



Box Hill

Burwood

Glen Waverley

Monash

Clayton

Stabling facility

Cheltenham

# Suburban Rail Loop East Early Works Air Quality Monthly Report

November 17 – December 18



## Document Information

Document Details	
Issue Date	09/01/2024
Revision Number	01
Status	Issued for Information

## Revision Control

Revision Number	Change Detail	Date	Comment
A	Draft issued to SRLA	20/12/2023	Issued for Review
B	Updated following SRLA review	22/12/2023	Issued for Review
C	Updated following SRLA review	08/01/2024	Issued for Review
00	Issued for Information	08/01/2024	Issued for Information
01	Updated following SRLA review	09/01/2024	Issued for Information

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## Glossary

**$\mu\text{g}/\text{m}^3$**  – micrograms per cubic metre is a unit of measurement used to measure the mass of air pollutants (micrograms) per volume of air (cubic metre) as a concentration.

**Environment Effects Statement (EES)** – In Victoria, environment assessment of the potential environmental impacts or effects of a proposed development under the *Environment Effects Act 1978*.

**Environmental Air Quality and Dust Management Plan (EAQDMP)** – The EAQDMP is environmental management documentation prepared by the MC to manage and monitor air quality impacts during construction of SRL East. It includes the RMMP and TARP and is verified by the IEA.

**Environmental Management Framework (EMF)** – The purpose of the EMF is to provide a transparent and integrated framework to manage environmental effects of the SRL East Project during construction and operation to achieve acceptable environmental outcomes.

**Environmental Performance Requirements (EPRs)** – The EPRs define the environmental outcomes that must be achieved during the design, construction and operation of SRL East and are included within the EMF.

**Environment Protection Authority (EPA)** - Victorian regulator established under the *Environment Protection Act 2017* and which has the statutory objective to protect human health and the environment from the harmful effects of pollution and waste.

**Environmental Reference Standard (ERS)** – The ERS is a tool made under the *Environment Protection Act 2017* to identify and assess environmental values, including air quality, in Victoria.

**Independent Environmental Auditor (IEA)** – The IEA is appointed by the Victorian Government to undertake independent environmental reviews and audits of project activities including assessing compliance with the EMF and EPRs.

**PM<sub>10</sub>** – Particulate matter with an aerodynamic diameter of 10 micrometres ( $\mu\text{m}$ ) or less. PM<sub>10</sub> particles are small enough to have a potential impact on human health.

**Risk Management and Monitoring Program (RMMP)** – this plan outlines the approach to air quality monitoring and includes instrumental, visual monitoring, TARP and public reporting processes. The RMMP forms part of the EAQDMP.

**Trigger Action Response Protocol (TARP)** – The TARP defines a series of adaptive management measures that are implemented to avoid or mitigate impacts from dust emissions for nearby sensitive receptors in response to the results from monitoring. The TARP forms part of the EAQDMP.

## Executive Summary

### Key Outcomes

Key outcomes arising from the monthly air quality monitoring program:

- Whilst only minimal Early Works were undertaken at Box Hill, appropriate dust controls were implemented to ensure the air quality was managed to community and project expectations.
- At Burwood, the Trigger Action Response Protocol (TARP) was implemented on three days due to windy conditions. In response, a water cart was used to dampen down the site until PM<sub>10</sub> measurements had returned to normal. Hand watering was used to provide targeted dust suppression in areas where the water cart could not reach.
- At Monash, there has been ongoing technical issues with the SiteHive monitoring devices. However, one device has always been actively capturing data. On four days, air quality conditions were measured that triggered a review of construction activities. On these days, visual inspections showed that no dust was observed onsite and it was assessed that the site was not contributing to overall background air quality.
- At Clayton, works have commenced and the TARP has not been required to be implemented.
- At Heatherton, the TARP was implemented on 18 days of the reporting period. In response to these events, site conditions were assessed, water carts mobilised, and soil binder applied to exposed surfaces until PM<sub>10</sub> measurements had returned to normal.
- The maximum PM<sub>10</sub> daily average across most sites was exacerbated by a fog event on 12 December.

### Purpose of the Report

This report presents the results of the monthly review of the air quality monitoring data for each Suburban Rail Loop (SRL) East Early Works construction site for the period between 17 November 2023 and 18 December 2023 in accordance with SRL East Environmental Management Framework (EMF) and Environmental Performance Requirements (EPRs) AQ1 and AQ2. Early Works for SRL East commenced at Burwood in May 2023, Box Hill in June 2023, Monash and Heatherton in October 2023, and Clayton in December 2023. Laing O'Rourke is delivering the Early Works as Managing Contractor (MC).

The MC implements an air quality monitoring program on each site that includes both visual observation and instrumental air quality monitoring. The purpose of the air quality monitors is to measure the concentration of small dust particles in the air near the construction site. These particles, known as PM<sub>10</sub> have the potential to impact human health. PM<sub>10</sub> refers to particles with an aerodynamic diameter of 10 µm or less.

Measured PM<sub>10</sub> concentrations may be compared to air quality objectives that are defined in the Environment Reference Standard (ERS) which is a tool under the *Environment Protection Act 2017*. The ERS sets out the air quality objectives for PM<sub>10</sub> which are measured over a 24-hour averaging period. The objectives are risk-based concentrations that are not intended to be compliance levels, but they assist the MC to understand the risk to human health. When the instrumental monitor and/or visual observations identify a change in site conditions this prompts the MC to take actions on site to reduce dust impacts, and review mitigation measures applied.

### Scope of Reporting

This report does not include works delivered as SRL Initial Works. The SRL Initial Works which include investigative works, protective works, utility relocations and installations, ground improvement works (such as at the Heatherton Stabling Facility) and minor road modifications were subject to a separate approval process under Clause 52.30 of the Victoria Planning Provisions (VPP) and were approved by the Minister for Planning on 19 December 2021. These works are required to comply with Clause 52.30 of the VPP and are not subject to the EMF and EPRs.

This report does not include monitoring related to asbestos containing material removal, which is monitored and reported on separately.

No works requiring monitoring (i.e. Early Works) occurred at the following locations during this period:

- Glen Waverley
- Cheltenham.

### Results

The key findings are summarised in Table 1. An analysis of these findings is provided in Section 3.

Table 1: Summary of air quality monitoring results for reporting period.

Location	Parameter	Averaging Period	Max Concentration ( $\mu\text{g}/\text{m}^3$ )	Median Concentration ( $\mu\text{g}/\text{m}^3$ )	Days TARP Implemented in the Month
Representative Background <sup>1</sup>					
Alphington	PM <sub>10</sub>	24-hour	36.6	14.6	N/A
Dandenong	PM <sub>10</sub>	24-hour	35.0	15.0	N/A
Box Hill					
Site Office	PM <sub>10</sub>	24-hour	76.2	18.2	0
East of Market Street	PM <sub>10</sub>	24-hour	126.9	19.2	
Burwood					
Corner of McComas Grove and Sinnott Street	PM <sub>10</sub>	24-hour	54.6	16.2	3
16 McComas Grove	PM <sub>10</sub>	24-hour	24.8	12.0	
Monash					
MH108 Location 1	PM <sub>10</sub>	24-hour	35.8	16.0	4
Site Office	PM <sub>10</sub>	24-hour	99.9	17.5	
Clayton					
CL69 - SiteHive 1	PM <sub>10</sub>	24-hour	24.0	9.0	0
Heatherston					
SSY North	PM <sub>10</sub>	24-hour	77.3	16.7	18
SSY South	PM <sub>10</sub>	24-hour	62.9	27.5	

<sup>1</sup> The EPA monitoring station at Dandenong is used as the representative control site for Cheltenham and Heatherston. The EPA monitoring station at Alphington is used as the representative control site for Clayton, Monash, Glen Waverley, Burwood and Box Hill.



