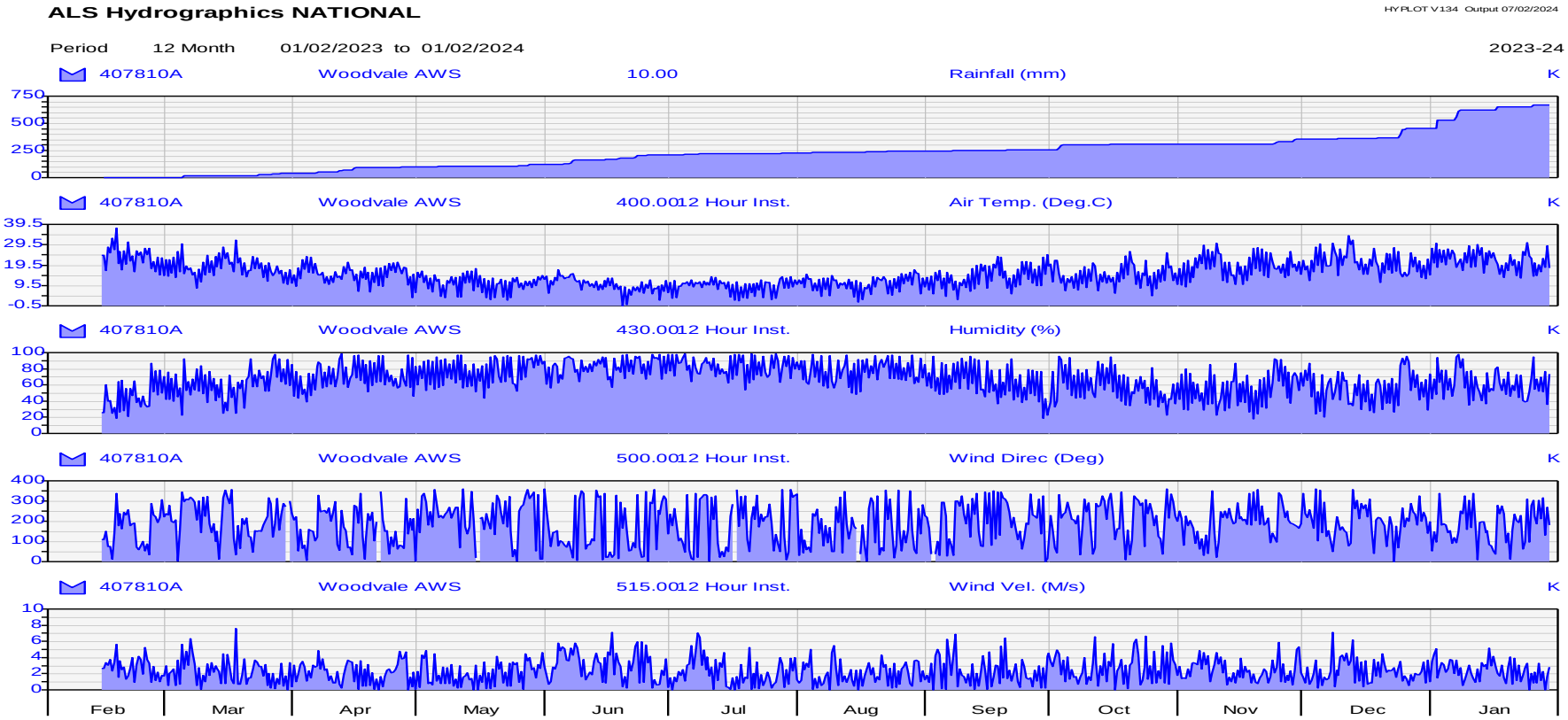

Figure 20 - Stacked data plot All Data Collected 2023, 407810A Weather Station

5.8 Wind Rose Plot Full Data Set

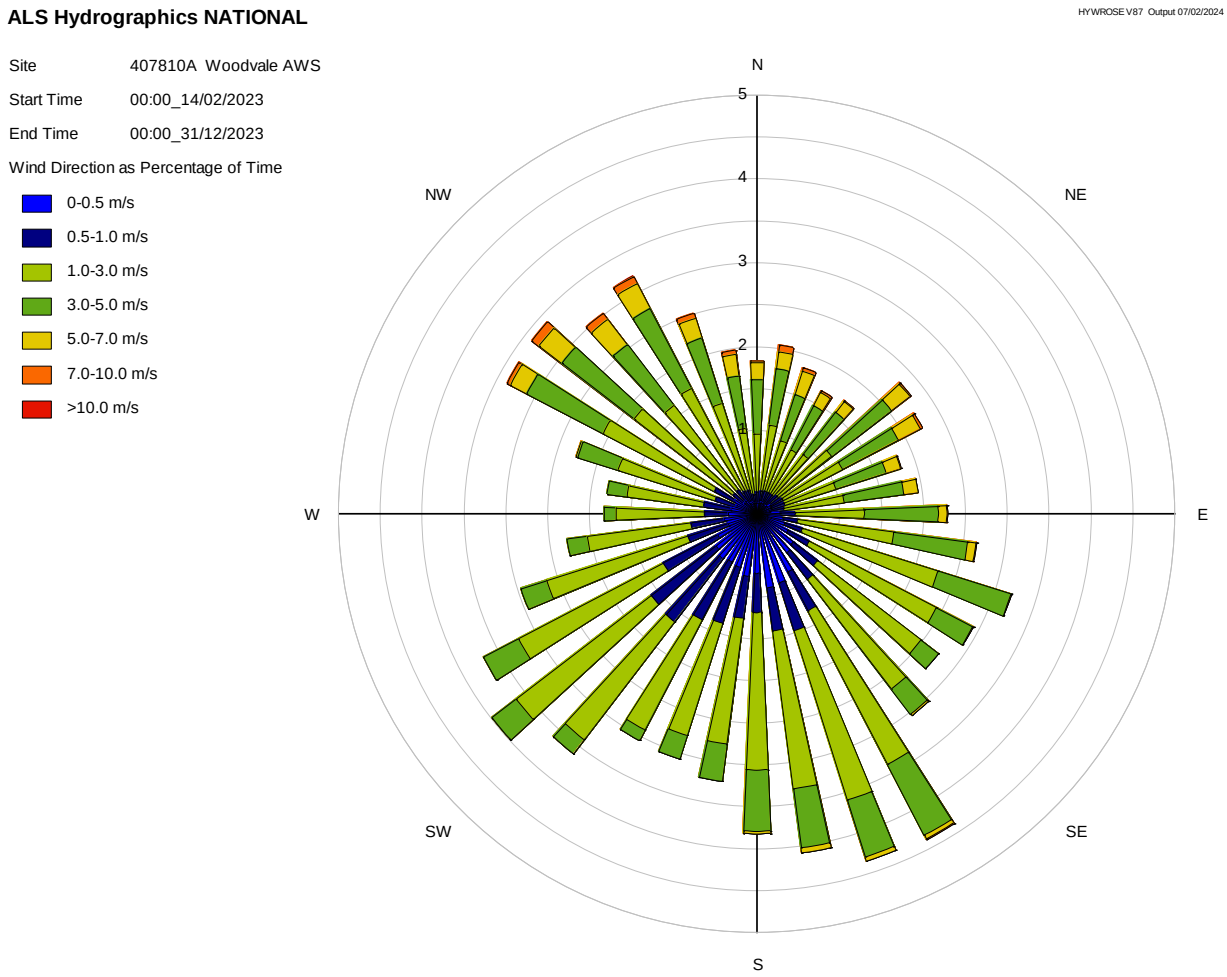

Figure 21 - Woodvale Wind Rose plot All Data Collected 2023

6. Summary of Results

Results are discussed in detail throughout the relevant sections. In summary, the overall results for Q4 2023 were comparable to previous results.

The key findings for Q4 2023 are as follows:

There were three instances where the dust level exceeded the 4 g/m^2/month criteria used in this report. Two instance occurred at site WVDD01 (S) during October 2023 and in December 2023.

- WVDD01 (S) during October 2023 (5.4 g/m^2/month)
- WVDD01 (S) during December 2023 (5.3 g/m^2/month)

There was one instance that occurred at the Background site (WVDD07 (BG)) and is not attributed to the Woodvale Evaporation Ponds.

- WVDD07(**BG**), during December 2023 (7.1 g/m^2/month)

When the data from all source monitoring sites excluding WVDD07 (BG) were averaged for Q4 2023, an average of 1.28g/m^2/month was recorded. This value is below the 4 g/m^2/month criteria, and the inferred background plus 2 g/m^2/month criteria in the Mining PEM.

Total arsenic concentrations for Q4 ranged from 1.2 to 16.1 mg/kg with a mean of 7.3 mg/kg for Q4 2023 not including the background site.

Highest concentrations were recorded in December 2023, 16.1 mg/kg at WVDD04 (E). This value is still well below the 100 mg/kg assessment level mentioned above.

- The control site results from Q4 2023 confirm the previous observation that the arsenic concentration levels recorded in the dust samples from the site were generally slightly higher than the background arsenic levels in the area but is still much lower than the Contaminated Sites Guideline criteria.

- Results for Barium in soluble fraction were slightly higher in December across all sites when compared to October and November results. Manganese recorded higher results for soluble fraction at WVDD07 BG during December 2023.

The Woodvale weather station has less than one year of data record and with the unprecedented rainfall across most of Victoria during 2022-2023 an assessment of site impacts may be limited.

7. Further Considerations

DEECA(ERR) have advised that they will continue to monitor the site with regular visits and ensure that a range of dust control measures are applied during the current care and maintenance phase of this rehabilitation project. DEECA(ERR) is also reviewing the effectiveness of dust control measures and monitoring on an ongoing basis and adopting a continuous improvement approach to dust minimisation and monitoring.

8. References

- ALS Hydrographics Pty Ltd (2021), Woodvale Dust Monitoring Q3 2021 Report. **(ALS Report)**
- ALS Hydrographics Pty Ltd (2021), Woodvale Dust Monitoring Q4 2021 Report. **(ALS Report)**
- ALS Hydrographics Pty Ltd (2022), Woodvale Dust Monitoring Q1 2022 Report. **(ALS Report)**
- ALS Hydrographics Pty Ltd (2022), Woodvale Dust Monitoring Q2 2022 Report. **(ALS Report)**
- ALS Hydrographics Pty Ltd (2022), Woodvale Dust Monitoring Q3 2022 Report. **(ALS Report)**
- ALS Hydrographics Pty Ltd (2022), Woodvale Dust Monitoring Q4 2022 Report. **(ALS Report)**
- ALS Hydrographics Pty Ltd (2022), Woodvale Dust Monitoring Q1 2023 Report. **(ALS Report)**
- ALS Hydrographics Pty Ltd (2022), Woodvale Dust Monitoring Q2 2023 Report. **(ALS Report)**
- ALS Hydrographics Pty Ltd (2022), Woodvale Dust Monitoring Q3 2023 Report. **(ALS Report)**
- Australian Standard AS/NZS 3580.10.1 (2016), Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method. **(AS/NZS 3580.10.1)**
- Australian Standard AS/NZS 3580.10.2 (2013), Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Impinged Matter - Gravimetric Method. **(AS/NZS 3580.10.2)**
- CDM Smith (2021), Woodvale Evaporation Ponds - Dust Monitoring Report - January to June 2021. **(CDM Smith Report)**
- Department of Conservation (2010), Contaminated Sites Management Series, Assessment Levels for Soil, Sediment and Water, February 2010. **(Contaminated Sites Assessment Levels)**
- EPA Vic Publication 1191 (2007), Protocol for Environmental Management - Mining and Extractive Industries. **(Mining PEM)**
- EPA NSW Publication (2017), Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, January 2017.
- EPA Vic Publication 1961 (2022), Guideline for Assessing and Minimising Air Pollution in Victoria, February 2022. **(Assessing and Minimising Guideline)**
- EPA Vic Publication 440.1 (2002), A Guide to the Sampling and Analysis of Air Emissions and Air Quality, December 2002. **(Sampling and Analysis Guideline)**
- Kralcopic Pty Ltd (2018), Quarterly Environmental Monitoring Report - Woodvale Dust Monitoring, October to December 2018. **(Kralcopic Report)**
- National Environment Protection Council (1998), National Environment Protection (Ambient Air Quality) Measure, July 2018. **(NEPM AAQ)**

- Peter J Ramsay and Associates (2018), Woodvale Evaporation Ponds Complex, Environmental Audit of the Risk of any Possible Harm or Detriment to the Environment Pursuant to Part IXD (Section 53V) of the *Environment Protection Act 1970*, 29 June 2018. **(Environmental Audit Report)**

- Victorian Government (2001), Statement of Environment Protection Policy (Air Quality Management), Victorian Government Gazette, No S 240, 21 December 2001. (**SEPP AQM**)

- Victorian Government (2016), State Environment Protection Policy (Ambient Air Quality), Original Policy including Two Variations, Victorian Gazette Nos S19, S240 and G30, published on 9 February 1999, 21 December 2001 and 28 July 2016, respectively. **(SEPP AAQ)**

- Victorian Government (2021), Environment Reference Standard, under the *Environment Protection Act 2017*, Victorian Government Gazette, No. S 245, 26 May 2021. **(ERS)**

9. Tables

Table 1 - Woodvale Dust Deposition Analysis Results Q4, 2023

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m2 month	ug/m2 month	ug/m2 month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									1	0.1	1	0.1	1	0.1	1	0.1	1
Description	**Location**	**Quarter**	**Month**	**Lab Report Number**													
WVDD01 (Insoluble)	**WVDD01**	**Q4 2023**	**Oct-23**	**EM2319529**	4.30	174	502										
			Nov-23	**EM2321591**	4.5	92.1	75.1										
			Dec-23	**EM2400076**	7.77	265	376										
WVDD01 (Soluble)	**WVDD01**	**Q4 2023**	**Oct-23**	**EM2319529**	26.8	203.8	1530										
			Nov-23	**EM2321591**	64.2	175	145										
			Dec-23	**EM2400076**	6.09	623	1840										
WVDD01 (Ash)	**WVDD01**	**Q4 2023**	**Oct-23**	**EM2319529**	4.3	130	330										
			Nov-23	**EM2321591**	4.29	92.1	57.8										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m2 month	ug/m2 month	ug/m2 month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Dec-23	**EM2400076**	7.77	265	293										
WVDD01	**WVDD01**	**Q4 2023**	**Oct-23**	**EM2319529**				14.1	249	5.4	96	8.7	153	5.2	93	0.2	3
			Nov-23	**EM2321591**				5.9	119	0.2	5	5.7	114	0.1	2	0.2	4
			Dec-23	**EM2400076**				11.5	196	5.3	90	6.2	106	4.8	81	0.5	9
WVDD02 (Insoluble)	**WVDD02**	**Q4 2023**	**Oct-23**	**EM2319529**	1.70	42.2	52.3										
			Nov-23	**EM2321591**	3.62	35.1	70										
			Dec-23	**EM2400076**	7.14	121	145										
WVDD02 (Soluble)	**WVDD02**	**Q4 2023**	**Oct-23**	**EM2319529**	6.06	78.8	340										
			Nov-23	**EM2321591**	1.44	107	224										
			Dec-23	**EM2400076**	10.90	581	635										
WVDD02 (Ash)	**WVDD02**	**Q4 2023**	**Oct-23**	**EM2319529**	1.7	42.2	33.1										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m2 month	ug/m2 month	ug/m2 month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Nov-23	**EM2321591**	2.23	40.4	34.1										
			Dec-23	**EM2400076**	6.71	121	97.4										
WVDD02	**WVDD02**	**Q4 2023**	**Oct-23**	**EM2319529**				1.4	24	0.5	8	0.9	16	0.4	6	0.1	2
			Nov-23	**EM2321591**				0.7	15	0.1	2	0.7	14	0.1	2	0.1	2
			Dec-23	**EM2400076**				3.7	63	1.3	22	2.4	41	1	17	0.3	5
WVDD03 (Insoluble)	**WVDD03**	**Q4 2023**	**Oct-23**	**EM2319529**	2.32	37.9	42.6										
			Nov-23	**EM2321591**	5.39	75.6	70.1										
			Dec-23	**EM2400076**	5.51	420	149										
WVDD03 (Soluble)	**WVDD03**	**Q4 2023**	**Oct-23**	**EM2319529**	10.4	56.9	195										
			Nov-23	**EM2321591**	9.01	112	285										
			Dec-23	**EM2400076**	5.66	838	762										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m2 month	ug/m2 month	ug/m2 month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
WVDD03 (Ash)	**WVDD03**	**Q4 2023**	**Oct-23**	**EM2319529**	1.98	37.9	23										
			Nov-23	**EM2321591**	4.8	75.6	51.3										
			Dec-23	**EM2400076**	5.22	420	92.8										
WVDD03	**WVDD03**	**Q4 2023**	**Oct-23**	**EM2319529**				1	18	0.4	7	0.6	11	0.3	6	0.1	2
			Nov-23	**EM2321591**				1.2	25	0.1	2	1.2	24	0.1	2	0.1	2
			Dec-23	**EM2400076**				4	69	1.4	24	2.6	45	1.1	19	0.3	5
WVDD04 (Insoluble)	**WVDD04**	**Q4 2023**	**Oct-23**	**EM2319529**	1.6	24	34.1										
			Nov-23	**EM2321591**	3.99	57.5	71.3										
			Dec-23	**EM2400076**	8.75	125	190										
WVDD04 (Soluble)	**WVDD04**	**Q4 2023**	**Oct-23**	**EM2319529**	6.62	41.9	150										
			Nov-23	**EM2321591**	37.5	236	1090										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m2 month	ug/m2 month	ug/m2 month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Dec-23	**EM2400076**	78	416	1522										
WVDD04 (Ash)	**WVDD04**	**Q4 2023**	**Oct-23**	**EM2319529**	1.41	20.1	20.5										
			Nov-23	**EM2321591**	3.64	57.5	50.6										
			Dec-23	**EM2400076**	6.4	125	118										
WVDD04	**WVDD04**	**Q4 2023**	**Oct-23**	**EM2319529**				1.1	18	0.5	8	0.6	10	0.4	6	0.1	2
			Nov-23	**EM2321591**				3.3	66	0.2	5	3.1	61	0.1	2	0.2	4
			Dec-23	**EM2400076**				5.4	92	1.3	23	4.1	69	1.1	19	0.2	4
WVDD05 (Insoluble)	**WVDD05**	**Q4 2023**	**Oct-23**	**EM2319529**	1.88	33.5	49.9										
			Nov-23	**EM2321591**	4.93	367	142										
			Dec-23	**EM2400076**	5.60	120	138										
WVDD05 (Soluble)	**WVDD05**	**Q4 2023**	**Oct-23**	**EM2319529**	4.81	51	253										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m2 month	ug/m2 month	ug/m2 month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Nov-23	**EM2321591**	19.1	1240	518										
			Dec-23	**EM2400076**	0.77	211.0	636										
WVDD05 (Ash)	**WVDD05**	**Q4 2023**	**Oct-23**	**EM2319529**	1.88	33.3	27										
			Nov-23	**EM2321591**	5.97	367	168										
			Dec-23	**EM2400076**	5.60	120	90.5										
WVDD05	**WVDD05**	**Q4 2023**	**Oct-23**	**EM2319529**				1.7	30	1.1	20	0.6	10	1	18	0.1	2
			Nov-23	**EM2321591**				9.5	190	1.5	30	8	160	1.3	26	0.2	4
			Dec-23	**EM2400076**				3.7	62	1.5	25	2.2	37	1.2	20	0.3	4
WVDD07BG (Insoluble)	**WVDD07 BG**	**Q4 2023**	**Oct-23**	**EM2319529**	2.94	69	57.8										
			Nov-23	**EM2321591**	6.02	204	162										
			Dec-23	**EM2400076**	13.5	610	900										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m2 month	ug/m2 month	ug/m2 month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
WVDD07BG (Soluble)	**WVDD07 BG**	**Q4 2023**	**Oct-23**	**EM2319529**	3.75	84.1	459										
			Nov-23	**EM2321591**	5.4	92.7	1030										
			Dec-23	**EM2400076**	11	633	3038										
WVDD07BG (Ash)	**WVDD07 BG**	**Q4 2023**	**Oct-23**	**EM2319529**	2.56	69	54.1										
			Nov-23	**EM2321591**	6.02	204	144										
			Dec-23	**EM2400076**	13.5	610	900										
WVDD07BG	**WVDD07 BG**	**Q4 2023**	**Oct-23**	**EM2319529**				1.4	25	0.6	11	0.8	14	0.4	8	0.2	3
			Nov-23	**EM2321591**				6.3	126	2	40	4.3	86	1.4	29	0.6	11
			Dec-23	**EM2400076**				2.02	346	7.1	122	13.1	224	6.2	107	0.9	15
WVDD08 (Insoluble)	**WVDD08**	**Q4 2023**	**Oct-23**	**EM2319529**	6.44	48.9	56.1										
			Nov-23	**EM2321591**	3.52	57.8	66.7										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m2 month	ug/m2 month	ug/m2 month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									1	0.1	1	0.1	1	0.1	1	0.1	1
			Dec-23	EM2400076	5.81	129	149										
WVDD08 (Soluble)	WVDD08	Q4 2023	Oct-23	EM2319529	10.9	74.3	523										
			Nov-23	EM2321591	10.7	123	412										
			Dec-23	EM2400076	14.1	276	802										
WVDD08 (Ash)	WVDD08	Q4 2023	Oct-23	EM2319529	2.90	48.9	39.2										
			Nov-23	EM2321591	2.97	57.8	46.9										
			Dec-23	EM2400076	5.30	129	90										
WVDD08	WVDD08	Q4 2023	Oct-23	EM2319529				1.6	29	0.6	11	1	18	0.5	9	0.1	2
			Nov-23	EM2321591				1.5	30	0.1	2	1.4	28	0.1	2	0.1	2
			Dec-23	EM2400076				3.6	62	1.6	28	2	34	1.3	23	0.3	5

