



**SUBURBAN  
RAIL LOOP**

# **Air Quality Monthly Report**

## **Early Works**

### **Tunnels South**

19 December 2024 – 18 January 2025

## Introduction

This summary report presents the results of the monthly air quality monitoring data for the construction of SRL East. Laing O’Rourke (LOR) is delivering the Early Works (EW) as Managing Contractor (MC) and Suburban Connect is delivering the Tunnels South works as Principal Contractor (PC). The two delivery partners have individually prepared reports to comply with the Environmental Performance Requirement (EPR) for Air Quality.

SRL East Early Works include road modifications, moving underground services, ground improvement works, tram terminus works, and site preparations for tunnel boring machines.

SRL East Tunnels South is a fully tunnelled metro corridor between Cheltenham and Glen Waverley. The delivery scope encompasses station boxes and twin segmentally lined bored tunnels with cross passages.

## Appendices

Appendix 1 – Suburban Rail Loop East Early Works Air Quality Monthly Report

Appendix 2 – Suburban Rail Loop East Tunnels South Air Quality Monthly Report



# Suburban Rail Loop East Early Works Air Quality Monthly Report

19 December 2024 – 18 January 2025



## Document Information

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## Revision Control

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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:

- In Box Hill, the TARP was implemented on one day during the reporting period, on 19 December 2024. Dust levels were elevated with warm weather and northerly wind gusts. Water carts and hoses were used to suppress dust during works. In preparation for the Christmas shutdown, a soil binder was applied to the site's exposed surfaces.
- In Burwood, the TARP was not implemented during the reporting period. Water carts and hoses were used during material and spoil haulage, and dust was reduced by street sweeping and requiring trucks to cover loads prior to leaving the site.
- In Glen Waverley, the TARP was not implemented during the reporting period. Water carts and hoses were used during material and spoil haulage, and dust was reduced by street sweeping and requiring trucks to cover loads prior to leaving the site.
- In Monash, the TARP was not implemented during the reporting period. Hoses were used proactively and reactively to suppress dust.
- In Clayton, the TARP was implemented on one day during the reporting period (19 December 2024). Water carts and hoses were used during plant movements, material haulage and concreting activities. Hoses were used proactively and reactively to suppress dust.
- In Heatherton, the TARP was implemented on one day during the reporting period (19 December 2024). Water carts and hoses were used during excavation, and material and spoil haulage. Dust was reduced by street sweeping and requiring trucks to cover loads prior to leaving the site.

No works took place at Cheltenham during the reporting period, therefore no monitoring was required. Monitoring will resume before works recommence in early 2025.

Due to the Christmas shutdown period, no works were occurring between December 20 2024 and January 15 2025.

Further explanation is provided in Section 3 regarding these observations.

### 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 19 December 2024 and 18 January 2025 in accordance with SRL East EMF and EPRs AQ1 and AQ2. Laing O'Rourke is delivering the Early Works as Managing Contractor (MC). Early Works for SRL East commenced at Burwood in May 2023, Box Hill in June 2023, Monash and Heatherton in October 2023, Clayton in December 2023, and Glen Waverley and Cheltenham in March 2024.

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 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 implement mitigations on site to reduce dust impacts, and review 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, moving underground services, ground improvement works (such as at the Stabling Facility at Heatherton) 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 separately.

## 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	29.5	17.5	-
Dandenong	PM <sub>10</sub>	24-hour	33.4	19.2	-
Box Hill					
Site Office	PM <sub>10</sub>	24-hour	31.4	22.5	
East of Market Street	PM <sub>10</sub>	24-hour	35.3	27.0	1
Uniting AgeWell (UAW)	PM <sub>10</sub>	24-hour	21.2	17.4	
Irving Avenue	PM <sub>10</sub>	24-hour	27.1	26.0	
Burwood					
Corner of McComas Grove and Sinnott Street	PM <sub>10</sub>	24-hour	24.4	12.8	
16 McComas Grove	PM <sub>10</sub>	24-hour	24.0	12.6	
Site 4 – East	PM <sub>10</sub>	24-hour	16.2	9.6	0
Site 4 – West	PM <sub>10</sub>	24-hour	27.7	11.8	
Site 1 – South	PM <sub>10</sub>	24-hour	36.8	26.8	
Glen Waverley					
Coleman Parade	PM <sub>10</sub>	24-hour	23.8	23.8	0
Railway Parade	PM <sub>10</sub>	24-hour	25.3	18.6	
Monash					
Daycare	PM <sub>10</sub>	24-hour	25.9	25.9	0
CSIRO	PM <sub>10</sub>	24-hour	27.7	23.2	
Clayton					
Clayton Community Space – Site 1	PM <sub>10</sub>	24-hour	46.6	19.6	1
Heatherton					
SSY - South	PM <sub>10</sub>	24-hour	66.3	29.1	1
Site Office	PM <sub>10</sub>	24-hour	30.3	30.3	

<sup>1</sup> The EPA monitoring station at Dandenong is used as the representative control site for Cheltenham and Heatherton. 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

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, and connect people travelling on the Gippsland corridor. Construction of SRL East is creating up to 8000 direct local jobs, with trains to be running in 2035.

Early Works for SRL East commenced at Burwood in May 2023, Box Hill in June 2023, Monash and Heatherton in October 2023, Clayton in December 2023, Glen Waverley and Cheltenham in March 2024. Laing O'Rourke is delivering the Early Works as MC. Early Works include:

- Road modifications
- Moving underground services
- 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 includes investigative works, protective works, utility relocations and installations, ground improvement works (such as at the Stabling Facility at Heatherton) and minor road modifications, were subject to a separate approval process under Clause 52.30 of the 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 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 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 EES and the Minister's Assessment, dated 5 August 2022.

The EMF requires the MC to develop and implement an 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 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. 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 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. 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
Box Hill – UAW	01 August 2024	Latitude -37.81479° Longitude: 145.12424°	PM <sub>10</sub>	Alphington EPA monitoring station
Box Hill – Irving Avenue	01 August 2024	Latitude -37.815964° Longitude: 145.12355°	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 – Site 4 – West	16 February 2024	Latitude: -37.850521° Longitude: 145.11009°	PM <sub>10</sub>	Alphington EPA monitoring station
Burwood – Site 4 – East	20 February 2024	Latitude: -37.850586° Longitude: 145.11188	PM <sub>10</sub>	Alphington EPA monitoring station
Burwood – Corner of McComas Grove and Sinnott Street	18 May 2023	Latitude: - 37.852413° Longitude: 145.11252°	PM <sub>10</sub>	Alphington EPA monitoring station
Burwood – Site 1 South	08 May 2024	Latitude: -37.8549° Longitude: 145.10995°	PM <sub>10</sub>	Alphington EPA monitoring station
Glen Waverley – Railway Parade	09 August 2024	Latitude: -37.878888° Longitude: 145.161078°	PM <sub>10</sub>	Alphington EPA monitoring station
Glen Waverley – Coleman Parade	19 August 2024	Latitude: -37.880739° Longitude: 145.160738°	PM <sub>10</sub>	Alphington EPA monitoring station
Monash – Daycare	17 October 2024	Latitude: -37.90497° Longitude: 145.139°	PM <sub>10</sub>	Alphington EPA monitoring station
Monash – CSIRO	15 January 2025	Latitude: -37.90627° Longitude: 145.1371°	PM <sub>10</sub>	Alphington EPA monitoring station
Clayton – Clayton Community Space Site 1	28 August 2024	Latitude: -37.92484° Longitude: 145.1207°	PM <sub>10</sub>	Alphington EPA monitoring station
Heatherston – SSY – South	29 May 2023	Latitude: -37.955917° Longitude: 145.10239°	PM <sub>10</sub>	Dandenong EPA monitoring station
Heatherston – SSY – Site Office	22 January 2024	Latitude: -37.95401° Longitude: 145.10062°	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 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. Air Quality monitoring devices are located in accordance with AS/NZS 3580.1.1-2016: Methods for sampling and analysis of ambient air (the Standard). 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.
- 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 is 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.

#### 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	29.5	26.5	-
1	Site Office	31.4	22.5	1
2	East of Market Street	35.3	27	
3	Uniting AgeWell	21.2	17.4	
4	Irving Avenue	27.1	26.0	

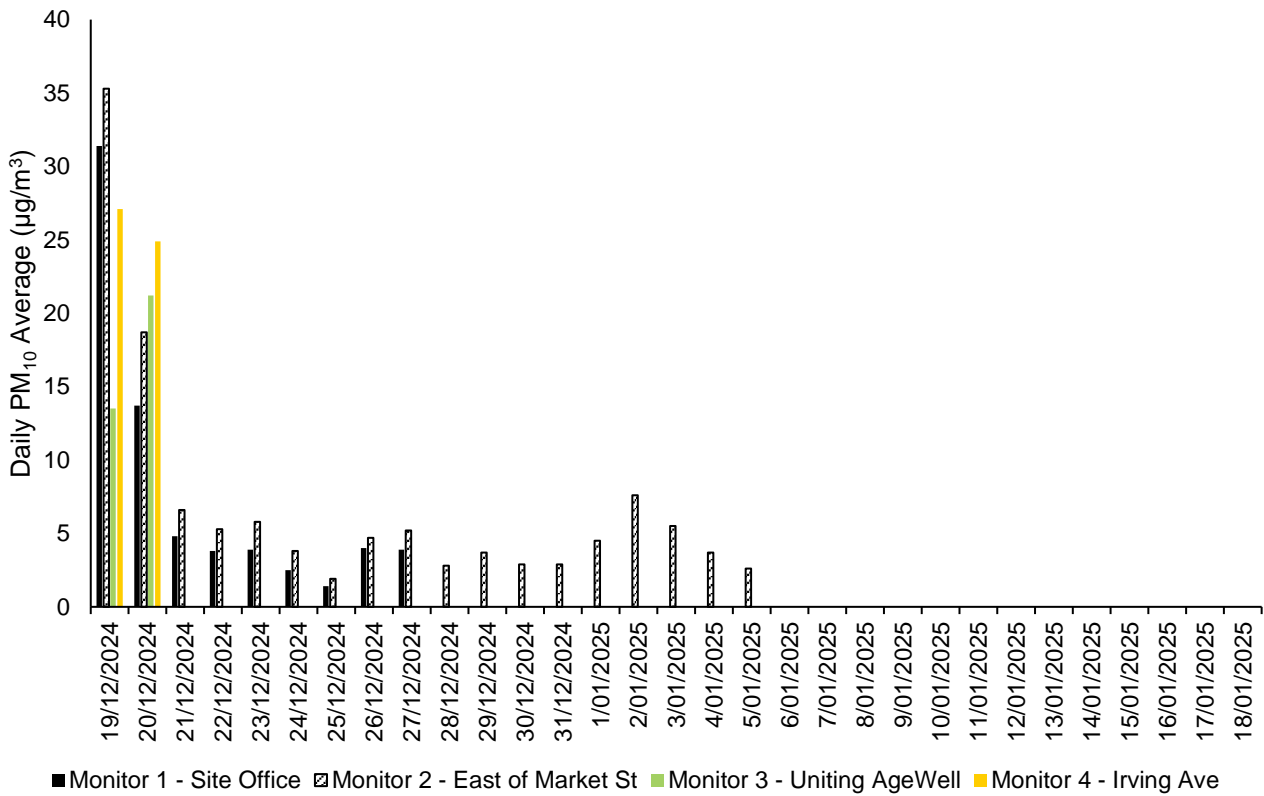


Figure 2: Box Hill PM<sub>10</sub> daily averages.

### 3.1.1. Analysis

The maximum daily average PM<sub>10</sub> concentrations were 31.4 µg/m<sup>3</sup> (n = 2), 35.3 µg/m<sup>3</sup> (n = 2), 21.2 µg/m<sup>3</sup> (n = 2), and 27.1 µg/m<sup>3</sup> (n = 2), at the monitoring stations located at the Site Office (Monitor 1), East of Market Street (Monitor 2), Uniting AgeWell (Monitor 3) and Irving Avenue (Monitor 4) respectively. It is noted that monitors one and two were left on in areas with invalid data. As such the readings from 21 December 2024 to 5 January 2025 are excluded.

The TARP was implemented on one day during the reporting period, on 19 December 2024. Dust generated from concrete cutting, excavation and spoil transport activities were proactively suppressed using water carts and sprayed with a soil binder for the planned shutdown over Christmas. Additional control measures in Box Hill Gardens also included spraying exposed surfaces with hydroseed to promote grass growth and reduce the area with exposed topsoil.

