

105 Judd Street, London, WC1H 9RE



Baseline Dust Monitoring Report

784-B033941
6th October 2023

PRESENTED TO

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EXECUTIVE SUMMARY

Tetra Tech Limited have undertaken real-time dust monitoring during from June 2023 to September 2023 at two locations, to discharge planning condition 7a for planning permission ref.2022/1817/P at 105 Judd Street, London.

The locations are representative of the closest sensitive receptors around the site. Monitoring location 1 was originally located on the south-east corner of the building on the roof, with monitoring location 2 positioned in the north-west corner at ground level. The positioning of the monitors was change on 14th September 2023, with monitoring location 1 being repositioned to the south-west corner of the roof and monitoring location 2 moving to the north-east corner at ground level, in response to comments made by the EHO.

Tetra Tech Limited Technicians deployed the monitoring pod on site on 29th June 2023, and visited the site to undertake routine maintenance and reposition the monitors on 14th September 2023.

With reference to published guidance by the Institute of Air Quality Management (*Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites*, 2018), the real-time monitoring results have been compared utilising a traffic light system. These are detailed in Table NT1 below, which also outlines the action to be taken if each alert level is breached.

Table NT1 Traffic Light Criteria

Alert level	Time Period	PM ₁₀ Maximum Permissible 15-minute average (µg/m ³)	PM _{2.5} Maximum Permissible 15-minute average (µg/m ³)
Red (<i>at this level all works to cease immediately, investigate cause of exceedance and use alternative methods where appropriate</i>)	15-minute average	>190 µg/m ³	>48 µg/m ³
Amber (<i>continual monitoring and investigation of alternative methods where appropriate</i>)	Two consecutive 15-minute averages	>80 µg/m ³	>38 µg/m ³
Green (<i>early warning/no action required</i>)	15-minute average	>80 µg/m ³	>38 µg/m ³

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
AADT	Annual Average Daily Traffic
ADMS	Atmospheric Dispersion Modelling Software
AQAL	the Air Quality Assessment Level
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objectives
AQS	Air Quality Standards
CHP	Combined Heat and Power
CL	Critical Level
CO	Carbon Monoxide
DEFRA	Department for Environment Food & Rural Affairs
EAL	Environmental Assessment Limits
EC	European Commission
EFT	The Emissions Factors Toolkit
EPUK	Environmental Protection UK
EU	European Union
EPAQS	The Expert Panel on Air Quality Standards
IAQM	The Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
NGR	The United Kingdom National Grid Reference
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
PC	Process Contribution
MHCLG	the Ministry for Housing, Communities and Local Government
NPPF	The National Planning Policy Framework
OS	the UK Ordnance Survey
PEC	Predicted Environment Concentration
PPG	Planning Policy Guidance
PPS	Planning Policy Statements
SAC	Special Areas of Conservation
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
VOC	Volatile organic compounds
WHO	World Health Organization
UK	The United Kingdom

1.0 INTRODUCTION

Tetra Tech Limited have undertaken real-time dust monitoring of PM₁₀ and PM_{2.5} from June to September 2023 at two locations, to discharge planning condition 7a for planning permission ref.2022/1817/P at 105 Judd Street, London.

Planning condition 7a states:

'Air quality monitoring shall be implemented on site. No development shall take place until:

- a. prior to installing monitors, full details of the air quality monitors have been submitted to and approved by the local planning authority in writing. Such details shall include the location, number and specification of the monitors, including evidence of the fact that they have been installed in line with guidance outlined in the GLA's Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance;*
- b. prior to commencement, evidence has been submitted demonstrating that the monitors have been in place for at least 3 months prior to the proposed implementation date. The monitors shall be retained and maintained on site for the duration of the development in accordance with the details thus approved.'*

The locations are representative of the closest sensitive receptors around the site. Monitoring location 1 was originally located on the south-east corner of the building on the roof, with monitoring location 2 positioned in the north-west corner at ground level. The positioning of the monitors was changed on 14th September 2023, with monitoring location 1 being repositioned to the south-west corner of the roof and monitoring location 2 moving to the north-east corner at ground level.

Tetra Tech Limited Technicians deployed the monitoring pod on site on 29th June 2023, and visited the site to undertake routine maintenance and reposition the monitors on 14th September 2023.

The purpose of this report is to review the monitored concentrations of PM₁₀ and PM_{2.5} observed during the baseline monitoring period, against criteria determined from appropriate guidance to minimise disruption to nearby sensitive receptors as a result of the proposed works.

The Institute of Air Quality Management (IAQM) 'Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites' October 2018 guidance outlines the onsite action levels for PM₁₀. The action levels for this site are set at a PM₁₀ concentration of over 190 µg/m³ over a 15-minute period, a PM_{2.5} concentration of over 48 µg/m³ over a 15-minute period for PM_{2.5}.

SITE LOCATION

The central Grid Reference is approximately 530135,182664. The site is bounded to the north by commercial properties situated along Cartwright Gardens, to the east by residential and commercial properties on Judd Street, to the south by residential properties along Judd Street and Thanet Street and to the west by residential and commercial properties on Thanet Street and Sandwich Street.

Reference should be made to **Figure 1-1** for a map of the application site and surrounding area.

Figure 1-1. Satellite Image of Site and Surrounding Area



Google Imagery (2023)

2.0 POLICY AND LEGISLATIVE CONTEXT

2.1 DOCUMENTS CONSULTED

The following documents were consulted during the undertaking of this assessment:

Legislation and Best Practice Guidance

- The Air Quality Standards (Amendment) Regulations 2016;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007;
- The Environment Act, 1995;
- The Environment Act, 2021;
- London Local Air Quality Management Technical Guidance LLAQM.TG(19), DEFRA, 2019;
- Local Air Quality Management Technical Guidance LAQM.TG (22), DEFRA, 2022;
- Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites, IAQM, 2018;
- London Plan Supplementary Planning Guidance (SPG) 'The Control of Dust and Emissions during Construction and Demolition', July 2014;
- Environmental Protection, England, 'The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023', January 2023.

2.2 AIR QUALITY LEGISLATIVE FRAMEWORK

European Legislation

European air quality legislation is consolidated under Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidates previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new air quality objectives for fine particulates. The consolidated Directives include:

- **Directive 1999/30/EC** – the First Air Quality 'Daughter' Directive – sets ambient air limit values for NO₂ and oxides of nitrogen, sulphur dioxide, lead and PM₁₀;
- **Directive 2000/69/EC** – the Second Air Quality 'Daughter' Directive – sets ambient air limit values for benzene and carbon monoxide; and,
- **Directive 2002/3/EC** – the Third Air Quality 'Daughter' Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

The fourth daughter Directive was not included within the consolidation and is described as:

- **Directive 2004/107/EC** – sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

UK Legislation

The Air Quality Standards Regulations (Amendments 2016) seek to simplify air quality regulation and provide a new transposition of the Air Quality Framework Directive, First, Second and Third Daughter Directives and

also transpose the Fourth Daughter Directive within the UK. The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards, with attainment dates in line with the European Directives. SI 2010 No. 1001, Part 7 Regulation 31 extends powers, under Section 85(5) of the Environment Act (1995), for the Secretary of State to give directions to Local Authorities (LAs) for the implementation of these Directives.

The UK Air Quality Strategy is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the effects of pollution.

For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations (2000) SI 928, and subsequent amendments. The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 amends the AQO for PM_{2.5} outlined within the Air Quality Standards Regulations (2010 & 2016 Amendments).

The AQOs for pollutants included within the Air Quality Strategy and assessed as part of the scope of this report are presented in **Table 2-1**, along with European Commission (EC) Directive Limits and World Health Organisation (WHO) Guidelines. The ecological levels are based on WHO and CLRTAP (Convention on Long-range Transboundary Air Pollution) guidance.

Table 2-1. Air Quality Standards, Objectives, Limits and Target Values

Pollutant	Applies	Objective	Concentration Measured as ¹⁰	Date to be achieved and maintained thereafter	European Obligations	Date to be achieved and maintained thereafter	New or existing
PM ₁₀	UK	50 µg/m ³ by end of 2004 (max 35 exceedances a year)	24-hour Mean	1 st January 2005	50 µg/m ³ by end of 2004 (max 35 exceedances a year)	1 st January 2005	Retain Existing
	UK	40 µg/m ³ by end of 2004	Annual Mean	1 st January 2005	40 µg/m ³	1 st January 2005	
PM _{2.5}	UK	10 µg/m ³	Annual Mean	31 st December 2040	-	-	New

There are currently no UK or EU objectives for PM₁.