Table 2 - Woodvale Directional Dust Deposition Analysis Results Q4, 2023

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
Description	**Location**	**Quarter**	**Month**	**Lab Report Number**													
WVDG03E (Insoluble)	**WVDG03E**	**Q4 2023**	**Oct-23**	**EM2319529**	6.04	36.4	21.8										
			Nov-23	**EM2321591**	2.52	38.7	61.7										
			Dec-23	**EM2400076**	3.27	48.3	46										
WVDG03E (Soluble)	**WVDG03E**	**Q4 2023**	**Oct-23**	**EM2319529**	3.53	6.4	19.4										
			Nov-23	**EM2321591**	0.36	2.4	1.5										
			Dec-23	**EM2400076**	1.95	3.4	9.16										
WVDG03E (Ash)	**WVDG03E**	**Q4 2023**	**Oct-23**	**EM2319529**	6.04	36.4	21.8										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Nov-23	**EM2321591**	1.88	27.7	32.3										
			Dec-23	**EM2400076**	2.33	48.3	41.2										
WVDG03E	**WVDG03E**	**Q4 2023**	**Oct-23**	**EM2319529**				0.9	13	0.3	4	0.6	9	0.3	3	0.1	2
			Nov-23	**EM2321591**				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	**EM2400076**				1.8	26	0.9	13	0.9	23	0.8	12	0.1	2
WVDG03N (Insoluble)	**WVDG03N**	**Q4 2023**	**Oct-23**	**EM2319529**	0.87	77.4	29.9										
			Nov-23	**EM2321591**	4.82	1140	71										
			Dec-23	**EM2400076**	0.87	10.7	13.2										
WVDG03N (Soluble)	**WVDG03N**	**Q4 2023**	**Oct-23**	**EM2319529**	0.47	36.1	32.4										
			Nov-23	**EM2321591**	8.94	7.4	2.3										
			Dec-23	**EM2400076**	0.88	0.1	2.5										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
WVDG03N (Ash)	**WVDG03N**	**Q4 2023**	**Oct-23**	**EM2319529**	0.72	46.5	13.5										
			Nov-23	**EM2321591**	5.02	1140	71										
			Dec-23	**EM2400076**	0.55	10.7	13.0										
WVDG03N	**WVDG03N**	**Q4 2023**	**Oct-23**	**EM2319529**				0.7	11	0.1	2	0.6	10	0.1	2	0.1	2
			Nov-23	**EM2321591**				0.1	2	0.2	4	0.1	2	0.1	2	0.1	2
			Dec-23	**EM2400076**				1.2	18	0.7	11	0.5	7	0.7	10	0.1	2
WVDG03S (Insoluble)	**WVDG03S**	**Q4 2023**	**Oct-23**	**EM2319529**	1.06	24.9	29.7										
			Nov-23	**EM2321591**	2.17	32.9	55.4										
			Dec-23	**EM2400076**	3.17	46.3	43.0							17	33		
WVDG03S (Soluble)	**WVDG03S**	**Q4 2023**	**Oct-23**	**EM2319529**	0.77	4	19.6										
			Nov-23	**EM2321591**	0.32	1.9	1.7										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									1	0.1	1	0.1	1	0.1	1	0.1	1
			Dec-23	EM2400076	0.68	3.3	12.5										
WVDG03S (Ash)	**WVDG03S**	**Q4 2023**	Oct-23	EM2319529	1.03	24.9	25										
			Nov-23	EM2321591	1.9	32.9	37.4										
			Dec-23	EM2400076	1.8	46.3	32.8										
WVDG03S	**WVDG03S**	**Q4 2023**	Oct-23	EM2319529				1.2	19	0.3	5	0.9	14	0.3	5	0.1	2
			Nov-23	EM2321591				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	EM2400076				2.6	39	1.1	17	1.5	22	1	16	0.1	2
WVDG03W (Insoluble)	**WVDG03W**	**Q4 2023**	Oct-23	EM2319529	1.89	22.6	33.2										
			Nov-23	EM2321591	4.07	56.2	55										
			Dec-23	EM2400076	5.23	80.9	70.5										
WVDG03W (Soluble)	**WVDG03W**	**Q4 2023**	Oct-23	EM2319529	0.55	1.6	15.4										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Nov-23	**EM2321591**	29.2	5.7	22.9										
			Dec-23	**EM2400076**	9.27	4.2	15.0										
WVDG03W (Ash)	**WVDG03W**	**Q4 2023**	**Oct-23**	**EM2319529**	1.1	22.6	19										
			Nov-23	**EM2321591**	2.07	56.2	38.2										
			Dec-23	**EM2400076**	4.18	80.9	70.5										
WVDG03W	**WVDG03W**	**Q4 2023**	**Oct-23**	**EM2319529**				0.7	11	0.4	6	0.3	5	0.3	5	0.1	2
			Nov-23	**EM2321591**				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	**EM2400076**				4.7	69	1.9	28	2.8	41	1.6	24	0.3	4
WVDG05E (Insoluble)	**WVDG05E**	**Q4 2023**	**Oct-23**	**EM2319529**	1.67	21	18.4										
			Nov-23	**EM2321591**	2.09	35.2	32.4										
			Dec-23	**EM2400076**	0.88	40.3	55.4										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									1	0.1	1	0.1	1	0.1	1	0.1	1
WVDG05E (Soluble)	**WVDG05E**	**Q4 2023**	**Oct-23**	**EM2319529**	0.66	15.9	36										
			Nov-23	**EM2321591**	0.27	0.2	0.89										
			Dec-23	**EM2400076**	0.05	2.3	5										
WVDG05E (Ash)	**WVDG05E**	**Q4 2023**	**Oct-23**	**EM2319529**	1.67	20.1	18.4										
			Nov-23	**EM2321591**	2.09	35.2	32.4										
			Dec-23	**EM2400076**	0.88	40.3	51.3										
WVDG05E	**WVDG05E**	**Q4 2023**	**Oct-23**	**EM2319529**				0.9	13	0.1	2	0.8	12	0.1	2	0.1	2
			Nov-23	**EM2321591**				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	**EM2400076**				1.2	18	0.8	12	0.4	6	0.8	12	0.1	2
WVDG05N (Insoluble)	**WVDG05N**	**Q4 2023**	**Oct-23**	**EM2319529**	4.69	60.2	45.5										
			Nov-23	**EM2321591**	2.36	41.4	38.1										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Dec-23	**EM2400076**	5.38	7.3	72.4										
WVDG05N (Soluble)	**WVDG05N**	**Q4 2023**	**Oct-23**	**EM2319529**	2.13	20.8	106										
			Nov-23	**EM2321591**	0.22	0.3	0.79										
			Dec-23	**EM2400076**	0.05	7.3	3.9										
WVDG05N (Ash)	**WVDG05N**	**Q4 2023**	**Oct-23**	**EM2319529**	4.69	60.2	45.5										
			Nov-23	**EM2321591**	2.37	41.4	41.7										
			Dec-23	**EM2400076**	3.82	277	56.8										
WVDG05N	**WVDG05N**	**Q4 2023**	**Oct-23**	**EM2319529**				0.9	15	0.3	5	0.6	10	0.2	4	0.1	2
			Nov-23	**EM2321591**				0.10	2	0.3	5	0.1	2	0.2	3	0.1	2
			Dec-23	**EM2400076**				2.7	39	2.3	34	0.4	5	1.9	28	0.4	6
WVDG05S (Insoluble)	**WVDG05S**	**Q4 2023**	**Oct-23**	**EM2319529**	0.65	15.9	17.1										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Nov-23	**EM2321591**	2.72	60.7	47.2										
			Dec-23	**EM2400076**	9.57	970	141										
WVDG05S (Soluble)	**WVDG05S**	**Q4 2023**	**Oct-23**	**EM2319529**	0.1	5.1	15.1										
			Nov-23	**EM2321591**	4.06	4.2	15.5										
			Dec-23	**EM2400076**	0.05	15.8	4.5										
WVDG05S (Ash)	**WVDG05S**	**Q4 2023**	**Oct-23**	**EM2319529**	0.65	14.5	13.2										
			Nov-23	**EM2321591**	2.72	60.7	47.2										
			Dec-23	**EM2400076**	9.57	970	141										
WVDG05S	**WVDG05S**	**Q4 2023**	**Oct-23**	**EM2319529**				0.4	6	0.1	2	0.4	6	0.1	2	0.1	2
			Nov-23	**EM2321591**				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	**EM2400076**				4.5	67	3.9	58	0.6	9	2.5	38	1.4	20

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
WVDG05W (Insoluble)	**WVDG05W**	**Q4 2023**	**Oct-23**	**EM2319529**	0.61	18.4	17.7										
			Nov-23	**EM2321591**	1.96	42	40.5										
			Dec-23	**EM2400076**	1.52	29.5	46.2										
WVDG05W (Soluble)	**WVDG05W**	**Q4 2023**	**Oct-23**	**EM2319529**	1.14	2.5	11.5										
			Nov-23	**EM2321591**	0.1	2.4	8.55										
			Dec-23	**EM2400076**	0.05	2.7	15.8										
WVDG05W (Ash)	**WVDG05W**	**Q4 2023**	**Oct-23**	**EM2319529**	0.61	18.4	16.6										
			Nov-23	**EM2321591**	1.96	42	40.5										
			Dec-23	**EM2400076**	1.00	29.5	32										
WVDG05W	**WVDG05W**	**Q4 2023**	**Oct-23**	**EM2319529**				0.4	6	0.1	2	0.3	5	0.1	2	0.1	2
			Nov-23	**EM2321591**				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Dec-23	**EM2400076**				1.5	22	7	11	0.8	11	0.6	10	0.1	2
WVDG04E (Insoluble)	**WVDG04E**	**Q4 2023**	**Oct-23**	**EM2319529**	1.21	20	18.3										
			Nov-23	**EM2321591**	2.12	17.5	30										
			Dec-23	**EM2400076**	10.40	732	103										
WVDG04E (Soluble)	**WVDG04E**	**Q4 2023**	**Oct-23**	**EM2319529**	2.01	5.8	23.7										
			Nov-23	**EM2321591**	3.44	19	51.2										
			Dec-23	**EM2400076**	0.05	29.2	5.48										
WVDG04E (Ash)	**WVDG04E**	**Q4 2023**	**Oct-23**	**EM2319529**	2.01	5.8	23.7										
			Nov-23	**EM2321591**	2.12	16.9	26.5										
			Dec-23	**EM2400076**	4.98	732.0	65.9										
WVDG04E	**WVDG04E**	**Q4 2023**	**Oct-23**	**EM2319529**				0.6	9	0.3	4	0.3	5	0.3	4	0.1	2

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Nov-23	**EM2321591**				0.2	4	0.1	2	0.2	4	0.1	2	0.1	2
			Dec-23	**EM2400076**				5.2	77	4.3	63	0.9	14	3.5	52	0.8	11
WVDG04N (Insoluble)	**WVDG04N**	**Q4 2023**	**Oct-23**	**EM2319529**	1.06	14.6	13.2										
			Nov-23	**EM2321591**	2.39	28	27.2										
			Dec-23	**EM2400076**	8.31	982	98.5										
WVDG04N (Soluble)	**WVDG04N**	**Q4 2023**	**Oct-23**	**EM2319529**	2.2	1.4	24.4										
			Nov-23	**EM2321591**	5.58	40.2	112										
			Dec-23	**EM2400076**	0.05	10.8	15										
WVDG04N (Ash)	**WVDG04N**	**Q4 2023**	**Oct-23**	**EM2319529**	1.06	13.9	10.8										
			Nov-23	**EM2321591**	2.39	28.0	27.2										
			Dec-23	**EM2400076**	8.31	982	98.5										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
WVDG04N	**WVDG04N**	**Q4 2023**	**Oct-23**	**EM2319529**				0.7	10	0.2	3	0.5	7	0.2	3	0.1	2
			Nov-23	**EM2321591**				0.1	2	0.2	3	0.1	2	0.1	2	0.1	2
			Dec-23	**EM2400076**				5.3	79	3.9	58	1.4	21	2.7	41	1.2	17
WVDG04S (Insoluble)	**WVDG04S**	**Q4 2023**	**Oct-23**	**EM2319529**	0.98	14.5	99.6										
			Nov-23	**EM2321591**	0.87	13.5	21.4										
			Dec-23	**EM2400076**	4.27	1046	65.5										
WVDG04S (Soluble)	**WVDG04S**	**Q4 2023**	**Oct-23**	**EM2319529**	0.67	3.9	17.7										
			Nov-23	**EM2321591**	3.53	19.8	43										
			Dec-23	**EM2400076**	0.05	19.7	14.8										
WVDG04S (Ash)	**WVDG04S**	**Q4 2023**	**Oct-23**	**EM2319529**	0.65	14.5	11.7										
			Nov-23	**EM2321591**	0.87	13.5	22.9										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									1	0.1	1	0.1	1	0.1	1	0.1	1
			Dec-23	EM2400076	4.17	1046	65.5										
WVDG04S	**WVDG04S**	**Q4 2023**	Oct-23	EM2319529				0.2	3	0.1	2	0.2	3	0.1	2	0.1	2
			Nov-23	EM2321591				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	EM2400076				4.2	62	2.8	41	1.4	21	2	30	0.8	11
WVDG04W (Insoluble)	**WVDG04W**	**Q4 2023**	Oct-23	EM2319529	2.74	41.3	47.4										
			Nov-23	EM2321591	2.41	14.8	37.8										
			Dec-23	EM2400076	11.6	79	69.2										
WVDG04W (Soluble)	**WVDG04W**	**Q4 2023**	Oct-23	EM2319529	1.13	2.7	14.30										
			Nov-23	EM2321591	6.93	39.0	73.7										
			Dec-23	EM2400076	0.05	0.7	3.56										
WVDG04W (Ash)	**WVDG04W**	**Q4 2023**	Oct-23	EM2319529	2.69	41.3	40.7										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Nov-23	**EM2321591**	2.41	14.8	37.8										
			Dec-23	**EM2400076**	7.1	79	53.7										
WVDG04W	**WVDG04W**	**Q4 2023**	**Oct-23**	**EM2319529**				0.6	10	0.3	5	0.3	5	0.2	3	0.1	2
			Nov-23	**EM2321591**				0.4	6	0.2	3	0.2	3	0.2	3	0.1	2
			Dec-23	**EM2400076**				1.8	26	1.4	21	0.4	5	1.2	18	0.2	3
WVDG08N (Insoluble)	**WVDG08N**	**Q4 2023**	**Oct-23**	**EM2319529**	2.25	69.1	48.2										
			Nov-23	**EM2321591**	2.07	36.1	56										
			Dec-23	**EM2400076**	0.32	12.8	13.1										
WVDG08N (Soluble)	**WVDG08N**	**Q4 2023**	**Oct-23**	**EM2319529**	0.38	1.8	6.57										
			Nov-23	**EM2321591**	1.25	9.2	73.7										
			Dec-23	**EM2400076**	0.05	0.2	1.2										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									1	0.1	1	0.1	1	0.1	1	0.1	1
WVDG08N (Ash)	**WVDG08N**	**Q4 2023**	**Oct-23**	**EM2319529**	2.25	69.1	32.8										
			Nov-23	**EM2321591**	1.94	36.1	47.3										
			Dec-23	**EM2400076**	0.27	8.9	12.9										
WVDG08N	**WVDG08N**	**Q4 2023**	**Oct-23**	**EM2319529**				0.5	7	0.3	5	0.2	2	0.3	5	0.1	2
			Nov-23	**EM2321591**				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	**EM2400076**				0.8	12	0.5	8	0.3	4	0.4	7	0.1	2
WVDG08E (Insoluble)	**WVDG08E**	**Q4 2023**	**Oct-23**	**EM2319529**	1.46	63.3	41										
			Nov-23	**EM2321591**	1.56	25.7	114										
			Dec-23	**EM2400076**	1.72	21.9	31.3										
WVDG08E (Soluble)	**WVDG08E**	**Q4 2023**	**Oct-23**	**EM2319529**	21.2	19.1	294										
			Nov-23	**EM2321591**	16.1	46.1	172										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									1	0.1	1	0.1	1	0.1	1	0.1	1
			Dec-23	EM2400076	0.05	2.7	3.7										
WVDG08E (Ash)	**WVDG08E**	**Q4 2023**	Oct-23	EM2319529	1.33	63.3	26.3										
			Nov-23	EM2321591	1.7	25.7	107										
			Dec-23	EM2400076	1.21	21.9	21										
WVDG08E	**WVDG08E**	**Q4 2023**	Oct-23	EM2319529				2.2	34	0.1	2	2.1	32	0.1	2	0.1	2
			Nov-23	EM2321591				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	EM2400076				1.7	26	1	15	0.7	11	1	14	0.1	2
WVDG08S (Insoluble)	**WVDG08S**	**Q4 2023**	Oct-23	EM2319529	2.13	53.3	72.5										
			Nov-23	EM2321591	1.54	22.5	43.2										
			Dec-23	EM2400076	3.43	68.7	85.3										
WVDG08S (Soluble)	**WVDG08S**	**Q4 2023**	Oct-23	EM2319529	24.6	13.5	674										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
			Nov-23	**EM2321591**	4.02	24.9	135										
			Dec-23	**EM2400076**	16	83.3	509										
WVDG08S (Ash)	**WVDG08S**	**Q4 2023**	**Oct-23**	**EM2319529**	1.87	53.3	64										
			Nov-23	**EM2321591**	1.54	22.5	43.2										
			Dec-23	**EM2400076**	3.02	68.7	81.6										
WVDG08S	**WVDG08S**	**Q4 2023**	**Oct-23**	**EM2319529**				4.6	71	0.5	8	4.1	63	0.4	6	0.1	2
			Nov-23	**EM2321591**				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	**EM2400076**				9	134	1.7	25	7.3	109	1.5	23	0.2	2
WVDG08W (Insoluble)	**WVDG08W**	**Q4 2023**	**Oct-23**	**EM2319529**	3.15	84.8	112										
			Nov-23	**EM2321591**	1.23	30.6	78.5										
			Dec-23	**EM2400076**	3.31	56.7	193										

					Arsenic	Barium	Manganese	Total Solids	Total Solids (mg)	Total Insoluble Matter	Total Insoluble Matter (mg)	Total Soluble Matter	Total Soluble Matter (mg)	Combustible Matter	Combustible Matter (mg)	Ash Content	Ash Content (mg)
					ug/m² month	ug/m² month	ug/m² month	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg	g/m2 month	mg
EQL									**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**1**
WVDG08W (Soluble)	**WVDG08W**	**Q4 2023**	**Oct-23**	**EM2319529**	4.42	20.9	261										
			Nov-23	**EM2321591**	0.48	5.2	11.8										
			Dec-23	**EM2400076**	0.05	1.3	34										
WVDG08W(Ash)	**WVDG08W**	**Q4 2023**	**Oct-23**	**EM2319529**	3.15	84.8	106										
			Nov-23	**EM2321591**	1.39	30.6	24.6										
			Dec-23	**EM2400076**	3.31	56.7	193										
WVDG08W	**WVDG08W**	**Q4 2023**	**Oct-23**	**EM2319529**				1.5	23	0.7	11	0.8	12	0.5	8	0.2	3
			Nov-23	**EM2321591**				0.1	2	0.1	2	0.1	2	0.1	2	0.1	2
			Dec-23	**EM2400076**				2.1	31	1.2	18	0.9	13	1	15	0.2	2

10. Supplementary Data

Graphs for Metals/Metalloids in Insoluble and Soluble Fractions including trends are presented below.