### 3.2. Burwood

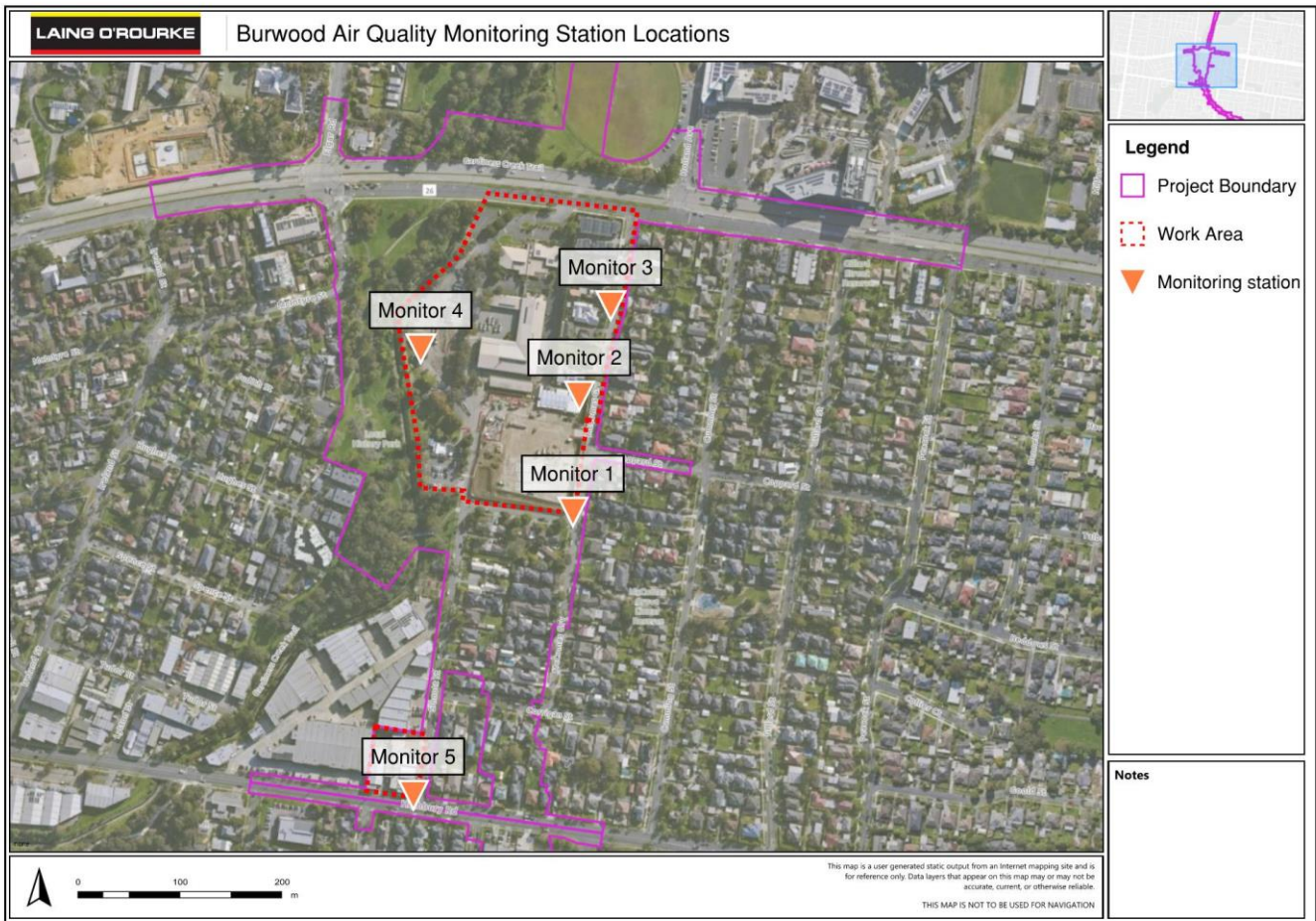


Figure 3: Burwood air quality monitoring stations.

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	29.5	17.5	-
1	Corner of McComas Grove and Sinnott Street	24.4	12.8	
2	16 McComas Grove	24.0	12.6	
3	Site 4 - East	16.2	9.6	0
4	Site 4 – West	27.7	11.8	
5	Site 1 – South	36.8	26.8	

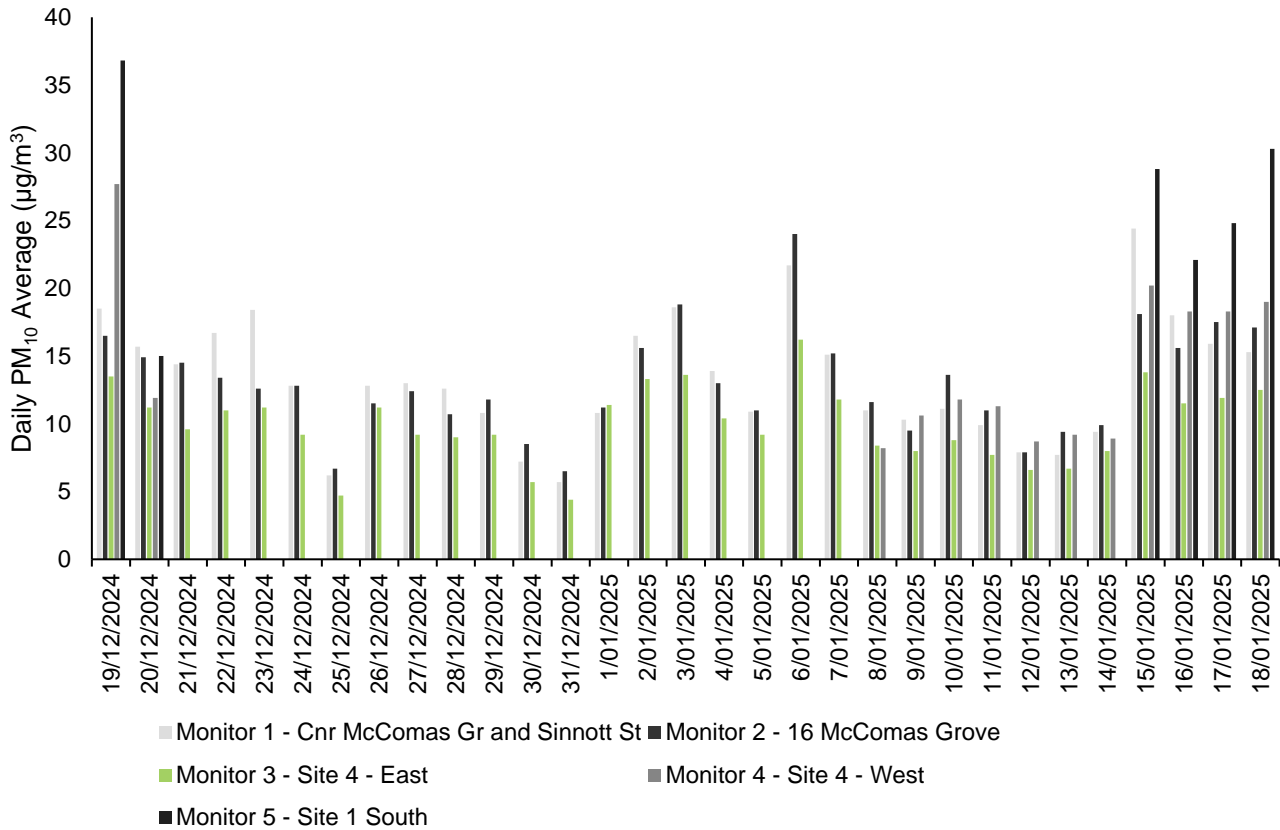


Figure 4: Burwood PM<sub>10</sub> daily averages.

### 3.2.1. Analysis

The maximum daily average PM<sub>10</sub> concentrations reported at the Burwood monitoring stations were 24.4 µg/m<sup>3</sup> (n = 31) at the corner of McComas Grove and Sinnott Street (Monitor 1), 24.0 µg/m<sup>3</sup> (n = 31) at 16 McComas Grove (Monitor 2), 16.2 µg/m<sup>3</sup> (n = 31) at Site 4 – East (Monitor 3), 27.7 µg/m<sup>3</sup> (n = 13) at Site 4 – West (Monitor 4), and 36.8 µg/m<sup>3</sup> (n = 6) at Site 1 South (Monitor 5).

The TARP was not implemented during this reporting period because regular dust suppression activities, including the use of water carts and hoses, were sufficient to maintain air quality levels. Dust generation from spoil haulage was reduced by requiring trucks to cover loads prior to leaving the site.

Stockpiles of soil and rock were maintained below the top of the hoarding to minimise the risk of dust leaving the site. Additionally, stockpiles were routinely dampened during worktimes to prevent dust. Polymer was applied to all exposed areas prior to the Christmas shutdown to prevent dust.



### 3.3. Glen Waverley

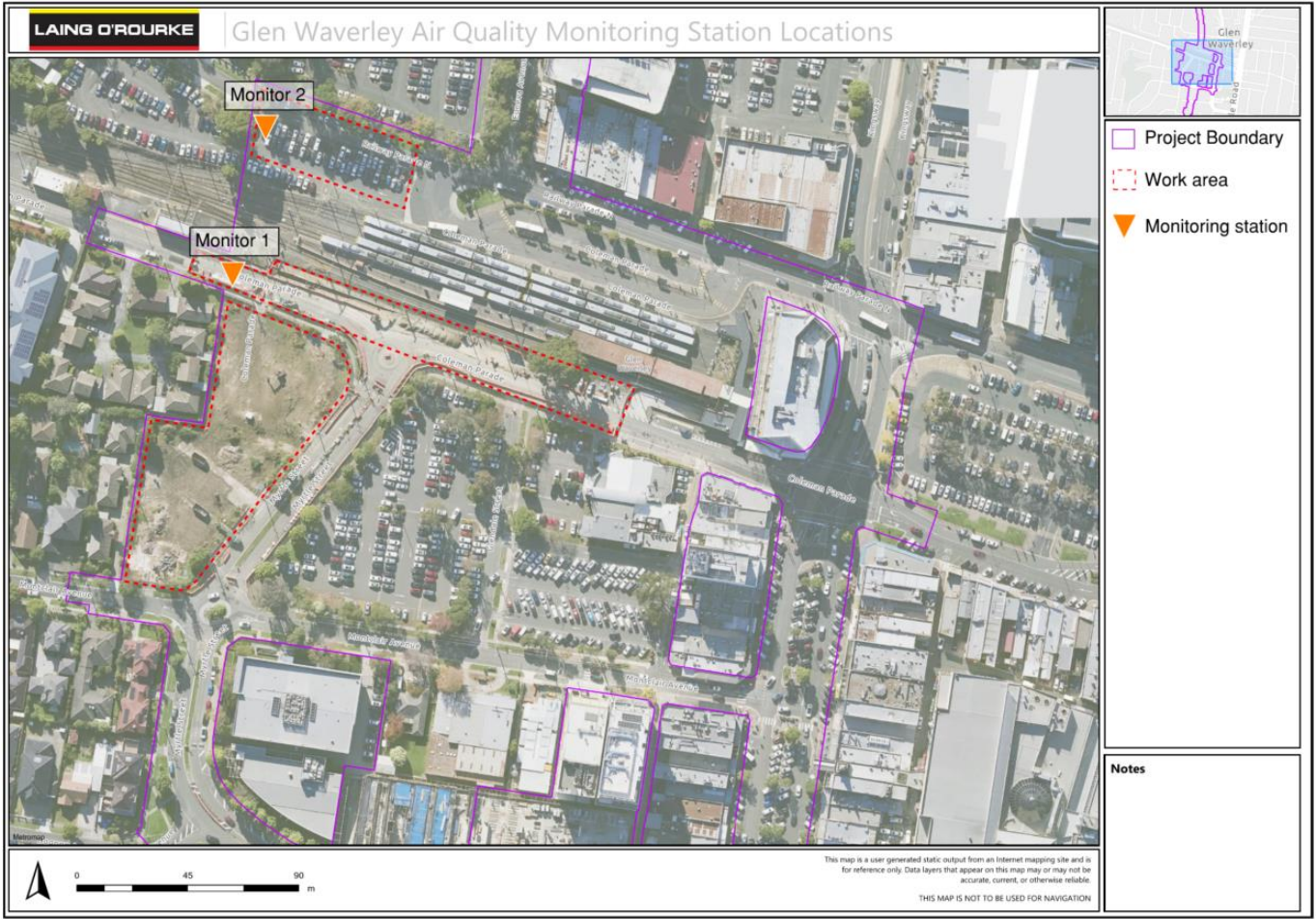


Figure 5: Glen Waverley air quality monitoring stations.