# 1. Introduction

## 1.1. Suburban Rail Loop East

Suburban Rail Loop (SRL) will deliver a 90km rail line linking every major suburban line from the Frankston Line to the Werribee Line via Melbourne Airport, better connecting Victorians to jobs, retail, education, health services and each other. Construction of SRL East from Cheltenham to Box Hill is underway and will connect major employment, health, education and retail destinations in Melbourne's east and south-east. The new underground train line will reduce travel times, connect people travelling on the Gippsland corridor and building it will create up to 8000 direct local jobs. Trains will be running by 2035.

Early Works for SRL East commenced at Burwood in May 2023, Box Hill in June 2023, Monash and Heatherton in October 2023, and Clayton in December 2023. Laing O'Rourke is delivering the Early Works as Managing Contractor (MC). Early Works include:

- road modifications
- utility relocations
- ground improvement works
- tram terminus works, and
- site preparations for tunnel boring machines.

This report does not include works delivered as SRL Initial Works. The SRL Initial Works which include investigative works, protective works, utility relocations and installations, ground improvement works (such as at the Heatherton Stabling Facility) and minor road modifications were subject to a separate approval process under Clause 52.30 of the Victoria Planning Provisions (VPP) and were approved by the Minister for Planning on 19 December 2021. These works are required to comply with Clause 52.30 of the VPP and are not subject to the EMF and EPRs.

## 1.2. Environmental Management Framework

The Environmental Management Framework (EMF) for SRL East (the Project) provides a transparent and integrated framework to manage environmental effects of the Project and includes EPRs that define environmental outcomes that must be achieved during the design, construction, and operation phases of the Project. The EMF is available on the SRL east website at <https://bigbuild.vic.gov.au/library/suburban-rail-loop/planning/srl-east-environmental-management-framework>.

The development of the EMF has been informed by relevant legislation, policy and guidelines, and the specialist impact assessment studies completed for the SRL East Environment Effects Statement (EES) and the Minister's Assessment, dated 5 August 2022.

The EMF requires the MC to develop and implement an Environmental Air Quality and Dust Management Plan (EAQDMP). As part of implementing this plan, the MC is required to conduct monitoring of PM<sub>10</sub> concentrations and measure wind speed and direction at each Early Works construction site and at a representative control site. The EAQDMP also includes a Trigger Action Response Protocol (TARP) which defines a set of triggers that prompt actions on site to reduce dust impacts, and review mitigation measures applied. The EMF, and therefore this report, is not applicable to SRL Initial Works activities.

The MC regularly reviews the monitoring data at each site, for the purpose of assessing the effectiveness of EAQDMP implementation. The verified results of the PM<sub>10</sub> monitoring for the applicable monthly period are contained in this report, which will be available to the public, in accordance with the requirements of the EMF.

# 2. Air Quality Monitoring

## 2.1. Context

Maintaining air quality is important for public health, the liveability of our cities and our environment. Overall air quality conditions in Melbourne are good, however like all major cities, there are days where the background concentrations of air pollutants are very high on a regional basis. Sometimes these elevated concentrations are due to regional influences such as windblown continental dust, bushfires or hazard reduction burns. Emissions from traffic, home heating, and industrial emissions across Melbourne can also cause high background concentrations, especially when the weather is

calm. Environment Protection Authority (EPA) monitoring stations measure these background levels of pollution that already exist in the air within the surrounding area. The EPA monitoring station at Dandenong is used as the representative control site for Heatherton and Cheltenham, and the EPA monitoring station at Alphington is used as the representative control site for all other SRL work sites.

Without effective management, construction of the Project has the potential to contribute to these background concentrations which may impact public health. Comparison of SRL East monitoring results with publicly available EPA monitoring data is used by the MC to identify when construction-related activities are impacting local air quality, and conversely when the local air quality results may be influenced by background conditions outside of the influence of the construction site.

Meteorological conditions such as wind direction and speed can impact on the dispersion of particulates in the air and by monitoring these, the MC can respond when conditions on site change. Having records of wind conditions is also helpful for retrospectively identifying the activity that is causing any elevated dust concentrations.

## 2.2. Purpose

The purpose of the air quality monitors is to measure the concentration of small dust particles in the air near the construction site. These particles, known as PM<sub>10</sub> have the potential to impact human health. PM<sub>10</sub> refers to particles with an aerodynamic diameter of 10 µm or less.

The measured concentrations are compared to air quality objectives that are defined in the Environment Reference Standard (ERS) which is a tool under the *Environment Protection Act 2017*. The air quality objectives defined in the ERS informed the objectives for air quality for the Project, noting that the ambient air ERS is not a compliance standard that one can pollute up to. The ERS does not provide an indicator or objective for nuisance dust.

The objectives are risk-based concentrations that are not intended to be compliance levels, but they assist the MC to understand the risk to human health. The ERS sets out the air quality objectives for PM<sub>10</sub> which are measured over a 24-hour averaging period, as reproduced below in Table 2.

Table 2: Ambient air quality objectives for PM<sub>10</sub>.

Indicator	Air Quality Objective (µg/m <sup>3</sup> )	Averaging Period
Particles as PM <sub>10</sub> (maximum concentration)	50	24-hour

The measured concentrations (which include both existing background concentrations and the Project's incremental contribution over a 24-hour period) are presented in Section 3 and compared against the air quality objective. Monitoring is continuous, even when there are no construction-related activities occurring on the site. Periods of time where there are no site activities are classified as 'Out of Hours'. The potential for dust generation from the work sites is much lower when there are no site activities occurring, however dust can still be generated at the work site during "Out of Hours" periods due to wind erosion.

## 2.3. Monitoring Locations

Air quality monitors are located on or adjacent to the Early Works construction sites, to represent local air quality conditions, in positions that enable the MC to adequately measure potential impact of works on local sensitive receivers including residents. This does not include monitoring undertaken as part of the SRL Initial Works as outlined in Section 1.1.

The air quality monitors were installed on the following dates at each of the following locations. The location of these monitors is shown on maps in Section 3 of this Report.

Table 3: Air quality monitoring locations active during reporting period.