10.1 Arsenic

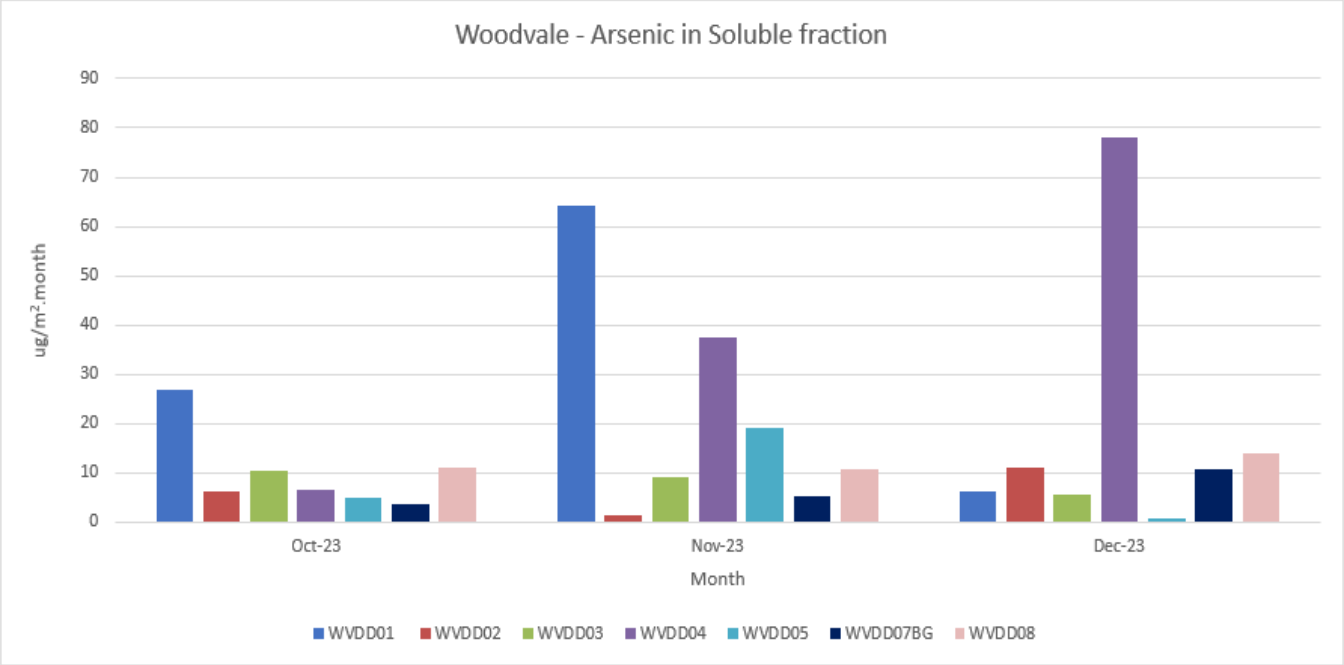

Figure 22 - Woodvale - Arsenic in Soluble Fraction – Q4 2023

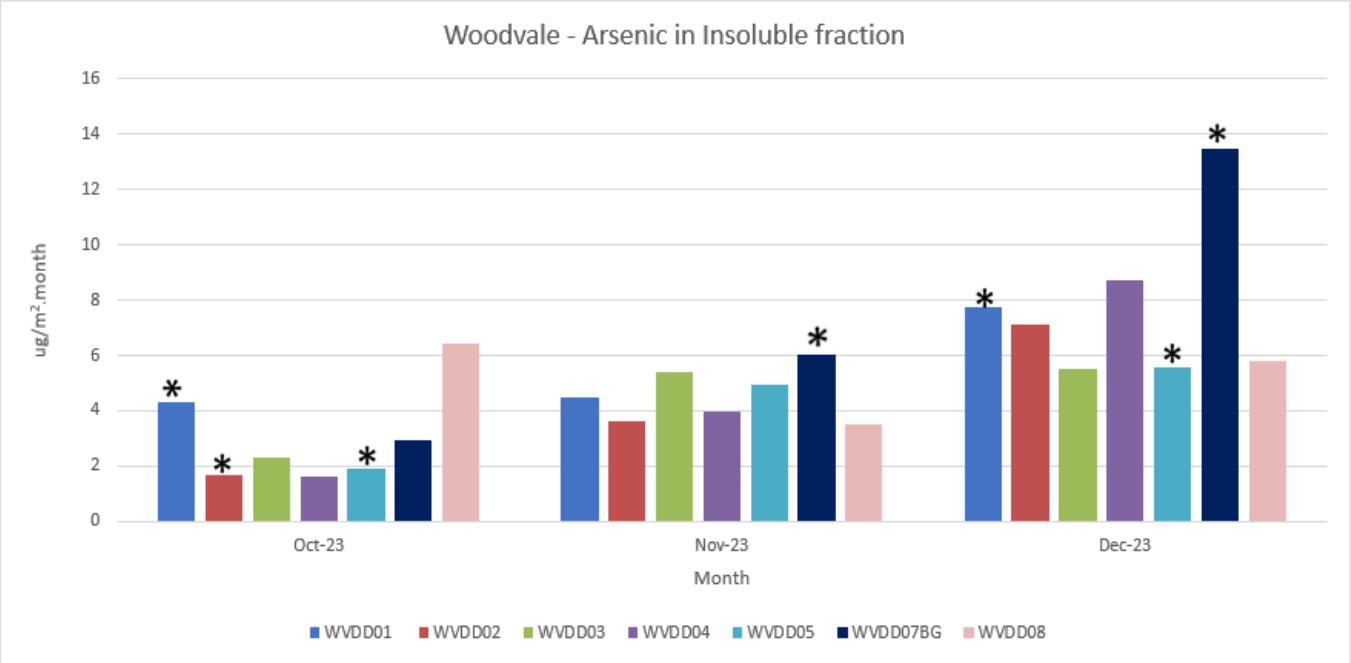

Figure 23 - Woodvale - Arsenic in Insoluble Fraction – Q4 2023
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

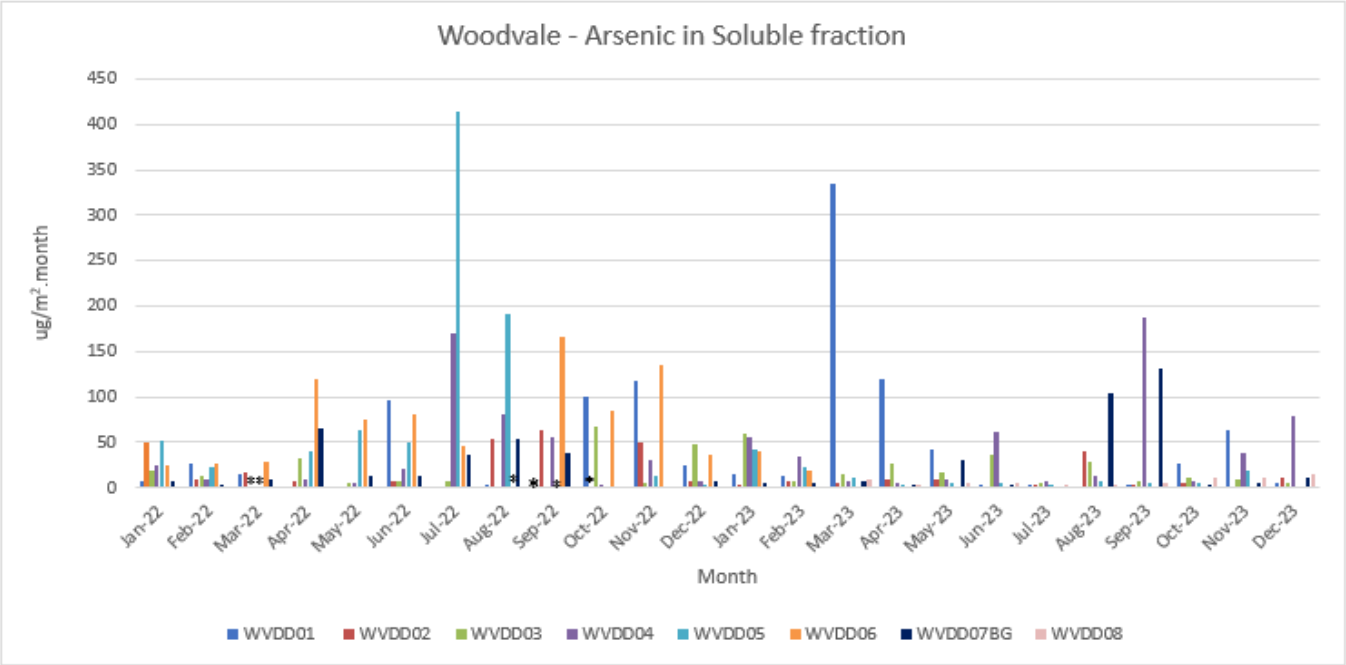

Figure 24 - Woodvale - Arsenic in Soluble Fraction Year Review (2022-23)
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

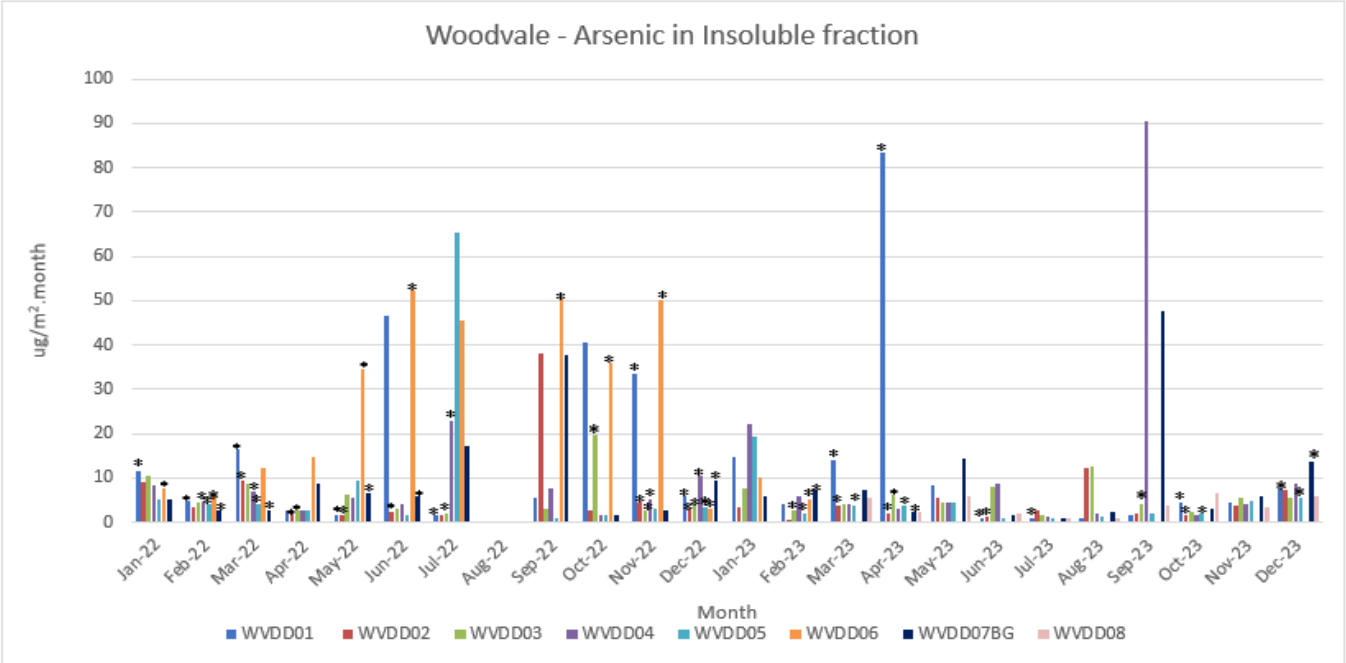

Figure 25 - Woodvale - Arsenic in Insoluble Fraction Year Review (2022-23)
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.
Arsenic lab results unable to be calculated left as blank

10.2 Barium

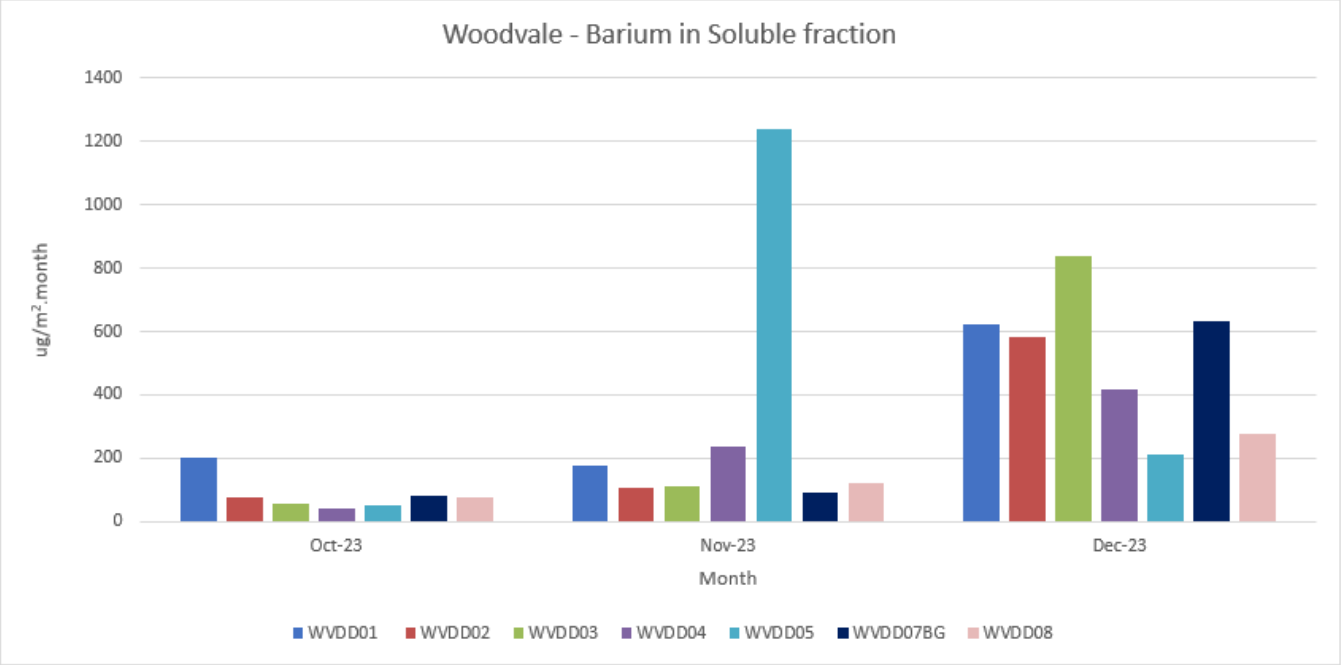

Figure 26 - Woodvale - Barium in Soluble Fraction – Q4 2023

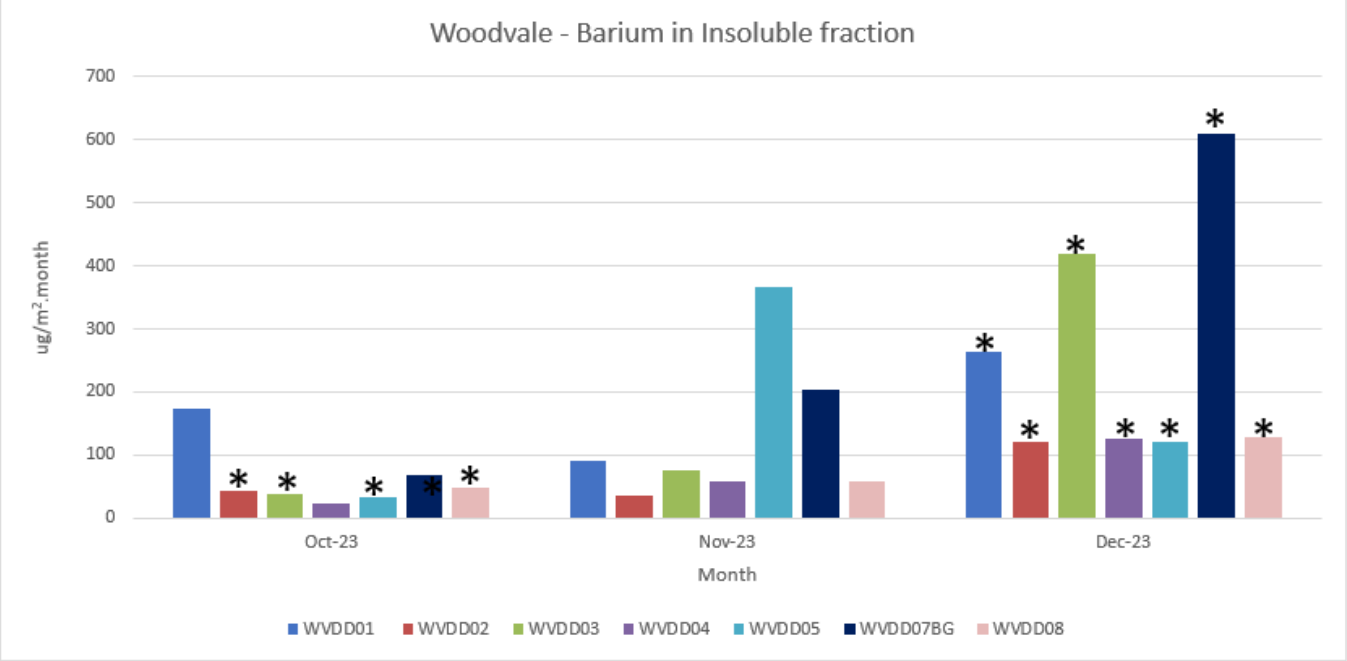

Figure 27 - Woodvale - Barium in Insoluble Fraction – Q4 2023
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

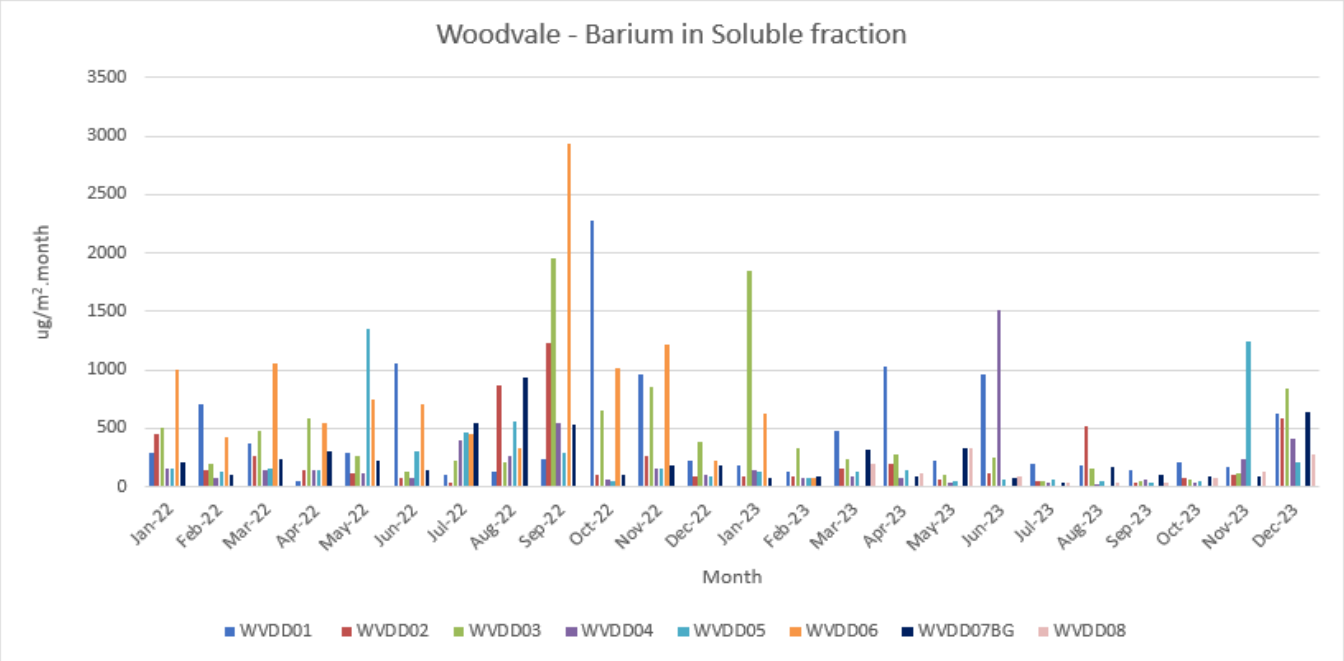

Figure 28 - Woodvale - Barium in Soluble Fraction Year Review (2022-23)

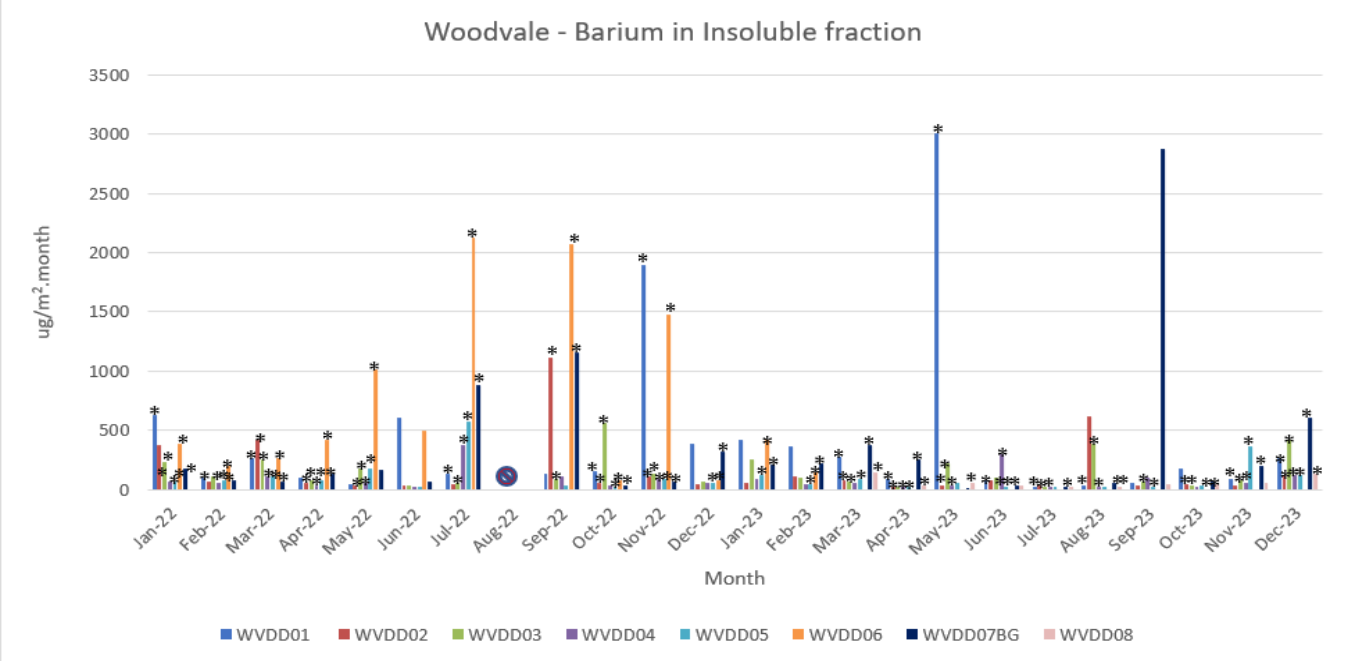

Figure 29 - Woodvale - Barium in Insoluble Fraction Year Review (2022-23)
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph. The larger bolder asterisks represent the entire months records as less than

