



Barratt London

NIMR, Mill Hill

Air Quality Monitoring Report 1

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1.0 Introduction

An air quality monitoring survey is being undertaken to determine levels of PM_{10} , $PM_{2.5}$ and PM_1 experienced as a result of the works undertaken at two locations at the former NIMR site, Mill Hill, Barnet: Phase 1 Monitoring Location 1A and Phase 1 Monitoring Location 1B. The monitoring locations are displayed in Figure 1. The purpose of this report is to review these levels against criteria determined from appropriate guidance to minimise disruption to nearby sensitive receptors as a result of the works

This report relates to measurements made between 1st February 2018 and 1st March 2018.

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;
- Local Air Quality Management Technical Guidance LAQM.TG(16), DEFRA, 2016;
- Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites, IAQM, 2012.

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, and includes:

- **Directive 1999/30/EC** – the First Air Quality "Daughter" Directive – sets ambient air limit values for nitrogen dioxide and oxides of nitrogen, sulphur dioxide, lead and particulate matter;
- **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 (Amendments) Regulations 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 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.

Table 2.1 Air Quality Standards, Objectives, Limit 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	50µg/m ³ by end of 2004 (max 35 exceedances a year)	24-hour mean	1 st January 2005	50µg/m ³ by end of 2004 (max 35 exceedances a year)	1 st January 2005	Retain Existing
	UK	40µg/m ³ by end of 2004	Annual mean	1 st January 2005	40µg/m ³	1 st January 2005	
PM _{2.5}	UK	25µg/m ³	Annual Mean	31st December 2010	25µg/m ³	1st January 2010	Retain Existing

There are currently no UK or EU objectives for PM₁.



3.0 Assessment Criteria

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 November 2017, DEFRA issued revised 2015 based background maps for PM₁₀ and PM_{2.5} which incorporate updates to the input data used for modelling. 2018 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)		2018	
X	Y	PM ₁₀	PM _{2.5}
522500	192500	14.4	9.5
523500	192500	14.3	9.4
522500	193500	14.1	9.3
523500	193500	13.9	9.2

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 2013. The detailed annual mean pollution maps are displayed in Figures 3.1 and Figure 3.2.

Figure 3.1 Modelled Annual Mean PM₁₀ Air Pollution (based on measurements made during 2013)