Monitoring Location	Date Commissioned	Coordinates	Monitoring Parameters	Representative Control Site
Box Hill – Site Office	07 Jul 2023	Latitude: -37.817863° Longitude: 145.12187°	PM <sub>10</sub>	Alphington EPA monitoring station
Box Hill – East of Market Street	13 Jul 2023	Latitude: -37.818073° Longitude: 145.1232°	PM <sub>10</sub>	Alphington EPA monitoring station
Burwood – 16 McComas Grove	18 May 2023	Latitude: -37.851494° Longitude: 145.1116°	PM <sub>10</sub>	Alphington EPA monitoring station
Burwood – Corner of McComas Grove and Sinnott Street	18 May 2023	Latitude: - 37.852413° Longitude: 145.11163°	PM <sub>10</sub>	Alphington EPA monitoring station



Monitoring Location	Date Commissioned	Coordinates	Monitoring Parameters	Representative Control Site
Monash – Site Office	16 October 2023	Latitude: -37.9024° Longitude: 145.13815°	PM <sub>10</sub>	Alphington EPA monitoring station
Monash – MH108 – Location 1	25 October 2023	Latitude: -37.902401° Longitude: 145.139465°	PM <sub>10</sub>	Alphington EPA monitoring station
Clayton - CL69 – SiteHive 1	2 December 2023	Latitude: -37.922485 Longitude: 145.11914	PM <sub>10</sub>	Alphington EPA monitoring station
Heatherton – SSY – North <sup>2</sup>	29 October 2023	Latitude: -37.95422° Longitude: 145.10141°	PM <sub>10</sub>	Dandenong EPA monitoring station
Heatherton – SSY – South	29 May 2023	Latitude: -37.955917° Longitude: 145.10239°	PM <sub>10</sub>	Dandenong EPA monitoring station

## 2.4 Data Limitations and Verification

The following limitations apply to this data:

- Meteorological conditions on site can affect measurements made by monitoring devices. For instance, dust measurements can be impacted by rainfall, fog and/or humidity (with water droplets in the air being mistaken as dust particles). Displaying periods of inclement weather allows reviewers to identify measurements that may have been impacted.
- The monitors that measure dust concentrations and noise are located within the construction site close to the nearest homes. However, the measured levels at the nearest homes and beyond are usually less than what is measured by the monitor. This is due to the monitor being located closer to the noise and dust source, due to the security requirements for the monitoring equipment.
- Monitors have been placed to record air quality and airborne noise at each site, however monitors may need to be moved as works progress.
- Breaks in data availability may occur due to sensor outages, instrument errors, technical issues or removal of sensors during non-working periods to ensure the security of the equipment.

Data are provided in tabular and graphical form in Section 3 to visually present 24-hour averages of PM<sub>10</sub> over the monthly period. The data included in this report have been verified by the MC and relevant subject matter experts.

## 3. Results

Data are provided in graphical form below to visually present 24-hour averages of PM<sub>10</sub> dust concentration over the monthly period for each active construction site. Where the TARP has been implemented due to works occurring on the construction sites, an analysis is presented for discussion.

<sup>2</sup> Refer to Figure 9 for a map of the monitoring locations.

### 3.1. Box Hill



Figure 1: Box Hill air quality monitoring stations.

Table 4: Box Hill PM<sub>10</sub> results.

Monitor Number	Monitoring Location	Max Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Median Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Days TARP Implemented in the Month
-	Representative Background - Alphington	36.6	35.0	N/A
1	Site Office	76.2	18.2	0
2	East of Market Street	126.9	19.2	

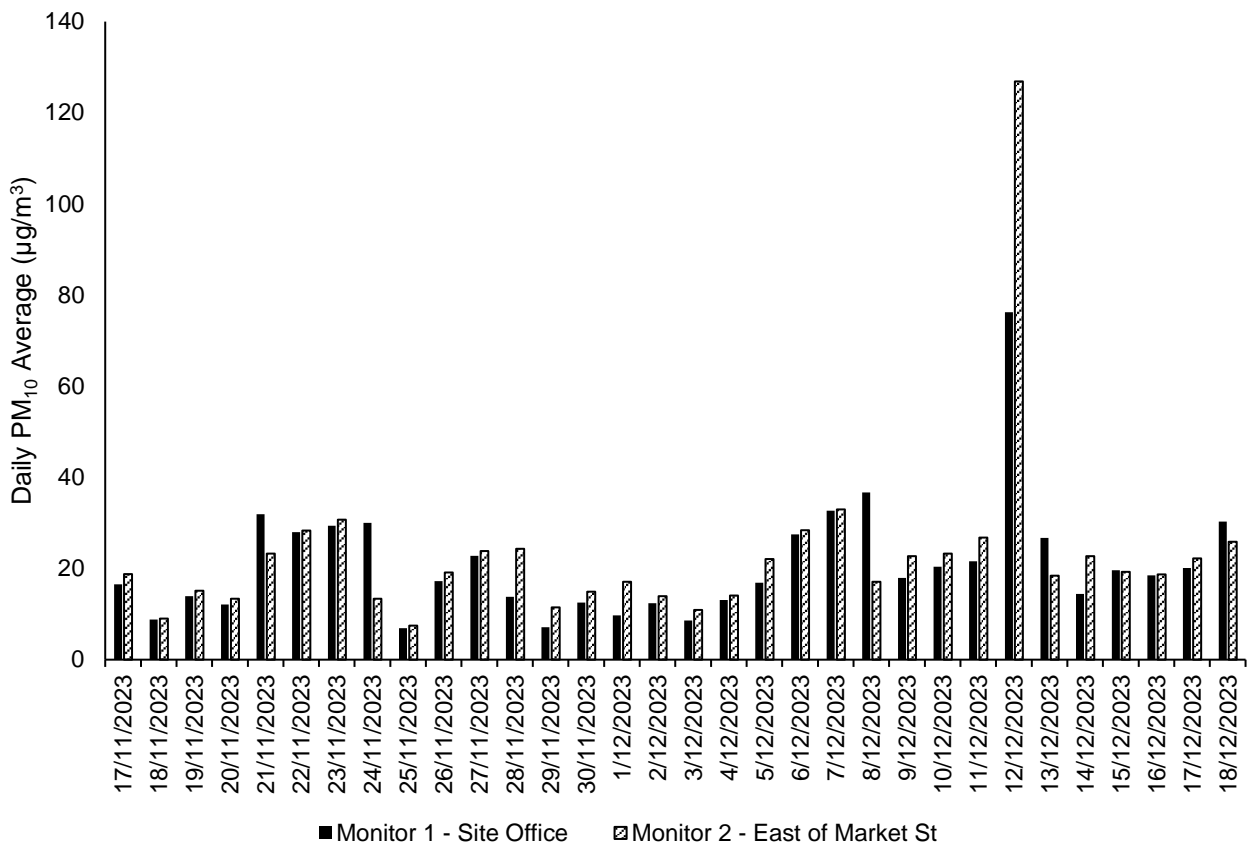


Figure 2: Box Hill PM<sub>10</sub> daily averages

### 3.1.1. Analysis

**Notes for the Box Hill site:** The majority of works currently being undertaken at Box Hill is high voltage (HV) cable relocations delivered as Initial Works. The dust recorded at this site will include contributions from Initial Works which are not subject to the EMF, therefore not within the scope of this report.

The maximum daily average PM<sub>10</sub> concentrations were 76.2 µg/m<sup>3</sup> (n = 32)<sup>3</sup> and 126.9 µg/m<sup>3</sup> (n = 32) at the monitoring stations at the Box Hill Site Office (Monitor 1) and east of Market Street (Monitor 2), respectively. These readings were outliers caused by foggy conditions experienced on 12 December between 2:00 AM and 7:00 AM. The average PM<sub>10</sub> concentrations reflect that the air quality the majority of the time is consistently good, as represented in Figure 2. Given that Initial Works are currently underway at Box Hill, the TARP which is attributable only to Early Works was not implemented.

Where dust was being generated by the activities associated with the Initial Works, appropriate dust suppression controls were employed. The water cart was used over sections of the site where dust was being generated (excavations or exposed surfaces) and a street sweeper was deployed over the extent of the designated westbound haul road and Whitehorse Road.