Table 6: Glen Waverley 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	29.5	17.5	-
1	Coleman Parade	23.8	23.8	0
2	Railway Parade	25.3	18.6	

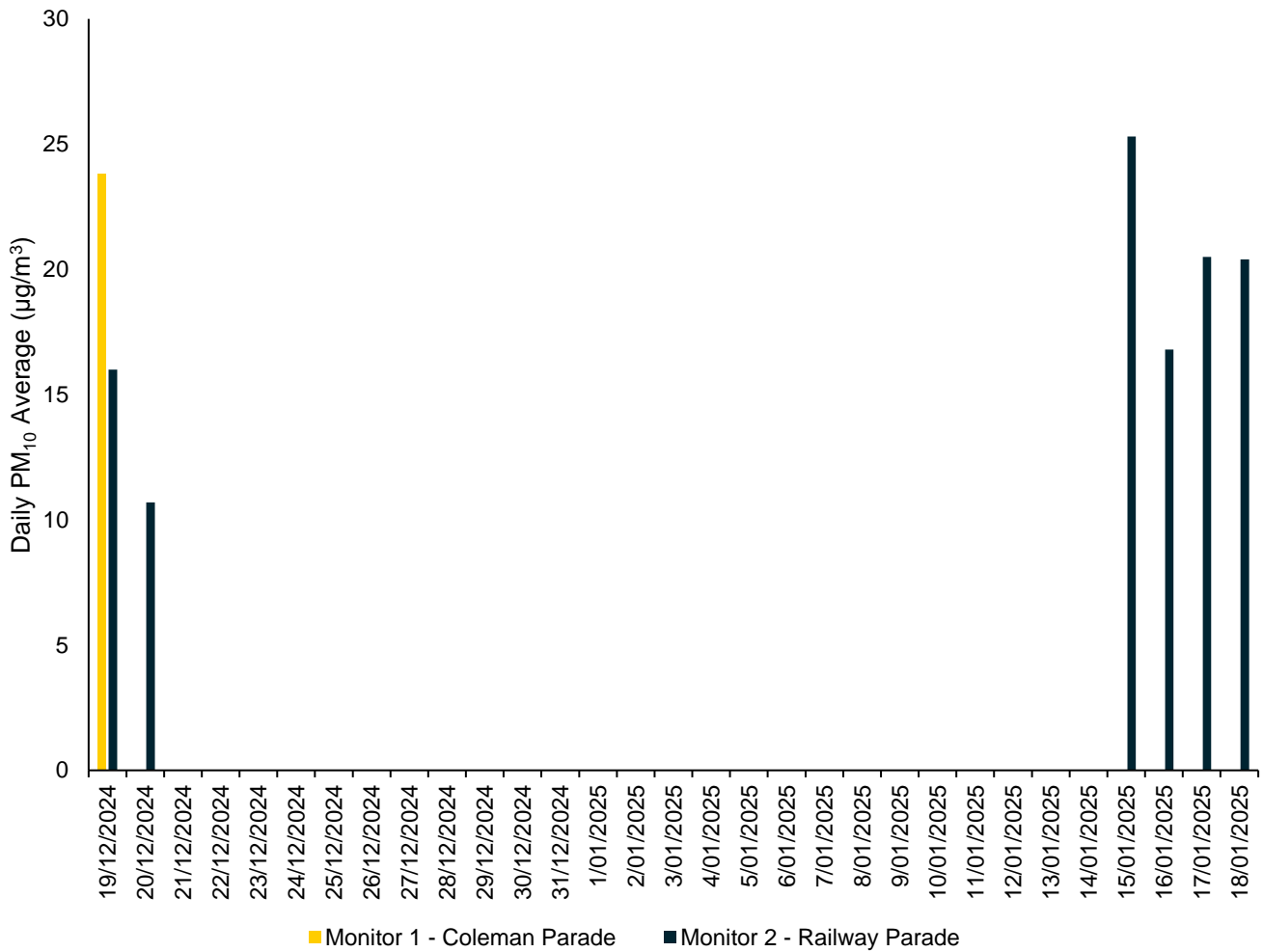


Figure 6: Glen Waverley PM<sub>10</sub> daily averages.

### 3.3.1. Analysis

The maximum daily average PM<sub>10</sub> concentrations were 23.8 µg/m<sup>3</sup> (n = 1), and 25.3 µg/m<sup>3</sup> (n = 6) at the monitoring locations at Coleman Parade (Monitor 1) and Railway Parade (Monitor 2), respectively.

The TARP was not implemented during this reporting period because regular dust suppression activities, including the use of water carts and hoses, were sufficient to maintain air quality levels. Dust generation from spoil haulage was reduced by requiring trucks to cover loads prior to leaving the site.

Stockpiles of soil and rock were maintained below the top of the hoarding to minimise the risk of dust leaving the site. Additionally, stockpiles were routinely dampened during worktimes to prevent dust. Polymer was applied to all exposed areas and any remaining stockpiles were covered prior to the Christmas shutdown to prevent dust.

### 3.4. Monash

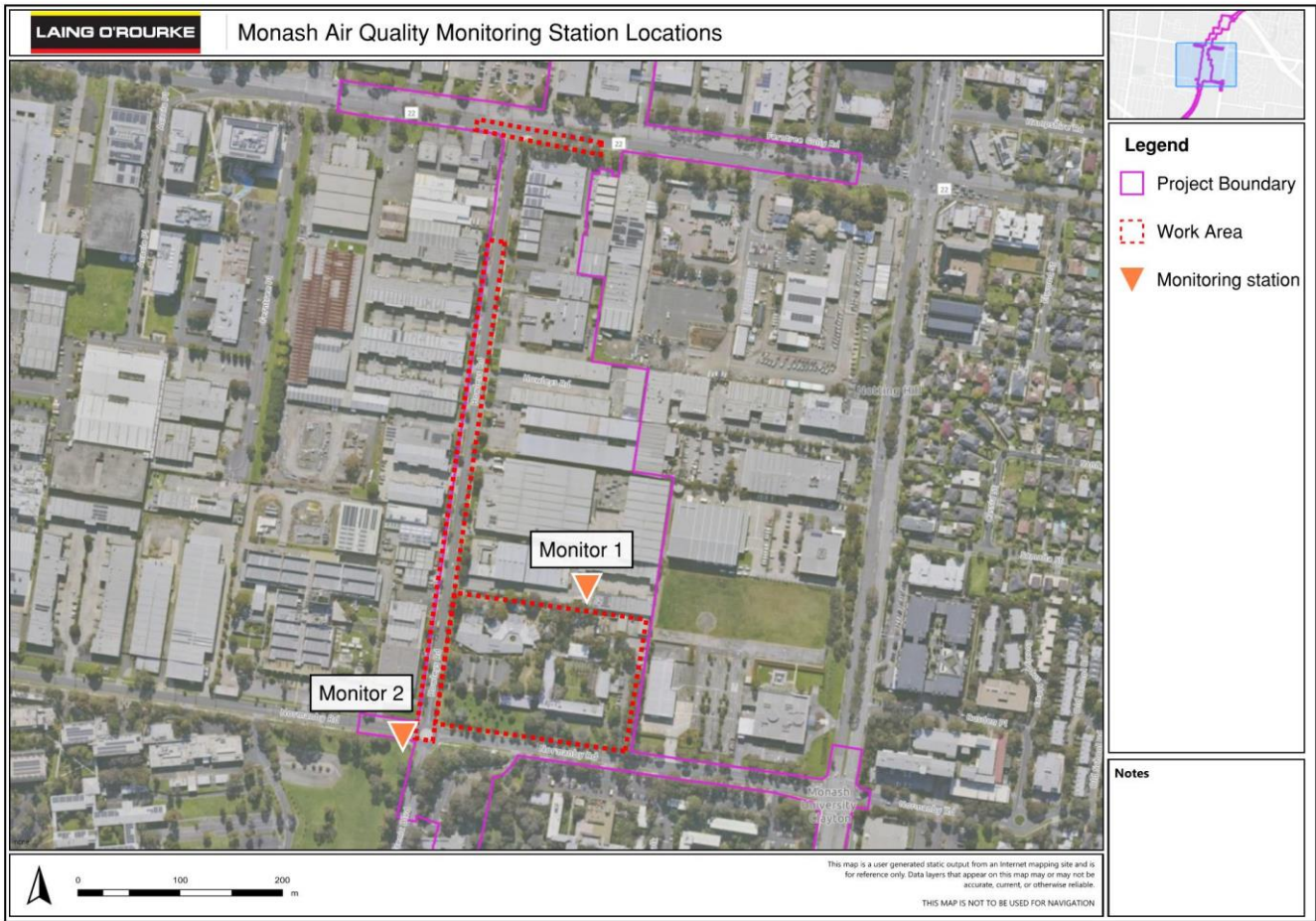


Figure 7: Monash air quality monitoring stations.

Table 7: 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	29.5	17.5	-
1	Daycare	25.9	25.9	0
2	CSIRO	27.7	23.2	

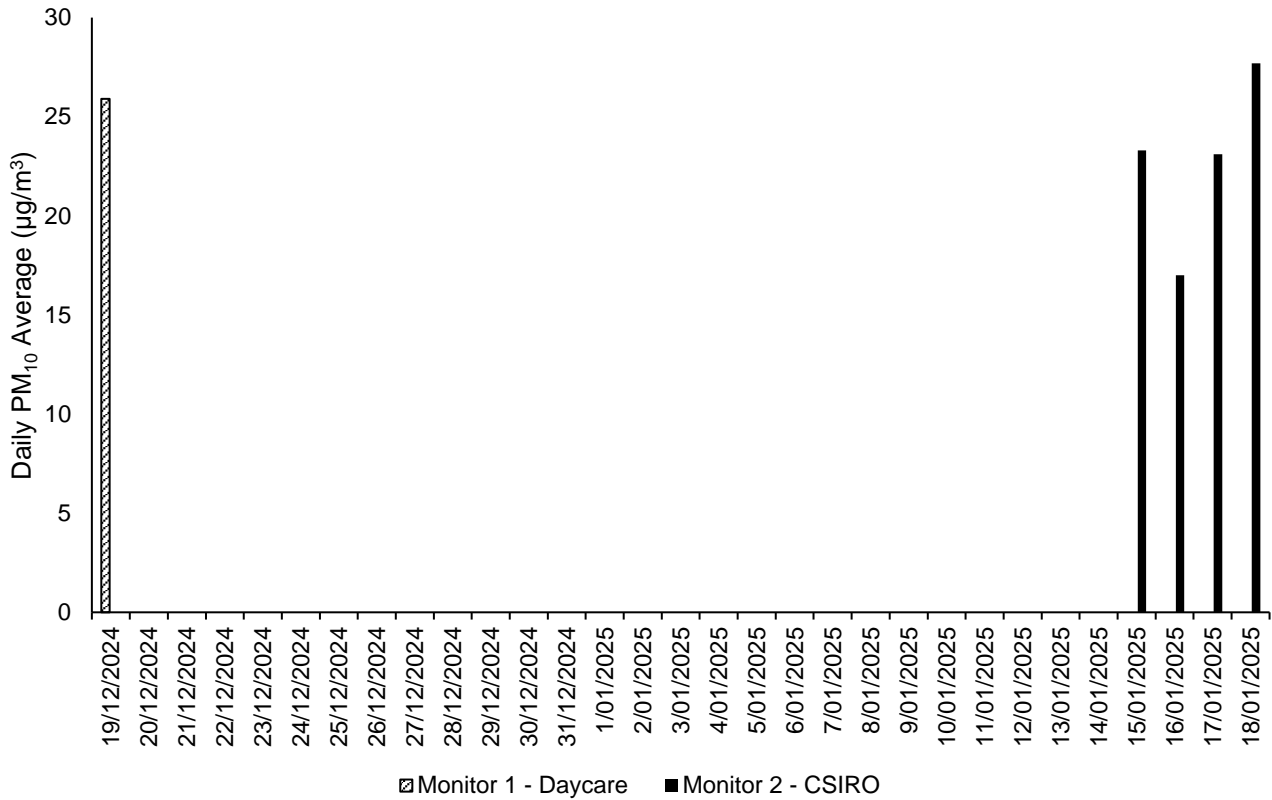


Figure 8: Monash PM<sub>10</sub> daily averages.

### 3.4.1. Analysis

The maximum daily average PM<sub>10</sub> concentrations was 25.9 µg/m<sup>3</sup> (n = 1) at the Daycare (Monitor 1), and 27.7 µg/m<sup>3</sup> (n = 4) at the CSIRO monitoring locations, respectively. The TARP was not implemented during the reporting period as regular dust suppression activities were adequate. Elevated PM<sub>10</sub> concentrations within the reporting period were due to high wind speeds. A hose was used proactively and reactively to suppress dust as required during spoil movement.

Monitor 1 was relocated on 19 December 2024 following the commencement of demolition works at the Normanby House site.

### 3.5. Clayton

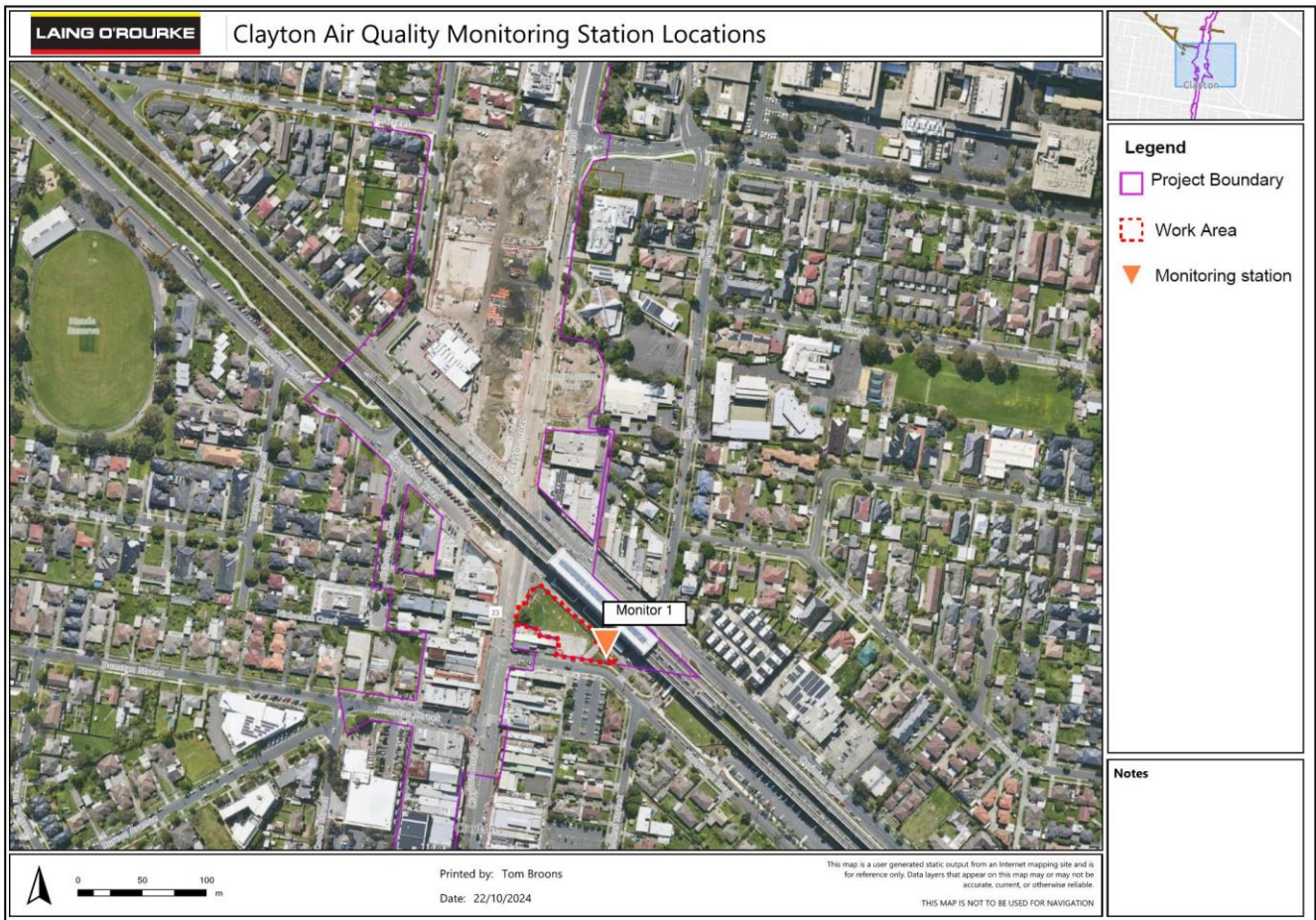


Figure 9: Clayton air quality monitoring stations.