3.0 ASSESSMENT METHODOLOGY

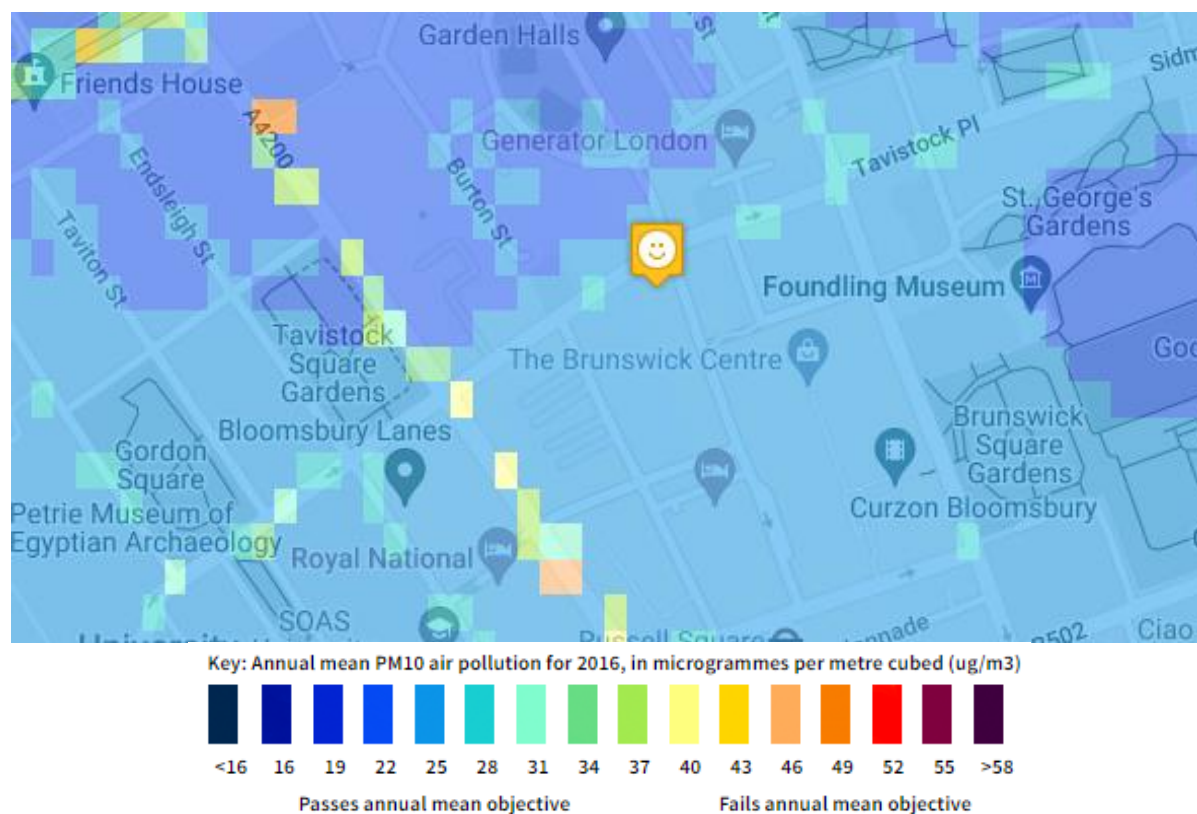
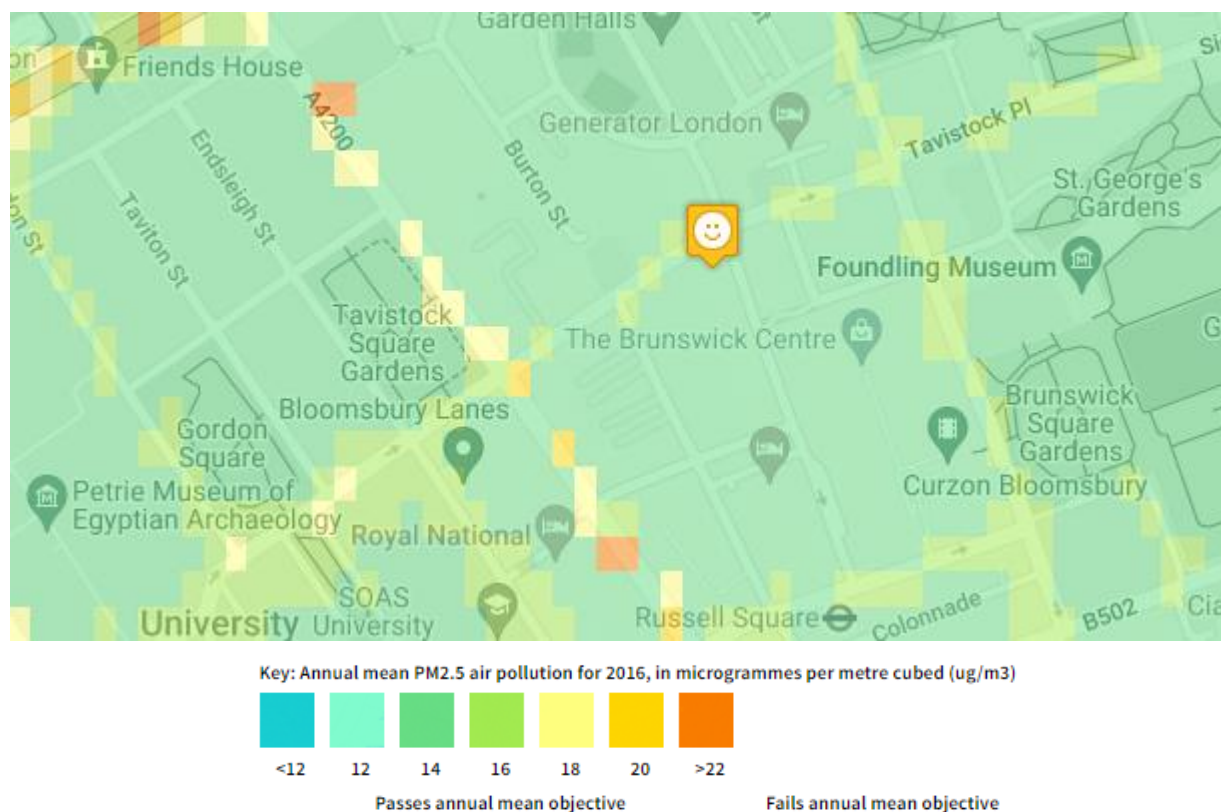
3.1 BACKGROUND CONCENTRATIONS

Background concentrations as used within the prediction calculations were referenced from the UK National Air Quality Information Archive database based on the National Grid Co-ordinates of 1 x 1 km grid squares nearest to the development site. In August 2020, DEFRA issued revised 2018 based background maps for PM₁₀ and PM_{2.5} which incorporate updates to the input data used for modelling. 2019 and 2020 background maps have been utilised to assess the significance of monitored levels. The updated mapped background concentrations used in the assessment are summarised in **Table 3.1**.

Table 3.1 Published Background Air Quality Levels (µg/m³)

UK NGR(m)		2019		2020	
X	Y	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
530500	182500	20.34	12.92	19.72	12.56

London Air's annual mean pollution map uses a detailed model to show a prediction of PM₁₀ and PM_{2.5} annual averages across the whole of Greater London. The latest accurate model is available for the year of 2016. The detailed annual mean pollution maps are displayed in **Figure 3.1** and **Figure 3.2**.

Figure 3.1 Modelled Annual Mean PM₁₀ Air Pollution (based on measurements made during 2016)**Figure 3.2 Modelled Annual Mean PM_{2.5} Air Pollution (based on measurements made during 2016)**

3.2 POLLUTANT SOURCES

The main potential effects of dust and particulate matter are:

- Visual – dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
- Physical and/or chemical contamination and corrosion of artefacts;
- Coating of vegetation and soil contamination; and,
- Health effects due to inhalation e.g. asthma or irritation of the eyes.

A number of other factors such as the amount of precipitation and other meteorological conditions will also greatly influence the amount of particulate matter generated.

Activities can give rise to short-term elevated dust/PM₁₀ concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

3.3 PARTICULATE MATTER

The UK Air Quality Standards seek to control the health implications of respirable PM₁₀ and PM_{2.5}. However, the majority of particles released from construction will be greater than this in size.

Demolition works on site have the potential to elevate localised PM₁₀ and PM_{2.5} concentrations in the area. On this basis, mitigation measures should still be taken to minimise these emissions as part of good site practice.

Particulate matter is made up of a collection of solid and/or liquids materials of various sizes. The particles are released into the atmosphere by numerous sources with the major sources being created by road transport. Emissions of dust can also generate high concentrations of particulate matter.

Particulate matter requires monitoring due to the impacts on human health that large amounts of exposure can cause.

4.0 SURVEY METHODOLOGY

4.1 AIR QUALITY MONITORING METHODOLOGY

Particulate Matter monitoring was undertaken at each of the monitoring locations as identified in Figure 1. Particulate Matter monitoring was undertaken using two Zephyr Monitors which are small battery-operated monitoring devices. These devices record levels of PM₁₀, PM_{2.5} and PM₁ constantly in 15-minute intervals.

The monitored results were compared to urban background monitored values of PM₁₀ and PM_{2.5} monitored by London Air (www.londonair.org.uk). The urban background values were monitored at Southwark – Elephant and Castle for this period as it was deemed the most representative of the area.

Detailed results of exceedances of the 'red' limit are outlined in Appendix A.

The results of the particulate matter monitoring survey are presented in the tables below.

5.0 MONITORING LOCATION 1 RESULTS

5.1 JULY 2023

The 24-hour monitoring results have been compared to background levels.