This reporting period demonstrates the MC’s proactive response to dust control and maintaining air quality in the Box Hill precinct.

<sup>3</sup> n = the number of days of monitoring data captured in the monitoring period



### 3.2. Burwood

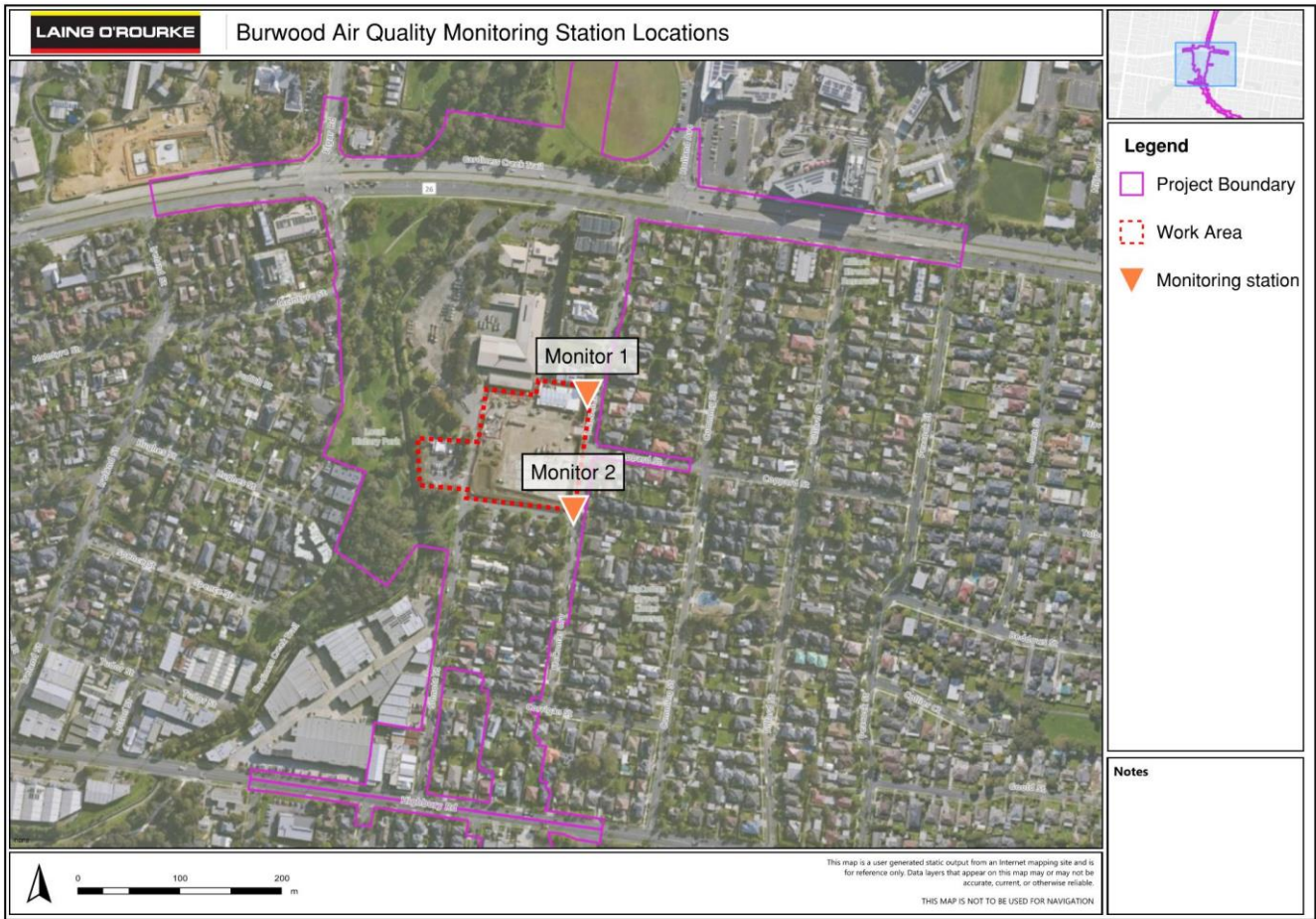


Figure 3: Burwood air quality monitoring stations.

Table 5: Burwood PM<sub>10</sub> results.

Monitor Number	Monitoring Location	Max Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Median Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Days TARP Implemented in the Month
-	Representative Background - Alphington	36.6	35.0	N/A
1	Corner of McComas Grove and Sinnott Street	54.6	16.2	3
2	16 McComas Grove	24.8	12.0	