10.3 Manganese

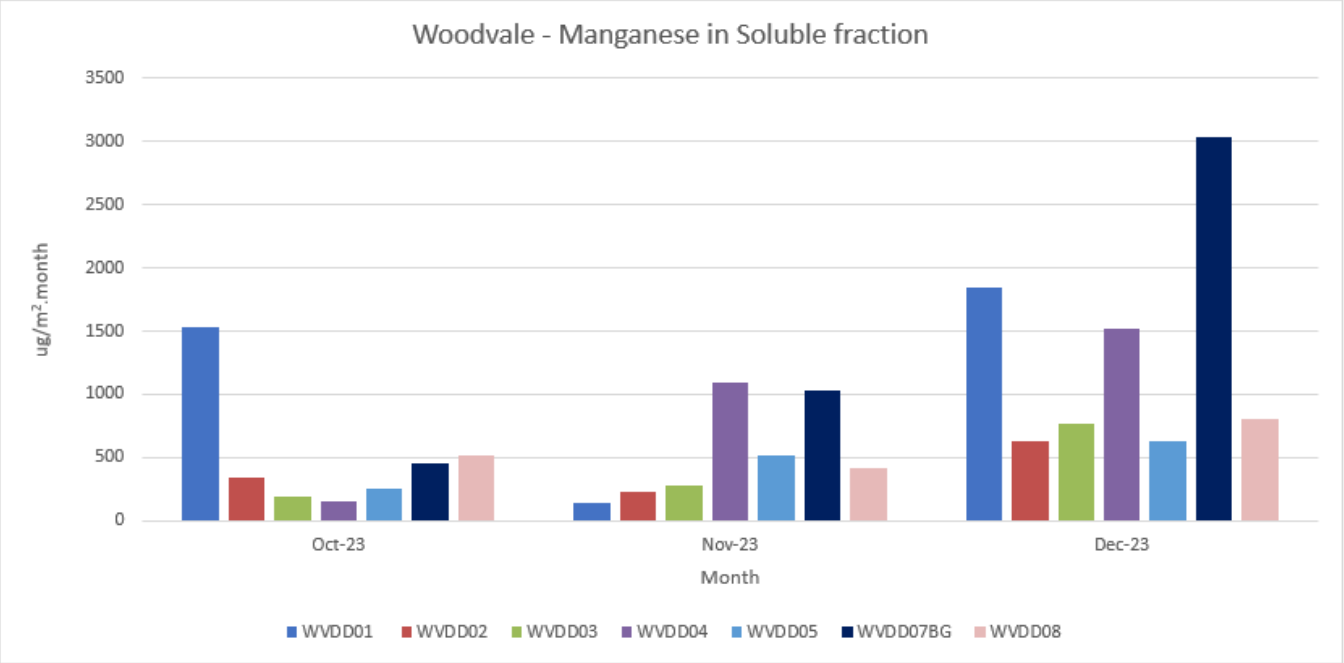

Figure 30 - Woodvale - Manganese in Soluble Fraction – Q4 2023

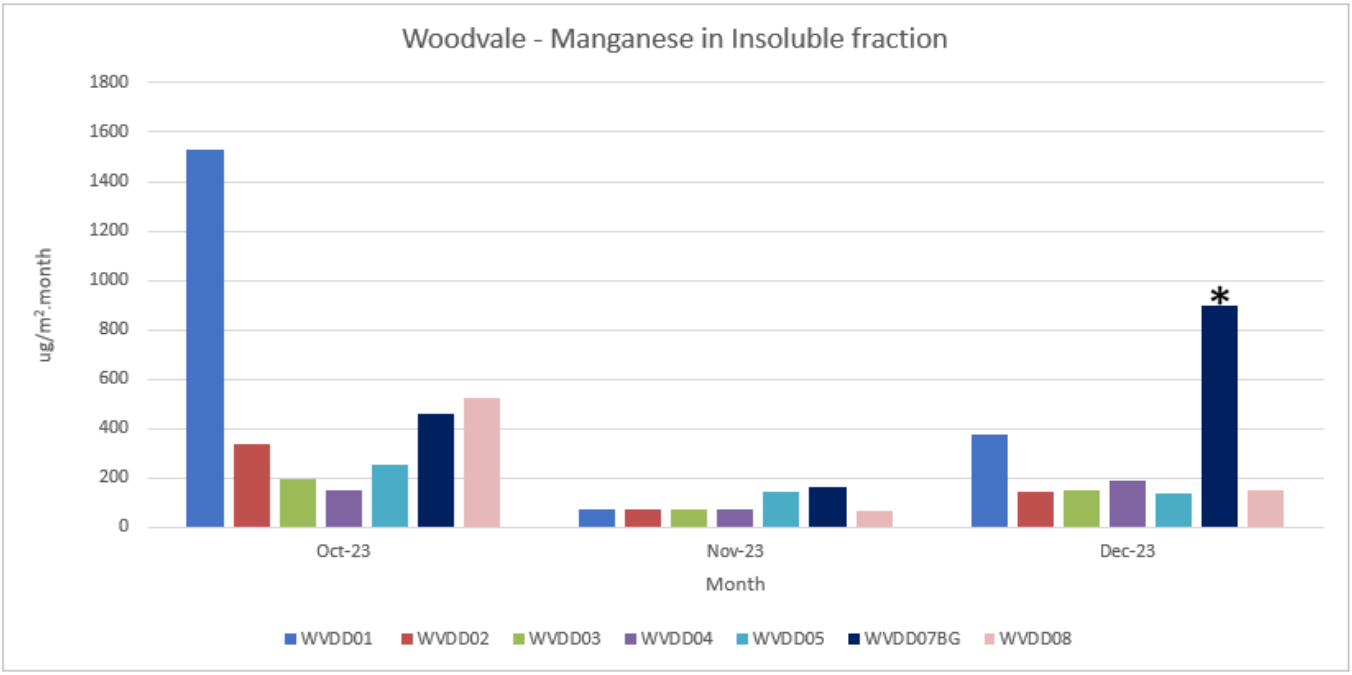

Figure 31 - Woodvale - Manganese in Insoluble Fraction – Q4 2023
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

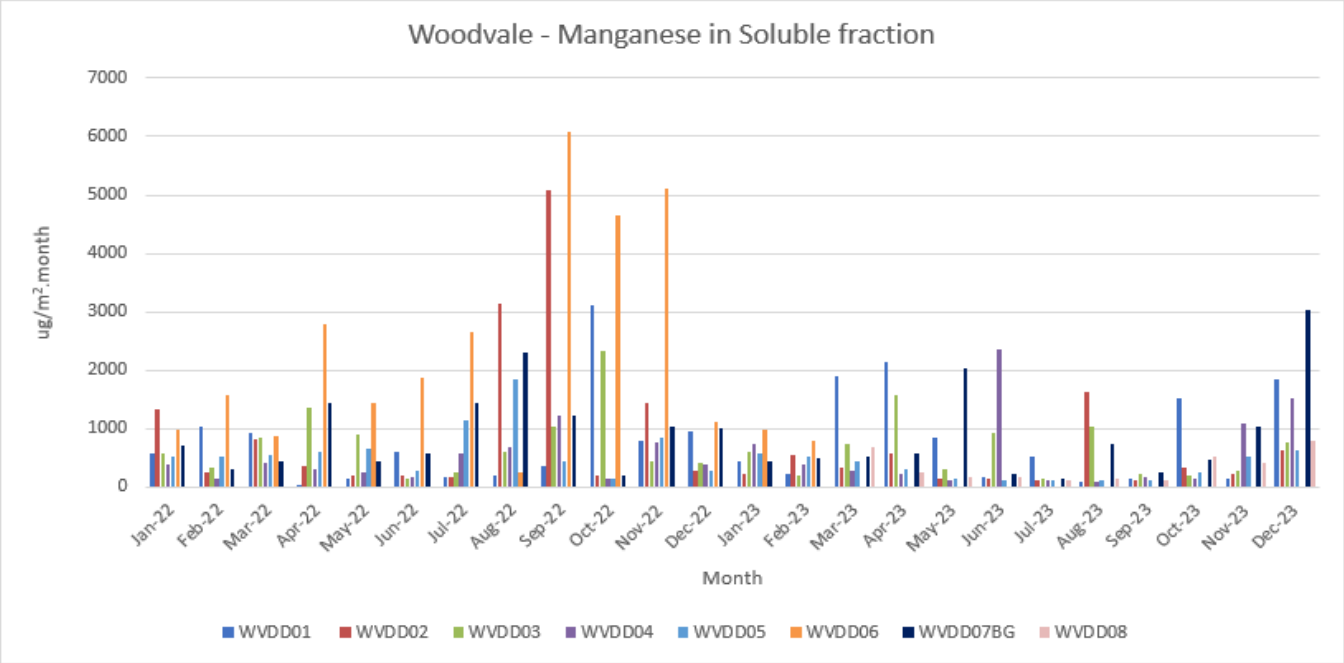

Figure 32 - Woodvale - Manganese in Soluble Fraction Year Review (2022-23)

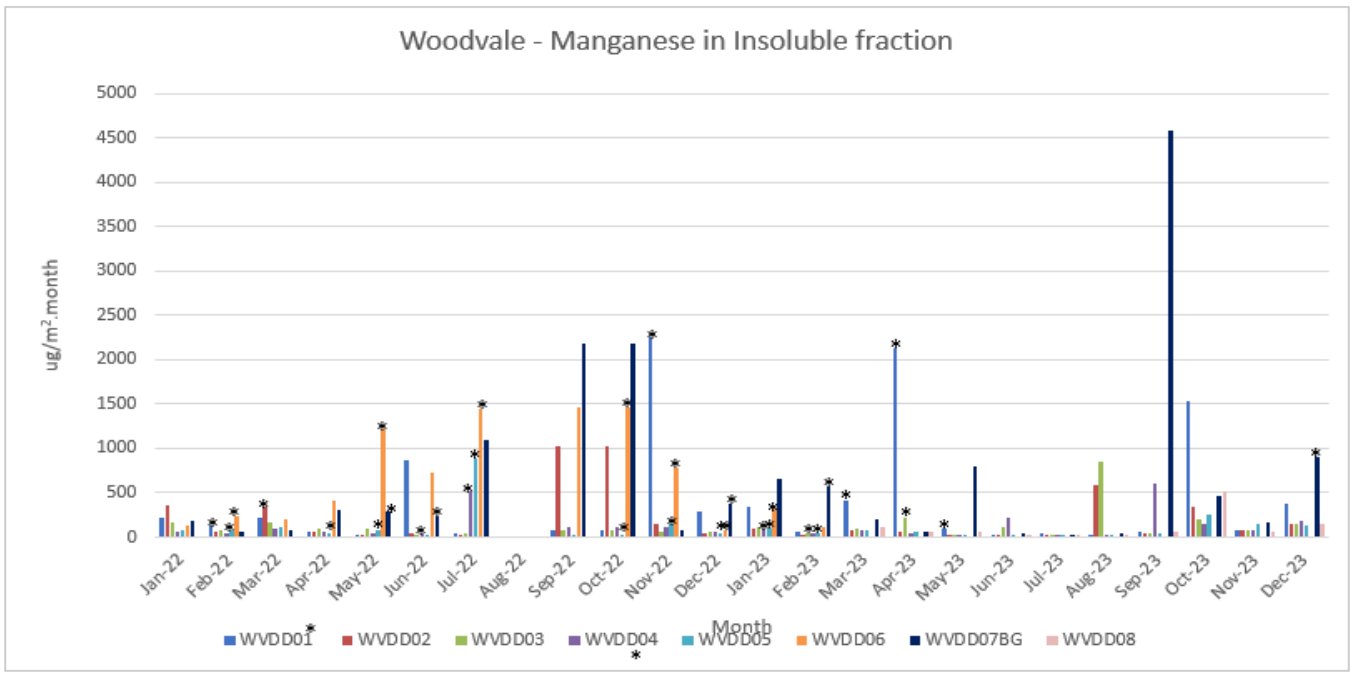

Figure 33 - Woodvale - Manganese in Insoluble Fraction Year Review (2022-23)
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

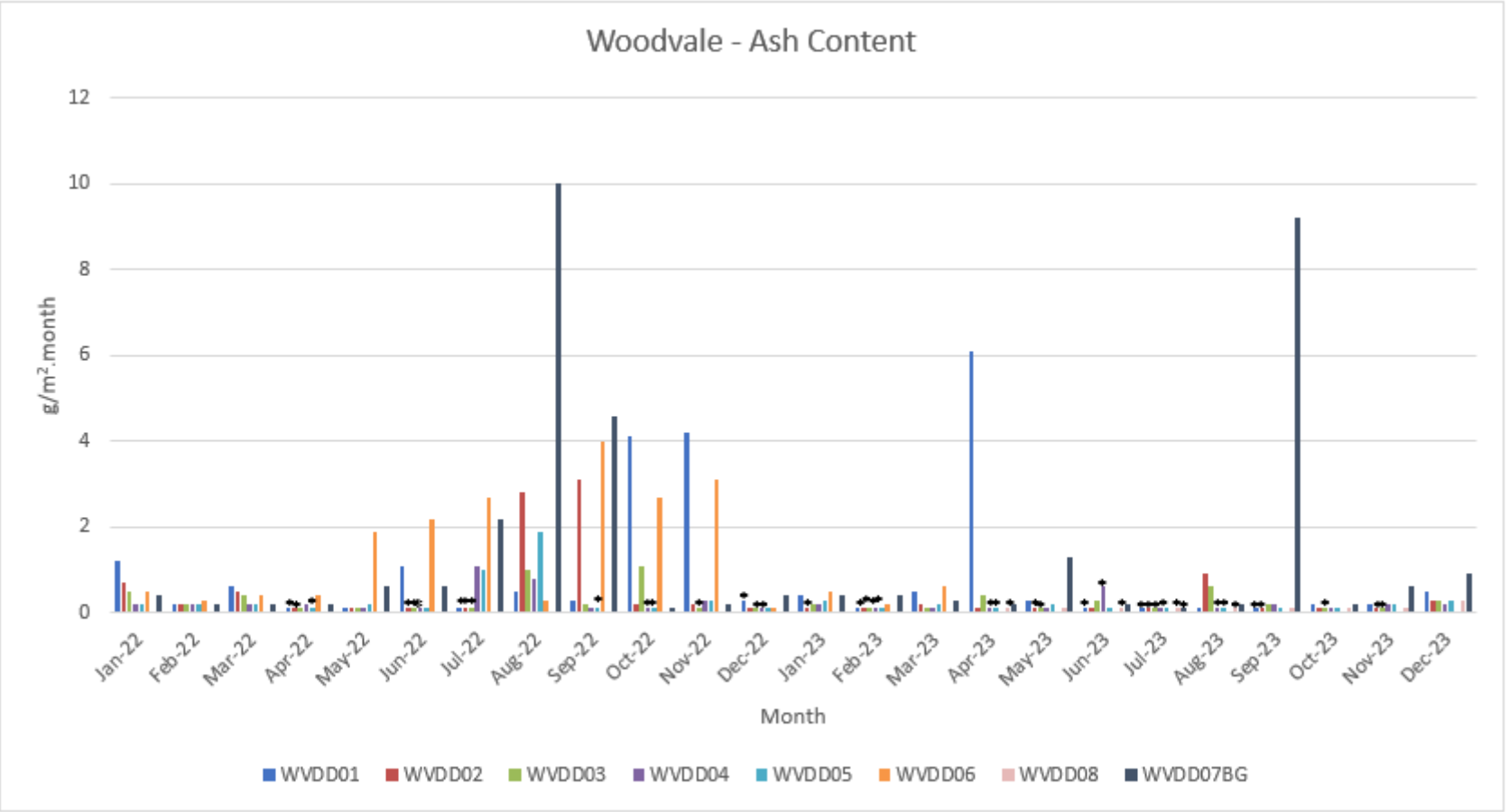

Figure 34 - Woodvale - Total Ash Content - 2022-2023
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

Figure 34 shows the Total Ash Content for all months in 2022 and 2023. Q4 monthly figures were very slightly higher than those presented in Q3 2023 when averaged over the quarter.

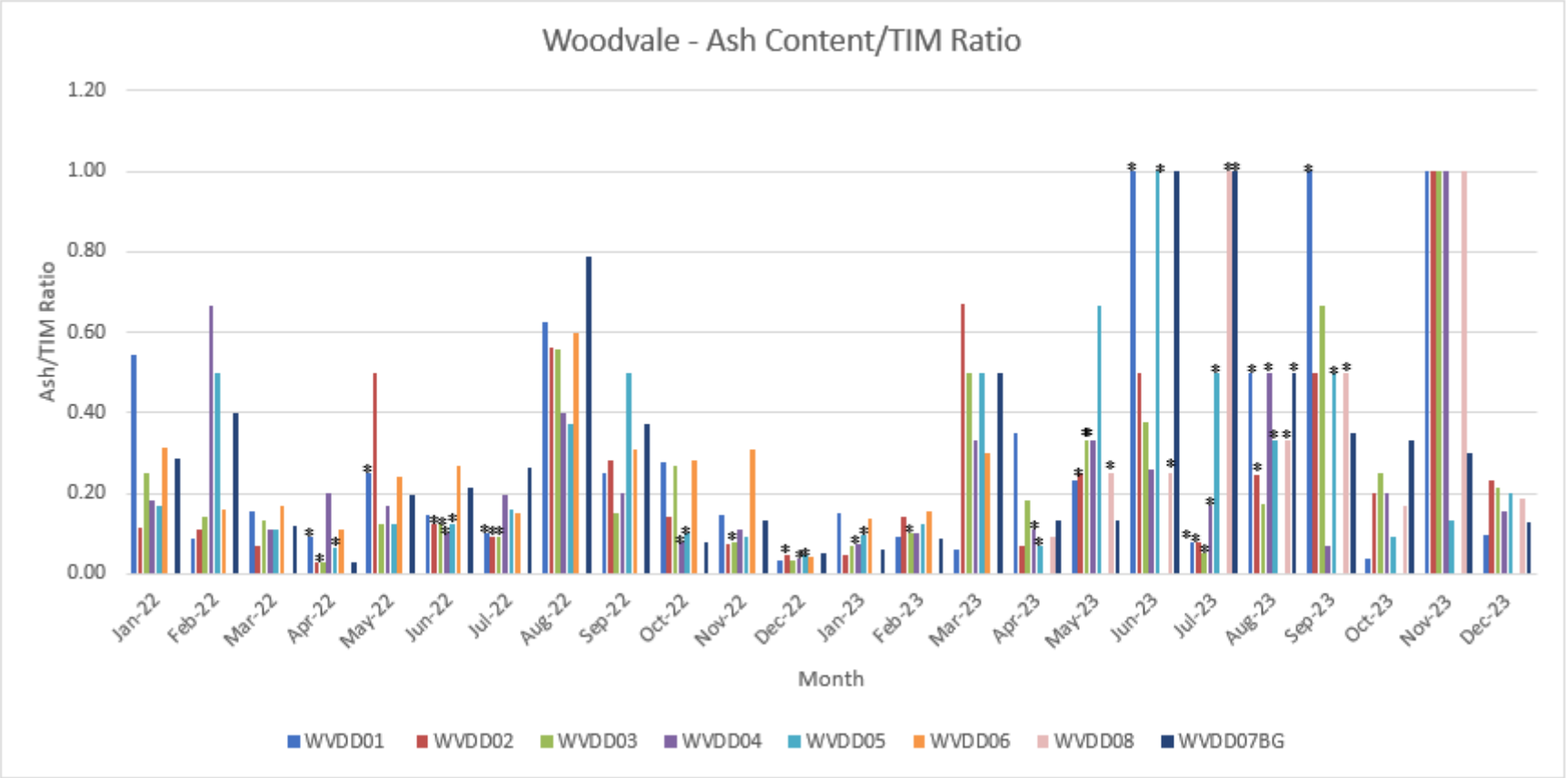

Figure 35 - Woodvale - Ash Content/TIM Ratio - 2022-2023
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

Figure 35 shows all results collected and sampled for 2022 and 2023.

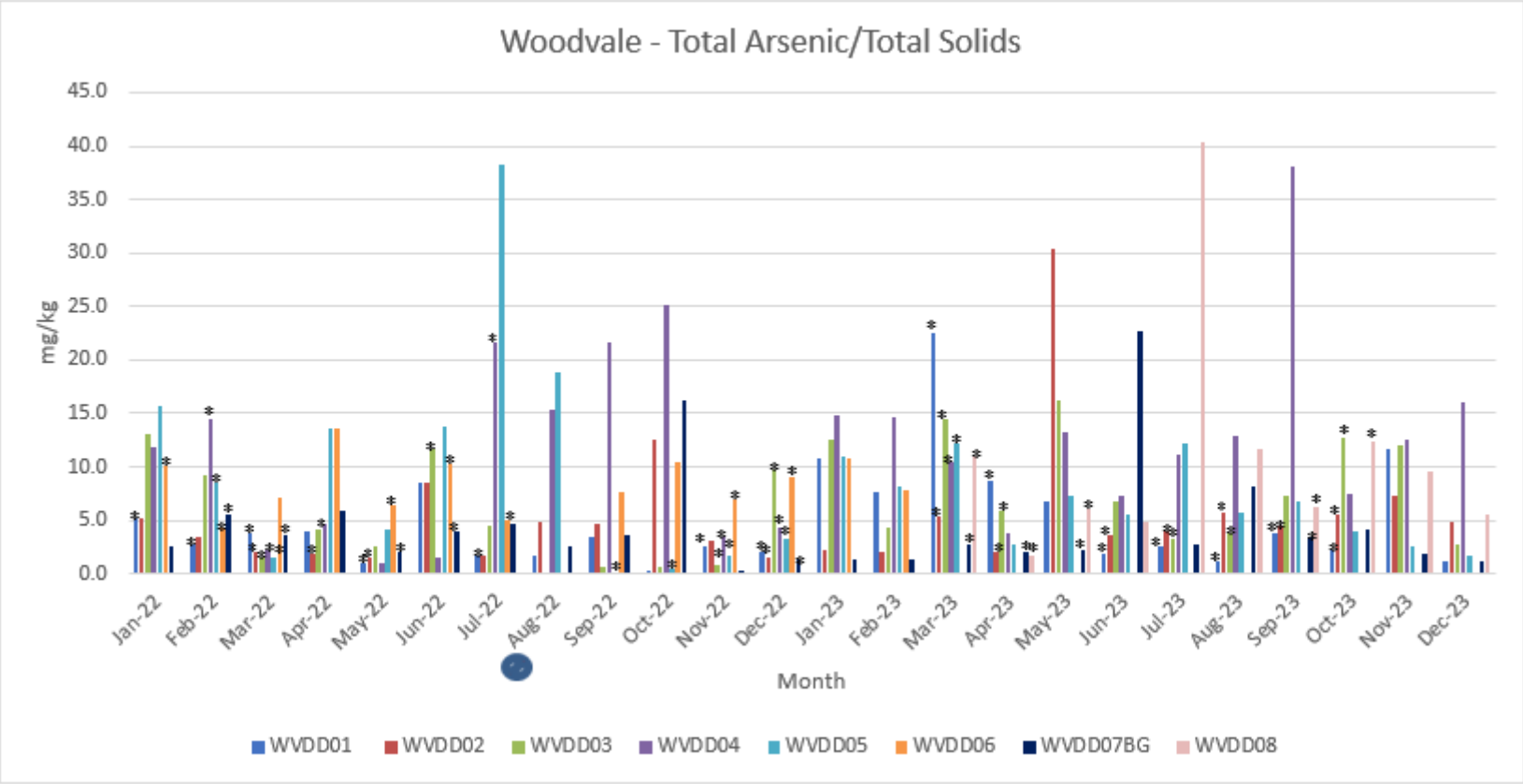

Figure 36 - Woodvale - Total Arsenic/Total Solids - 2022-2023
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.
Could not be calculated as per other months due to lab samples results – August 2022

Figure 36 above presents the ratio of Total Arsenic/Total Solids. Arsenic results for August have been given an over the sample as lab results were compromised as a result of being totally ashed. For more details refer to Q3 2022 report.