Table 5.1 PM₁₀ 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Max 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Min 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM ₁₀ Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM ₁₀ (%)
01/07/2023	2.00	7.77	0.00	8.77	-77
02/07/2023	4.00	10.36	0.52	16.22	-75
03/07/2023	1.10	2.38	0.05	11.73	-91
04/07/2023	3.04	7.13	0.52	9.01	-66
05/07/2023	2.11	7.74	0.05	6.94	-70
06/07/2023	1.46	3.66	0.47	7.81	-81
07/07/2023	3.73	5.99	1.81	15.32	-76
08/07/2023	5.00	8.36	1.24	16.12	-69
09/07/2023	1.62	4.42	0.00	9.51	-83
10/07/2023	1.37	3.23	0.24	10.59	-87
11/07/2023	1.77	3.97	0.30	9.02	-80
12/07/2023	1.75	3.90	0.00	8.19	-79
13/07/2023	1.69	3.04	0.14	7.77	-78
14/07/2023	3.81	7.56	1.38	9.09	-58
15/07/2023	2.27	5.99	0.09	13.25	-83
16/07/2023	1.14	3.32	0.00	10.55	-89
17/07/2023	1.14	3.18	0.00	7.38	-85
18/07/2023	0.85	2.23	0.00	8.17	-90
19/07/2023	1.20	3.99	0.05	5.81	-79
20/07/2023	1.76	4.94	0.05	7.03	-75
21/07/2023	4.69	20.49	0.66	11.16	-58
22/07/2023	2.43	5.56	0.14	6.19	-61
23/07/2023	0.63	2.33	0.00	4.66	-86
24/07/2023	2.46	6.37	0.20	6.92	-64
25/07/2023	1.60	3.56	0.00	7.39	-78
26/07/2023	2.84	7.01	0.73	7.53	-62
27/07/2023	2.17	5.45	0.04	5.54	-61
28/07/2023	1.19	4.88	0.00	4.07	-71
29/07/2023	1.43	3.15	0.40	6.64	-78
30/07/2023	1.71	5.05	0.37	7.49	-77
31/07/2023	1.90	4.16	0.00	5.54	-66

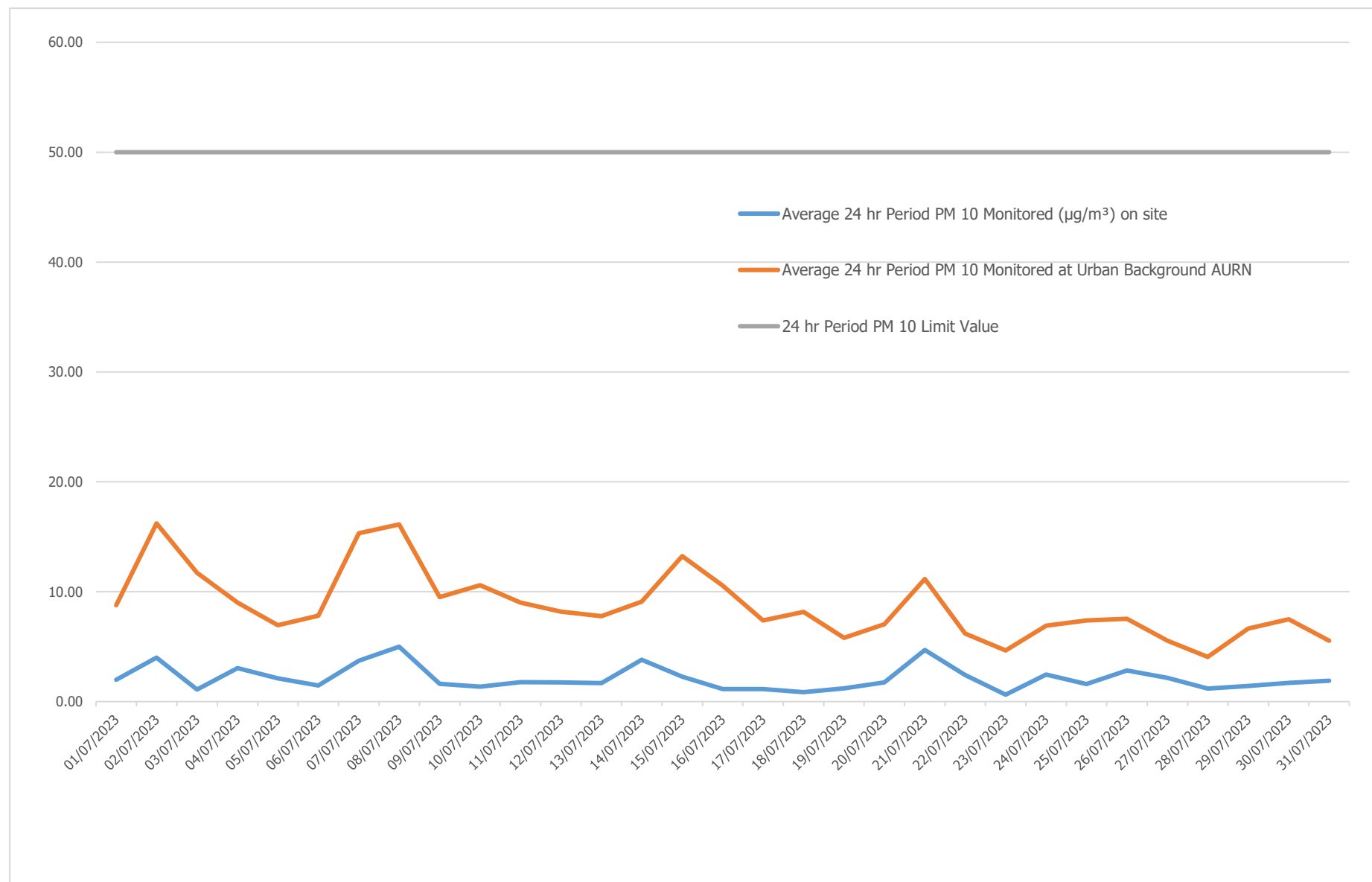
Figure 5.1 Comparison of On Site Monitored PM₁₀ and Urban Background

Table 5.2 PM_{2.5} 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM _{2.5} Monitored (µg/m³) on site	Average 24 hr Period PM _{2.5} Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM _{2.5} (%)
01/07/2023	1.33	5.32	-75
02/07/2023	0.63	9.86	-94
03/07/2023	0.75	5.25	-86
04/07/2023	0.78	5.38	-86
05/07/2023	1.76	3.64	-52
06/07/2023	0.52	3.95	-87
07/07/2023	0.99	7.52	-87
08/07/2023	0.03	9.57	-100
09/07/2023	0.10	5.31	-98
10/07/2023	0.22	5.05	-96
11/07/2023	0.06	4.87	-99
12/07/2023	0.35	3.97	-91
13/07/2023	0.20	3.84	-95
14/07/2023	0.18	5.17	-97
15/07/2023	0.27	6.17	-96
16/07/2023	0.27	5.29	-95
17/07/2023	0.35	3.75	-91
18/07/2023	0.29	3.75	-92
19/07/2023	0.13	3.05	-96
20/07/2023	0.22	3.49	-94
21/07/2023	0.24	6.84	-96
22/07/2023	0.28	3.42	-92
23/07/2023	0.17	2.61	-93
24/07/2023	0.48	3.63	-87
25/07/2023	0.63	3.76	-83
26/07/2023	1.20	4.26	-72
27/07/2023	3.45	2.97	16
28/07/2023	3.49	1.94	80
29/07/2023	3.33	3.46	-4
30/07/2023	4.02	4.09	-2
31/07/2023	4.61	3.17	45

The total data capture for this period was 100.0%.

5.2 AUGUST 2023

The 24-hour monitoring results have been compared to background levels.

Table 5.3 PM₁₀ 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Max 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Min 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM ₁₀ Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM ₁₀ (%)
01/08/2023	11.35	16.59	8.27	8.73	30
02/08/2023	16.62	26.00	10.64	4.38	280
03/08/2023	21.45	30.61	14.49	6.92	210
04/08/2023	21.59	34.68	10.42	9.51	127
05/08/2023	22.18	33.02	12.32	7.21	207
06/08/2023	23.99	47.50	16.80	4.80	400
07/08/2023	36.48	49.99	15.27	5.91	517
08/08/2023	25.55	48.89	15.93	5.34	379
09/08/2023	22.94	40.42	17.47	7.70	198
10/08/2023	34.36	57.46	12.34	9.29	270
11/08/2023	15.92	31.15	8.65	8.42	89
12/08/2023	8.78	15.03	5.06	10.63	-17
13/08/2023	8.29	10.43	5.19	6.71	23
14/08/2023	9.29	14.04	6.96	7.14	30
15/08/2023	14.01	22.61	9.16	6.92	102
16/08/2023	19.27	29.73	10.15	13.19	46
17/08/2023	24.15	39.92	11.42	16.75	44
18/08/2023	9.42	36.33	5.31	29.43	-68
19/08/2023	7.21	12.32	5.92	10.84	-33
20/08/2023	8.23	12.69	4.92	8.00	3
21/08/2023	7.50	42.49	4.67	7.07	6
22/08/2023	9.72	67.90	5.71	6.49	50
23/08/2023	8.09	13.98	5.97	8.88	-9
24/08/2023	8.74	26.51	6.95	11.71	-25
25/08/2023	8.22	11.91	6.35	5.94	38
26/08/2023	8.87	14.11	6.83	5.09	74
27/08/2023	9.64	16.63	7.05	4.34	122
28/08/2023	7.80	10.41	6.19	5.41	44
29/08/2023	8.11	26.75	4.60	6.64	22
30/08/2023	8.38	10.93	6.74	6.75	24
31/08/2023	10.42	14.06	0.00	8.87	18