Table 8: 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	29.5	17.5	-
1	Clayton Community Space - Site 1	46.6	19.6	1

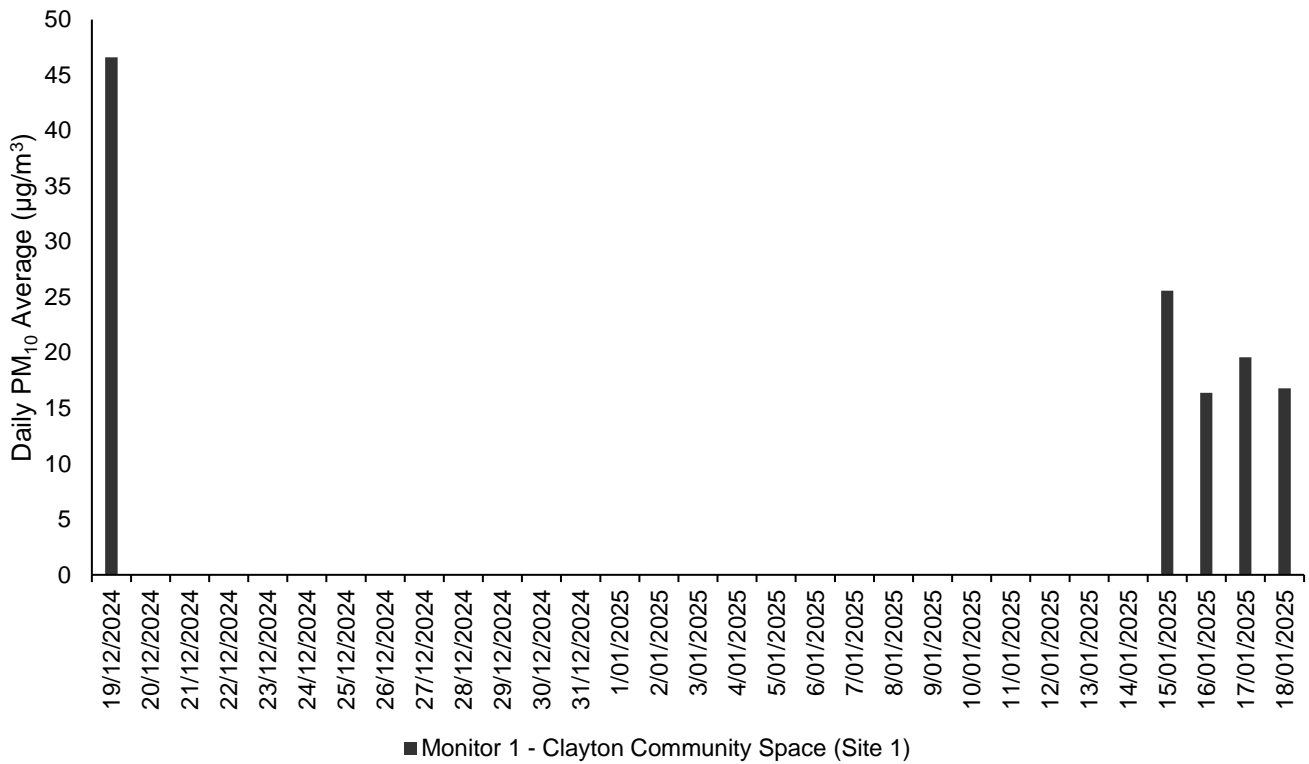


Figure 10: Clayton PM<sub>10</sub> daily averages.

### 3.5.1. Analysis

The maximum daily average PM<sub>10</sub> concentration was 46.6 µg/m<sup>3</sup> (n = 5) at the Clayton Community Space Site 1 (Monitor 1) monitoring locations.

The TARP was implemented on one day during the reporting period. Plant movements, concreting activities and equipment installation activities contributed to dust on site. Proactive mitigation measures included using water carts and hoses, requiring trucks to cover loads prior to leaving the site, and street sweeping around the site.

### 3.6. Heatherton



Figure 11: Heatherton air quality monitoring stations.

Table 9: 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	17.5	19.2	-
1	SSY - South	66.3	29.1	1
2	Site Office	30.3	30.3	

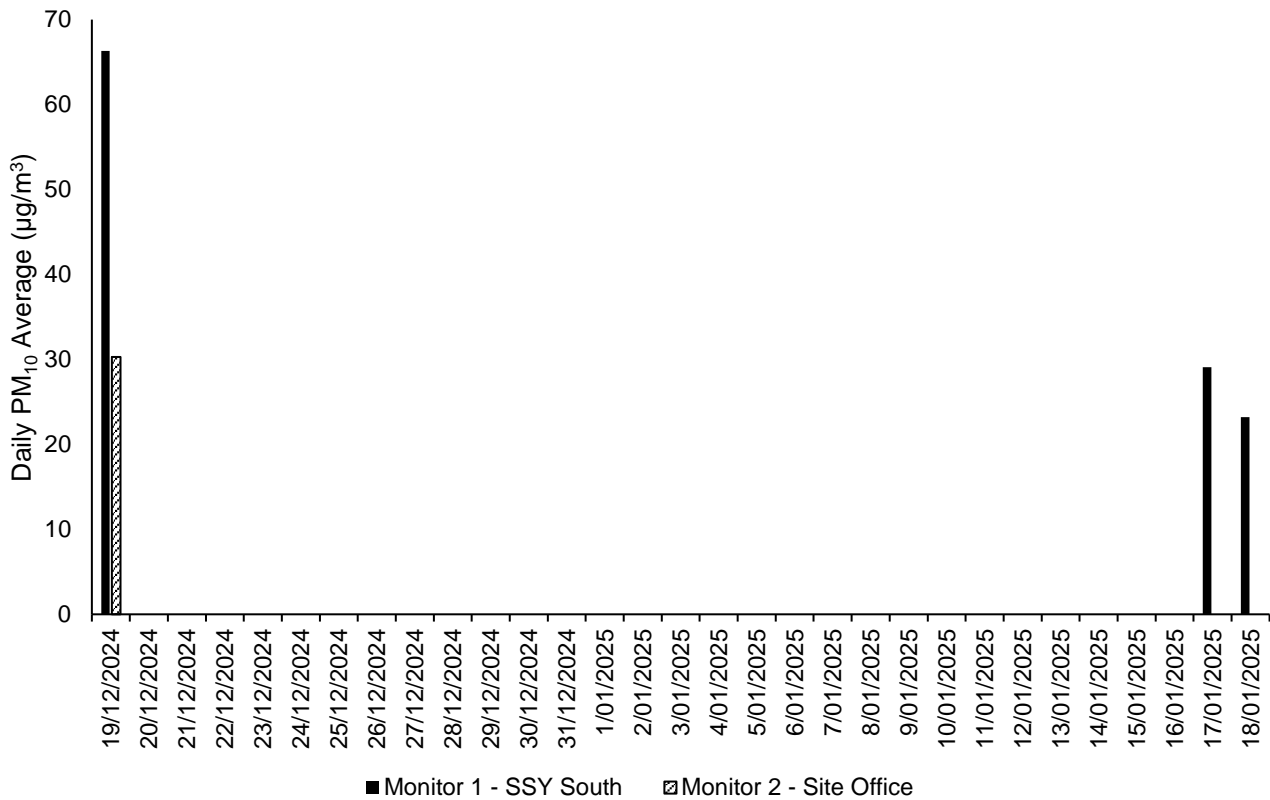


Figure 12: Heatherton PM<sub>10</sub> daily averages.

### 3.6.1. Analysis

Both Initial Works and Early Works are being undertaken at Heatherton. Given the proximity of each of these works to each other, there is a strong possibility Initial Works are contributing 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 separately. Monitoring for asbestos particles in the air has consistently found levels are within a safe and allowable range.

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. These included earthworks associated with site establishment and the safe removal of hazardous materials.

The maximum daily average PM<sub>10</sub> concentrations were 66.3 µg/m<sup>3</sup> (n =3), 30.3 µg/m<sup>3</sup> (n = 1) at SSY South (Monitor 1), and Site Office (Monitor 2) respectively. The TARP was implemented on one day during the reporting period. Proactive controls were implemented such as water cart operation, soil binders on disused stockpiles and trucks with covered loads.

The Heatherton site is in an industrial area with several neighbouring properties undertaking earthworks with large areas of exposed soil. On days where there are strong winds, airborne dust generated off-site has been observed to be blown onto the Heatherton site, contributing to elevated onsite monitoring results.



### 3.7. Cheltenham

No works took place at Cheltenham during the reporting period; therefore, no monitoring was required.

Air quality monitoring will recommence prior to works beginning in early 2025.

## 4. Meteorological Conditions

Table 10: Daily weather observations for Melbourne (Olympic Park), Victoria 19 December 2024 –18 January 2025. 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 (%)
Mean	15.6	26.8	-	37.1	59.8
Lowest	11.0	18.5	SSW	28.0	28.0
Highest	20.5	38.0	SW	52.0	91.0

Table 11: Daily weather observations for Melbourne (Moorabbin), Victoria 19 December 2024 –18 January 2025. 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 (%)
Mean	14.5	27.0	-	44.9	60.5
Lowest	8.8	18.0	SSW	30.0	27.0
Highest	19.2	40.4	N	69.0	87.0

Table 12: Daily rain data for Melbourne (Olympic Park and Moorabbin), Victoria 19 December 2024 –18 January 2025. Data Source BOM.

Statistic	Rain data Olympic Park (mm)	Rain data Moorabbin (mm)
Daily Low	0.0	0.0
Daily High	31	21.4
Total	82.6	56.2

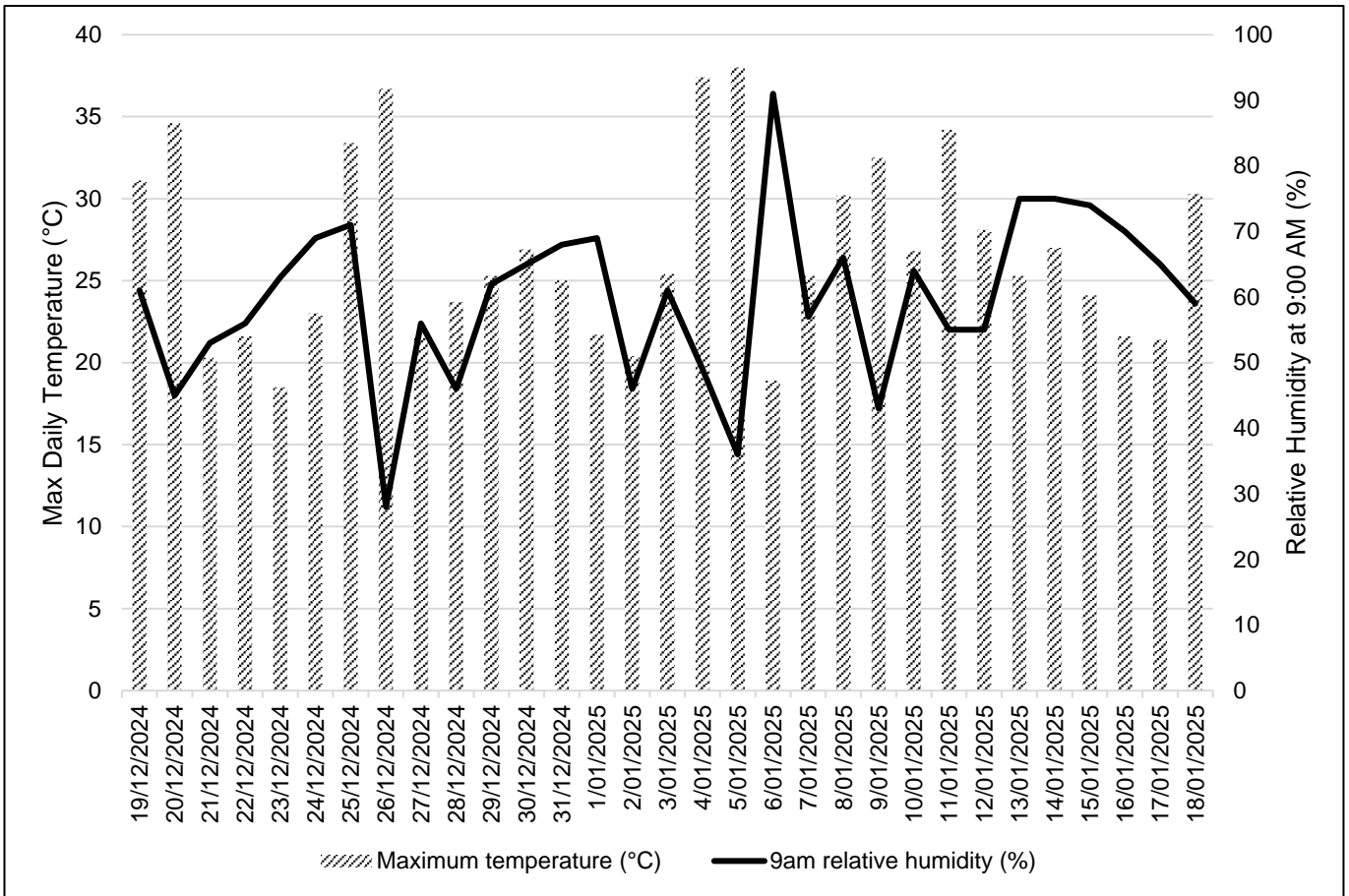


Figure 13: Daily relative humidity and temperature observations for Melbourne (Olympic Park), Victoria 19 December 2024 –18 January 2025. Data Source BOM.