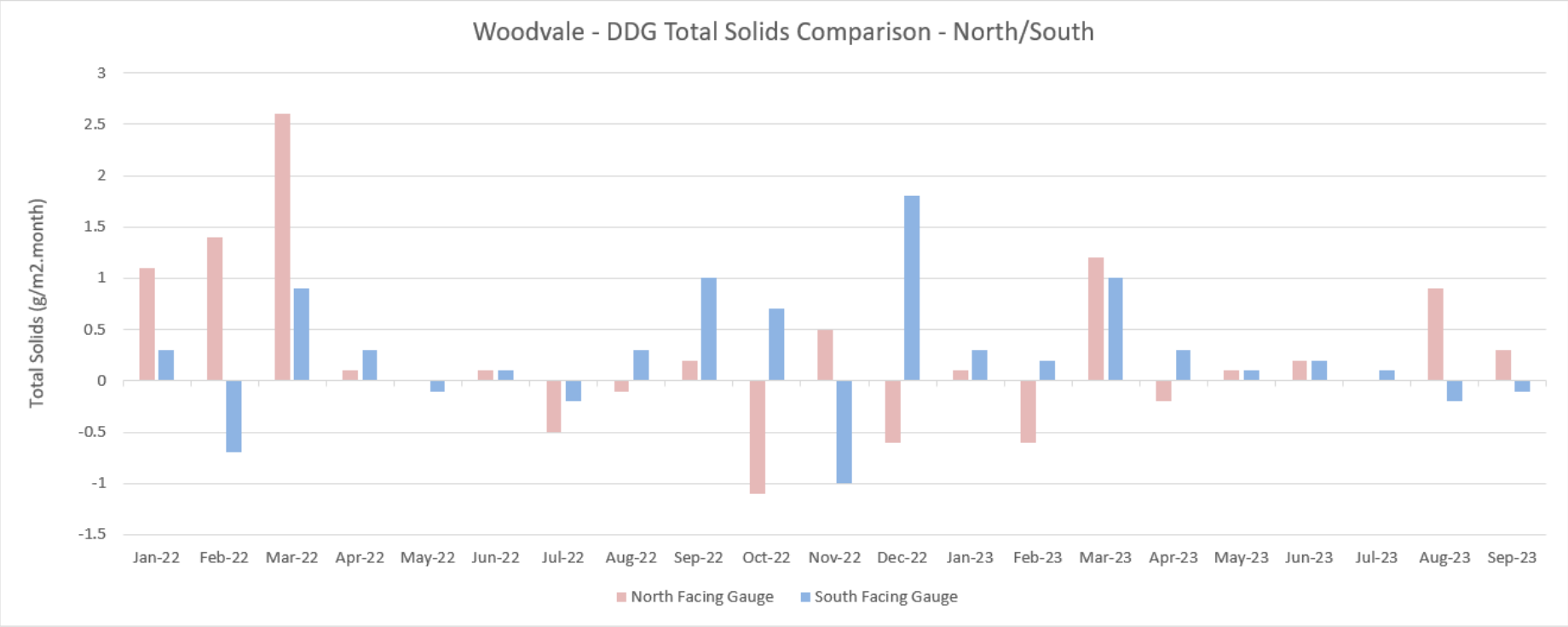

Figure 37 - Woodvale - DDG Total Solids Comparison North/South - 2022-2023

Figure 37 above displays the results from 2022 and 2023, no definitive pattern is apparent throughout this period with small net gains and losses from both the upwind and downwind quadrants being observed.

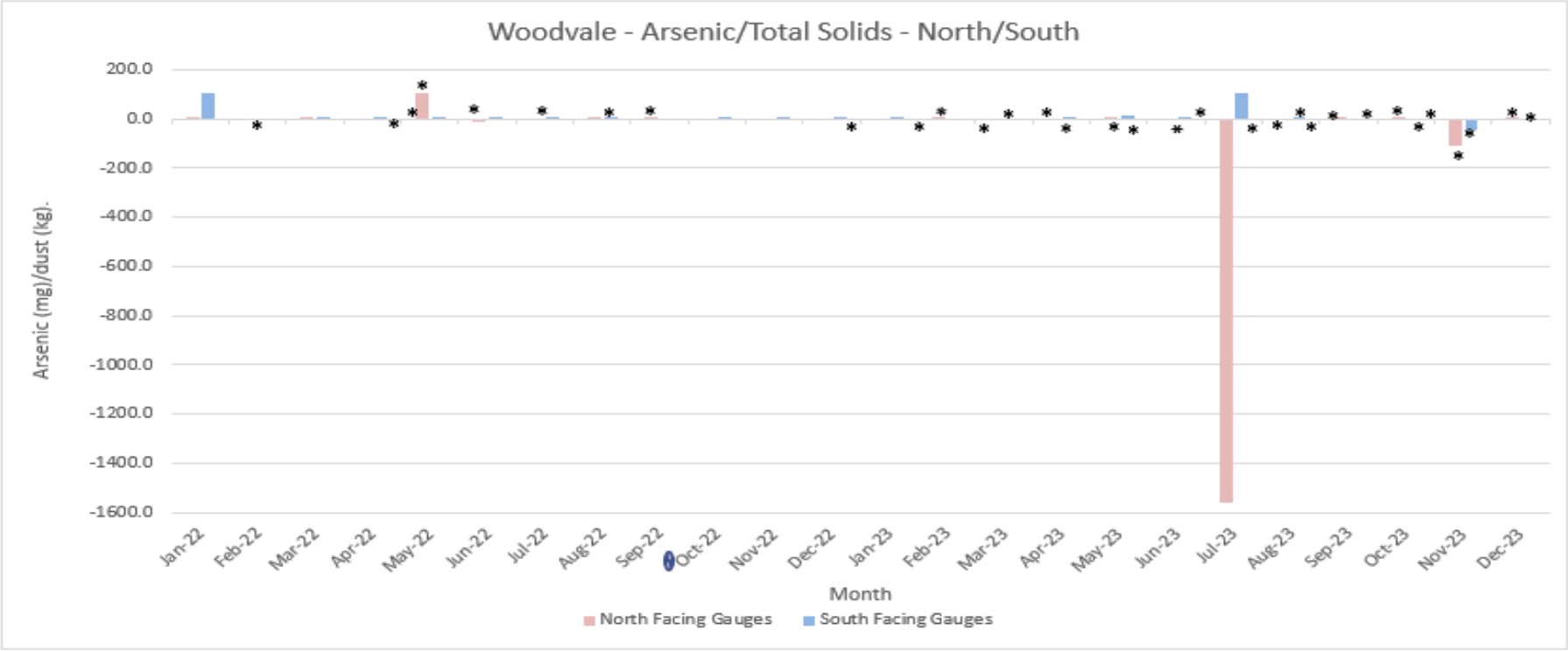

Figure 38 - Woodvale - Arsenic/Total Solids Comparison - North/South 2022-2023
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.
No results for Arsenic (insoluble) for August 2022

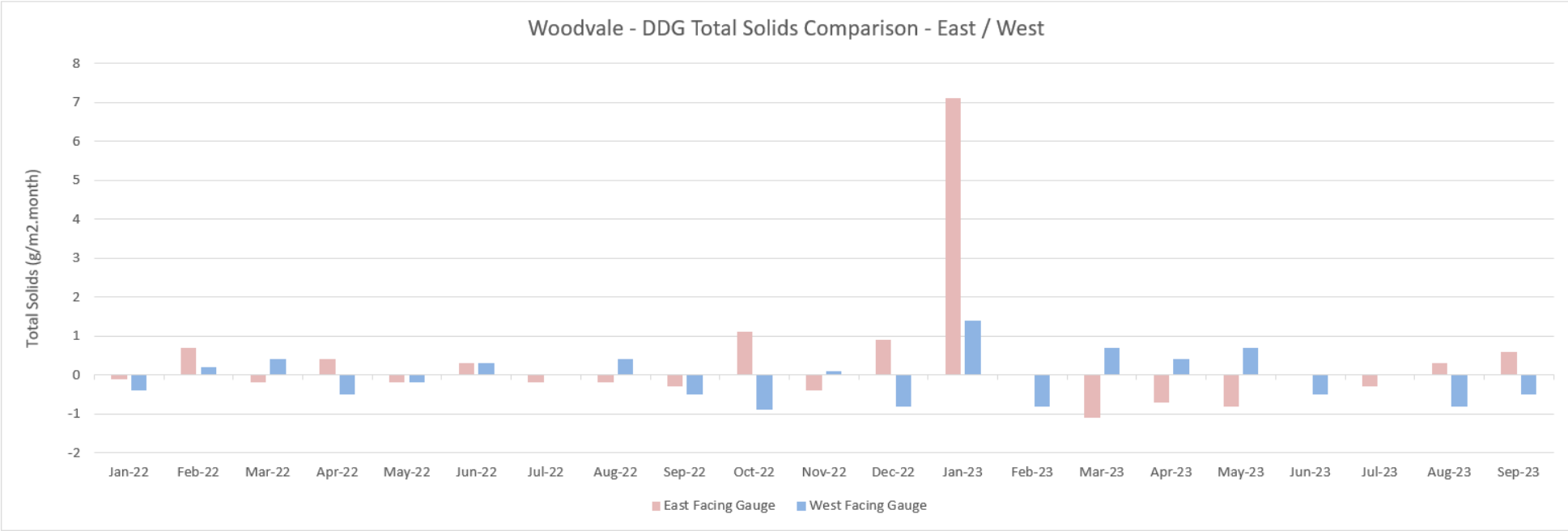

Figure 39 - Woodvale - DDG Total Solids Comparison East/West - 2022-2023

Figure 39 above displays the net gain or loss both upwind and downwind from east and west for total solids, and no clear pattern is identified above during the 21 months with both gains and losses occurring throughout the period.

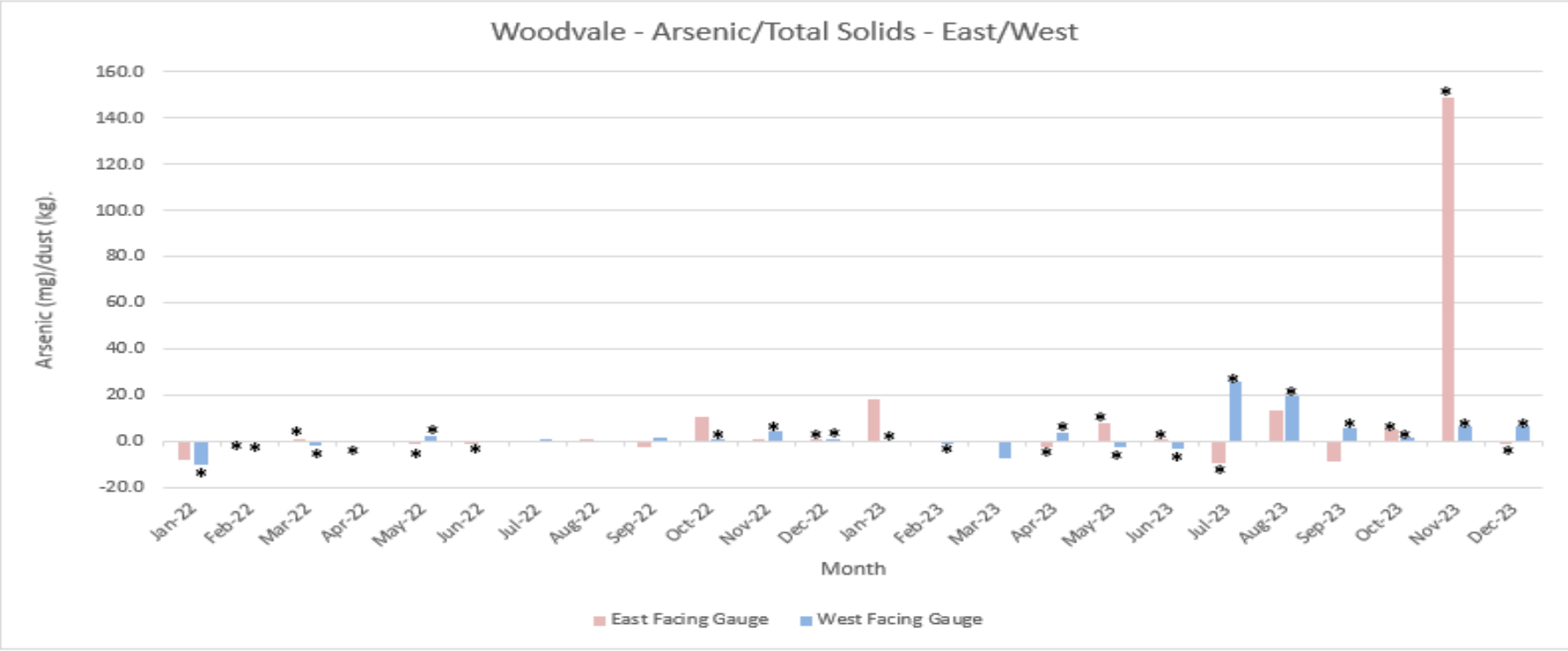

Figure 40 - Woodvale - Arsenic/Total Solids Comparison - East/West - 2022-2023
An asterisk (*) has been placed over the samples which recorded as less than (<) the value x displayed on the graph.

11. Appendix A – Supplementary Information

Dust Sampling – Depositional Dust Gauge Work Procedure

1 Scope

Depositional Dust Gauges are used to collect samples of ambient airborne dust particles. The information is often used to monitor the levels of dust generated by industry activities. Monitoring stations are usually located near lease boundaries, at neighbouring receptor sites (neighbouring properties) or to specifically determine the airborne dust associated with a particular activity (eg. stockpiles). The samples are collected monthly and analysed.

2 Definitions

Dust Gauges	Comprises of a 150 mm diameter soda glass funnel with side angles of 60 degrees. The funnel is supported firmly in the neck of a wide mouth glass bottle. The funnel and bottle are positioned on a fixed stand with the top of the funnel being approximately 2 m above ground. Sitting of gauges is as per AS 2922-1987.
Copper Sulfate	($CuSO_4.5H_2O$) – 10ml of $CuSO_4$ solution (7.8 g/L copper sulphate pentahydrate in de-ionised water matrix) placed into each of the sample collection flasks prior to placement in the field to inhibit algal growth.
Bottle Exchange	The sample collection period is not to exceed 30 day +/-2 days.

3 References

- AS / NZS 2922:1987 Ambient Air – Guide for the Siting of Sampling Units
- AS / NZS 3580.10.1:2003 Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method
- MAT-MAP3001 – ALS WRG Queensland Safety Management Plan

4 Procedure

4.1 Location of Depositional Dust Gauges

Depositional Dust Gauges should be located and installed as per AS / NZS 2922:1987.

4.2 Bottle Collection & Deployment

Depositional dust gauges should be collected and deployed as outlined below:

- Upon arrival at each site review any safety considerations such as JSA or "Take 5's" based on site requirements.
- Remove the bottle and funnel from the stand being careful not to spill any of the liquid from the bottle.
- Rinse any deposited matter from the walls of the funnel into the bottle with distilled water and record the required observations on the appropriate Dust Field Forms.
- Remove the funnel and stopper from the bottle and affix the cap to the bottle.
- Record on the field sheet the site number (and bottle number) that has been removed and the time and date of removal.
- Clean the funnel of any residual grease or matter and inspect the stopper for damage or wear.
- Select a new bottle for the site (recording the bottle number if required), remove the cap and insert the funnel.
- Replace the bottle into stand and secure.

4.3 Sample Submission and Laboratory Testing

Submit the sampled deposit flask to a selected analytical laboratory for analysis to AS 3580.10.1 – 1991 as follows:

- Determination of Total Solids
- Insoluble Solids
- Soluble Solids
- Ash and Combustible Matter

Generally the receiving laboratory should report specified particulate parameters in grams/m^2/month. Results should be reported to at least 1 decimal place. If required, the volume of liquid contained in each deposit flask should be recorded to give an indication of the rainfall for the exposure period.

The receiving laboratory must hold current NATA accreditation to perform and report the results of these analytical procedures.

5 Equipment

The following items of equipment are required to undertake the servicing of the sites:

- Suitably prepared exchange deposit flasks
- Wash bottle of distilled or de-ionised water
- Narrow bottle brush
- Clean rag or paper towel
- Permanent marker pen
- Insect spray

6 Recording of Results

Field observations shall be recorded on the Field Sheet Form.
Any uncharacteristic weather observations that are observed shall be entered onto the Field Sheet Form. These include any wet weather observations that are outside of what would be expected for the time of year that may impact on samples taken. These can include but are not limited to: Very strong winds, very high temperatures, heavy recent rainfall, very cold temperatures, hail, snow etc.

12. Appendix B – Laboratory Reports

CERTIFICATE OF ANALYSIS

Work Order	: **EM2319529**	Page	: 1 of 20
Client	: **ALS WATER AND HYDROGRAPHICS PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact			: Customer Services EM
Address	: 94 KERANG-KOONDROOK ROAD KERANG 3579	Contact	: 4 Westall Rd Springvale VIC Australia 3171
	: ----	Address	: +61 3 8549 9600
Telephone		Telephone	
Project	: MV214940	Date Samples Received	: 31-Oct-2023 12:50
Order number	: ----	Date Analysis Commenced	: 02-Nov-2023
C-O-C number	: ----	Issue Date	: 23-Nov-2023 18:14

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

Sampler	: R. Oliver
Site	: Woodvale & Kangaroo Flat
Quote number	: ME/968/20
No. of samples received	: 84
No. of samples analysed	: 84

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ALS is not NATA accredited for the analysis of metals in dust deposition gauge.
- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited. ALS Mudgee laboratory is NATA accredited for dust sampling, therefore ALS Mudgee reported deposition units are accredited.
- EA120-142i (Particulate Matter Directional Dust): As Total Soluble Matter mass is less than algaecide correction mass results have been reported on as received basis. No Algaecide correction has been applied.
- Sampling period 27/9/2023 -27/10/2023
- EA120-EA142:EM2319529:Sample#1-12 exposure period is within the typical exposure period of 30+/-2 days as per AS3580.10.1
- EA120I-EA142I:EM2319529:Sample#13-20,22-24, container was received with no liquid. 100ml of DI water was used to dissolve contents, perform analysis and for calculation of results.
- EA120I-EA142I:EM2319529:Sample# 13-28, exposure period is within the typical exposure period of 30+/-2 days as per AS3580.10.2
- EA120-EA142:EM2319529:Sample # 1-12, have been dosed with Benzalkonium chloride prior to sample collection and a correction factor of 0.030g has been used for calculations.
- Directional dust analysis as per AS3580.10.2-2013. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)				Sample ID	WVDD01	WVDD02	WVDD03	WVDD04	WVDD05
				Sampling date / time	27-Oct-2023 10:10	27-Oct-2023 10:30	27-Oct-2023 11:05	27-Oct-2023 11:25	27-Oct-2023 11:40
Compound	CAS Number	LOR	Unit		EM2319529-001	EM2319529-002	EM2319529-003	EM2319529-004	EM2319529-005
					Result	Result	Result	Result	Result
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.2**	**0.1**	<0.1	**0.1**	**0.1**
Ash Content (mg)	----	2	mg		**3**	<2	<2	<2	**2**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**5.2**	**0.4**	**0.3**	**0.4**	**1.0**
Combustible Matter (mg)	----	2	mg		**93**	**6**	**6**	**6**	**18**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**8.7**	**0.9**	**0.6**	**0.6**	**0.6**
Total Soluble Matter (mg)	----	2	mg		**153**	**16**	**11**	**10**	**10**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**5.4**	**0.5**	**0.4**	**0.5**	**1.1**
Total Insoluble Matter (mg)	----	2	mg		**96**	**8**	**7**	**8**	**20**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**14.1**	**1.4**	**1.0**	**1.1**	**1.7**
Total Solids (mg)		2	mg		**249**	**24**	**18**	**18**	**30**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		<4.30	<1.70	**----**	**----**	<1.88
ø Arsenic	7440-38-2	0.050	µg/m².month		**----**	**----**	**1.98**	**1.41**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		**----**	<42.2	<37.9	**----**	<33.3
ø Barium	7440-39-3	0.050	µg/m².month		**130**	**----**	**----**	**20.1**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**330**	**33.1**	**23.0**	**20.5**	**27.0**