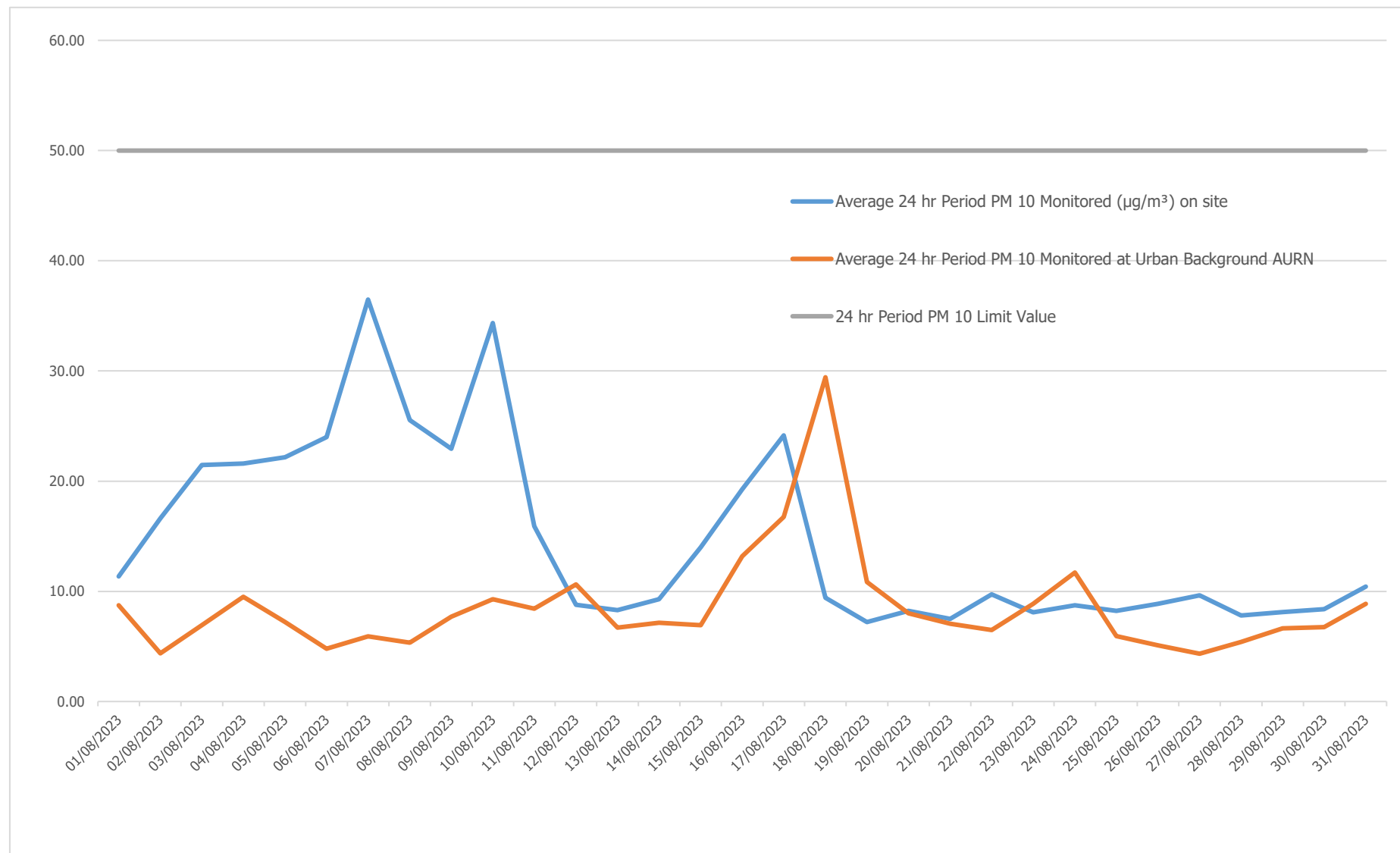
Figure 5.3 Comparison of On Site Monitored PM₁₀ and Urban Background

Table 5.4 PM_{2.5} 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM _{2.5} Monitored (µg/m³) on site	Average 24 hr Period PM _{2.5} Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM _{2.5} (%)
01/08/2023	10.30	4.67	120
02/08/2023	15.17	2.22	584
03/08/2023	19.61	3.63	440
04/08/2023	19.54	5.61	249
05/08/2023	20.34	4.64	338
06/08/2023	21.81	2.88	657
07/08/2023	31.62	2.92	984
08/08/2023	22.76	3.02	654
09/08/2023	20.87	3.74	459
10/08/2023	29.42	4.76	518
11/08/2023	14.49	4.59	216
12/08/2023	7.96	5.97	33
13/08/2023	7.54	3.78	99
14/08/2023	8.42	3.97	112
15/08/2023	12.75	3.61	253
16/08/2023	17.63	5.92	198
17/08/2023	21.97	7.20	205
18/08/2023	8.55	21.40	-60
19/08/2023	6.53	6.42	2
20/08/2023	7.48	5.06	48
21/08/2023	6.65	4.28	55
22/08/2023	8.71	3.55	146
23/08/2023	7.36	4.39	68
24/08/2023	7.95	6.18	29
25/08/2023	7.47	2.56	191
26/08/2023	8.06	3.07	162
27/08/2023	8.76	2.49	252
28/08/2023	7.10	3.34	112
29/08/2023	7.37	3.78	95
30/08/2023	7.61	3.54	115
31/08/2023	9.58	4.54	111

The total data capture for this period was 100.0%.

5.3 SEPTEMBER 2023

The 24-hour monitoring results have been compared to background levels.

Table 5.5 PM₁₀ 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Max 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Min 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM ₁₀ Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM ₁₀ (%)
01/09/2023	5.92	11.41	2.20	8.44	-30
02/09/2023	9.21	17.37	3.09	13.48	-32
03/09/2023	12.86	19.77	5.39	17.07	-25
04/09/2023	12.46	23.04	2.56	25.64	-51
05/09/2023	13.19	21.60	4.46	25.41	-48
06/09/2023	15.62	38.83	8.91	37.70	-59
07/09/2023	24.71	48.93	7.73	41.57	-41
08/09/2023	16.02	37.93	8.65	25.09	-36
09/09/2023	13.99	30.68	10.04	30.59	-54
10/09/2023	25.66	54.66	5.04	47.65	-46
11/09/2023	8.34	19.59	1.29	12.68	-34
12/09/2023	3.32	5.82	0.02	8.67	-62
13/09/2023	2.56	4.96	0.17	9.69	-74
14/09/2023	2.66	5.26	1.17	8.99	-70
15/09/2023	8.18	15.21	3.16	8.80	-7
16/09/2023	12.33	20.48	2.89	8.80	40
17/09/2023	16.28	25.37	5.97	8.80	85
18/09/2023	3.35	23.94	0.48	8.35	-60
19/09/2023	1.97	3.84	0.54	9.25	-79
20/09/2023	3.02	6.18	0.14	8.99	-66
21/09/2023	1.49	6.79	0.39	7.76	-81
22/09/2023	2.10	5.14	0.54	6.12	-66
23/09/2023	2.05	9.20	0.59	7.43	-72
24/09/2023	2.88	5.79	1.73	9.93	-71
25/09/2023	2.40	4.24	1.07	12.03	-80
26/09/2023	3.30	9.20	0.95	10.63	-69
27/09/2023	4.18	8.46	1.62	12.91	-68
28/09/2023	2.11	4.88	0.47	13.10	-84
29/09/2023	1.84	4.61	0.00	7.48	-75
30/09/2023	2.56	5.51	0.65	10.92	-77

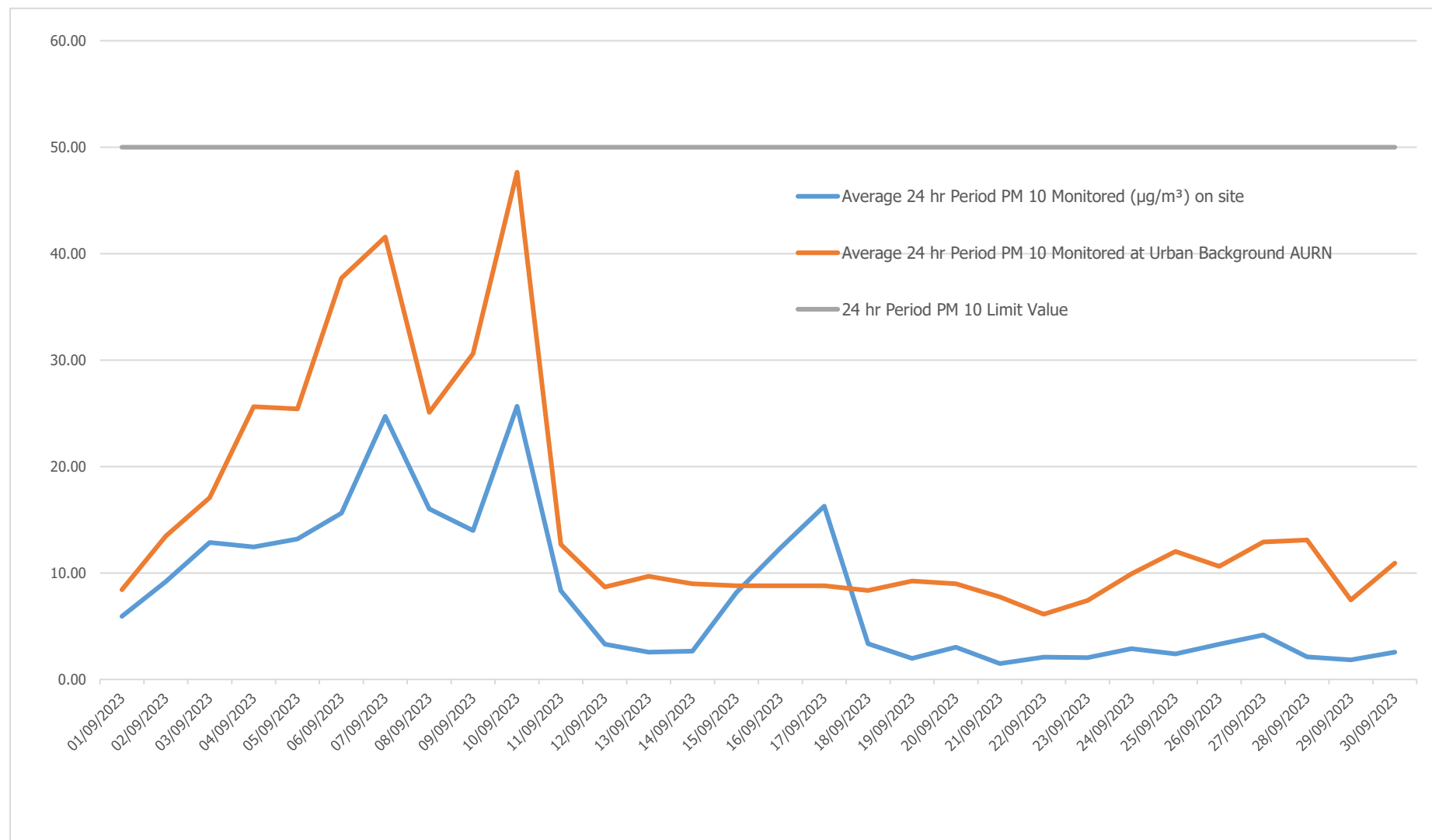
Figure 5.3 Comparison of On Site Monitored PM₁₀ and Urban Background