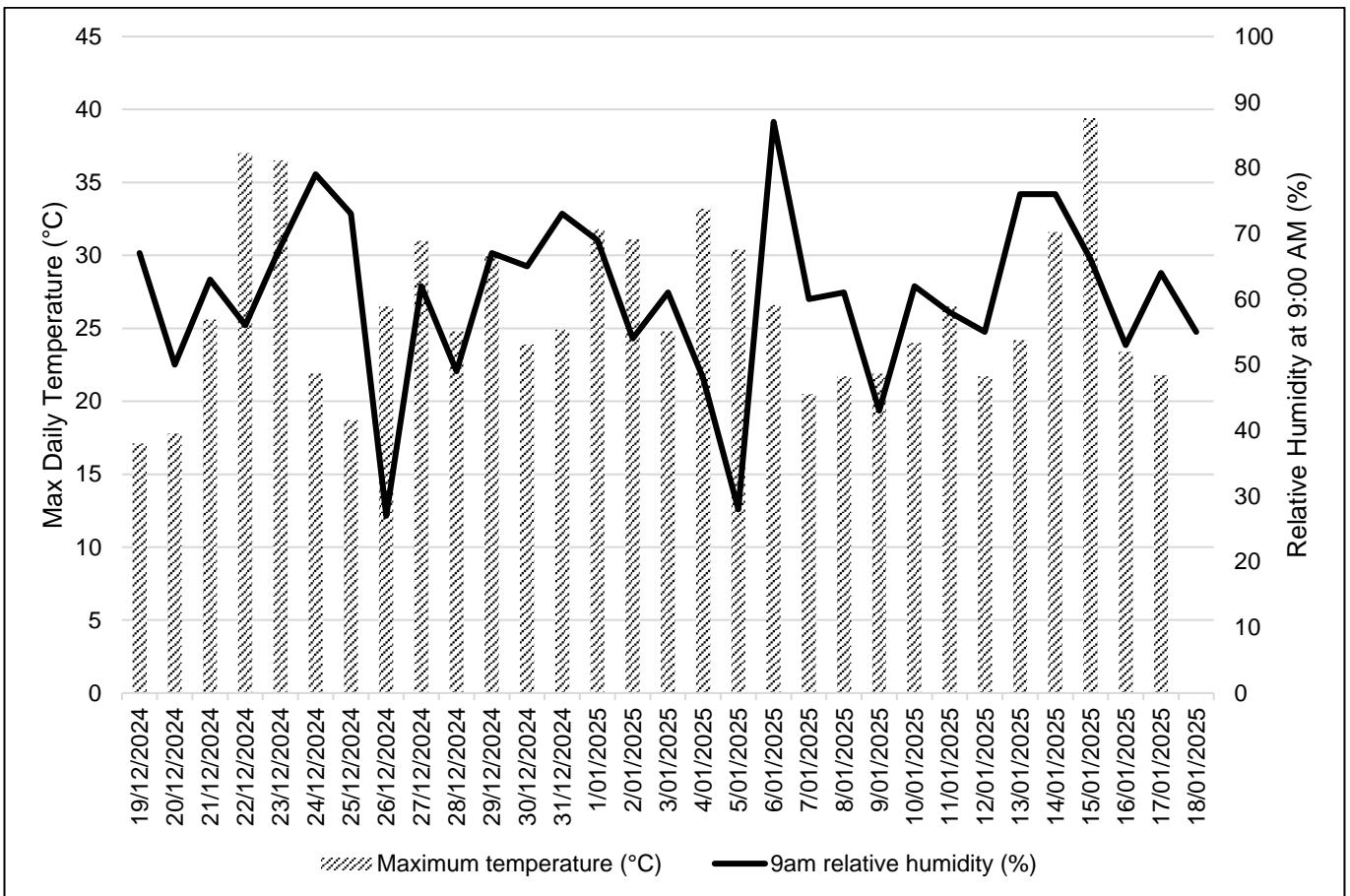


Figure 14: Daily relative humidity and temperature observations for Melbourne (Moorabbin), Victoria 19 December 2024 –18 January 2025. Data Source BOM.

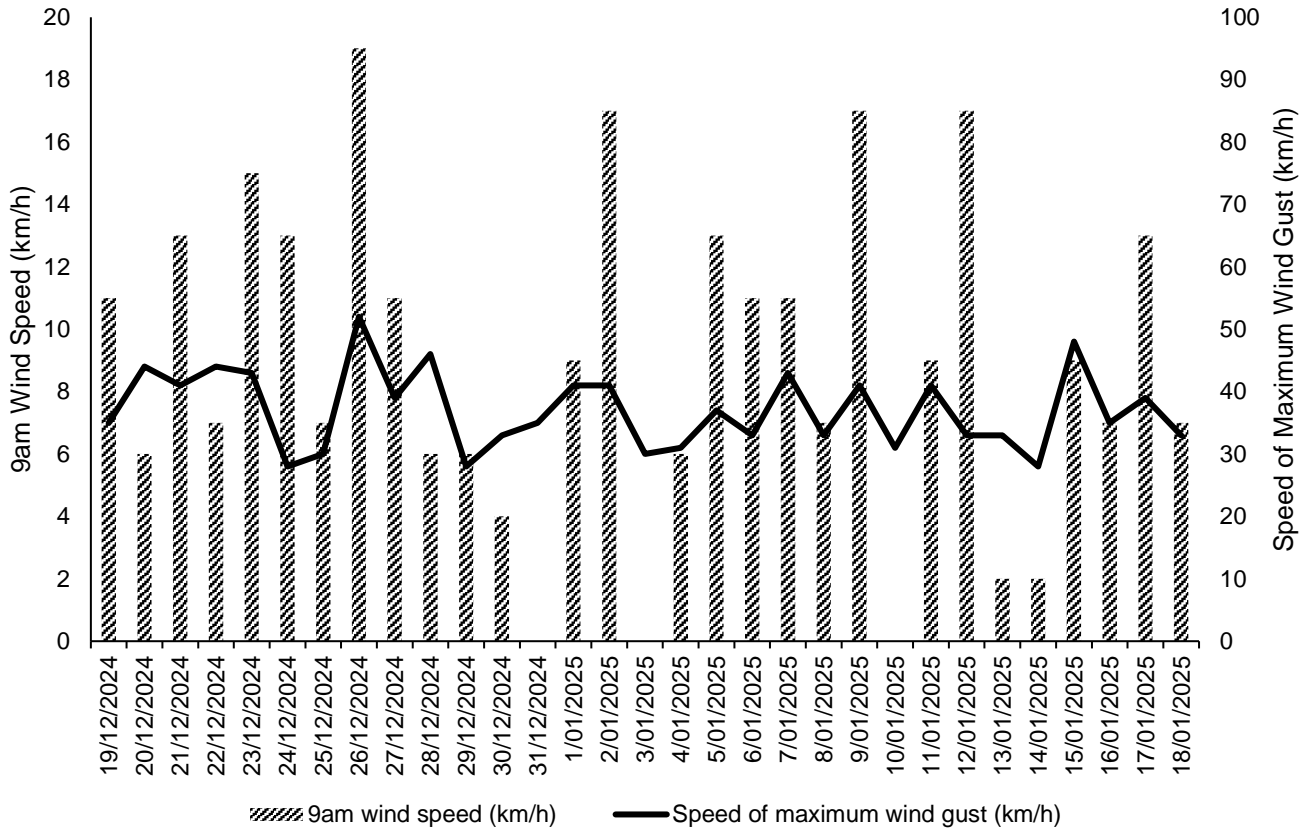


Figure 15: Daily wind speed observations for Melbourne (Olympic Park), Victoria 19 December 2024 – 18 January 2025. Data Source BOM.

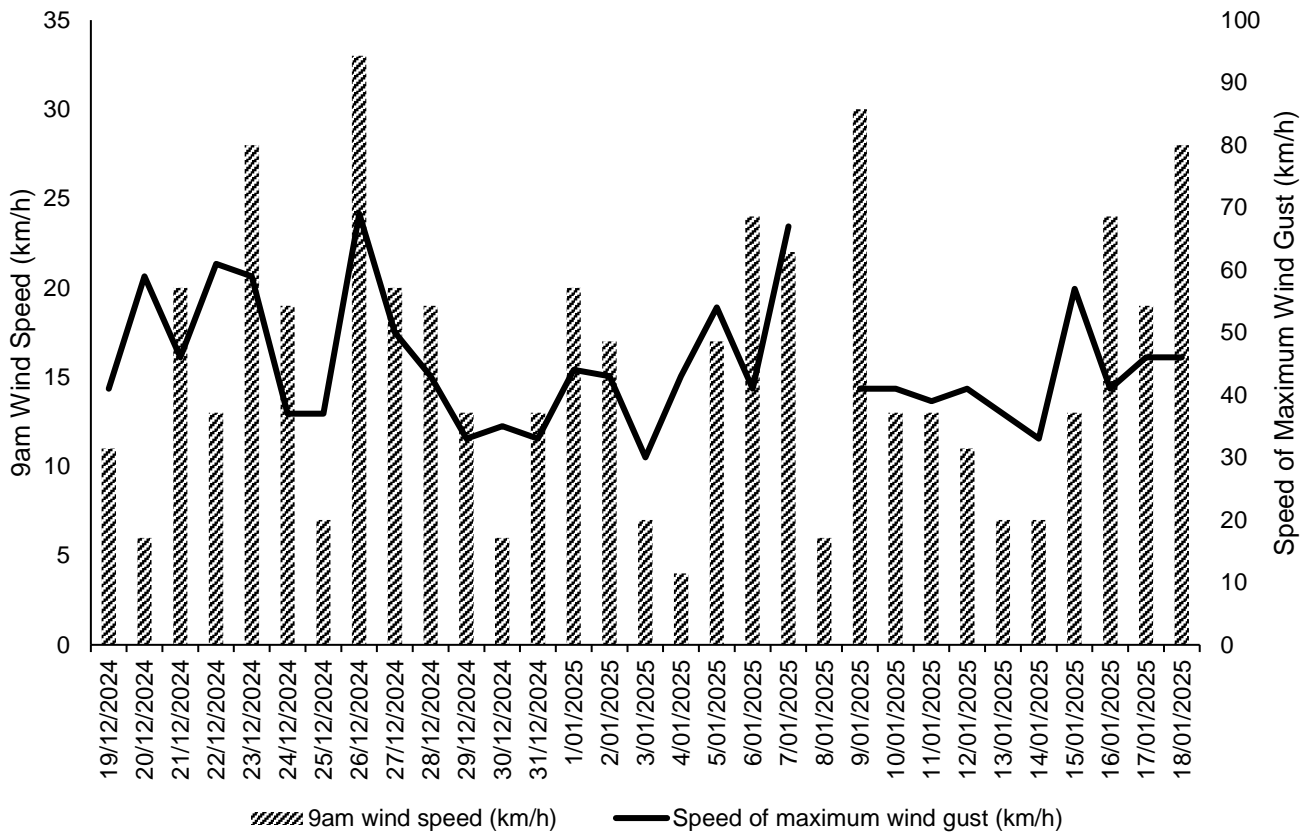


Figure 16: Daily wind speed observations for Melbourne (Moorabbin), Victoria 19 December 2024 – 18 January 2025. Data Source BOM.

## 5. Quality Assurance

### 5.1. 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 19 December 2024 to 18 January 2025 are shown in Table 13. Due to the Christmas shutdown period, no works were occurring between December 20 2024 and January 15 2025.