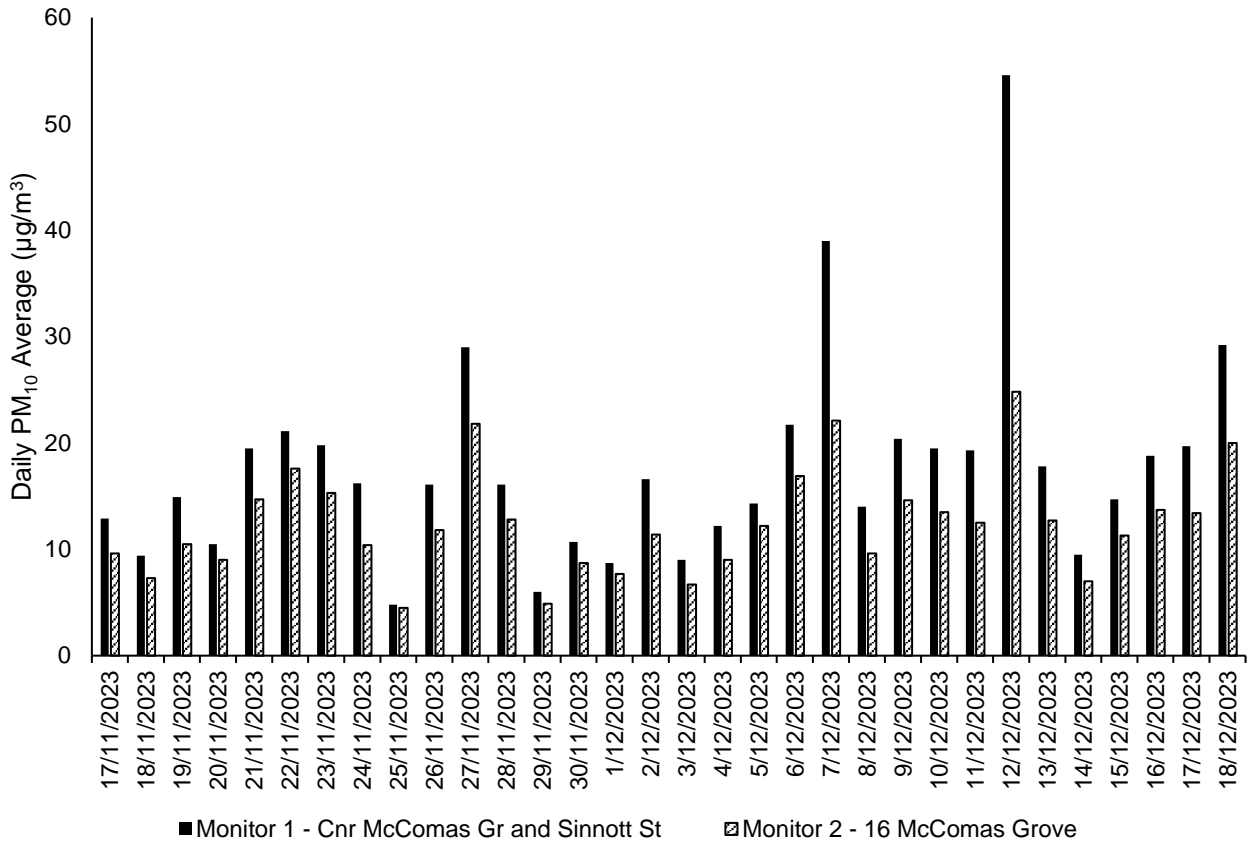


Figure 4: Burwood PM<sub>10</sub> daily averages

### 3.2.1. Analysis

The maximum daily average PM<sub>10</sub> concentrations were 54.6 µg/m<sup>3</sup> (n = 32)<sup>4</sup> and 24.8 µg/m<sup>3</sup> (n = 32) at the monitoring stations at the corner of McComas Grove and Sinnott Street (Monitor 1) and at 16 McComas Grove (Monitor 2), respectively. These two readings were caused by foggy conditions experienced on 12 December between 2:00 AM and 7:00 AM. The average PM<sub>10</sub> concentrations reflect that the air quality the majority of the time is consistently good, as represented in Figure 4.

The TARP was implemented on three days of the reporting period due to windy conditions generating dust. In response to these events, a water cart was used to dampen down the exposed surfaces of the site continuously until PM<sub>10</sub> measurements had returned to normal. Additionally, a new water line was installed around the perimeter of the site to allow hand watering of exposed surfaces. Hand watering has been used to provide targeted dust suppression in areas where the water cart cannot reach.

Implementation of the TARP during this reporting period demonstrates the MC’s proactive response to dust control and maintaining air quality in the Burwood precinct.

<sup>4</sup> n = the number of days of monitoring data captured in the monitoring period



### 3.3. Monash

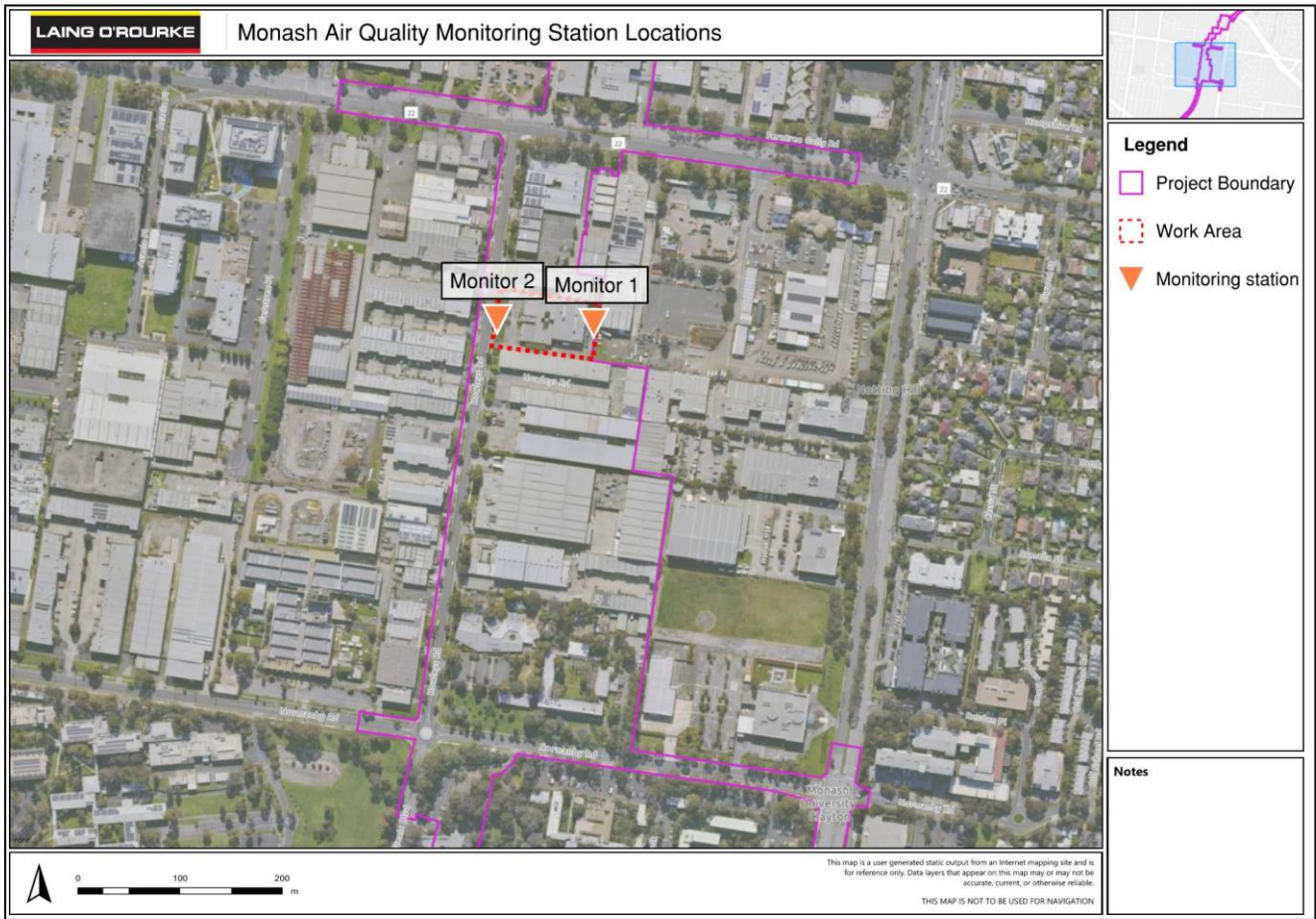


Figure 5: Monash air quality monitoring stations.

Table 6: Monash PM<sub>10</sub> results.

Monitor Number	Monitoring Location	Max Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Median Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Days TARP Implemented in the Month
-	Representative Background - Alphington	36.6	35.0	N/A
1	MH108 Location 1	35.8	16.0	4
2	Site Office	99.9	17.5	