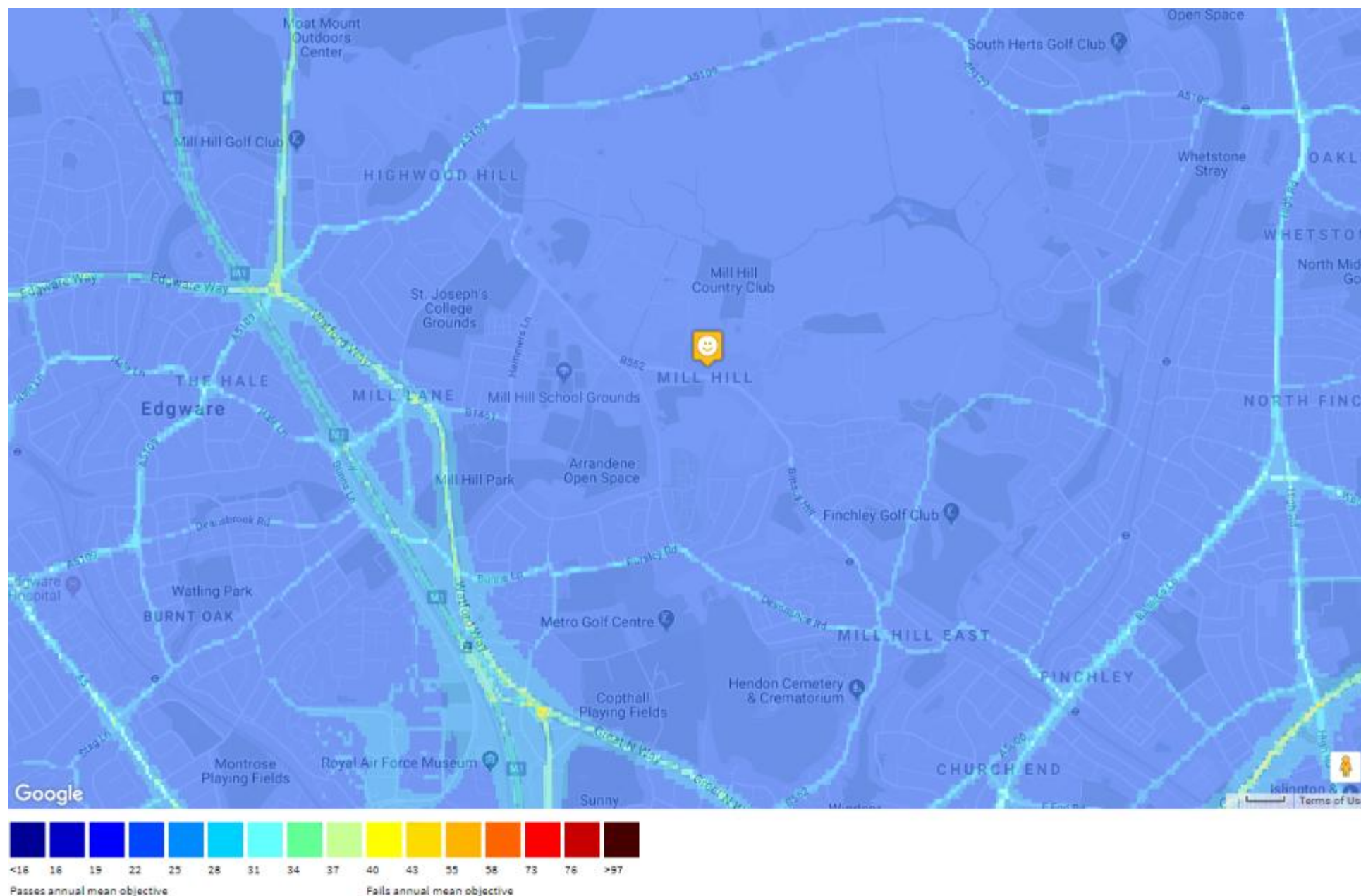
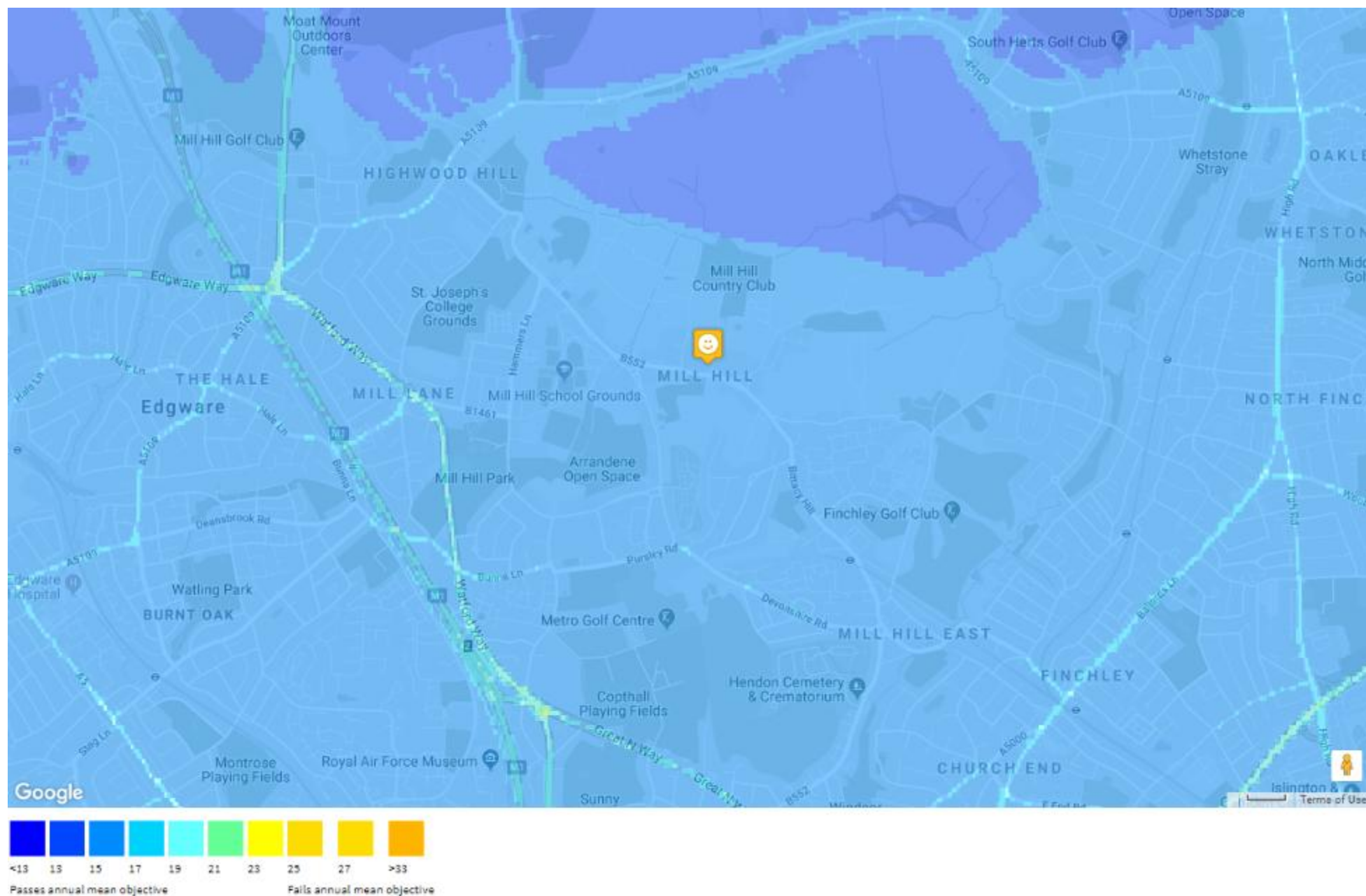