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

- At Box Hill, the gaps in reporting data for all monitors were caused by delays in establishing the monitoring equipment after demobilising equipment for site over the Christmas shutdown period.
- At Burwood, the gaps in reporting data at Monitors 4 and 5 were due to the devices being taken offsite during the Christmas shutdown period. Devices were reinstated prior to any works occurring onsite.
- At Glen Waverley, the gaps in reporting data at Monitor 1 was due to the device being taken offsite during the Christmas shutdown period. Device was reinstated prior to any works occurring onsite.
- At Monash, the gaps in reporting data at Monitor 1 was due to the devices being taken offsite during the Christmas shutdown period. The device was reinstated prior to any works occurring onsite.
- At Clayton, the gaps in reporting data at Monitors 1 and 2 were due to the devices being taken offsite during the Christmas shutdown period. Devices were reinstated prior to any works occurring onsite.
- At Heatherton, the gaps in reporting data at Monitors 1 and 2 from 20 December to 14 January 2024 was due to the devices being taken offsite during the Christmas shutdown period. Monitor 1 (SSY South) was offline between 15 January and 16 January 2024, and Monitor 2 (Site Office) between 15 and 18 January 2025 due to set up issues.
- At Cheltenham, no monitoring was completed during the reporting period as no works occurred at the site.
- The construction program has been reviewed to ensure monitoring devices are installed prior to works. The MC is continuing to closely monitor the operation of the SiteHive units.

Table 13: 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	2	2	100%
Box Hill – East of Market Street	PM <sub>10</sub>	24-hours	2	2	100%
Box Hill – Uniting AgeWell	PM <sub>10</sub>	24-hours	2	2	100%
Box Hill – Irving Avenue	PM <sub>10</sub>	24-hours	2	2	100%
Burwood – Corner of McComas Grove and Sinnott Street	PM <sub>10</sub>	24-hours	31	31	100%
Burwood – 16 McComas Grove	PM <sub>10</sub>	24-hours	31	31	100%
Burwood – Site 4 - West	PM <sub>10</sub>	24-hours	13	31	42%
Burwood – Site 4 - East	PM <sub>10</sub>	24-hours	31	31	100%
Burwood – Site 1 - South	PM <sub>10</sub>	24-hours	6	31	19%
Glen Waverley – Coleman Parade	PM <sub>10</sub>	24-hours	1	1	100%
Glen Waverley – Railway Parade	PM <sub>10</sub>	24-hours	6	6	97%
Monash – Daycare	PM <sub>10</sub>	24-hours	1	1	100%
Monash – CSIRO	PM <sub>10</sub>	24-hours	4	4	100%
Clayton – Clayton Community Space Site 1	PM <sub>10</sub>	24-hours	5	5	100%
Heatherton – SSY – South	PM <sub>10</sub>	24-hours	3	5	60%
Heatherton – SSY – Site Office	PM <sub>10</sub>	24-hours	1	5	20%

## 5.2. Data Validation

Data contained in this report has been validated against performance and calibration requirements for each instrument.

Table 14: 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
Box Hill – Uniting AgeWell	HEX-000011	8 Apr 2024	8 Apr 2026
Box Hill – Irving Avenue (retired)	HEX-000222	13 June 2024	13 June 2026
Box Hill – Irving Avenue (replacement)	HEX-000748	27 November 2024	27 November 2026
Burwood – 16 McComas Grove	HEX-000162	22 July 2024	22 July 2026
Burwood – Corner of McComas Grove and Sinnott Street	HEX-000308	3 Apr 2023	3 Apr 2025
Burwood – Site 4 - West	HEX-000489	6 Dec 2023	06 Dec 2025
Burwood – Site 4 – East	HEX-000541	24 Apr 2024	24 Apr 2026
Burwood – Site 1 South	HEX-000525	4 Mar 2024	4 Mar 2026
Glen Waverley – Coleman Parade	HEX-000477	12 Dec 2023	12 Dec 2025
Glen Waverley – Railway Parade	HEX-000528	4 Mar 2024	4 Mar 2026
Monash – Daycare	HEX-000540	24 Apr 2024	24 Apr 2026
Monash – CSIRO	HEX-000540	24 Apr 2024	24 Apr 2026
Clayton – Clayton Community Space Site 1	HEX-000031	5 March 2024	5 March 2026
Heatherton – SSY – South	HEX-000050	21 Apr 2023	21 Apr 2025
Heatherton – SSY – Site Office	HEX-000317	13 Dec 2023	13 Dec 2025

# **Suburban Rail Loop East Tunnels South Air Quality Monitoring Report**

**19 December 2024 to 18 January 2025**

## Document Information

### Document Details

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Revision Number	Change Detail	Date	Comment
A	Draft issued to SRLA	22/01/2025	Issued For Review
B	Draft issued to SRLA	29/01/2025	Issued For Review
C	Final Report Issued to SRLA	05/02/2025	Final Report

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# Executive Summary

## Key Outcomes

Key outcomes arising from the monthly air quality monitoring program:

- At the Clarinda CC01 construction site there was no requirement to implement the TARP.
- Commencement of main works at Clayton and Alex Fraser
- No works occurred on any sites from 20 December 2024 to 15 January 2025.

Further explanation is provided in Section 3 regarding these observations.

## 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 main works construction site for the period between 19 December 2024 to 18 January 2025 in accordance with SRL East Environmental Management Framework (EMF) and Environmental Performance Requirements (EPRs) AQ1 and AQ2.

Suburban Connect is delivering the following scope of works as part of Suburban Rail Loop (SRL) East – Tunnels South:

- Initial launch of four Tunnel Boring Machines (TBM) from the Clarinda Tunnel Access Structure site
- Construction of approximately 16km of twin tube tunnels between Cheltenham and Glen Waverley
- Construction of 55 cross passages between the tunnels (surface-based ground improvement at eight locations with the remainder to be frozen from within the main tunnels)
- Construction of the western and eastern decline structures at the train stabling facility
- Protection of the South East Trunk Sewer (SETS)
- Box excavations at Clayton and Monash station locations
- Interface works with the Melbourne Metropolitan Rail Network (MMRN).

Suburban Connect is implementing 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.

This report compares the measured concentrations 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 and are shown in Table 1 below. The objectives are risk-based concentrations that are not intended to be compliance levels, but they assist Suburban Connect understand the risk to human health. When the instrumental monitor and/or visual observations identify a change in site conditions this triggers prompts Suburban Connect to prompt take actions on site to reduce dust impacts, and review mitigation measures applied.

## Scope of Reporting

Construction works requiring air quality monitoring occurred at the following site/s during this reporting period:

- Clarinda – CC01
- Clarinda – Clarinda Tunnel Access Structure Site
- Clayton – Clayton Site

There were no construction works requiring air quality monitoring at the following site/s during this reporting period:

- Cheltenham
- Monash
- Glen Waverley
- Stabling Facility West
- Stabling Facility East

This report does not include:

- works delivered as SRL Initial Works. The SRL Initial Works, which include investigative works are not subject to the EMF and EPRs.
- monitoring related to asbestos containing material removal works, which is monitored and reported separately.

## 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**

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
<b>Representative Background Locations</b>					
Dandenong	PM <sub>10</sub>	24-hour	33.4	19.2	N/A
<b>Suburban Connect Monitoring Locations</b>					
Clarinda CC01	PM <sub>10</sub>	24-hour	24.3	1.2	0
Clarinda Tunnel Access Structure Site	PM <sub>10</sub>	24-hour	46.9	22.7	0
Clayton Site - East	PM <sub>10</sub>	24-hour	41.2	17.2	0
Clayton Site - West	PM <sub>10</sub>	24-hour	27.7	14.1	0

# 1 Introduction

## 1.1 SRL 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.

The SRL East – Tunnels South scope of works include:

- Initial launch of four Tunnel Boring Machines (TBM) from the Clarinda Tunnel Access Structure site
- Construction of approximately 16km of twin tube tunnels between Cheltenham and Glen Waverley
- Construction of 55 cross passages between the tunnels (surface-based ground improvement at eight locations with the remainder to be frozen from within the main tunnels)
- Construction of the western and eastern decline structures at the train stabling facility
- Protection of the South East Trunk Sewer (SETS)
- Box excavations at Clayton and Monash station locations
- Interface works with the Melbourne Metropolitan Rail Network (MMRN).

This report does not include works delivered as SRL Initial Works. The SRL Initial Works, which includes investigative works, were subject to a separate approval process under Clause 52.30 of the 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 Principal Contractor (PC) to develop and implement an Environmental Air Quality and Dust Management Plan (EAQDMP). As part of implementing this document plan, the PC 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 PC 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 Suburban Connect 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 PC 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 PC 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 PC 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
Indicator 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 construction sites, to represent local air quality conditions, in positions that enable the PC to adequately measure potential impact of works on local sensitive receivers including residents.

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
Clarinda CC01 – Nearest residential property	24 Oct 2024	Latitude: -37.9558° Longitude: 145.1062°	PM <sub>10</sub>	Dandenong EPA monitoring station
Clarinda Tunnel Access Structure Site	3 Dec 2024	Latitude: -37.95700° Longitude: 145.11020°	PM <sub>10</sub>	Dandenong EPA monitoring station
Clayton Site - East	3 Dec 2024	Latitude: -37.92241° Longitude: 145.12012°	PM <sub>10</sub>	Dandenong EPA monitoring station
Clayton Site - West	3 Dec 2024	Longitude: -37.92149° Latitude: 145.11933°	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.
- 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.
- Proximity of site monitors to public roads, industrial businesses and other factors will impact data recording.

Data has been 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 has been verified by the Suburban Connect and relevant subject matter experts.

# 3 Results

Data has been presented 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.

## 3.1 Clarinda CC01

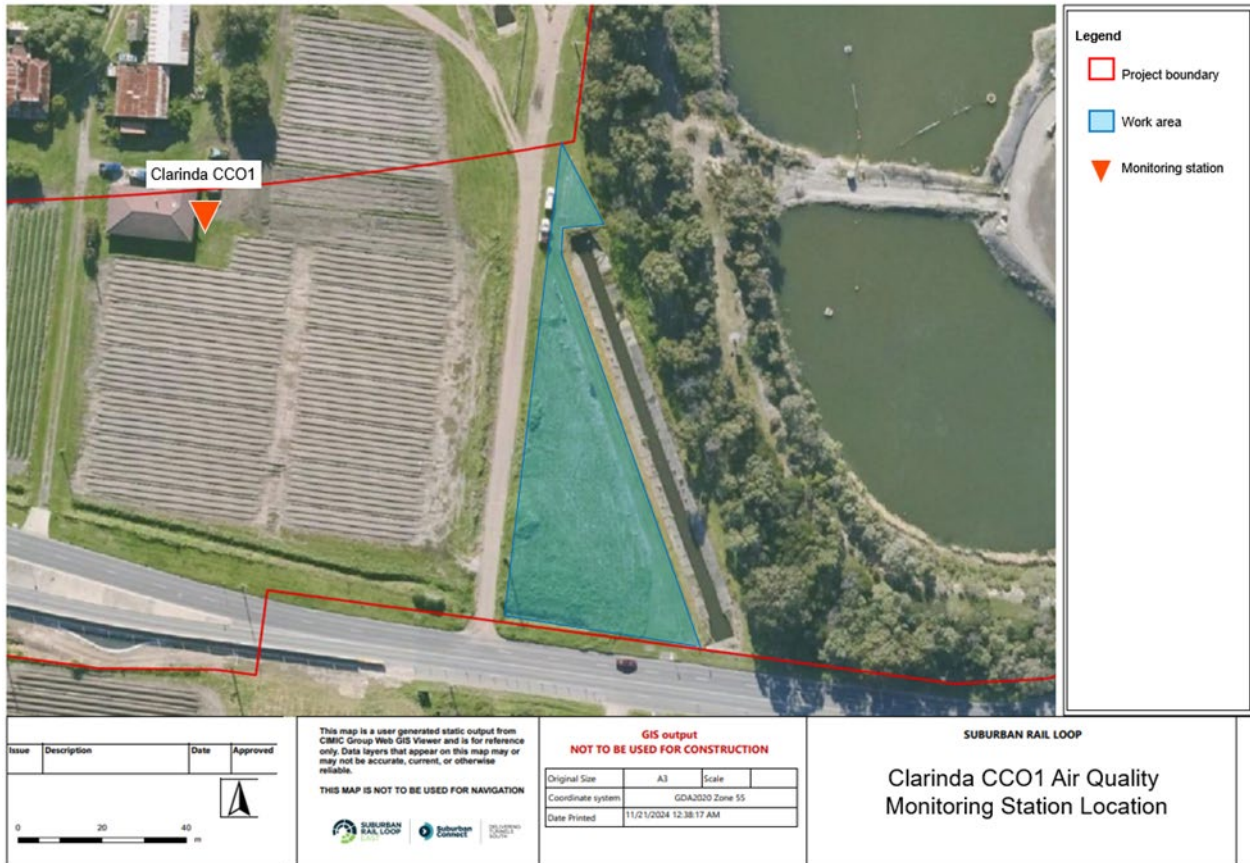
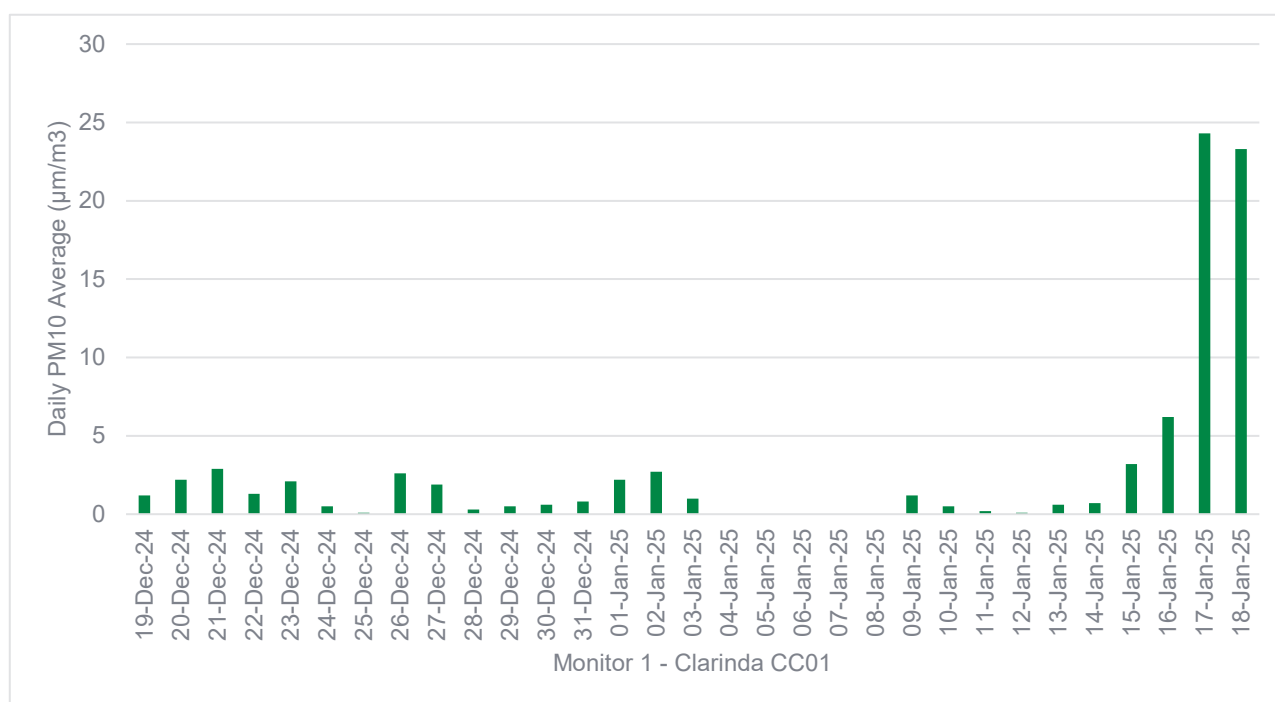