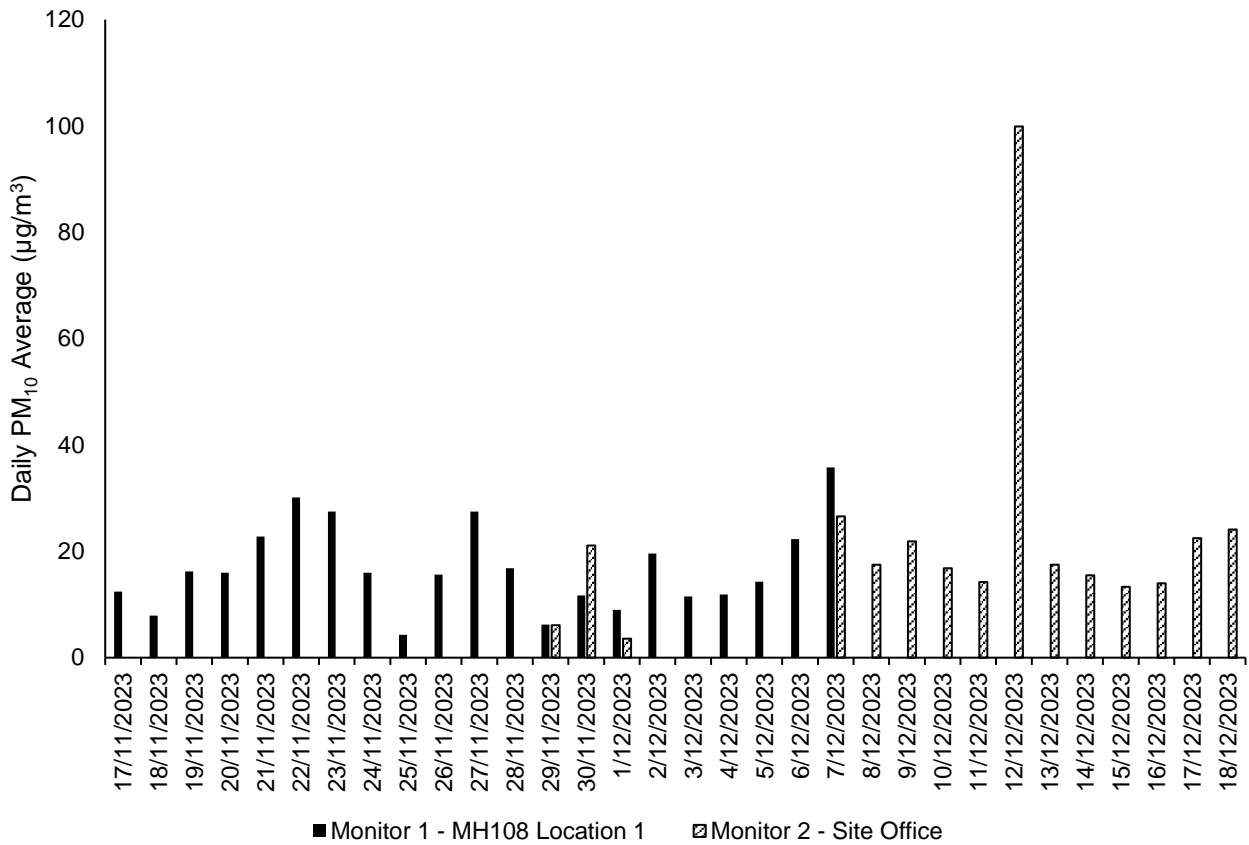


Figure 6: Monash PM<sub>10</sub> daily averages

### 3.3.1. Analysis

The maximum daily average PM<sub>10</sub> concentrations were 35.8 µg/m<sup>3</sup> (n = 32)<sup>5</sup> and 99.9 µg/m<sup>3</sup> (n = 32) at the monitoring stations at the MH108 Location 1 (Monitor 1) and Monash Site Office (Monitor 2), respectively. The reading of 99.9µg/m<sup>3</sup> measured on 12 December was caused by foggy conditions experienced between 2:00 AM and 7:00 AM.

On four days, air quality conditions were measured that triggered a review of construction activities. On these occasions, a visual inspection of site was undertaken to verify if dust was being generated. On all occasions, no dust was observed on site and it was assessed the site was not contributing to the overall background air quality.

Ongoing hardware issues with air quality monitors on site reduced the quantity of data captured at this site during this reporting period. This is discussed in Section 4.1.

<sup>5</sup> n = the number of days of monitoring data captured in the monitoring period

### 3.4. Clayton



Figure 7: Clayton air quality monitoring stations.

Table 7: Clayton PM<sub>10</sub> results.

Monitor Number	Monitoring Location	Max Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Median Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Days TARP Implemented in the Month
-	Representative Background - Alphington	36.6	35.0	N/A
1	CL69 - SiteHive 1	24.0	9.0	0

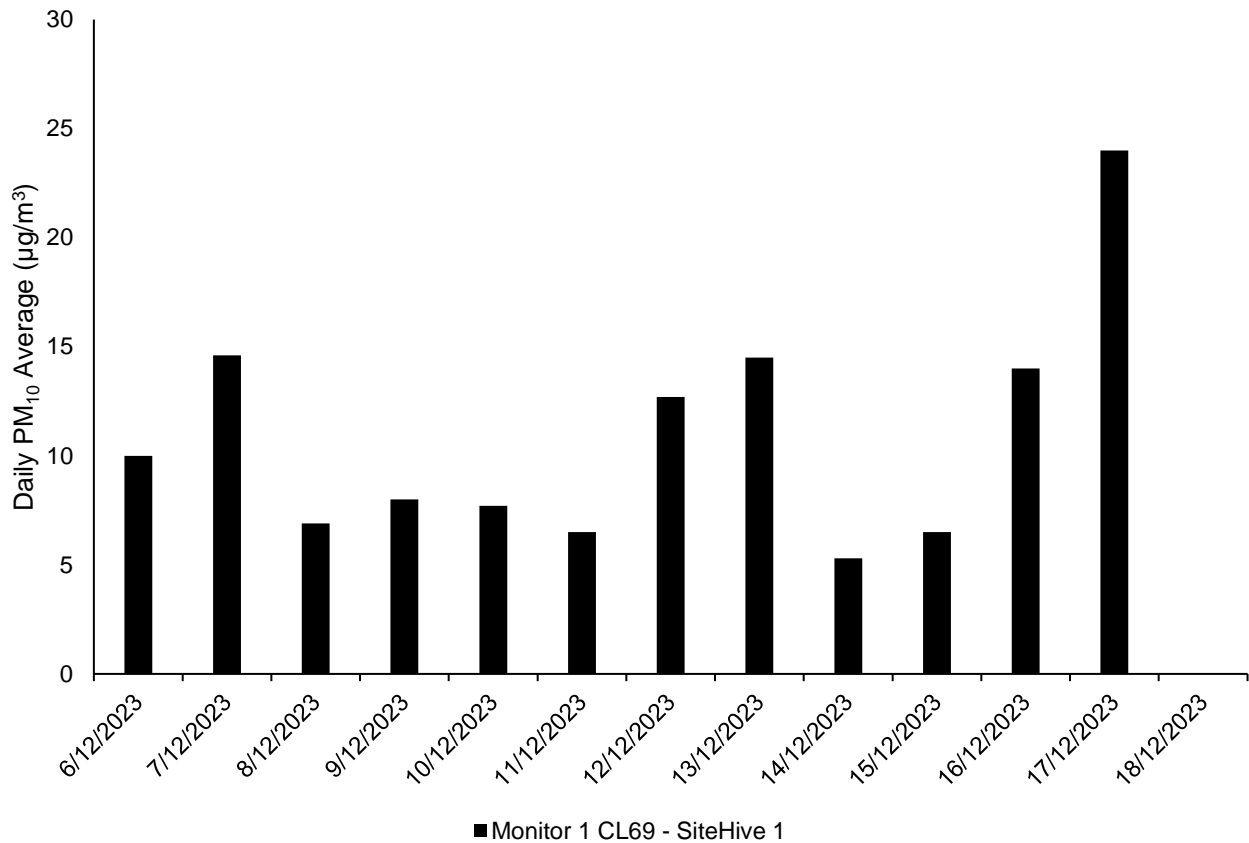


Figure 8: Clayton PM<sub>10</sub> daily averages

### 3.4.1. Analysis

Early Works commenced at Clayton on 6 December 2023. The maximum daily average PM<sub>10</sub> concentrations were 24.0 µg/m<sup>3</sup> (n = 12)<sup>6</sup> at the monitoring station at the CL69 site (Monitor 1). The TARP was not implemented during the reporting period as the trigger thresholds were not met. The potential dust generation on site was low due to the minimal scope during the reporting period, which was limited to demolition of one dwelling and no ground disturbing works. Site stabilisation will remain on site until the next phase of works at this location.