Table 5.6 PM_{2.5} 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM _{2.5} Monitored (µg/m³) on site	Average 24 hr Period PM _{2.5} Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM _{2.5} (%)
01/09/2023	4.33	10.00	-57
02/09/2023	2.14	13.41	-84
03/09/2023	2.20	17.62	-87
04/09/2023	2.00	15.79	-87
05/09/2023	1.61	22.28	-93
06/09/2023	1.24	29.60	-96
07/09/2023	0.75	14.40	-95
08/09/2023	1.46	16.31	-91
09/09/2023	0.87	35.71	-98
10/09/2023	1.02	8.51	-88
11/09/2023	1.88	4.19	-55
12/09/2023	3.07	4.62	-34
13/09/2023	5.25	6.44	-18
14/09/2023	3.05	7.00	-56
15/09/2023	2.99	7.00	-57
16/09/2023	2.15	7.00	-69
17/09/2023	2.27	5.14	-56
18/09/2023	3.63	4.84	-25
19/09/2023	4.23	4.96	-15
20/09/2023	3.56	3.71	-4
21/09/2023	5.23	3.31	58
22/09/2023	6.24	4.16	50
23/09/2023	5.84	5.40	8
24/09/2023	3.74	6.69	-44
25/09/2023	2.24	6.31	-65
26/09/2023	2.71	7.35	-63
27/09/2023	3.15	6.60	-52
28/09/2023	3.50	4.01	-13
29/09/2023	3.09	6.01	-49
30/09/2023	4.08	4.67	-13

The total data capture for this period was 100.0%.

6.0 MONITORING LOCATION 2 RESULTS

6.1 JULY 2023

The 24-hour monitoring results have been compared to background levels.

Table 6.1 PM₁₀ 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Max 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Min 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM ₁₀ Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM ₁₀ (%)
01/07/2023	8.79	22.20	5.20	8.77	0
02/07/2023	12.94	24.67	7.28	16.22	-20
03/07/2023	7.17	8.33	6.14	11.73	-39
04/07/2023	8.17	12.36	5.41	9.01	-9
05/07/2023	7.70	17.04	5.05	6.94	11
06/07/2023	7.48	9.13	5.72	7.81	-4
07/07/2023	10.75	14.05	7.46	15.32	-30
08/07/2023	11.69	16.15	7.71	16.12	-27
09/07/2023	7.22	8.91	5.82	9.51	-24
10/07/2023	6.89	8.40	5.59	10.59	-35
11/07/2023	7.01	8.99	5.34	9.02	-22
12/07/2023	7.06	10.40	5.93	8.19	-14
13/07/2023	6.71	7.96	5.58	7.77	-14
14/07/2023	7.67	12.42	5.06	9.09	-16
15/07/2023	7.38	14.48	5.38	13.25	-44
16/07/2023	7.00	8.19	5.81	10.55	-34
17/07/2023	7.07	8.60	5.56	7.38	-4
18/07/2023	7.09	8.23	5.96	8.17	-13
19/07/2023	7.03	9.39	5.44	5.81	21
20/07/2023	7.71	10.17	6.44	7.03	10
21/07/2023	13.45	49.05	7.26	11.16	21
22/07/2023	6.79	9.89	4.82	6.19	10
23/07/2023	6.14	8.04	4.72	4.66	32
24/07/2023	6.25	8.39	5.33	6.92	-10
25/07/2023	7.28	8.69	5.76	7.39	-1
26/07/2023	8.11	10.26	4.78	7.53	8
27/07/2023	6.08	9.00	4.76	5.54	10
28/07/2023	6.23	7.64	5.39	4.07	53
29/07/2023	6.66	9.75	5.36	6.64	0
30/07/2023	6.48	8.33	4.98	7.49	-13
31/07/2023	6.04	8.41	1.00	5.54	9

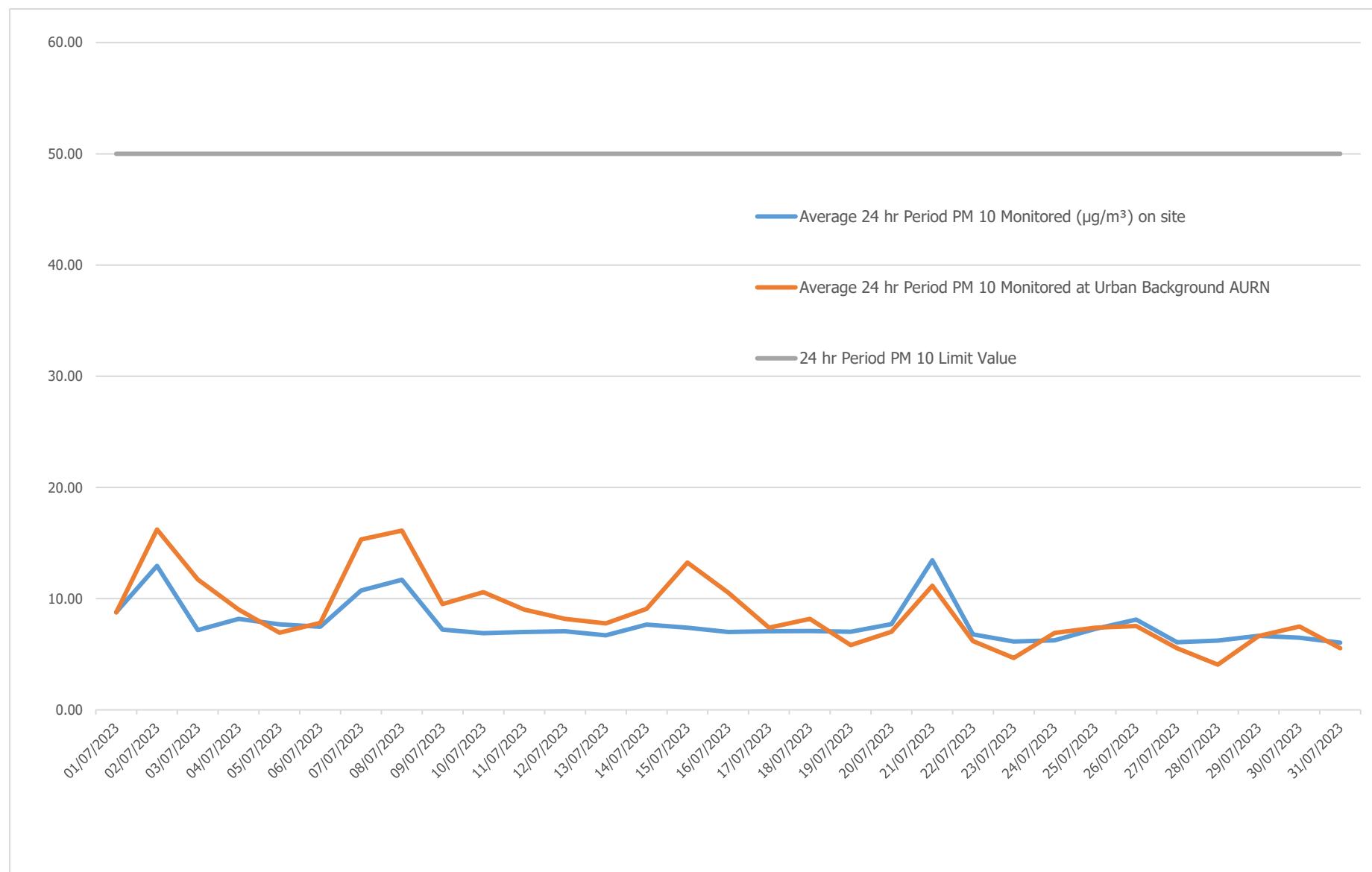
Figure 6.1 Comparison of On Site Monitored PM₁₀ and Urban Background

Table 6.2 PM_{2.5} 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM _{2.5} Monitored (µg/m³) on site	Average 24 hr Period PM _{2.5} Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM _{2.5} (%)
01/07/2023	8.03	5.32	51
02/07/2023	11.87	9.86	20
03/07/2023	6.52	5.25	24
04/07/2023	7.43	5.38	38
05/07/2023	7.00	3.64	92
06/07/2023	6.80	3.95	72
07/07/2023	9.77	7.52	30
08/07/2023	10.65	9.57	11
09/07/2023	6.56	5.31	24
10/07/2023	6.27	5.05	24
11/07/2023	6.37	4.87	31
12/07/2023	6.42	3.97	62
13/07/2023	6.10	3.84	59
14/07/2023	6.97	5.17	35
15/07/2023	6.71	6.17	9
16/07/2023	6.36	5.29	20
17/07/2023	6.43	3.75	71
18/07/2023	6.45	3.75	72
19/07/2023	6.39	3.05	110
20/07/2023	7.01	3.49	101
21/07/2023	12.07	6.84	76
22/07/2023	6.17	3.42	80
23/07/2023	5.57	2.61	113
24/07/2023	5.68	3.63	56
25/07/2023	6.62	3.76	76
26/07/2023	7.37	4.26	73
27/07/2023	5.53	2.97	86
28/07/2023	5.66	1.94	192
29/07/2023	6.06	3.46	75
30/07/2023	5.90	4.09	44
31/07/2023	5.54	3.17	75

The total data capture for this period was 100.0%.