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)				Sample ID	WVDD07BG	WVDD08	KF1	KF2	KF3
				Sampling date / time	27-Oct-2023 09:40	27-Oct-2023 10:40	27-Oct-2023 13:40	27-Oct-2023 13:10	27-Oct-2023 13:20
Compound	CAS Number	LOR	Unit		EM2319529-006	EM2319529-007	EM2319529-008	EM2319529-009	EM2319529-010
					Result	Result	Result	Result	Result
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.2**	**0.1**	**0.2**	**0.2**	**0.1**
Ash Content (mg)	----	2	mg		**3**	<2	**4**	**4**	**2**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.4**	**0.5**	**0.7**	**1.0**	**0.4**
Combustible Matter (mg)	----	2	mg		**8**	**9**	**12**	**18**	**7**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.8**	**1.0**	**0.9**	**1.3**	**0.3**
Total Soluble Matter (mg)	----	2	mg		**14**	**18**	**16**	**24**	**6**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.6**	**0.6**	**0.9**	**1.2**	**0.5**
Total Insoluble Matter (mg)	----	2	mg		**11**	**11**	**16**	**22**	**9**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**1.4**	**1.6**	**1.8**	**2.5**	**0.8**
Total Solids (mg)		2	mg		**25**	**29**	**32**	**46**	**15**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	**----**	<9.04	<125	**----**
ø Arsenic	7440-38-2	0.050	µg/m².month		**2.56**	**2.90**	**----**	**----**	**21.2**
ø Barium	7440-39-3	0.05	µg/m².month		<69.0	<48.9	<71.0	<115	<63.0
ø Manganese	7439-96-5	0.050	µg/m².month		**54.1**	**39.2**	**81.0**	**82.8**	**57.4**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

				Sample ID	KF4	KF5BG	WVDD01 – INSOLUBLE METALS INSOLUBLE METALS	WVDD02 – INSOLUBLE METALS INSOLUBLE METALS	WVDD03 – INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	27-Oct-2023 13:05	27-Oct-2023 12:55	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
Compound	CAS Number	LOR	Unit		EM2319529-011	EM2319529-012	EM2319529-029	EM2319529-030	EM2319529-031
					Result	Result	Result	Result	Result
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.1**	**0.1**	**----**	**----**	**----**
Ash Content (mg)	----	2	mg		**2**	<2	**----**	**----**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.6**	**0.1**	**----**	**----**	**----**
Combustible Matter (mg)	----	2	mg		**9**	**2**	**----**	**----**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.8**	**0.3**	**----**	**----**	**----**
Total Soluble Matter (mg)	----	2	mg		**14**	**5**	**----**	**----**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.7**	**0.2**	**----**	**----**	**----**
Total Insoluble Matter (mg)	----	2	mg		**12**	**4**	**----**	**----**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**1.5**	**0.5**	**----**	**----**	**----**
Total Solids (mg)		2	mg		**26**	**9**	**----**	**----**	**----**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	**----**	<4.30	<1.70	**----**
ø Arsenic	7440-38-2	0.050	µg/m².month		**33.8**	**4.53**	**----**	**----**	**2.32**
ø Barium	7440-39-3	0.05	µg/m².month		<83.3	<52.3	**----**	<42.2	<37.9
ø Barium	7440-39-3	0.050	µg/m².month		**----**	**----**	**174**	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**59.7**	**36.2**	**502**	**52.3**	**42.6**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	WVDD04 – INSOLUBLE METALS INSOLUBLE METALS	WVDD05 – INSOLUBLE METALS INSOLUBLE METALS	WVDD07BG – INSOLUBLE METALS INSOLUBLE METALS	WVDD08 – INSOLUBLE METALS INSOLUBLE METALS	KF1 – INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
					EM2319529-032	EM2319529-033	EM2319529-034	EM2319529-035	EM2319529-036
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	<1.88	**----**	**----**	<9.04
ø Arsenic	7440-38-2	0.050	µg/m².month		**1.60**	**----**	**2.94**	**6.44**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		**----**	<33.5	<69.0	<48.9	<71.0
ø Barium	7440-39-3	0.050	µg/m².month		**24.0**	**----**	**----**	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**34.1**	**49.9**	**87.8**	**56.1**	**129**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

				Sample ID	KF2 – INSOLUBLE METALS INSOLUBLE METALS	KF3 – INSOLUBLE METALS INSOLUBLE METALS	KF4 – INSOLUBLE METALS INSOLUBLE METALS	KF5BG – INSOLUBLE METALS INSOLUBLE METALS	WVDD01 – SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
Compound	CAS Number	LOR	Unit		EM2319529-037	EM2319529-038	EM2319529-039	EM2319529-040	EM2319529-057
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		<125	----	----	----	----
ø Arsenic	7440-38-2	0.050	µg/m².month		----	**23.3**	**33.8**	**5.15**	**26.8**
ø Barium	7440-39-3	0.05	µg/m².month		<115	<63.0	<83.3	<52.3	**203.8**
ø Manganese	7439-96-5	0.050	µg/m².month		**101**	**110**	**92.6**	**73.3**	**1530**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

				Sample ID	WVDD02 – SOLUBLE METALS SOLUBLE METALS	WVDD03 – SOLUBLE METALS SOLUBLE METALS	WVDD04 – SOLUBLE METALS SOLUBLE METALS	WVDD05 – SOLUBLE METALS SOLUBLE METALS	WVDD07BG – SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
Compound	CAS Number	LOR	Unit		EM2319529-058	EM2319529-059	EM2319529-060	EM2319529-061	EM2319529-062
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**6.06**	**10.4**	**6.62**	**4.81**	**3.75**
ø Barium	7440-39-3	0.050	µg/m².month		**78.8**	**56.9**	**41.9**	**51.0**	**84.1**
ø Manganese	7439-96-5	0.050	µg/m².month		**340**	**195**	**150**	**253**	**459**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

				Sample ID	WVDD08 – SOLUBLE METALS SOLUBLE METALS	KF1 – SOLUBLE METALS SOLUBLE METALS	KF2 – SOLUBLE METALS SOLUBLE METALS	KF3 – SOLUBLE METALS SOLUBLE METALS	KF4 – SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
Compound	CAS Number	LOR	Unit		EM2319529-063	EM2319529-064	EM2319529-065	EM2319529-066	EM2319529-067
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**10.9**	**11.4**	**44.3**	**26.0**	**17.4**
ø Barium	7440-39-3	0.050	µg/m².month		**74.3**	**80.1**	**58.8**	**75.8**	**124**
ø Manganese	7439-96-5	0.050	µg/m².month		**523**	**389**	**238**	**259**	**210**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

				Sample ID	KF5BG – SOLUBLE METALS SOLUBLE METALS	----	----	----	----
				Sampling date / time	[27-Oct-2023]	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2319529-068	--------	--------	--------	--------
					Result				
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**16.6**	**----**	**----**	**----**	**----**
ø Barium	7440-39-3	0.050	µg/m².month		**60.1**	**----**	**----**	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**200**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG03N	WVDG03E	WVDG03S	WVDG03W	WVDG04N
				Sampling date / time	27-Oct-2023 11:05	27-Oct-2023 11:05	27-Oct-2023 11:05	27-Oct-2023 11:05	27-Oct-2023 11:25
Compound	CAS Number	LOR	Unit		EM2319529-013	EM2319529-014	EM2319529-015	EM2319529-016	EM2319529-017
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		<0.1	<0.1	<0.1	<0.1	<0.1
Ash Content (mg)	----	2	mg		<2	<2	<2	<2	<2
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.1**	**0.3**	**0.3**	**0.3**	**0.2**
Combustible Matter (mg)	----	2	mg		<2	**3**	**5**	**5**	**3**
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.6**	**0.6**	**0.9**	**0.3**	**0.5**
Total Soluble Matter (mg)	----	2	mg		**10**	**9**	**14**	**5**	**7**
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.1**	**0.3**	**0.3**	**0.4**	**0.2**
Total Insoluble Matter (mg)	----	2	mg		<2	**4**	**5**	**6**	**3**
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		**0.7**	**0.9**	**1.2**	**0.7**	**0.7**
Total Solids (mg)		2	mg		**11**	**13**	**19**	**11**	**10**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	<6.04	**----**	**----**	<1.06
ø Arsenic	7440-38-2	0.050	µg/m².month		**0.720**	**----**	**1.03**	**1.10**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		**----**	<36.4	<24.9	<22.6	**----**
ø Barium	7440-39-3	0.050	µg/m².month		**46.5**	**----**	**----**	**----**	**13.9**
ø Manganese	7439-96-5	0.05	µg/m².month		**----**	<21.8	**----**	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**13.5**	**----**	**25.2**	**19.0**	**10.8**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG04E	WVDG04S	WVDG04W	WVDG05N	WVDG05E
				Sampling date / time	27-Oct-2023 11:25	27-Oct-2023 11:25	27-Oct-2023 11:25	27-Oct-2023 11:40	27-Oct-2023 11:40
Compound	CAS Number	LOR	Unit		EM2319529-018	EM2319529-019	EM2319529-020	EM2319529-021	EM2319529-022
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		<0.1	<0.1	**0.1**	<0.1	<0.1
Ash Content (mg)	----	2	mg		<2	<2	**2**	<2	<2
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.3**	<0.1	**0.2**	**0.2**	**0.1**
Combustible Matter (mg)	----	2	mg		**4**	<2	**3**	**4**	<2
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.3**	**0.2**	**0.3**	**0.6**	**0.8**
Total Soluble Matter (mg)	----	2	mg		**5**	**3**	**5**	**10**	**12**
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.3**	<0.1	**0.3**	**0.3**	**0.1**
Total Insoluble Matter (mg)	----	2	mg		**4**	<2	**5**	**5**	<2
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		**0.6**	**0.2**	**0.6**	**0.9**	**0.9**
Total Solids (mg)		2	mg		**9**	**3**	**10**	**15**	**13**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		<1.21	**----**	**----**	<4.69	<1.67
ø Arsenic	7440-38-2	0.050	µg/m².month		**----**	**0.650**	**2.69**	**----**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		<20.0	<14.5	<41.3	<60.2	**----**
ø Barium	7440-39-3	0.050	µg/m².month		**----**	**----**	**----**	**----**	**20.1**
ø Manganese	7439-96-5	0.05	µg/m².month		**----**	**----**	**----**	<45.5	<18.4
ø Manganese	7439-96-5	0.050	µg/m².month		**14.1**	**11.7**	**40.7**	**----**	**----**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG05S	WVDG05W	WVDG08N	WVDG08E	WVDG08S
				Sampling date / time	27-Oct-2023 11:40	27-Oct-2023 11:40	27-Oct-2023 10:40	27-Oct-2023 10:40	27-Oct-2023 10:40
Compound	CAS Number	LOR	Unit		EM2319529-023	EM2319529-024	EM2319529-025	EM2319529-026	EM2319529-027
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		<0.1	<0.1	<0.1	<0.1	**0.1**
Ash Content (mg)	----	2	mg		<2	<2	<2	<2	<2
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		<0.1	**0.1**	**0.3**	**0.1**	**0.4**
Combustible Matter (mg)	----	2	mg		<2	<2	**5**	<2	**6**
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.4**	**0.3**	**0.2**	**2.1**	**4.1**
Total Soluble Matter (mg)	----	2	mg		**6**	**5**	**2**	**32**	**63**
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		<0.1	**0.1**	**0.3**	**0.1**	**0.5**
Total Insoluble Matter (mg)	----	2	mg		<2	<2	**5**	**2**	**8**
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		**0.4**	**0.4**	**0.5**	**2.2**	**4.6**
Total Solids (mg)		2	mg		**6**	**6**	**7**	**34**	**71**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		<0.65	<0.61	<2.25	----	----
ø Arsenic	7440-38-2	0.050	µg/m².month		----	----	----	**1.33**	**1.87**
ø Barium	7440-39-3	0.05	µg/m².month		----	<18.4	<69.1	<63.3	<53.3
ø Barium	7440-39-3	0.050	µg/m².month		**14.5**	----	----	----	----
ø Manganese	7439-96-5	0.050	µg/m².month		**13.2**	**16.6**	**32.8**	**26.3**	**64.0**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)			Sample ID	WVDG08W	WVDG03N – INSOLUBLE METALS INSOLUBLE METALS	WVDG03E – INSOLUBLE METALS INSOLUBLE METALS	WVDG03S – INSOLUBLE METALS INSOLUBLE METALS	WVDG03W – INSOLUBLE METALS INSOLUBLE METALS
			Sampling date / time	27-Oct-2023 10:40	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
Compound	CAS Number	LOR	Unit	EM2319529-028	EM2319529-041	EM2319529-042	EM2319529-043	EM2319529-044
				Result	Result	Result	Result	Result
EA120I: Ash Content								
Ash Content	----	0.1	g/m².month	**0.2**	**----**	**----**	**----**	**----**
Ash Content (mg)	----	2	mg	**3**	**----**	**----**	**----**	**----**
EA125I: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	**0.5**	**----**	**----**	**----**	**----**
Combustible Matter (mg)	----	2	mg	**8**	**----**	**----**	**----**	**----**
EA139I: Total Soluble Matter								
Total Soluble Matter	----	0.1	g/m².month	**0.8**	**----**	**----**	**----**	**----**
Total Soluble Matter (mg)	----	2	mg	**12**	**----**	**----**	**----**	**----**
EA141I: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	**0.7**	**----**	**----**	**----**	**----**
Total Insoluble Matter (mg)	----	2	mg	**11**	**----**	**----**	**----**	**----**
EA142I: Total Solids								
Total Solids	----	0.1	g/m².month	**1.5**	**----**	**----**	**----**	**----**
Total Solids (mg)		2	mg	**23**	**----**	**----**	**----**	**----**
EG020T: Total Metals by ICP-MS								
ø Arsenic	7440-38-2	0.05	µg/m².month	<3.15	**----**	<6.04	**----**	**----**
ø Arsenic	7440-38-2	0.050	µg/m².month	**----**	**0.870**	**----**	**1.06**	**1.89**
ø Barium	7440-39-3	0.05	µg/m².month	<84.8	**----**	<36.4	<24.9	<22.6
ø Barium	7440-39-3	0.050	µg/m².month	**----**	**77.4**	**----**	**----**	**----**
ø Manganese	7439-96-5	0.05	µg/m².month	**----**	**----**	<21.8	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month	**106**	**29.9**	**----**	**29.7**	**33.2**

Analytical Results

Sub-Matrix: **DUST** (Matrix: **AIR**)

				Sample ID	WVDG04N – INSOLUBLE METALS INSOLUBLE METALS	WVDG04E – INSOLUBLE METALS INSOLUBLE METALS	WVDG04S – INSOLUBLE METALS INSOLUBLE METALS	WVDG04W – INSOLUBLE METALS INSOLUBLE METALS	WVDG05N – INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
Compound	CAS Number	LOR	Unit		EM2319529-045	EM2319529-046	EM2319529-047	EM2319529-048	EM2319529-049
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		<1.06	<1.21	----	----	<4.69
ø Arsenic	7440-38-2	0.050	µg/m².month		----	----	**0.980**	**2.74**	----
ø Barium	7440-39-3	0.05	µg/m².month		----	<20.0	<14.5	<41.3	<60.2
ø Barium	7440-39-3	0.050	µg/m².month		**14.6**	----	----	----	----
ø Manganese	7439-96-5	0.05	µg/m².month		----	----	----	----	<45.5
ø Manganese	7439-96-5	0.050	µg/m².month		**13.2**	**18.3**	**99.6**	**47.4**	----

Analytical Results

Sub-Matrix: **DUST** (Matrix: **AIR**)

				Sample ID	WVDG05E – INSOLUBLE METALS INSOLUBLE METALS	WVDG05S – INSOLUBLE METALS INSOLUBLE METALS	WVDG05W – INSOLUBLE METALS INSOLUBLE METALS	WVDG08N – INSOLUBLE METALS INSOLUBLE METALS	WVDG08E – INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
Compound	CAS Number	LOR	Unit		EM2319529-050	EM2319529-051	EM2319529-052	EM2319529-053	EM2319529-054
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		<1.67	<0.65	<0.61	<2.25	**----**
ø Arsenic	7440-38-2	0.050	µg/m².month		**----**	**----**	**----**	**----**	**1.46**
ø Barium	7440-39-3	0.05	µg/m².month		**----**	**----**	<18.4	<69.1	<63.3
ø Barium	7440-39-3	0.050	µg/m².month		**21.0**	**15.9**	**----**	**----**	**----**
ø Manganese	7439-96-5	0.05	µg/m².month		<18.4	**----**	**----**	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**----**	**17.1**	**17.7**	**48.2**	**41.0**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	WVDG08S – INSOLUBLE METALS INSOLUBLE METALS	WVDG08W – INSOLUBLE METALS INSOLUBLE METALS	WVDG03N – SOLUBLE METALS SOLUBLE METALS	WVDG03E – SOLUBLE METALS SOLUBLE METALS	WVDG03S – SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
					EM2319529-055	EM2319529-056	EM2319529-069	EM2319529-070	EM2319529-071
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	<3.15	**----**	**----**	**----**
ø Arsenic	7440-38-2	0.050	µg/m².month		**2.13**	**----**	**0.470**	**3.53**	**0.770**
ø Barium	7440-39-3	0.05	µg/m².month		<53.3	<84.8	**----**	**----**	**----**
ø Barium	7440-39-3	0.050	µg/m².month		**----**	**----**	**36.1**	**6.40**	**4.00**
ø Manganese	7439-96-5	0.050	µg/m².month		**72.5**	**112**	**32.4**	**19.4**	**19.6**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

				Sample ID	WVDG03W – SOLUBLE METALS SOLUBLE METALS	WVDG04N – SOLUBLE METALS SOLUBLE METALS	WVDG04E – SOLUBLE METALS SOLUBLE METALS	WVDG04S – SOLUBLE METALS SOLUBLE METALS	WVDG04W – SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
Compound	*CAS Number*	*LOR*	*Unit*		**EM2319529-072**	**EM2319529-073**	**EM2319529-074**	**EM2319529-075**	**EM2319529-076**
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**0.550**	**2.20**	**2.01**	**0.670**	**1.13**
ø Barium	7440-39-3	0.050	µg/m².month		**1.60**	**1.40**	**5.80**	**3.90**	**2.70**
ø Manganese	7439-96-5	0.050	µg/m².month		**15.4**	**24.4**	**23.7**	**17.7**	**14.3**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

				Sample ID	WVDG05N – SOLUBLE METALS SOLUBLE METALS	WVDG05E – SOLUBLE METALS SOLUBLE METALS	WVDG05S – SOLUBLE METALS SOLUBLE METALS	WVDG05W – SOLUBLE METALS SOLUBLE METALS	WVDG08N – SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]
Compound	*CAS Number*	*LOR*	*Unit*		**EM2319529-077**	**EM2319529-078**	**EM2319529-079**	**EM2319529-080**	**EM2319529-081**
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**2.13**	**0.660**	**0.100**	**1.14**	**0.380**
ø Barium	7440-39-3	0.050	µg/m².month		**20.8**	**15.9**	**5.10**	**2.50**	**1.80**
ø Manganese	7439-96-5	0.050	µg/m².month		**106**	**36.0**	**15.1**	**11.5**	**6.57**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)

				Sample ID	WVDG08E – SOLUBLE METALS SOLUBLE METALS	WVDG08S – SOLUBLE METALS SOLUBLE METALS	WVDG08W – SOLUBLE METALS SOLUBLE METALS	----	----
				Sampling date / time	[27-Oct-2023]	[27-Oct-2023]	[27-Oct-2023]	----	----
Compound	CAS Number	LOR	Unit		EM2319529-082	EM2319529-083	EM2319529-084	--------	--------
					Result	Result	Result		
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**21.2**	**24.6**	**4.42**	**----**	**----**
ø Barium	7440-39-3	0.050	µg/m².month		**19.1**	**13.5**	**20.9**	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**294**	**674**	**261**	**----**	**----**

CERTIFICATE OF ANALYSIS

Work Order	: **EM2321591**	Page	: 1 of 20
Amendment	: **3**		
Client	: **ALS WATER AND HYDROGRAPHICS PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact			: Customer Services EM
Address	: 94 KERANG-KOONDROOK ROAD KERANG 3579		: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61 3 8549 9600
Project	: MV214940	Date Samples Received	: 04-Dec-2023 10:15
Order number	: ----	Date Analysis Commenced	: 08-Dec-2023
C-O-C number	: ----	Issue Date	: 19-Feb-2024 10:31
Sampler	: ROHAN OLIVER		
Site	: Woodvale & Kangaroo Flat		
Quote number	: ME/968/20_V2		
No. of samples received	: 84		
No. of samples analysed	: 84		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*

Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- (16/02/2024) It is recognised that insoluble barium is less than ashed barium for samples 2 & 58. However, the difference is within experimental variation of the methods.
- (16/02/2024) EM2321591 #6&62, 17&73, 18&74, 19&75, 20&76, 22&78, 23&79, 24&80 and 27&83 comparison of insoluble and ash arsenic results has exceeded the expected RPD criteria. A cautious approach has been taken towards this and the higher ash results have been reported while LOR of the insoluble has been raised as a result. This is potentially due to the heterogeneity of the filtered matter distribution.
- (16/02/2024) EM2321591 #13&69, 17&73, 20&76, 22&78, 23&79, 24&80 and 27&83 comparison of insoluble and ash manganese results has exceeded the expected RPD criteria. A cautious approach has been taken towards this and the higher ash results have been reported while LOR of the insoluble has been raised as a result. This is potentially due to the heterogeneity of the filtered matter distribution.
- (16/02/2024) EM2321591 #1, 3-13, 15-17, 19-28, 57, 59-69, 71-73 and 75-84 comparison of insoluble and ash barium results has exceeded the expected RPD criteria. A cautious approach has been taken towards this and the higher ash results have been reported while LOR of the insoluble has been raised as a result. This is potentially due to the heterogeneity of the filtered matter distribution.
- ALS is not NATA accredited for the analysis of metals in dust deposition gauge.
- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited. ALS Mudgee laboratory is NATA accredited for dust sampling, therefore ALS Mudgee reported deposition units are accredited.
- (16/02/2024) It is recognised that insoluble arsenic is less than ashed arsenic for samples 5 & 61, 13 & 69, 21 & 77 and 26 & 82. However, the difference is within experimental variation of the methods.
- (16/02/2024) It is recognised that insoluble manganese is less than ashed manganese for samples 5 & 61, 19 & 75 and 21 & 77. However, the difference is within experimental variation of the methods.
- Amendment (16/02/2024): This report has been amended and re-released to allow additional pertinent comments regarding method EG020TUG to be added to the report.
- Amendment 13/02/2024: This report has been amended following a change to the sample ID and ash metal results for EG020TUG reported for sample EM2321591 #29-84 due to a transcription