<sup>6</sup> n = the number of days of monitoring data captured in the monitoring period



### 3.5. Heatherton



Figure 9: Heatherton air quality monitoring stations.

Table 8: Heatherton PM<sub>10</sub> results.

Monitor Number	Monitoring Location	Max Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Median Daily PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Days TARP Implemented in the Month
-	Representative Background - Dandenong	35.0	15.0	N/A
1	SSY North	77.3	16.7	18
2	SSY South	62.9	27.5	



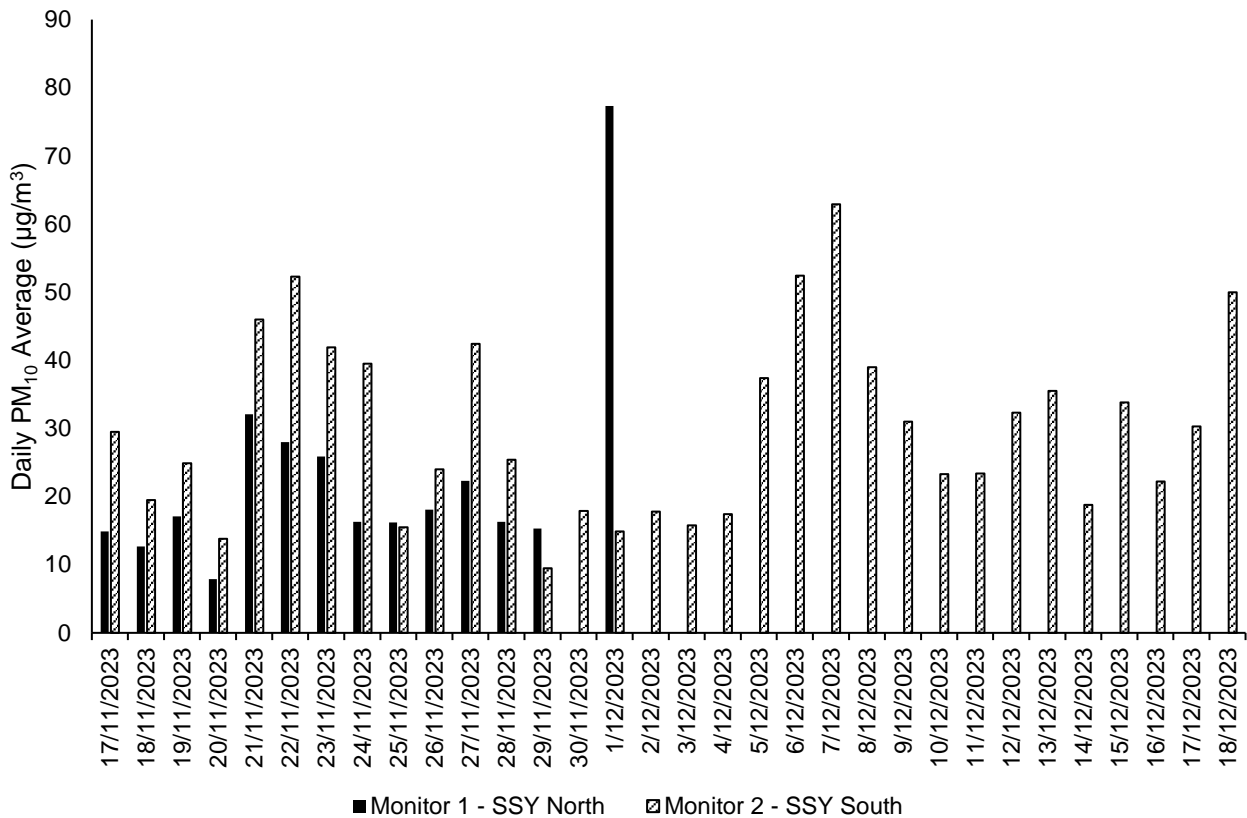


Figure 10: Heatherton PM<sub>10</sub> daily averages

### 3.5.1. Analysis

**Notes for the Heatherton site:** Both Initial Works and Early Works are being undertaken concurrently at Heatherton. The close proximity of these works means that there is a strong possibility that Initial Works are contributory factors to air quality conditions at the site. Initial Works are not subject to the EMF.

This report does not include monitoring related to asbestos removal, which is monitored and reported on separately. Monitoring for asbestos particles in the air has consistently found that levels are within a safe and allowable range.

The maximum daily average PM<sub>10</sub> concentrations were 77.3 µg/m<sup>3</sup> (n = 14)<sup>7</sup> and 62.9 µg/m<sup>3</sup> (n = 32) at the monitoring stations at the SSY North (Monitor 1) and SSY South (Monitor 2), respectively. The maximum value measured is attributable to a monitor fault, this issue and associated data gaps are discussed in Section 4.1. The TARP was implemented on 18 days of the reporting period.

Throughout this reporting period there were a range of works being undertaken at the site, some of which are not subject to the reporting requirements of this document (see explanatory note above). These included earthworks associated with site establishment and the safe removal of contaminated materials. High winds and meteorological events (fog) were experienced throughout the reporting period, contributing elevated PM<sub>10</sub> readings to the data.

Where dust was being generated by the activities associated with the site establishment works, Level 1 and 2 TARP were triggered and appropriate dust suppression controls were employed. The water cart was used over sections of the site where dust was being generated (excavations or exposed surfaces), soil binding agent sprayed over exposed surfaces and the location of monitoring devices in proximity to work area and receptors assessed.

As identified in Section 2.4, monitors may need to be moved as works progress. Air Quality monitoring devices are located in accordance with AS/NZS 3580.1.1-2016: *Methods for sampling and analysis of ambient air*. This Standard specifies that locations must be representative of the location being monitored, which in this case is offsite receptors. Specifically, Section 7 of the Standard emphasises that locations should not be unduly influenced by immediate surroundings. Locating a monitoring device too close to the works results in increased readings as the space for air quality pollutants (i.e. dust) to dissipate is not representative of emissions at the offsite receptors. Therefore, depending on the location of the works on site and the monitoring device, the device may be moved to best represent impacts to offsite receptors, while also maintaining security and safe access.

<sup>7</sup> n = the number of days of monitoring data captured in the monitoring period

### 3.6. Meteorological Conditions

Table 9: Daily weather observations for Melbourne (Olympic Park), Victoria November 17 – December 18. Data Source BOM.

Statistic	Min Temperature (°C)	Max Temperature (°C)	Maximum Wind Gust Direction	Maximum Wind Gust Speed (km/h)	Relative Humidity @ 9:00 AM (%)
Average	14.9	23.3	N/A	N/A	75.8
Lowest	11.5	16.7	N	26	54.0
Highest	19.7	34.0	N	69	100.0

Table 10: Daily rain data for Melbourne (Olympic Park), Victoria November 17 – December 18. Data Source BOM.