6.2 AUGUST 2023

The 24-hour monitoring results have been compared to background levels.

Table 6.3 PM₁₀ 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Max 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Min 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM ₁₀ Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM ₁₀ (%)
01/08/2023	7.00	7.99	5.96	8.73	-20
02/08/2023	5.31	6.40	4.53	4.38	21
03/08/2023	6.71	10.38	4.99	6.92	-3
04/08/2023	8.59	11.42	6.86	9.51	-10
05/08/2023	8.20	16.32	5.07	7.21	14
06/08/2023	6.79	10.11	5.45	4.80	41
07/08/2023	6.94	8.31	5.52	5.91	17
08/08/2023	6.26	8.28	4.86	5.34	17
09/08/2023	7.70	11.87	4.97	7.70	0
10/08/2023	7.96	10.18	5.94	9.29	-14
11/08/2023	7.04	9.64	5.37	8.42	-16
12/08/2023	7.29	12.04	5.93	10.63	-31
13/08/2023	6.53	7.92	5.55	6.71	-3
14/08/2023	6.06	7.37	5.10	7.14	-15
15/08/2023	6.67	8.55	5.31	6.92	-4
16/08/2023	8.70	13.31	6.63	13.19	-34
17/08/2023	9.75	21.72	6.41	16.75	-42
18/08/2023	25.39	43.95	8.07	29.43	-14
19/08/2023	9.66	37.49	5.30	10.84	-11
20/08/2023	7.79	10.59	5.66	8.00	-3
21/08/2023	7.64	10.76	5.67	7.07	8
22/08/2023	7.37	12.02	5.49	6.49	14
23/08/2023	7.97	10.19	6.10	8.88	-10
24/08/2023	9.49	17.83	6.64	11.71	-19
25/08/2023	7.30	8.81	6.12	5.94	23
26/08/2023	7.25	13.62	5.45	5.09	42
27/08/2023	6.68	7.96	5.45	4.34	54
28/08/2023	7.07	10.33	5.43	5.41	31
29/08/2023	7.13	9.10	5.31	6.64	7
30/08/2023	7.02	8.30	5.32	6.75	4
31/08/2023	6.98	9.52	0.00	8.87	-21

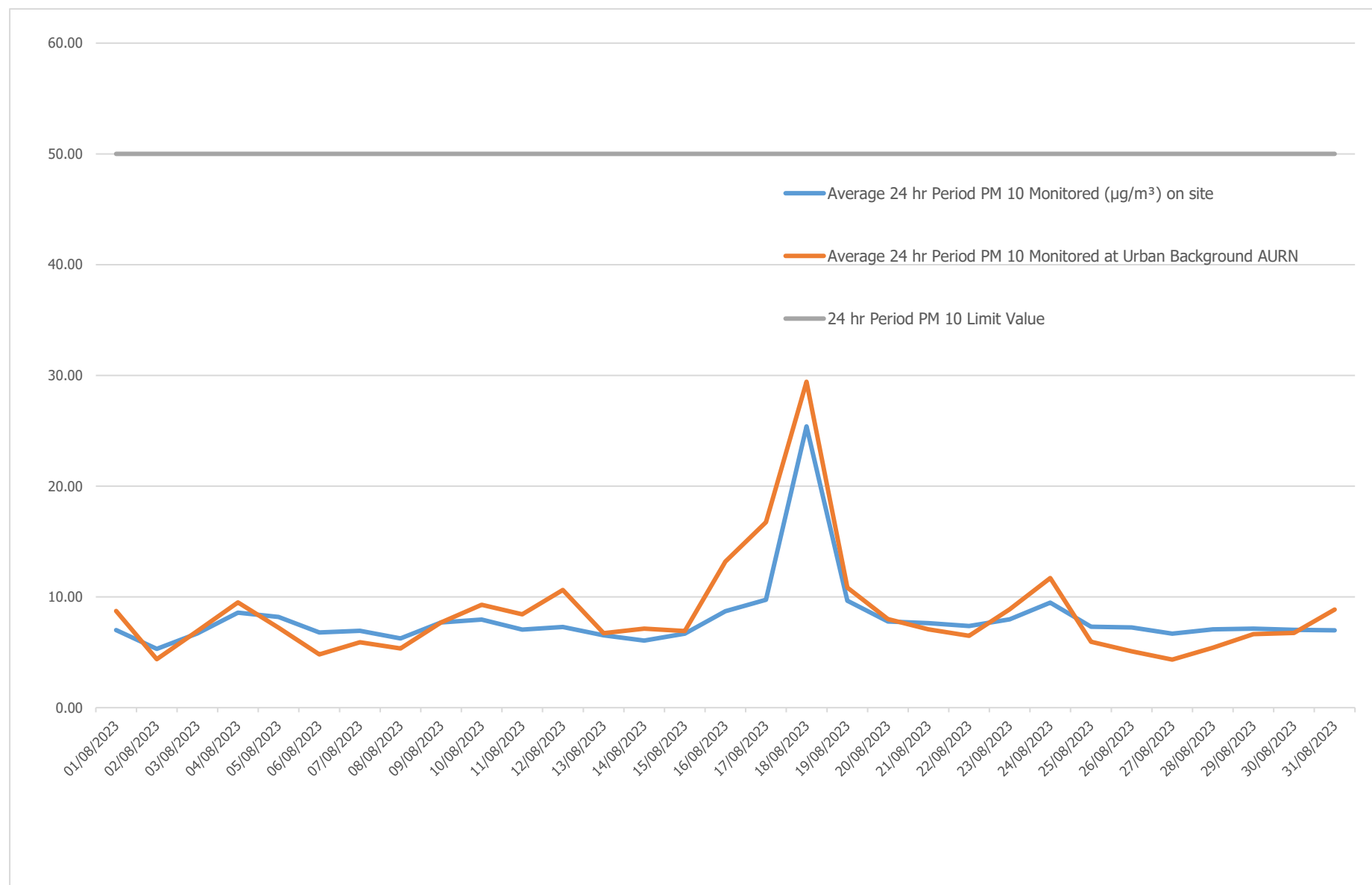
Figure 6.2 Comparison of On Site Monitored PM₁₀ and Urban Background

Table 6.4 PM_{2.5} 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM _{2.5} Monitored (µg/m³) on site	Average 24 hr Period PM _{2.5} Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM _{2.5} (%)
01/08/2023	6.37	4.67	36
02/08/2023	4.82	2.22	117
03/08/2023	6.10	3.63	68
04/08/2023	7.81	5.61	39
05/08/2023	7.47	4.64	61
06/08/2023	6.17	2.88	114
07/08/2023	6.31	2.92	116
08/08/2023	5.69	3.02	89
09/08/2023	7.00	3.74	87
10/08/2023	7.23	4.76	52
11/08/2023	6.40	4.59	39
12/08/2023	6.63	5.97	11
13/08/2023	5.94	3.78	57
14/08/2023	5.51	3.97	39
15/08/2023	6.07	3.61	68
16/08/2023	7.91	5.92	34
17/08/2023	8.87	7.20	23
18/08/2023	22.68	21.40	6
19/08/2023	8.79	6.42	37
20/08/2023	7.08	5.06	40
21/08/2023	6.94	4.28	62
22/08/2023	6.70	3.55	89
23/08/2023	7.25	4.39	65
24/08/2023	8.63	6.18	40
25/08/2023	6.64	2.56	159
26/08/2023	6.59	3.07	115
27/08/2023	6.07	2.49	144
28/08/2023	6.43	3.34	92
29/08/2023	6.48	3.78	72
30/08/2023	6.39	3.54	80
31/08/2023	6.41	4.54	41

The total data capture for this period was 100.0%.

6.3 SEPTEMBER 2023

The 24-hour monitoring results have been compared to background levels.

Table 6.5 PM₁₀ 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Max 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Min 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM ₁₀ Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM ₁₀ (%)
01/09/2023	9.80	20.28	6.28	8.44	16
02/09/2023	16.86	28.82	7.59	13.48	25
03/09/2023	22.23	36.43	11.39	17.07	30
04/09/2023	24.17	43.00	8.58	25.64	-6
05/09/2023	23.98	38.13	10.49	25.41	-6
06/09/2023	26.73	58.32	15.53	37.70	-29
07/09/2023	39.14	66.97	13.78	41.57	-6
08/09/2023	26.20	56.83	13.23	25.09	4
09/09/2023	24.80	53.28	19.34	30.59	-19
10/09/2023	42.07	84.68	10.52	47.65	-12
11/09/2023	15.98	36.82	7.17	12.68	26
12/09/2023	7.44	12.02	5.21	8.67	-14
13/09/2023	6.93	10.63	5.40	9.69	-28
14/09/2023	7.21	9.68	5.58	8.99	-20
15/09/2023	14.69	25.78	7.87	8.80	67
16/09/2023	20.85	34.34	8.72	8.80	137
17/09/2023	27.57	46.51	9.95	8.80	213
18/09/2023	8.14	43.35	4.84	8.35	-2
19/09/2023	6.07	8.21	5.42	9.25	-34
20/09/2023	6.98	12.57	4.77	8.99	-22
21/09/2023	6.36	24.66	4.76	7.76	-18
22/09/2023	6.48	8.28	5.17	6.12	6
23/09/2023	7.14	14.42	5.52	7.43	-4
24/09/2023	6.87	10.23	5.51	9.93	-31
25/09/2023	6.68	9.09	5.12	12.03	-44
26/09/2023	7.45	15.65	5.31	10.63	-30
27/09/2023	8.09	13.90	6.09	12.91	-37
28/09/2023	6.79	10.34	5.71	13.10	-48
29/09/2023	6.59	10.80	4.79	7.48	-12
30/09/2023	7.01	10.63	5.53	10.92	-36