- error. All details are recorded in client query 24MECC034 and a full investigation will be detailed in corrective action request 24MEC013.
- Amendment (08/01/2024): This report has been amended following the identification of an error in the LIMS quoting or reporting setup for this test. The quality system is being utilised to resolve this issue. The specific data affected includes container type for sample #6.
- Sampling period: 27/10/2023 - 30/11/2023
- EA120-EA142:EM2321591:Sample#1-12, exposure period is 34 days which is outside the typical exposure period of 30+/-2 days as per AS3580.10.1/AS3580.10.2
- EA120I-EA142I:EM2321591:Sample#13-28, Sample exposure period is 34 days which is outside the typical exposure period of 30 +/- 2 days as per AS3580.10.2
- EA120-EA142:EM2321591:Sample#1-12,Dust samples have been dosed with Benzalkonium chloride prior to sample collection and a correction factor of 0.030g has been used for calculations.
- EA120I-EA142I:EM2321591:Sample#13-28,Dust samples have been dosed with Benzalkonium chloride prior to sample collection and a correction factor of 0.030g has been used for calculations.
- Directional dust analysis as per AS3580.10.2-2013. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)				Sample ID	WVDD01	WVDD02	WVDD03	WVDD04	WVDD05
				Sampling date / time	30-Nov-2023 10:20	30-Nov-2023 10:35	30-Nov-2023 10:45	30-Nov-2023 11:10	30-Nov-2023 11:30
Compound	CAS Number	LOR	Unit		EM2321591-001	EM2321591-002	EM2321591-003	EM2321591-004	EM2321591-005
					Result	Result	Result	Result	Result
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.2**	<0.1	<0.1	**0.2**	**0.2**
Ash Content (mg)	----	2	mg		**4**	<2	<2	**4**	**4**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		<0.1	<0.1	<0.1	<0.1	**1.3**
Combustible Matter (mg)	----	2	mg		<2	<2	<2	<2	**26**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**5.7**	**0.7**	**1.2**	**3.1**	**8.0**
Total Soluble Matter (mg)	----	2	mg		**114**	**14**	**24**	**61**	**160**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.2**	<0.1	<0.1	**0.2**	**1.5**
Total Insoluble Matter (mg)	----	2	mg		**5**	<2	<2	**5**	**30**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**5.9**	**0.7**	**1.2**	**3.3**	**9.5**
Total Solids (mg)	----	2	mg		**119**	**15**	**25**	**66**	**190**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	**----**	**----**	**----**	**5.97**
ø Arsenic	7440-38-2	0.050	µg/m².month		**4.29**	**2.23**	**4.80**	**3.64**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		**92.1**	**40.4**	**75.6**	**57.5**	**367**
ø Manganese	7439-96-5	0.05	µg/m².month		**----**	**----**	**----**	**----**	**168**
ø Manganese	7439-96-5	0.050	µg/m².month		**57.8**	**34.1**	**51.3**	**50.6**	**----**

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)				Sample ID	WVDD07BG	WVDD08	KF1	KF2	KF3
				Sampling date / time	30-Nov-2023 10:00	30-Nov-2023 12:30	30-Nov-2023 14:30	30-Nov-2023 13:50	30-Nov-2023 14:00
Compound	CAS Number	LOR	Unit		EM2321591-006	EM2321591-007	EM2321591-008	EM2321591-009	EM2321591-010
					Result	Result	Result	Result	Result
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		0.6	0.1	0.2	0.2	0.2
Ash Content (mg)	----	2	mg		11	2	4	5	3
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		1.4	<0.1	<0.1	<0.1	<0.1
Combustible Matter (mg)	----	2	mg		29	<2	<2	<2	<2
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		4.3	1.4	1.1	0.8	0.8
Total Soluble Matter (mg)	----	2	mg		86	28	23	16	15
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		2.0	0.1	0.2	0.3	0.2
Total Insoluble Matter (mg)	----	2	mg		40	2	4	6	4
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		6.3	1.5	1.3	1.1	1.0
Total Solids (mg)	----	2	mg		126	30	27	22	19
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		6.02	----	28.1	----	----
ø Arsenic	7440-38-2	0.050	µg/m².month		----	2.97	----	113	23.8
ø Barium	7440-39-3	0.05	µg/m².month		204	57.8	78.9	100	55.7
ø Manganese	7439-96-5	0.050	µg/m².month		144	46.9	64.5	61.1	48.1

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	KF4	KF5BG	WVDD01 - SOLUBLE METALS SOLUBLE METALS	WVDD02 - SOLUBLE METALS SOLUBLE METALS	WVDD03 - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	30-Nov-2023 13:40	30-Nov-2023 13:30	30-Nov-2023 10:20	30-Nov-2023 10:35	30-Nov-2023 10:45
					EM2321591-011	EM2321591-012	EM2321591-029	EM2321591-030	EM2321591-031
					Result	Result	Result	Result	Result
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.1**	**0.2**	**----**	**----**	**----**
Ash Content (mg)	----	2	mg		**2**	**4**	**----**	**----**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		<0.1	<0.1	**----**	**----**	**----**
Combustible Matter (mg)	----	2	mg		<2	<2	**----**	**----**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**1.1**	**0.7**	**----**	**----**	**----**
Total Soluble Matter (mg)	----	2	mg		**23**	**14**	**----**	**----**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.1**	**0.2**	**----**	**----**	**----**
Total Insoluble Matter (mg)	----	2	mg		**3**	**4**	**----**	**----**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**1.2**	**0.9**	**----**	**----**	**----**
Total Solids (mg)	----	2	mg		**26**	**18**	**----**	**----**	**----**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**15.0**	**7.21**	**64.2**	**1.44**	**9.01**
ø Barium	7440-39-3	0.05	µg/m².month		**92**	**59.4**	**----**	**----**	**----**
ø Barium	7440-39-3	0.050	µg/m².month		**----**	**----**	**175**	**107**	**112**
ø Manganese	7439-96-5	0.050	µg/m².month		**55.0**	**53.2**	**145**	**224**	**285**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	WVDD04 - SOLUBLE METALS SOLUBLE METALS	WVDD05 - SOLUBLE METALS SOLUBLE METALS	WVDD07BG - SOLUBLE METALS SOLUBLE METALS	WVDD08 - SOLUBLE METALS SOLUBLE METALS	KF1 - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	30-Nov-2023 11:10	30-Nov-2023 11:30	30-Nov-2023 10:00	30-Nov-2023 12:30	30-Nov-2023 14:30
					EM2321591-032	EM2321591-033	EM2321591-034	EM2321591-035	EM2321591-036
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**37.5**	**19.1**	**5.40**	**10.7**	**12.1**
ø Barium	7440-39-3	0.050	µg/m².month		**236**	**1240**	**92.7**	**123**	**85.5**
ø Manganese	7439-96-5	0.050	µg/m².month		**1090**	**518**	**1030**	**412**	**260**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	KF2 - SOLUBLE METALS SOLUBLE METALS	KF3 - SOLUBLE METALS SOLUBLE METALS	KF4 - SOLUBLE METALS SOLUBLE METALS	KF5BG - SOLUBLE METALS SOLUBLE METALS	WVDD01 - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	30-Nov-2023 13:50	30-Nov-2023 14:00	30-Nov-2023 13:40	30-Nov-2023 13:30	30-Nov-2023 10:20
					EM2321591-037	EM2321591-038	EM2321591-039	EM2321591-040	EM2321591-057
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**53.9**	**44.8**	**20.5**	**10.9**	**4.49**
ø Barium	7440-39-3	0.05	µg/m².month		**----**	**----**	**----**	**----**	<92.1
ø Barium	7440-39-3	0.050	µg/m².month		**93.0**	**72.3**	**223**	**152**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**232**	**269**	**227**	**255**	**75.1**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	WVDD02 - INSOLUBLE METALS INSOLUBLE METALS	WVDD03 - INSOLUBLE METALS INSOLUBLE METALS	WVDD04 - INSOLUBLE METALS INSOLUBLE METALS	WVDD05 - INSOLUBLE METALS INSOLUBLE METALS	WVDD07BG - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	30-Nov-2023 10:35	30-Nov-2023 10:45	30-Nov-2023 11:10	30-Nov-2023 11:30	30-Nov-2023 10:00
					EM2321591-058	EM2321591-059	EM2321591-060	EM2321591-061	EM2321591-062
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	**----**	**----**	**4.93**	<6.02
ø Arsenic	7440-38-2	0.050	µg/m².month		**3.62**	**5.39**	**3.99**	**----**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		**35.1**	<75.6	<57.5	<367	<204
ø Manganese	7439-96-5	0.05	µg/m².month		**----**	**----**	**----**	**142**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**70.0**	**70.1**	**71.3**	**----**	**162**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	WVDD08 - INSOLUBLE METALS INSOLUBLE METALS	KF1 - INSOLUBLE METALS INSOLUBLE METALS	KF2 - INSOLUBLE METALS INSOLUBLE METALS	KF3 - INSOLUBLE METALS INSOLUBLE METALS	KF4 - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	30-Nov-2023 12:30	30-Nov-2023 14:30	30-Nov-2023 13:50	30-Nov-2023 14:00	30-Nov-2023 13:40
					EM2321591-063	EM2321591-064	EM2321591-065	EM2321591-066	EM2321591-067
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	<28.1	**----**	**----**	**----**
ø Arsenic	7440-38-2	0.050	µg/m².month		**3.52**	**----**	**116**	**47.4**	**18.2**
ø Barium	7440-39-3	0.05	µg/m².month		<57.8	<78.9	<100	<55.7	<92.0
ø Manganese	7439-96-5	0.050	µg/m².month		**66.7**	**76.2**	**84.4**	**75.3**	**68.7**

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)				Sample ID	KF5BG - INSOLUBLE METALS INSOLUBLE METALS	----	----	----	----
				Sampling date / time	30-Nov-2023 13:30	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2321591-068	--------	--------	--------	--------
					Result	----	----	----	----
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**8.32**	**----**	**----**	**----**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		<59.4	**----**	**----**	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**60.2**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG03N	WVDG03E	WVDG03S	WVDG03W	WVDG04N
				Sampling date / time	30-Nov-2023 10:45	30-Nov-2023 10:45	30-Nov-2023 10:45	30-Nov-2023 10:45	30-Nov-2023 11:10
Compound	CAS Number	LOR	Unit		EM2321591-013	EM2321591-014	EM2321591-015	EM2321591-016	EM2321591-017
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		**0.1**	<0.1	<0.1	<0.1	**0.1**
Ash Content (mg)	----	2	mg		**2**	<2	<2	<2	**2**
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.1**	**0.1**	<0.1	<0.1	**0.1**
Combustible Matter (mg)	----	2	mg		**2**	<2	<2	<2	<2
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		<0.1	<0.1	<0.1	<0.1	<0.1
Total Soluble Matter (mg)	----	2	mg		<2	<2	<2	<2	<2
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.2**	**0.1**	**0.1**	**0.1**	**0.2**
Total Insoluble Matter (mg)	----	2	mg		**4**	<2	<2	**2**	**3**
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		<0.1	<0.1	<0.1	<0.1	<0.1
Total Solids (mg)	----	2	mg		<2	<2	<2	<2	<2
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**5.02**	**----**	**----**	**----**	**2.39**
ø Arsenic	7440-38-2	0.050	µg/m².month		**----**	**1.88**	**1.90**	**2.07**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		**1140**	**----**	**32.9**	**56.2**	**28**
ø Barium	7440-39-3	0.050	µg/m².month		**----**	**27.7**	**----**	**----**	**----**
ø Manganese	7439-96-5	0.05	µg/m².month		**71.0**	**----**	**----**	**----**	**27.2**
ø Manganese	7439-96-5	0.050	µg/m².month		**----**	**32.3**	**37.4**	**38.2**	**----**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG04E	WVDG04S	WVDG04W	WVDG05N	WVDG05E
				Sampling date / time	30-Nov-2023 11:10	30-Nov-2023 11:10	30-Nov-2023 11:10	30-Nov-2023 11:30	30-Nov-2023 11:30
Compound	CAS Number	LOR	Unit		EM2321591-018	EM2321591-019	EM2321591-020	EM2321591-021	EM2321591-022
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		<0.1	<0.1	<0.1	**0.1**	<0.1
Ash Content (mg)	----	2	mg		<2	<2	<2	**2**	<2
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		<0.1	**0.1**	**0.2**	**0.2**	<0.1
Combustible Matter (mg)	----	2	mg		<2	<2	**3**	**3**	<2
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.2**	<0.1	**0.2**	<0.1	<0.1
Total Soluble Matter (mg)	----	2	mg		**4**	<2	**3**	<2	<2
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		<0.1	**0.1**	**0.2**	**0.3**	<0.1
Total Insoluble Matter (mg)	----	2	mg		<2	<2	**3**	**5**	<2
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		**0.2**	<0.1	**0.4**	<0.1	<0.1
Total Solids (mg)	----	2	mg		**4**	<2	**6**	<2	<2
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**2.12**	**0.87**	**2.41**	**2.37**	**2.09**
ø Barium	7440-39-3	0.05	µg/m².month		**----**	**13.5**	**14.8**	**41.4**	**35.2**
ø Barium	7440-39-3	0.050	µg/m².month		**16.9**	**----**	**----**	**----**	**----**
ø Manganese	7439-96-5	0.05	µg/m².month		**----**	**22.9**	**37.8**	**41.7**	**32.4**
ø Manganese	7439-96-5	0.050	µg/m².month		**26.5**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG05S	WVDG05W	WVDG08N	WVDG08E	WVDG08S
				Sampling date / time	30-Nov-2023 11:30	30-Nov-2023 11:30	30-Nov-2023 12:30	30-Nov-2023 12:30	30-Nov-2023 12:30
Compound	CAS Number	LOR	Unit		EM2321591-023	EM2321591-024	EM2321591-025	EM2321591-026	EM2321591-027
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		**0.1**	**0.1**	<0.1	<0.1	<0.1
Ash Content (mg)	----	2	mg		**2**	<2	<2	<2	<2
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		<0.1	<0.1	**0.1**	<0.1	**0.1**
Combustible Matter (mg)	----	2	mg		<2	<2	<2	<2	<2
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.1**	<0.1	<0.1	<0.1	<0.1
Total Soluble Matter (mg)	----	2	mg		<2	<2	<2	<2	<2
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		<0.1	<0.1	**0.1**	**0.1**	**0.1**
Total Insoluble Matter (mg)	----	2	mg		<2	<2	<2	<2	<2
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		**0.1**	<0.1	<0.1	**0.1**	<0.1
Total Solids (mg)	----	2	mg		<2	<2	<2	<2	<2
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**2.72**	**1.96**	**----**	**1.70**	**1.54**
ø Arsenic	7440-38-2	0.050	µg/m².month		**----**	**----**	**1.94**	**----**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		**60.7**	**42.0**	**36.1**	**25.7**	**22.5**
ø Manganese	7439-96-5	0.05	µg/m².month		**47.2**	**40.5**	**----**	**----**	**43.2**
ø Manganese	7439-96-5	0.050	µg/m².month		**----**	**----**	**47.3**	**107**	**----**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)

Compound	CAS Number	LOR	Unit	Sample ID	WVDG08W	WVDG03N - SOLUBLE METALS SOLUBLE METALS	WVDG03E - SOLUBLE METALS SOLUBLE METALS	WVDG03S - SOLUBLE METALS SOLUBLE METALS	WVDG03W - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	30-Nov-2023 12:30	30-Nov-2023 10:45	30-Nov-2023 10:45	30-Nov-2023 10:45	30-Nov-2023 10:45
					EM2321591-028	EM2321591-041	EM2321591-042	EM2321591-043	EM2321591-044
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		<0.1	----	----	----	----
Ash Content (mg)	----	2	mg		<2	----	----	----	----
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.1**	----	----	----	----
Combustible Matter (mg)	----	2	mg		<2	----	----	----	----
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		<0.1	----	----	----	----
Total Soluble Matter (mg)	----	2	mg		<2	----	----	----	----
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.1**	----	----	----	----
Total Insoluble Matter (mg)	----	2	mg		<2	----	----	----	----
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		<0.1	----	----	----	----
Total Solids (mg)	----	2	mg		<2	----	----	----	----
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**1.39**	----	----	----	----
ø Arsenic	7440-38-2	0.050	µg/m².month		----	**8.94**	**0.360**	**0.320**	**29.2**
ø Barium	7440-39-3	0.05	µg/m².month		**30.6**	----	----	----	----
ø Barium	7440-39-3	0.050	µg/m².month		----	**7.40**	**2.40**	**1.90**	**5.70**
ø Manganese	7439-96-5	0.050	µg/m².month		**24.6**	**2.30**	**1.50**	**1.70**	**22.9**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

Compound	CAS Number	LOR	Unit	Sample ID	WVDG04N - SOLUBLE METALS SOLUBLE METALS	WVDG04E - SOLUBLE METALS SOLUBLE METALS	WVDG04S - SOLUBLE METALS SOLUBLE METALS	WVDG04W - SOLUBLE METALS SOLUBLE METALS	WVDG05N - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	30-Nov-2023 11:10	30-Nov-2023 11:10	30-Nov-2023 11:10	30-Nov-2023 11:10	30-Nov-2023 11:30
					EM2321591-045	EM2321591-046	EM2321591-047	EM2321591-048	EM2321591-049
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**5.58**	**3.44**	**3.53**	**6.93**	**0.220**
ø Barium	7440-39-3	0.050	µg/m².month		**40.2**	**19.0**	**19.8**	**39.0**	**0.300**
ø Manganese	7439-96-5	0.050	µg/m².month		**112**	**51.2**	**43.0**	**73.7**	**0.790**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

				Sample ID	WVDG05E - SOLUBLE METALS SOLUBLE METALS	WVDG05S - SOLUBLE METALS SOLUBLE METALS	WVDG05W - SOLUBLE METALS SOLUBLE METALS	WVDG08N - SOLUBLE METALS SOLUBLE METALS	WVDG08E - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	30-Nov-2023 11:30	30-Nov-2023 11:30	30-Nov-2023 11:30	30-Nov-2023 12:30	30-Nov-2023 12:30
Compound	CAS Number	LOR	Unit		EM2321591-050	EM2321591-051	EM2321591-052	EM2321591-053	EM2321591-054
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.050	µg/m².month		**0.270**	**4.06**	**0.100**	**1.25**	**16.1**
ø Barium	7440-39-3	0.050	µg/m².month		**0.200**	**4.20**	**2.40**	**9.20**	**46.1**
ø Manganese	7439-96-5	0.050	µg/m².month		**0.890**	**15.5**	**8.55**	**73.7**	**172**

Analytical Results

Sub-Matrix: **DUST** (Matrix: **AIR**)

				Sample ID	WVDG08S - SOLUBLE METALS SOLUBLE METALS	WVDG08W - SOLUBLE METALS SOLUBLE METALS	WVDG03N - INSOLUBLE METALS INOLUBLE METALS	WVDG03E - INSOLUBLE METALS INSOLUBLE METALS	WVDG03S - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	30-Nov-2023 12:30	30-Nov-2023 12:30	30-Nov-2023 10:45	30-Nov-2023 10:45	30-Nov-2023 10:45
Compound	CAS Number	LOR	Unit		EM2321591-055	EM2321591-056	EM2321591-069	EM2321591-070	EM2321591-071
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	**----**	**4.82**	**----**	**----**
ø Arsenic	7440-38-2	0.050	µg/m².month		**4.02**	**0.480**	**----**	**2.52**	**2.17**
ø Barium	7440-39-3	0.05	µg/m².month		**----**	**----**	<1140	**----**	<32.9
ø Barium	7440-39-3	0.050	µg/m².month		**24.9**	**5.20**	**----**	**38.7**	**----**
ø Manganese	7439-96-5	0.05	µg/m².month		**----**	**----**	<71.0	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**135**	**11.8**	**----**	**61.7**	**55.4**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

				Sample ID	WVDG03W - INSOLUBLE METALS INSOLUBLE METALS	WVDG04N - INSOLUBLE METALS INSOLUBLE METALS	WVDG04E - INSOLUBLE METALS INSOLUBLE METALS	WVDG04S - INSOLUBLE METALS INSOLUBLE METALS	WVDG04W - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	30-Nov-2023 10:45	30-Nov-2023 11:10	30-Nov-2023 11:10	30-Nov-2023 11:10	30-Nov-2023 11:10
Compound	CAS Number	LOR	Unit		EM2321591-072	EM2321591-073	EM2321591-074	EM2321591-075	EM2321591-076
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**----**	<2.39	<2.12	<0.87	<2.41
ø Arsenic	7440-38-2	0.050	µg/m².month		**4.07**	**----**	**----**	**----**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		<56.2	<28.0	**----**	<13.5	<14.8
ø Barium	7440-39-3	0.050	µg/m².month		**----**	**----**	**17.5**	**----**	**----**
ø Manganese	7439-96-5	0.05	µg/m².month		**----**	<27.2	**----**	**21.4**	<37.8
ø Manganese	7439-96-5	0.050	µg/m².month		**55.0**	**----**	**30.0**	**----**	**----**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG05N - INSOLUBLE METALS INSOLUBLE METALS	WVDG05E - INSOLUBLE METALS INSOLUBLE METALS	WVDG05S - INSOLUBLE METALS INSOLUBLE METALS	WVDG05W - INSOLUBLE METALS INSOLUBLE METALS	WVDG08N - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	30-Nov-2023 11:30	30-Nov-2023 11:30	30-Nov-2023 11:30	30-Nov-2023 11:30	30-Nov-2023 12:30
Compound	CAS Number	LOR	Unit		EM2321591-077	EM2321591-078	EM2321591-079	EM2321591-080	EM2321591-081
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**2.36**	<2.09	<2.72	<1.96	**----**
ø Arsenic	7440-38-2	0.050	µg/m².month		**----**	**----**	**----**	**----**	**2.07**
ø Barium	7440-39-3	0.05	µg/m².month		<41.4	<35.2	<60.7	<42.0	<36.1
ø Manganese	7439-96-5	0.05	µg/m².month		**38.1**	<32.4	<47.2	<40.5	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**----**	**----**	**----**	**----**	**56.0**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG08E - INSOLUBLE METALS INSOLUBLE METALS	WVDG08S - INSOLUBLE METALS INSOLUBLE METALS	WVDG08W - INSOLUBLE METALS INSOLUBLE METALS	----	----
				Sampling date / time	30-Nov-2023 12:30	30-Nov-2023 12:30	30-Nov-2023 12:30	----	----
Compound	CAS Number	LOR	Unit		EM2321591-082	EM2321591-083	EM2321591-084	--------	--------
					Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**1.56**	<1.54	**1.23**	**----**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		<25.7	<22.5	<30.6	**----**	**----**
ø Manganese	7439-96-5	0.05	µg/m².month		**----**	<43.2	**----**	**----**	**----**
ø Manganese	7439-96-5	0.050	µg/m².month		**114**	**----**	**78.5**	**----**	**----**