Statistic	Rain (mm)
Daily Low	0.0
Daily High	11.8
Total	62.6

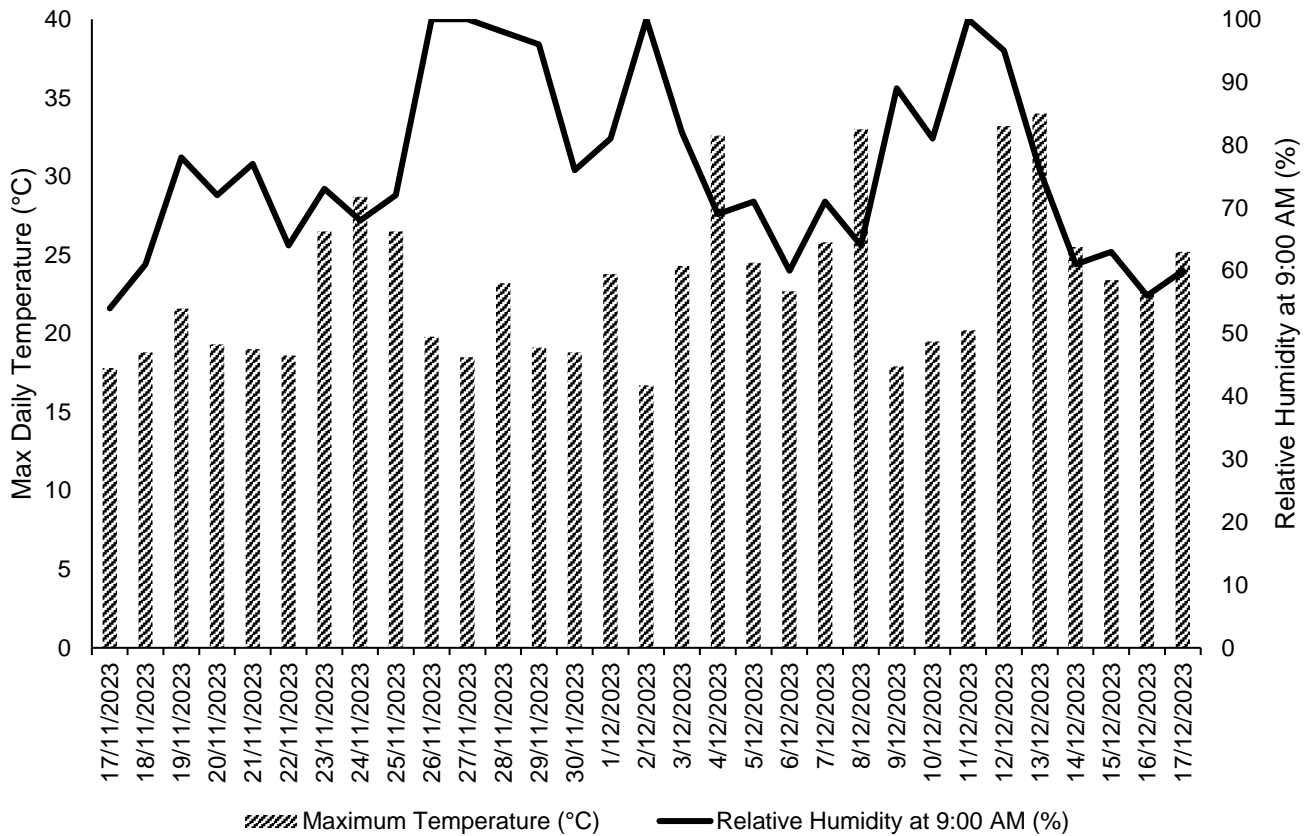


Figure 11: Daily relative humidity and temperature observations for Melbourne (Olympic Park), Victoria November 17 – December 18. Data Source BOM.

## 4. Quality Assurance

### 4.1. Data Capture

Data capture is defined as the number of valid data periods collected divided by the number of available data periods. Valid data excludes period where the instrument is unavailable due to calibration and maintenance and excludes periods where the data has been rejected due to quality assurance/data validation procedures.

Data capture statistics for the reporting period 17 November to 18 December 2023 are shown in Table 11, below.

Data capture statistics were 100% for all parameters at all stations for the reporting period, with the exception of the following:

- There was ongoing hardware issues at the Site Office monitor at Monash during this reporting period. Replacement SiteHive Hexanode units have been supplied and are now operational.
- The MH108 Location 1 monitor at Monash has also been experiencing ongoing hardware issues. This monitoring station was previously functional. Technical support has been sought to diagnose elements that may be creating issues.
- The CL69 monitor at Clayton requires a solar panel to charge the batteries of the SiteHive Hexanode unit, which was not delivered prior to commissioning of the unit due to postage issues. As a result, this monitoring station was not powered for one day during the reporting period. This monitoring station was decommissioned on 19 December for the Christmas shutdown period to prevent theft and will be reinstated prior to works recommencing on 8 January 2024.
- The SSY North monitor in Heatherton was found to be faulty on 1 December, resulting in inaccurate, unreasonably high measurements and failure to capture data after 2 December. The device was subsequently returned to the supplier for maintenance. This device monitors up-wind conditions where air quality has not been impacted by site activities. Monitor 2 – SSY South monitors down-wind conditions where air quality has been impacted by site activities and remained in place throughout the duration of the reporting period.

Table 11: Air quality monitoring, data capture summary

Location	Parameter	Averaging Period	Collected Periods	Available Periods	Data Capture
Box Hill – Site Office	PM <sub>10</sub>	24-hours	32	32	100%
Box Hill – East of Market Street	PM <sub>10</sub>	24-hours	32	32	100%
Burwood – 16 McComas Grove	PM <sub>10</sub>	24-hours	32	32	100%
Burwood – Corner of McComas Grove and Sinnott Street	PM <sub>10</sub>	24-hours	32	32	100%
Monash – Site Office	PM <sub>10</sub>	24-hours	21	32	66%
Monash – MH108 – Location 1	PM <sub>10</sub>	24-hours	15	32	47%
Clayton - CL69 – SiteHive 1	PM <sub>10</sub>	24-hours	12	13	92%
Heatherton – SSY – North <sup>8</sup>	PM <sub>10</sub>	24-hours	14	32	44%
Heatherton – SSY – South	PM <sub>10</sub>	24-hours	32	32	100%

<sup>8</sup> Refer to Figure 9 for a map of the monitoring locations.

## 4.2. Data Validation

Data contained in this report has been validated against performance and calibration requirements for each instrument. Data during commissioning, maintenance and calibration periods has been removed from the validated data sets.

Table 12: Monitoring device calibration information.

Location	Device Serial Number	Calibration Date	Calibration Due
Box Hill – Site Office	HEX-000407	29 Aug 2023	29 Aug 2025
Box Hill – East of Market Street	HEX-000339	19 Apr 2023	19 Apr 2025
Burwood – 16 McComas Grove	HEX-000385	29 Aug 2023	29 Aug 2025
Burwood – Corner of McComas Grove and Sinnott Street	HEX-000308	03 Apr 2023	03 Apr 2025
Monash – Site Office	HEX-000418	29 Aug 2023	29 Aug 2025
Monash – MH108 – Location 1	HEX-000418	29 Aug 2023	29 Aug 2025
Clayton - CL69 – SiteHive 1	HEX-000139	22 Nov 2023	22 Nov 2025
Heatherton – SSY – North <sup>9</sup>	HEX-000067	21 Feb 2023	21 Feb 2025
Heatherton – SSY – South	HEX-000050	21 Apr 2023	21 Apr 2025

<sup>9</sup> Refer to Figure 9 for a map of the monitoring locations.