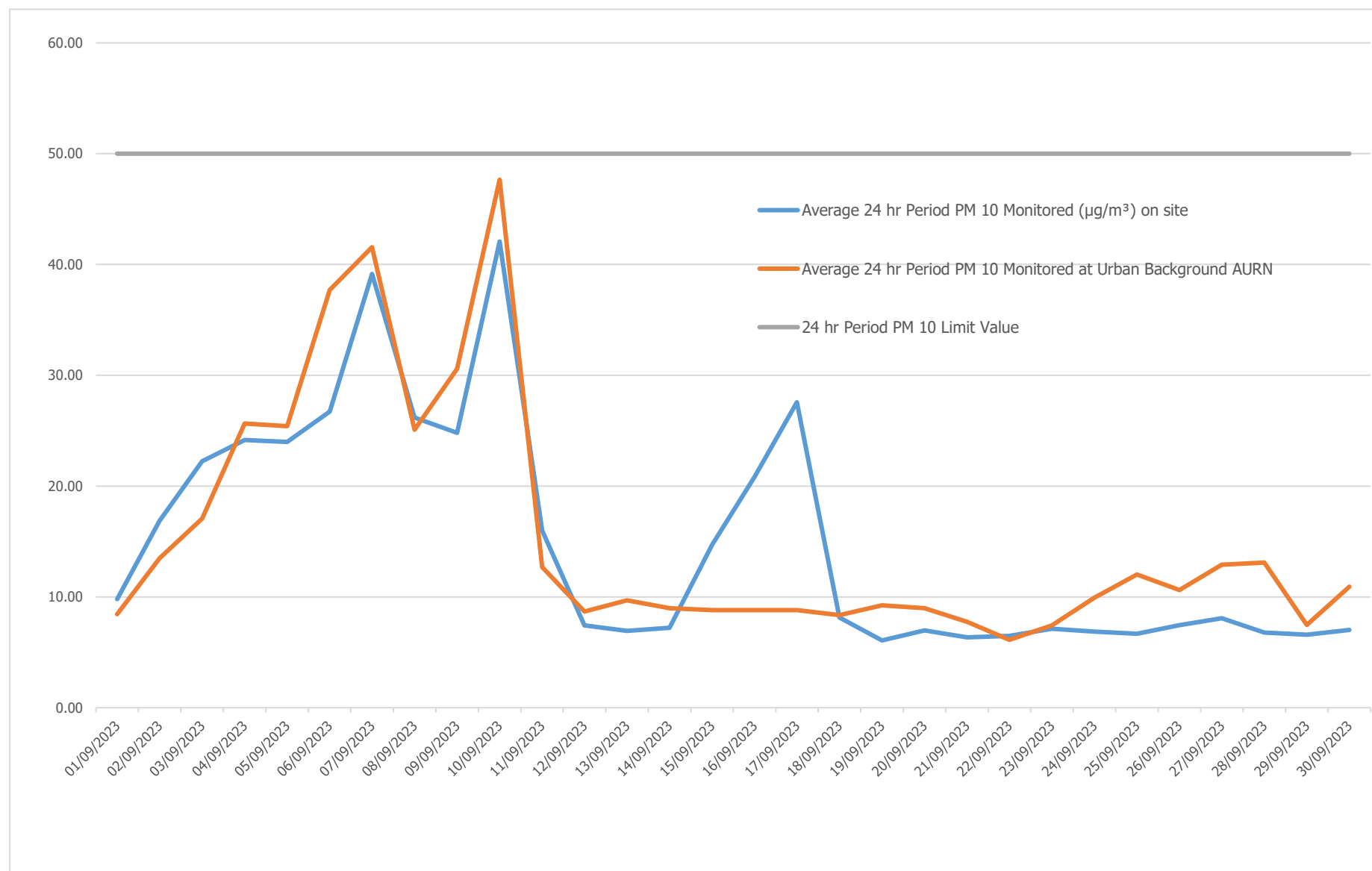
Figure 6.3 Comparison of On Site Monitored PM₁₀ and Urban Background

Table 6.6 PM_{2.5} 24-hour monitoring results compared with background levels

Date	Average 24 hr Period PM _{2.5} Monitored (µg/m³) on site	Average 24 hr Period PM _{2.5} Monitored at Urban Background AURN	Difference Between 24 hr Monitored Background and On Site PM _{2.5} (%)
01/09/2023	8.92	10.00	-11
02/09/2023	15.44	13.41	15
03/09/2023	20.48	17.62	16
04/09/2023	21.35	15.79	35
05/09/2023	21.57	22.28	-3
06/09/2023	24.29	29.60	-18
07/09/2023	34.36	14.40	139
08/09/2023	23.01	16.31	41
09/09/2023	22.45	35.71	-37
10/09/2023	37.19	8.51	337
11/09/2023	14.53	4.19	247
12/09/2023	6.75	4.62	46
13/09/2023	6.30	6.44	-2
14/09/2023	6.55	7.00	-6
15/09/2023	13.41	7.00	92
16/09/2023	19.17	7.00	174
17/09/2023	24.87	5.14	384
18/09/2023	7.34	4.84	52
19/09/2023	5.52	4.96	11
20/09/2023	6.34	3.71	71
21/09/2023	5.78	3.31	74
22/09/2023	5.89	4.16	42
23/09/2023	6.49	5.40	20
24/09/2023	6.25	6.69	-7
25/09/2023	6.08	6.31	-4
26/09/2023	6.77	7.35	-8
27/09/2023	7.35	6.60	11
28/09/2023	6.17	4.01	54
29/09/2023	5.99	6.01	0
30/09/2023	6.38	4.67	37

The total data capture for this period was 100.0%.

7.0 METEOROLOGICAL CONDITIONS

Below is a summary of the meteorological conditions recorded at London City Airport during each month.

Table 7.1 Recorded meteorological conditions in July 2023

Date	Wind Directions	Wind Speed (km/h)	Weather Conditions
01/07/2023	West	20	Cloudy
02/07/2023	West	22	Fair
03/07/2023	West	27	Fair
04/07/2023	West-South-West	14	Fair
05/07/2023	West	20	Fair
06/07/2023	South-West	17	Fair
07/07/2023	East	11	Fair
08/07/2023	East	12	Fair
09/07/2023	South-West	15	Fair
10/07/2023	South-South-West	19	Fair
11/07/2023	South-West	22	Mostly Cloudy
12/07/2023	West	21	Fair
13/07/2023	West-South-West	18	Fair
14/07/2023	South-South-East	14	Fair
15/07/2023	South-West	30	Mostly Cloudy / Windy
16/07/2023	South-West	28	Mostly Cloudy
17/07/2023	West	19	Fair
18/07/2023	South-West	14	Fair
19/07/2023	West-North-West	13	Fair
20/07/2023	North-West	9	Fair
21/07/2023	West	14	Fair
22/07/2023	South-South-West	21	Light Rain
23/07/2023	South-West	23	Mostly Cloudy
24/07/2023	North-North-East	11	Cloudy
25/07/2023	West-North-West	11	Fair
26/07/2023	West	10	Fair
27/07/2023	South-West	21	Cloudy
28/07/2023	West	18	Cloudy
29/07/2023	West	21	Fair
30/07/2023	West-South-West	23	Fair
31/07/2023	West-South-West	23	Cloudy

Table 7.2 Recorded meteorological conditions in August 2023

Date	Wind Directions	Wind Speed (km/h)	Weather Conditions
01/08/2023	West	21	Fair
02/08/2023	South-West	19	Mostly Cloudy
03/08/2023	North-West	11	Fair
04/08/2023	West-North-West	11	Fair
05/08/2023	South-South-East	14	Fair
06/08/2023	West-North-West	14	Fair
07/08/2023	West	16	Fair
08/08/2023	South-West	15	Light Rain
09/08/2023	Various	9	Fair
10/08/2023	South-South-West	13	Fair
11/08/2023	South-South-West	18	Fair
12/08/2023	South-West	21	Mostly Cloudy
13/08/2023	South-West	20	Mostly Cloudy
14/08/2023	South	17	Mostly Cloudy
15/08/2023	West	13	Fair
16/08/2023	East	9	Fair
17/08/2023	East	17	Fair
18/08/2023	East	17	Cloudy
19/08/2023	South-West	20	Fair
20/08/2023	South-West	15	Fair
21/08/2023	South-West	15	Fair
22/08/2023	West	15	Fair
23/08/2023	West	15	Fair
24/08/2023	West	15	Fair
25/08/2023	North-West	13	Mostly Cloudy
26/08/2023	West-South-West	12	Light Drizzle
27/08/2023	West	15	Fair
28/08/2023	West	15	Fair
29/08/2023	West-South-West	12	Fair
30/08/2023	West-North-West	14	Fair
31/08/2023	West	21	Fair

Table 7.3 Recorded meteorological conditions in September 2023

Date	Wind Directions	Wind Speed (km/h)	Weather Conditions
01/09/2023	North	7	Fair
02/09/2023	North-East	11	Mostly Cloudy
03/09/2023	North-East	7	Fair
04/09/2023	East	11	Fair
05/09/2023	East	12	Fair
06/09/2023	Various	6	Fair
07/09/2023	North-East	7	Fair
08/09/2023	South-West	9	Fair
09/09/2023	Various	6	Fair
10/09/2023	South-South-West	10	Fair
11/09/2023	West-South-West	16	Cloudy
12/09/2023	West	11	Fair
13/09/2023	North	9	Cloudy
14/09/2023	South	10	Fair
15/09/2023	South-South-East	7	Fair
16/09/2023	East	10	Fair
17/09/2023	East-North-East	15	Cloudy
18/09/2023	West-South-West	21	Fair
19/09/2023	South-West	28	Fair
20/09/2023	South-South-West	28	Light Rain
21/09/2023	South	10	Fair
22/09/2023	West	13	Fair
23/09/2023	West	15	Fair
24/09/2023	South	20	Fair
25/09/2023	South-West	16	Fair
26/09/2023	South-West	7	Fair
27/09/2023	South	17	Mostly Cloudy
28/09/2023	South-South-West	20	Mostly Cloudy
29/09/2023	West	17	Fair
30/09/2023	South-South-West	13	Fair

8.0 MONITORING SUMMARY

8.1 MAINTAINANCE

The locations are representative of the closest sensitive receptors around the site. Monitoring location 1 was originally located on the south-east corner of the building on the roof, with monitoring location 2 positioned in the north-west corner at ground level. The positioning of the monitors was changed on the 14th September 2023, with monitoring location 1 being repositioned to the south-west corner of the roof and monitoring location 2 moving to the north-east corner at ground level, in response to comments made by the EHO.