CERTIFICATE OF ANALYSIS

Work Order	: **EM2400076**	Page	: 1 of 20
Amendment	: 1		
Client	: ALS WATER AND HYDROGRAPHICS PTY LTD	Laboratory	: Environmental Division Melbourne
Contact			: Customer Services EM
Address	: 94 KERANG-KOONDROOK ROAD KERANG 3579		: 4 Westall Rd Springvale VIC Australia 3171
	: ----	Contact	
Telephone		Address	: +61 3 8549 9600
		Telephone	
Project	: MV214940	Date Samples Received	: 03-Jan-2024 10:10
Order number	: ----	Date Analysis Commenced	: 11-Jan-2024
C-O-C number	: ----	Issue Date	: 31-Jan-2024 18:19

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

: ALS WATER AND HYDROGRAPHICS PTY LTD

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ALS is not NATA accredited for the analysis of metals in dust deposition gauge.
- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m².mth where the sampling procedure is not NATA accredited. ALS Mudgee laboratory is NATA accredited for dust sampling, therefore ALS Mudgee reported deposition units are accredited.
- Amendment (31/01/2024): This report has been amended to allow the distribution of an Electronic Data Deliverable (EDD) not previously provided. All analysis results are as per the previous report.
- Sampling period 30/11/2023 to 29/12/2023.
- Sample exposure period is within the typical exposure period of 30+/-2 days as per AS3580.10.1
- EA120I - 142I: EM2400076 #17 & #21 - container was received with no liquid. 100ml of DI water was used to dissolve contents, perform analysis and for calculation of results.
- Sample exposure period is within the typical exposure period of 30+/-2 days as per AS3580.10.2
- Dust samples have been dosed with Benzalkonium chloride prior to sample collection
- Directional dust analysis as per AS3580.10.2-2013. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)			Sample ID	WVDD01	WVDD02	WVDD03	WVDD04	WVDD05
			Sampling date / time	29-Dec-2023 09:35	29-Dec-2023 09:50	29-Dec-2023 10:30	29-Dec-2023 10:55	29-Dec-2023 01:20
Compound	CAS Number	LOR	Unit	EM2400076-001	EM2400076-002	EM2400076-003	EM2400076-004	EM2400076-005
				Result	Result	Result	Result	Result
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	**0.5**	**0.3**	**0.3**	**0.2**	**0.3**
Ash Content (mg)	----	2	mg	**9**	**5**	**5**	**4**	**4**
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	**4.8**	**1.0**	**1.1**	**1.1**	**1.2**
Combustible Matter (mg)	----	2	mg	**81**	**17**	**19**	**19**	**20**
EA139: Total Soluble Matter								
Total Soluble Matter	----	0.1	g/m².month	**6.2**	**2.4**	**2.6**	**4.1**	**2.2**
Total Soluble Matter (mg)	----	2	mg	**106**	**41**	**45**	**69**	**37**
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	**5.3**	**1.3**	**1.4**	**1.3**	**1.5**
Total Insoluble Matter (mg)	----	2	mg	**90**	**22**	**24**	**23**	**25**
EA142: Total Solids								
Total Solids	----	0.1	g/m².month	**11.5**	**3.7**	**4.0**	**5.4**	**3.7**
Total Solids (mg)	----	2	mg	**196**	**63**	**69**	**92**	**62**
EG020T: Total Metals by ICP-MS								
ø Arsenic	7440-38-2	0.05	µg/m².month	<7.77	**6.71**	**5.22**	**6.42**	<5.60
ø Barium	7440-39-3	0.05	µg/m².month	<265	<121	<420	<125	<120
ø Manganese	7439-96-5	0.05	µg/m².month	**293**	**97.4**	**92.8**	**118**	**90.5**

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)				Sample ID	WVDD07BG	WVDD08	KF1	KF2	KF3
				Sampling date / time	29-Dec-2023 12:20	29-Dec-2023 10:05	29-Dec-2023 13:40	29-Dec-2023 14:25	29-Dec-2023 13:50
Compound	CAS Number	LOR	Unit		EM2400076-006	EM2400076-007	EM2400076-008	EM2400076-009	EM2400076-010
					Result	Result	Result	Result	Result
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.9**	**0.3**	**0.2**	**0.3**	**0.3**
Ash Content (mg)	----	2	mg		**15**	**5**	**3**	**5**	**6**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**6.2**	**1.3**	**1.4**	**1.0**	**1.1**
Combustible Matter (mg)	----	2	mg		**107**	**23**	**24**	**18**	**18**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**13.1**	**2.0**	**2.1**	**1.7**	**1.6**
Total Soluble Matter (mg)	----	2	mg		**224**	**34**	**37**	**28**	**27**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**7.1**	**1.6**	**1.6**	**1.3**	**1.4**
Total Insoluble Matter (mg)	----	2	mg		**122**	**28**	**27**	**23**	**24**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**20.2**	**3.6**	**3.7**	**3.0**	**3.0**
Total Solids (mg)	----	2	mg		**346**	**62**	**64**	**51**	**51**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		<13.5	**5.30**	**9.88**	<27.5	<23.6
ø Barium	7440-39-3	0.05	µg/m².month		<610	<129	<104	<134	<142
ø Manganese	7439-96-5	0.05	µg/m².month		<900	**90.0**	**84.0**	**100**	**108**

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)

Compound	CAS Number	LOR	Unit	Sample ID	KF4	KF5BG	WVDD01 - INSOLUBLE METALS INSOLUBLE METALS	WVDD02 - INSOLUBLE METALS INSOLUBLE METALS	WVDD03 - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	29-Dec-2023 14:10	29-Dec-2023 13:25	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
					EM2400076-011	EM2400076-012	EM2400076-029	EM2400076-030	EM2400076-031
					Result	Result	Result	Result	Result
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.3**	**0.2**	**----**	**----**	**----**
Ash Content (mg)	----	2	mg		**5**	**4**	**----**	**----**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**1.1**	**1.2**	**----**	**----**	**----**
Combustible Matter (mg)	----	2	mg		**19**	**22**	**----**	**----**	**----**
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**1.9**	**1.8**	**----**	**----**	**----**
Total Soluble Matter (mg)	----	2	mg		**33**	**31**	**----**	**----**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**1.4**	**1.5**	**----**	**----**	**----**
Total Insoluble Matter (mg)	----	2	mg		**24**	**26**	**----**	**----**	**----**
EA142: Total Solids									
Total Solids	----	0.1	g/m².month		**3.3**	**3.3**	**----**	**----**	**----**
Total Solids (mg)	----	2	mg		**57**	**57**	**----**	**----**	**----**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**13.2**	**6.73**	<7.77	**7.14**	**5.51**
ø Barium	7440-39-3	0.05	µg/m².month		<131	<109	<265	<121	<420
ø Manganese	7439-96-5	0.05	µg/m².month		**87.9**	**78.4**	**376**	**145**	**149**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

				Sample ID	WVDD04 - INSOLUBLE METALS INSOLUBLE METALS	WVDD05 - INSOLUBLE METALS INSOLUBLE METALS	WVDD07BG - INSOLUBLE METALS INSOLUBLE METALS	WVDD08 - INSOLUBLE METALS INSOLUBLE METALS	KF1 - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	*CAS Number*	*LOR*	*Unit*		**EM2400076-032**	**EM2400076-033**	**EM2400076-034**	**EM2400076-035**	**EM2400076-036**
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**8.75**	<5.60	<13.5	**5.81**	**14.6**
ø Barium	7440-39-3	0.05	µg/m².month		<125	<120	<610	<129	<104
ø Manganese	7439-96-5	0.05	µg/m².month		**190**	**138**	<900	**149**	**186**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

				Sample ID	KF2 - INSOLUBLE METALS INSOLUBLE METALS	KF3 - INSOLUBLE METALS INSOLUBLE METALS	KF4 - INSOLUBLE METALS INSOLUBLE METALS	KF5BG - INSOLUBLE METALS INSOLUBLE METALS	WVDD01 - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	CAS Number	LOR	Unit		EM2400076-037	EM2400076-038	EM2400076-039	EM2400076-040	EM2400076-057
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		<27.5	<23.6	**19.3**	**7.77**	**6.09**
ø Barium	7440-39-3	0.05	µg/m².month		<134	<142	<131	<109	**623**
ø Manganese	7439-96-5	0.05	µg/m².month		**158**	**156**	**160**	**139**	**1840**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

				Sample ID	WVDD02 - SOLUBLE METALS SOLUBLE METALS	WVDD03 - SOLUBLE METALS SOLUBLE METALS	WVDD04 - SOLUBLE METALS SOLUBLE METALS	WVDD05 - SOLUBLE METALS SOLUBLE METALS	WVDD07BG - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	CAS Number	LOR	Unit		EM2400076-058	EM2400076-059	EM2400076-060	EM2400076-061	EM2400076-062
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**10.9**	**5.66**	**78.0**	**0.77**	**10.8**
ø Barium	7440-39-3	0.05	µg/m².month		**581**	**838**	**416**	**211**	**633**
ø Manganese	7439-96-5	0.05	µg/m².month		**635**	**762**	**1522**	**636**	**3038**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)

				Sample ID	WVDD08 - SOLUBLE METALS SOLUBLE METALS	KF1 - SOLUBLE METALS SOLUBLE METALS	KF2 - SOLUBLE METALS SOLUBLE METALS	KF3 - SOLUBLE METALS SOLUBLE METALS	KF4 - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	CAS Number	LOR	Unit		EM2400076-063	EM2400076-064	EM2400076-065	EM2400076-066	EM2400076-067
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**14.1**	**8.16**	**16.5**	**6.75**	**3.87**
ø Barium	7440-39-3	0.05	µg/m².month		**276**	**172**	**198**	**193**	**474**
ø Manganese	7439-96-5	0.05	µg/m².month		**802**	**589**	**848**	**555**	**572**

Analytical Results

Sub-Matrix: DEPOSITIONAL DUST (Matrix: AIR)				Sample ID	KF5BG - SOLUBLE METALS SOLUBLE METALS	----	----	----	----
				Sampling date / time	[29-Dec-2023]	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2400076-068	--------	--------	--------	--------
					Result	----	----	----	----
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**102**	**----**	**----**	**----**	**----**
ø Barium	7440-39-3	0.05	µg/m².month		**230**	**----**	**----**	**----**	**----**
ø Manganese	7439-96-5	0.05	µg/m².month		**619**	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG05N	WVDG05E	WVDG05S	WVDG05W	WVDG08N
				Sampling date / time	29-Dec-2023 11:25	29-Dec-2023 11:30	29-Dec-2023 11:35	29-Dec-2023 11:40	29-Dec-2023 10:10
Compound	CAS Number	LOR	Unit		EM2400076-013	EM2400076-014	EM2400076-015	EM2400076-016	EM2400076-017
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		**0.4**	<0.1	**1.4**	<0.1	<0.1
Ash Content (mg)	----	2	mg		**6**	<2	**20**	<2	<2
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**1.9**	**0.8**	**2.5**	**0.6**	**0.4**
Combustible Matter (mg)	----	2	mg		**28**	**12**	**38**	**10**	**7**
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.4**	**0.4**	**0.6**	**0.8**	**0.3**
Total Soluble Matter (mg)	----	2	mg		**5**	**6**	**9**	**11**	**4**
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**2.3**	**0.8**	**3.9**	**0.7**	**0.5**
Total Insoluble Matter (mg)	----	2	mg		**34**	**12**	**58**	**11**	**8**
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		**2.7**	**1.2**	**4.5**	**1.5**	**0.8**
Total Solids (mg)	----	2	mg		**39**	**18**	**67**	**22**	**12**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**3.82**	<0.88	<9.57	**1.00**	**0.27**
ø Barium	7440-39-3	0.05	µg/m².month		<277	<40.3	<970	<29.5	**8.90**
ø Manganese	7439-96-5	0.05	µg/m².month		**56.8**	**51.3**	<141	**32.0**	**12.9**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG08E	WVDG08S	WVDG08W	WVDG03N	WVDG03E
				Sampling date / time	29-Dec-2023 10:15	29-Dec-2023 10:20	29-Dec-2023 10:25	29-Dec-2023 10:35	29-Dec-2023 10:40
Compound	CAS Number	LOR	Unit		EM2400076-018	EM2400076-019	EM2400076-020	EM2400076-021	EM2400076-022
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		<0.1	0.2	0.2	<0.1	<0.1
Ash Content (mg)	----	2	mg		<2	2	2	<2	<2
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		1.0	1.5	1.0	0.7	0.8
Combustible Matter (mg)	----	2	mg		14	23	15	10	12
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		0.7	7.3	0.9	0.5	0.9
Total Soluble Matter (mg)	----	2	mg		11	109	13	7	13
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		1.0	1.7	1.2	0.7	0.9
Total Insoluble Matter (mg)	----	2	mg		15	25	18	11	13
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		1.7	9.0	2.1	1.2	1.8
Total Solids (mg)	----	2	mg		26	134	31	18	26
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		1.21	3.02	<3.31	0.55	2.33
ø Barium	7440-39-3	0.05	µg/m².month		<21.9	<68.7	<56.7	<10.7	<48.3
ø Manganese	7439-96-5	0.05	µg/m².month		21.0	81.6	<193	13.0	41.2

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG03S	WVDG03W	WVDG04N	WVDG04E	WVDG04S
				Sampling date / time	29-Dec-2023 10:45	29-Dec-2023 10:50	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	CAS Number	LOR	Unit		EM2400076-023	EM2400076-024	EM2400076-025	EM2400076-026	EM2400076-027
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		<0.1	0.3	1.2	0.8	0.8
Ash Content (mg)	----	2	mg		<2	4	17	11	11
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		1.0	1.6	2.7	3.5	2.0
Combustible Matter (mg)	----	2	mg		16	24	41	52	30
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		1.5	2.8	1.4	0.9	1.4
Total Soluble Matter (mg)	----	2	mg		22	41	21	14	21
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		1.1	1.9	3.9	4.3	2.8
Total Insoluble Matter (mg)	----	2	mg		17	28	58	63	41
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		2.6	4.7	5.3	5.2	4.2
Total Solids (mg)	----	2	mg		39	69	79	77	62
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		1.80	4.18	<8.31	4.98	4.17
ø Barium	7440-39-3	0.05	µg/m².month		<46.3	<80.9	<982	<732	<1046
ø Manganese	7439-96-5	0.05	µg/m².month		32.8	<70.5	<98.5	65.9	<65.5

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG04W	WVDG05N - INSOLUBLE METALS INSOLUBLE METALS	WVDG05E - INSOLUBLE METALS INSOLUBLE METALS	WVDG05S - INSOLUBLE METALS INSOLUBLE METALS	WVDG05W - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	CAS Number	LOR	Unit		EM2400076-028	EM2400076-041	EM2400076-042	EM2400076-043	EM2400076-044
					Result	Result	Result	Result	Result
EA120I: Ash Content									
Ash Content	----	0.1	g/m².month		**0.2**	**----**	**----**	**----**	**----**
Ash Content (mg)	----	2	mg		**3**	**----**	**----**	**----**	**----**
EA125I: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**1.2**	**----**	**----**	**----**	**----**
Combustible Matter (mg)	----	2	mg		**18**	**----**	**----**	**----**	**----**
EA139I: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m².month		**0.4**	**----**	**----**	**----**	**----**
Total Soluble Matter (mg)	----	2	mg		**5**	**----**	**----**	**----**	**----**
EA141I: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**1.4**	**----**	**----**	**----**	**----**
Total Insoluble Matter (mg)	----	2	mg		**21**	**----**	**----**	**----**	**----**
EA142I: Total Solids									
Total Solids	----	0.1	g/m².month		**1.8**	**----**	**----**	**----**	**----**
Total Solids (mg)	----	2	mg		**26**	**----**	**----**	**----**	**----**
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**7.10**	**5.38**	<0.88	<9.57	**1.52**
ø Barium	7440-39-3	0.05	µg/m².month		<79.0	<277	<40.3	<970	<29.5
ø Manganese	7439-96-5	0.05	µg/m².month		**53.7**	**72.4**	**55.4**	<141	**46.2**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

				Sample ID	WVDG08N - INSOLUBLE METALS INSOLUBLE METALS	WVDG08E - INSOLUBLE METALS INSOLUBLE METALS	WVDG08S - INSOLUBLE METALS INSOLUBLE METALS	WVDG08W - INSOLUBLE METALS INSOLUBLE METALS	WVDG03N - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	CAS Number	LOR	Unit		EM2400076-045	EM2400076-046	EM2400076-047	EM2400076-048	EM2400076-049
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**0.32**	**1.72**	**3.43**	<3.31	**0.87**
ø Barium	7440-39-3	0.05	µg/m².month		**12.8**	<21.9	<68.7	<56.7	<10.7
ø Manganese	7439-96-5	0.05	µg/m².month		**13.1**	**31.3**	**85.3**	<193	**13.2**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	WVDG03E - INSOLUBLE METALS INSOLUBLE METALS	WVDG03S - INSOLUBLE METALS INSOLUBLE METALS	WVDG03W - INSOLUBLE METALS INSOLUBLE METALS	WVDG04N - INSOLUBLE METALS INSOLUBLE METALS	WVDG04E - INSOLUBLE METALS INSOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	CAS Number	LOR	Unit		EM2400076-050	EM2400076-051	EM2400076-052	EM2400076-053	EM2400076-054
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**3.27**	**3.17**	**5.23**	<8.31	**10.4**
ø Barium	7440-39-3	0.05	µg/m².month		<48.3	<46.3	<80.9	<982	<732
ø Manganese	7439-96-5	0.05	µg/m².month		**46.0**	**43.0**	<70.5	<98.5	**103**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

				Sample ID	WVDG04S - INSOLUBLE METALS INSOLUBLE METALS	WVDG04W - INSOLUBLE METALS INSOLUBLE METALS	WVDG05N - SOLUBLE METALS SOLUBLE METALS	WVDG05E - SOLUBLE METALS SOLUBLE METALS	WVDG05S - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	CAS Number	LOR	Unit		EM2400076-055	EM2400076-056	EM2400076-069	EM2400076-070	EM2400076-071
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**4.27**	**11.6**	<0.05	<0.05	<0.05
ø Barium	7440-39-3	0.05	µg/m².month		<1046	<79.0	**7.30**	**2.30**	**15.8**
ø Manganese	7439-96-5	0.05	µg/m².month		<65.5	**69.2**	**3.90**	**5.00**	**4.50**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

				Sample ID	WVDG05W - SOLUBLE METALS SOLUBLE METALS	WVDG08N - SOLUBLE METALS SOLUBLE METALS	WVDG08E - SOLUBLE METALS SOLUBLE METALS	WVDG08S - SOLUBLE METALS SOLUBLE METALS	WVDG08W - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	*CAS Number*	*LOR*	*Unit*		**EM2400076-072**	**EM2400076-073**	**EM2400076-074**	**EM2400076-075**	**EM2400076-076**
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		<0.05	<0.05	<0.05	**16.0**	<0.05
ø Barium	7440-39-3	0.05	µg/m².month		**2.70**	**0.20**	**2.70**	**83.3**	**1.30**
ø Manganese	7439-96-5	0.05	µg/m².month		**15.8**	**1.20**	**3.70**	**509**	**34.0**

Analytical Results

Sub-Matrix: **DUST**
(Matrix: **AIR**)

				Sample ID	WVDG03N - SOLUBLE METALS SOLUBLE METALS	WVDG03E - SOLUBLE METALS SOLUBLE METALS	WVDG03S - SOLUBLE METALS SOLUBLE METALS	WVDG03W - SOLUBLE METALS SOLUBLE METALS	WVDG04N - SOLUBLE METALS SOLUBLE METALS
				Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]
Compound	*CAS Number*	*LOR*	*Unit*		**EM2400076-077**	**EM2400076-078**	**EM2400076-079**	**EM2400076-080**	**EM2400076-081**
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS									
ø Arsenic	7440-38-2	0.05	µg/m².month		**0.88**	**1.95**	**0.68**	**9.27**	<0.05
ø Barium	7440-39-3	0.05	µg/m².month		**0.10**	**3.40**	**3.30**	**4.20**	**10.8**
ø Manganese	7439-96-5	0.05	µg/m².month		**2.50**	**9.16**	**12.5**	**15.0**	**15.0**

Analytical Results

Sub-Matrix: DUST (Matrix: AIR)			Sample ID	WVDG04E- SOULUBLE METAL SOULUBLE METALS	WVDG04S - SOLUBLE METALS SOLUBLE METALS	WVDG04W - SOLUBLE METALS SOLUBLE METALS	----	----
			Sampling date / time	[29-Dec-2023]	[29-Dec-2023]	[29-Dec-2023]	----	----
Compound	CAS Number	LOR	Unit	EM2400076-082	EM2400076-083	EM2400076-084	--------	--------
				Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS								
ø Arsenic	7440-38-2	0.05	µg/m².month	<0.05	<0.05	<0.05	**----**	**----**
ø Barium	7440-39-3	0.05	µg/m².month	**29.2**	**19.7**	**0.70**	**----**	**----**
ø Manganese	7439-96-5	0.05	µg/m².month	**5.48**	**14.8**	**3.56**	**----**	**----**