Figure 1: Clarinda CC01 air quality monitoring station.

**Table 4: Clarinda CC01 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	33.4	19.2	-
1	Clarinda CC01 – nearest residential property	24.3	1.2	0


**Figure 2: Daily Averages PM<sub>10</sub> Results at Clarinda CC01**

### 3.1.1 Analysis

The maximum daily average PM<sub>10</sub> concentration for the Clarinda CC01 monitoring station was 24.3 µg/m<sup>3</sup>. The average PM<sub>10</sub> concentration indicates air quality was maintained throughout the reporting period, as represented in Figure 2.

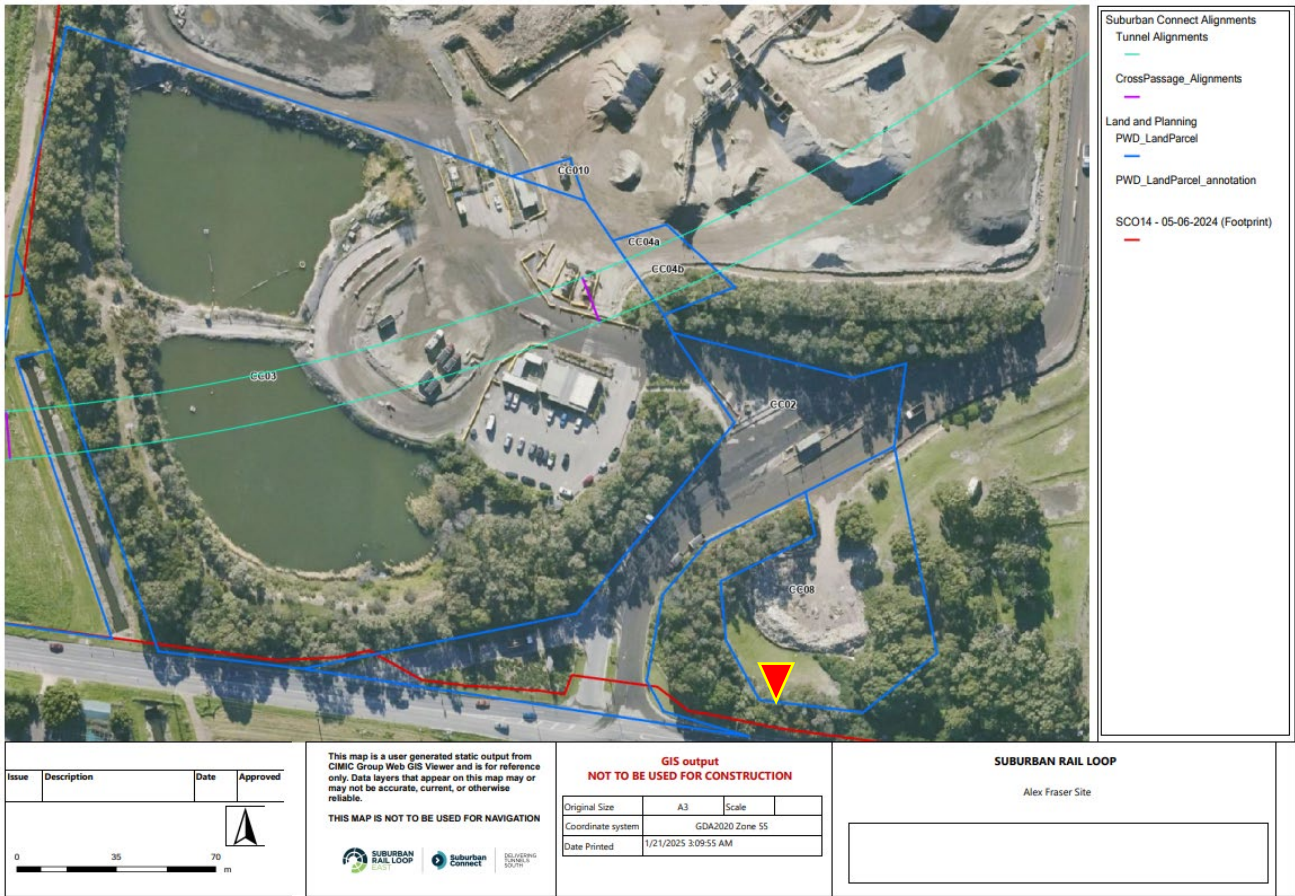
A data gap between 4 January and 8 January was due to an equipment fault. There were no works during this period, and the equipment was replaced prior to recommencing construction works.

There was no requirement to implement the TARP during the reporting period. Dust at the site was suppressed using water carts.

Visual air inspections corroborate this data as no dust was observed to be leaving the site boundaries. This reporting period demonstrates Suburban Connect is proactive in responding to dust control and maintaining air quality in the Clarinda CC01 area.



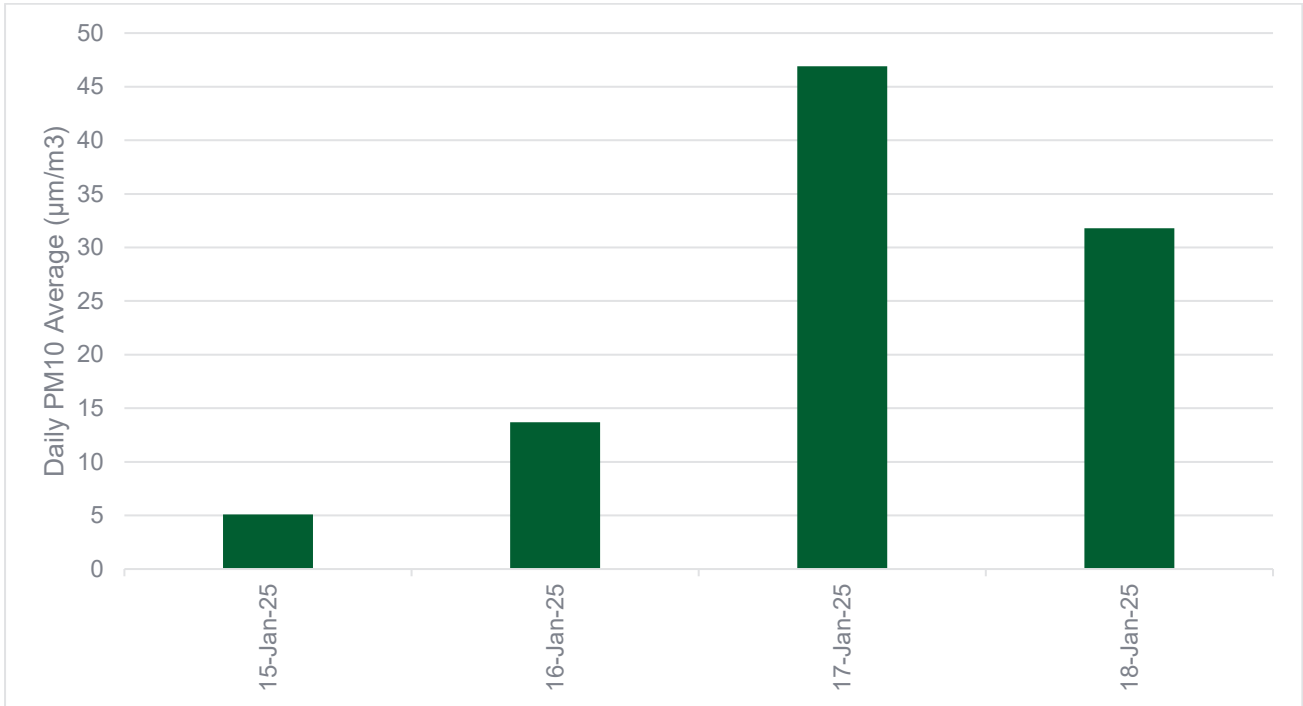
### 3.2 Clarinda Tunnel Access Structure Site



**Figure 3: Clarinda Tunnel Access Structure Site air quality monitoring station.**

**Table 5: Clarinda Tunnel Access Structure Site 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	33.4	19.2	-
1	Clarinda - Tunnel Access Structure Site	46.9	22.8	0



**Figure 4: Daily Averages PM<sub>10</sub> Results at Clarinda Tunnel Access Structure Site**

### 3.2.1 Analysis

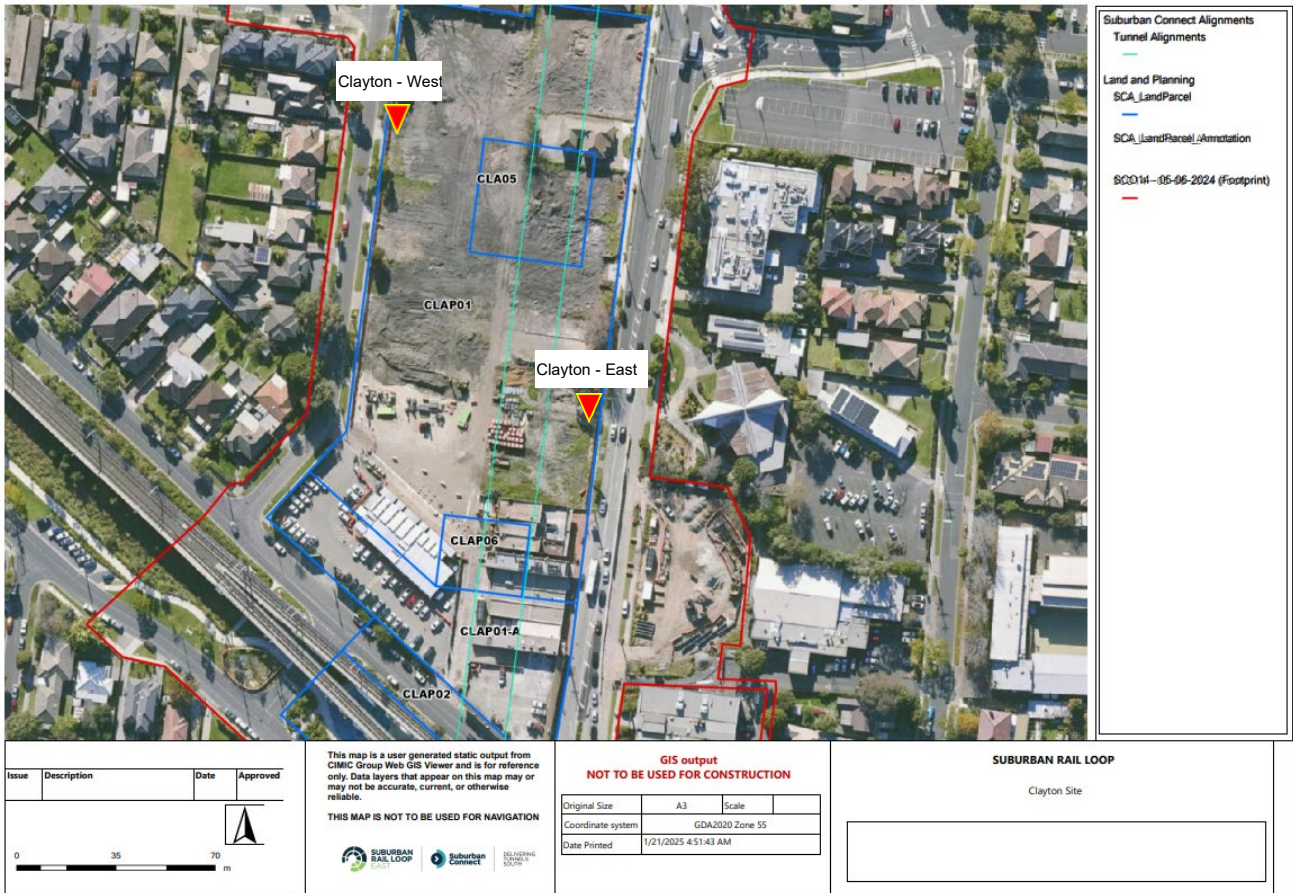
Works at the Clarinda Tunnel Access Structure Site commenced on 15 January 2025.