Tetra Tech Limited Technicians deployed the monitoring pod on site on the 29th June 2023, and visited the site to undertake routine maintenance and reposition the monitors on the 14th September 2023.

This report contains on site monitoring results between 1st July 2023 – 30th September 2023.

Tetra Tech Limited will continue to monitor the concentrations of PM₁₀ and PM_{2.5} at the Judd Street Site. These will continue to be cross-checked with urban background concentrations and the construction schedule to identify appropriate locations for the air quality monitoring and to inform any required future mitigation measures. Monitoring reports will be updated on a monthly schedule and will be inclusive of current site activities and any changes in the construction schedule.

APPENDIX A – FIGURES

Figure A-1. Monitoring Locations at 105 Judd Street Site

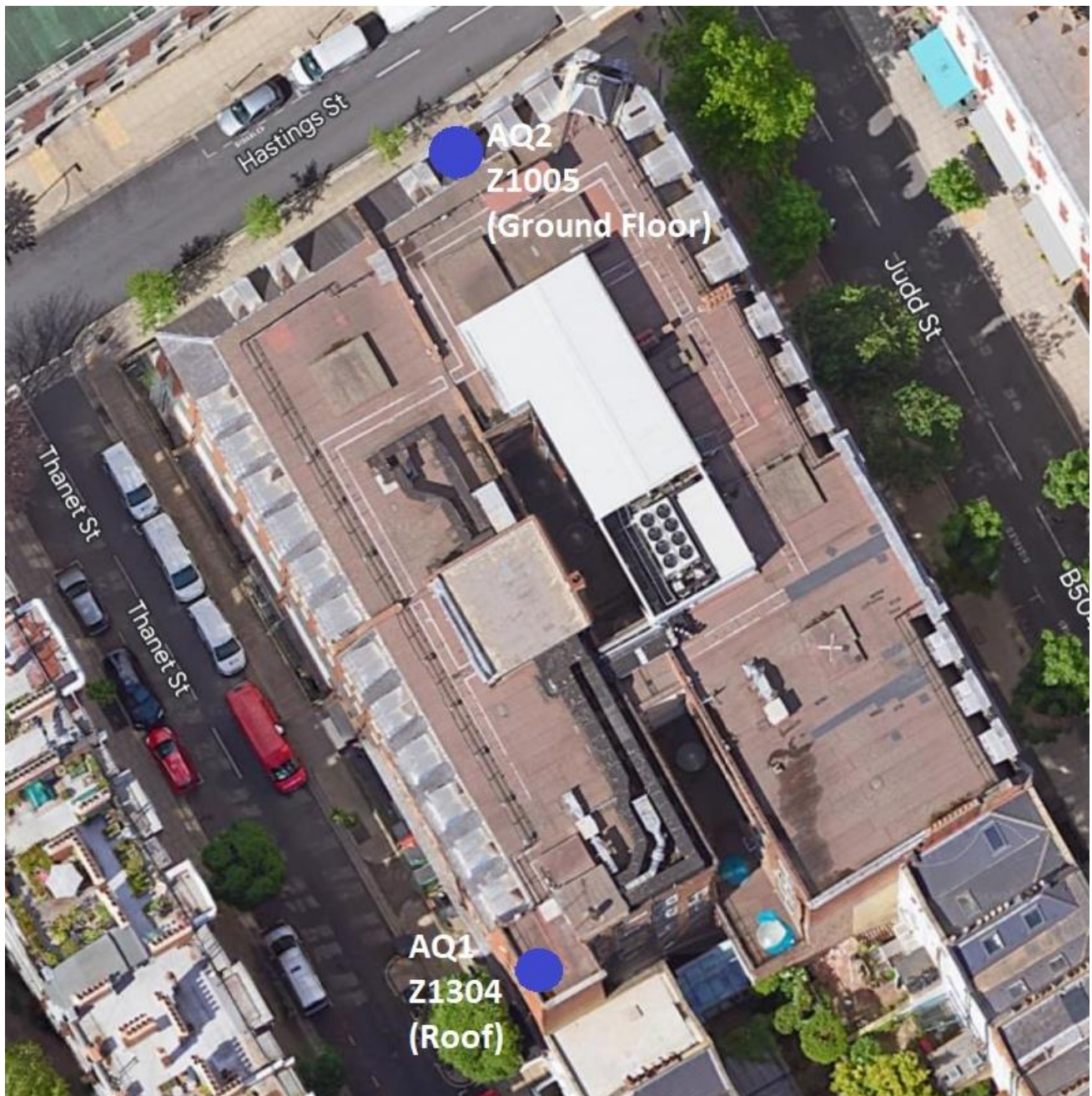


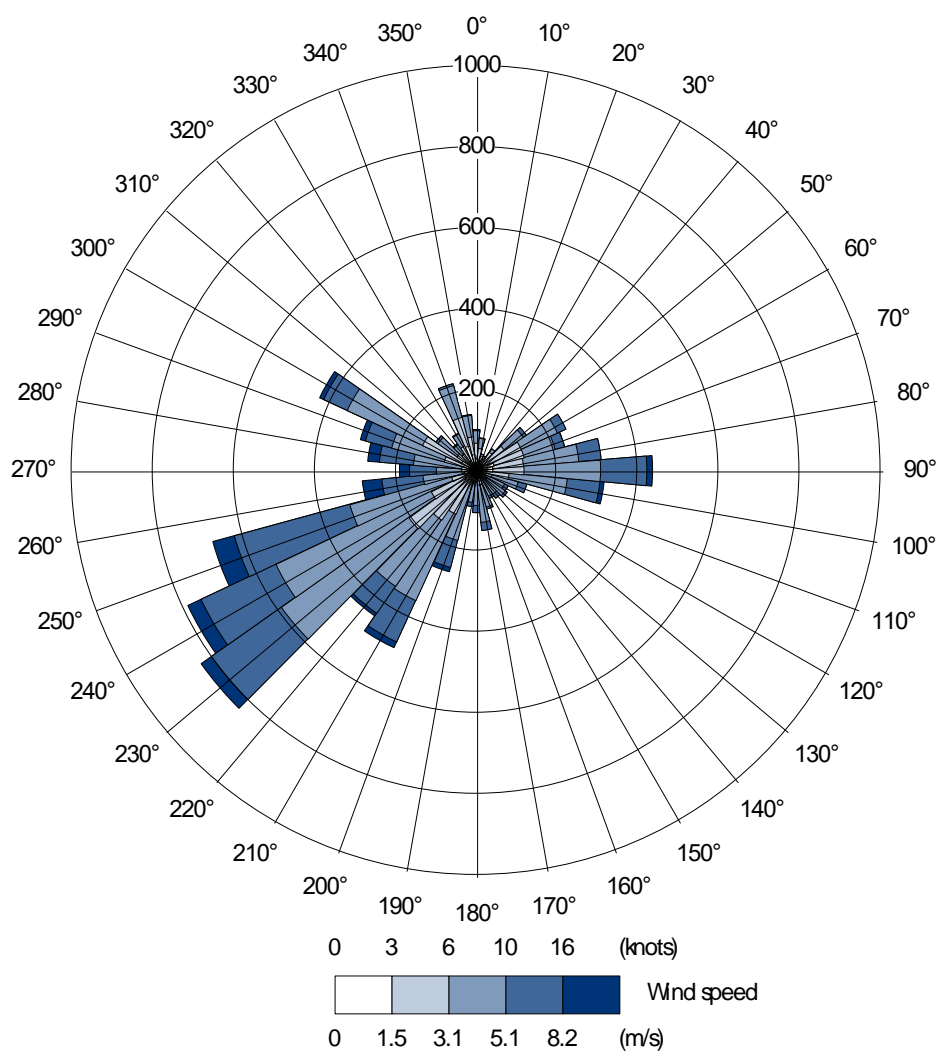
Figure A-2. London City Airport 2019 Meteorological Wind Rose

Figure A-3. Monitoring Location 1



Figure A-4. Monitoring Location 2



APPENDIX B – REPORT CONDITIONS

This Report has been prepared using reasonable skill and care for the sole benefit of J Coffey Construction (“the Client”) for the proposed uses stated in the report by Tetra Tech Limited (Tetra Tech). Tetra Tech exclude all liability for any other uses and to any other party. The report must not be relied on or reproduced in whole or in part by any other party without the copyright holder’s permission.

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The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary, and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The “shelf life” of the Report will be determined by a number of factors including; its original purpose, the Client’s instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accept no liability for issues with performance arising from such factors.