The maximum daily average PM<sub>10</sub> concentration for the Clarinda Tunnel Access Structure Site monitoring station was 46.9 µg/m<sup>3</sup>. The average PM<sub>10</sub> concentration indicates air quality was maintained throughout the reporting period, as represented in Figure 4.

There was no requirement to implement the TARP during the reporting period. During site establishment works, dust was mitigated by a combination of water carts (furfy and truck) and street sweepers.

Visual air inspections corroborate this data as no dust was observed to be leaving the site boundaries as a result of site works. This reporting period demonstrates Suburban Connect is proactive in responding to dust control and maintaining air quality in the Clarinda Tunnel Access Structure Site area.

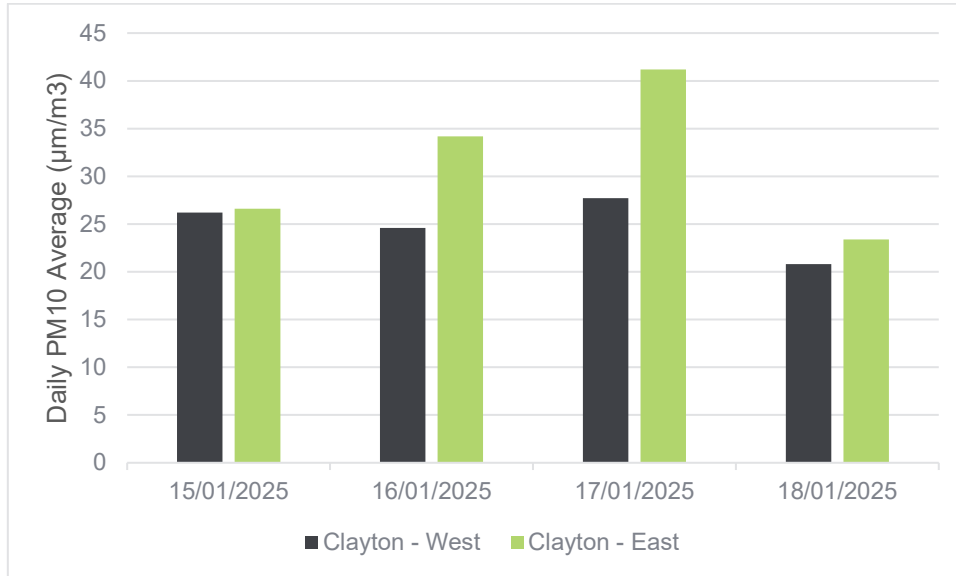
### 3.3 Clayton Site



**Figure 5: Clayton site air quality monitoring station**

**Table 6: Clayton Site 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	33.4	19.2	-
1	Clayton Site – West	41.2	31.4	0
2	Clayton Site – East	27.7	24.8	0



**Figure 6: Daily Averages PM<sub>10</sub> Results at Clayton**

### 3.3.1 Analysis

Works at Clayton Site commenced on the 15 January 2025.

The maximum daily average PM<sub>10</sub> concentration for the Clayton Site (West and East) monitoring station was 41.2 µg/m<sup>3</sup> and 27.7 µg/m<sup>3</sup> respectfully. The average PM<sub>10</sub> concentration indicates air quality was maintained throughout the reporting period, as represented in Figure 6.

There was no requirement to implement the TARP during the reporting period. Dust at the site was suppressed using a water cart. During site establishment works, dust was mitigated by a combination of water carts (furphy and truck) and street sweepers.

Visual air inspections corroborate this data as no dust was observed to be leaving the site boundaries as a result of site works. This reporting period demonstrates Suburban Connect is proactive in responding to dust control and maintaining air quality in the Clayton area.

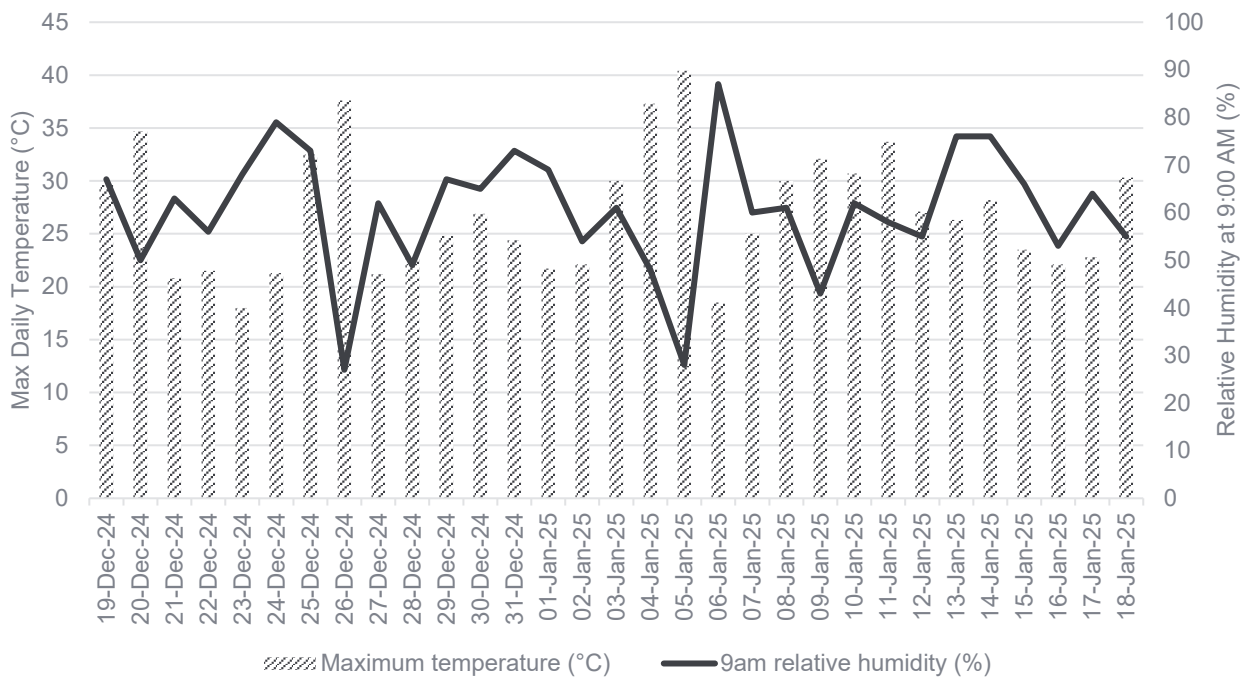
## 3.4 Meteorological Conditions

**Table 7: Daily weather observations for Moorabbin, Victoria** Error! Bookmark not defined.

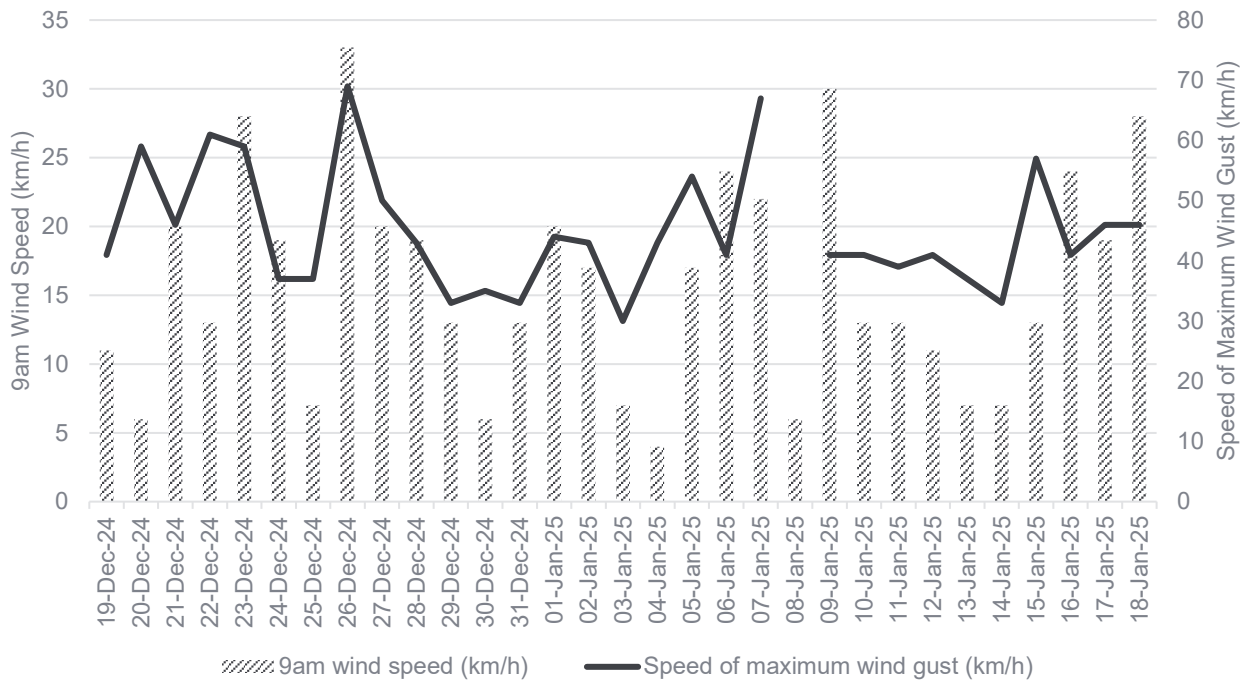
Statistic	Min Temperature (°C)	Max Temperature (°C)	Maximum Wind Gust Direction	Maximum Wind Gust Speed (km/h)	Relative Humidity @ 9:00 AM (%)
Mean	14.5	27.0	N/A	44.9	60.5
Lowest	8.8	18	SSW	30	27
Highest	19.2	40.4	N	69	87

**Table 8: Daily rain data for Moorabbin, Victoria** Error! Bookmark not defined.

Statistic	Rain (mm)
Daily Low	0.0
Daily High	21.4
Total	56.2



**Figure 7: Daily relative humidity and temperature observations for Moorabbin, Victoria** Error! Bookmark not defined.



**Figure 8: Daily wind speed observations for Moorabbin, Victoria** Error! Bookmark not defined.

## 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 19 December 2024 to 18 January 2025 are shown in Table 11, below. Data capture statistics were 84% for Clarinda CC01, and 100% for Clayton (East & West), and the Clarinda Tunnel Access Structure Site for the reporting period.

**Table 9: Air quality monitoring, data capture summary** Error! Bookmark not defined.

Location	Parameter	Averaging Period	Collected Periods	Available Periods	Data Capture
Clarinda – CC01	PM <sub>10</sub>	24-hours	26	31	84%
Clayton – East	PM <sub>10</sub>	24-hours	4	4	100%
Clayton – West	PM <sub>10</sub>	24-hours	4	4	100%
Clarinda Tunnel Access Structure Site	PM <sub>10</sub>	24-hours	4	4	100%

## 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 10: Monitoring device calibration information**

Location	Device Serial Number	Calibration Date	Calibration Due
Clarinda – CC01	HEX-000403	20 Sep 2024	20 Sep 2026
Clayton – East	HEX-000705	24 Oct 2024	24 Oct 2026
Clayton – West	HEX-000370	03 Oct 2024	03 Oct 2026
Clarinda Tunnel Access Structure Site	HEX-000619	21 Aug 2024	21 Aug 2026

# Glossary

Term / Abbreviation	Definition
$\mu\text{g}/\text{m}^3$	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.
EAQDMP	The Environmental Air Quality and Dust Management Plan (EAQDMP) is environmental management documentation prepared by the PC to manage and monitor air quality impacts during construction of SRL East. It includes the RMMP and TARP and is verified by the IEA.
EES	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.
EMF	The Environmental Management Framework (EMF) provides a transparent and integrated framework to manage environmental effects of the SRL East Project during construction and operation to achieve acceptable environmental outcomes.
EPA	Environment Protection Authority (EPA) is the 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.
EPRs	The Environmental Performance Requirements (EPRs) define the environmental outcomes that must be achieved during the design, construction and operation of SRL East and are included within the EMF.
ERS	The Environmental Reference Standard (ERS) is a tool made under the Environment Protection Act 2017 to identify and assess environmental values, including air quality, in Victoria.
IEA	The Independent Environmental Auditor (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.
PC	Principal Contractor
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.
RMMP	The Risk Management and Monitoring Program (RMMP) 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.
TARP	The Trigger Action Response Protocol (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.