Figure 3.2 Modelled Annual Mean PM_{2.5} Air Pollution (based on measurements made during 2013)



3.2 Pollutant Sources

The main emissions during demolition are likely to be dust and particulate matter generated during earth moving (particularly during dry months) or from demolition materials. 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.

Demolition 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 amount of exposure can cause.

3.4 Criteria

An assessment using the traffic light approach based on sections 5.3.2 and the IAQM document 'Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (2012)' is considered appropriate and is proposed in Table 3.2 below. Given the proximity (within 7m) of nearby receptors and the possibility for exposure to PM₁₀ the following criteria is proposed.



Table 3.2 Traffic Light Criteria

Alert level	Time Period	Maximum Permissible 15 minute average ($\mu\text{g}/\text{m}^3$)
Red (<i>at this level all works to cease immediately, investigate cause of exceedance and use alternative methods where appropriate</i>)	15-minute average	>250
Amber (<i>continual monitoring and investigation of alternative methods where appropriate</i>)	Two consecutive 15-minute averages	>80
Green (<i>early warning/no action required</i>)	15-minute average	>80

The below criteria have been adopted for $\text{PM}_{2.5}$ levels at the boundary of the site.

Table 3.3 $\text{PM}_{2.5}$ Level Criteria – Levels at Boundary

Monitoring Levels	Time Period	$\text{PM}_{2.5}$ exceedance limits at monitoring locations
Red (<i>at this level all works to cease immediately, investigate cause of exceedance and use alternative methods</i>)	15-minute average	>48 $\mu\text{g}/\text{m}^3$
Amber (<i>continual monitoring and investigation of alternative methods where appropriate</i>)	Two consecutive 15-minute averages	Between 48 $\mu\text{g}/\text{m}^3$ and 40 $\mu\text{g}/\text{m}^3$
Green (<i>no action required</i>)	15-minute average	<38 $\mu\text{g}/\text{m}^3$

4.0 Particulate Matter Survey

4.1 Air Quality Monitoring Methodology

Particulate Matter monitoring was undertaken at each of the monitoring locations as identified in section 6.1. Particulate Matter monitoring was undertaken using two AQ Mesh Pods 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 both urban background and roadside monitored values of PM₁₀ and PM_{2.5} monitored by London Air (www.londonair.org.uk). The urban background values were monitored at the Kensington & Chelsea – North Ken (FIDAS) AURN. The roadside monitoring values were monitored at the Brent - Ikea AURN.

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

4.1.1 Particulate Matter Results

The results of the Particulate Matter Monitoring Survey are presented in the tables below.

Phase 1 Monitoring Location 1A Results

Table 4.1 Monitoring Results 24 hour averages

Date	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	PM ₁ (µg/m ³)
February 2018			
01/02/2018	7.05	1.82	0.47
02/02/2018	8.54	2.65	0.88
03/02/2018	10.41	5.29	2.48
04/02/2018	6.47	2.64	1.08
05/02/2018	8.78	3.51	1.54
06/02/2018	14.29	7.90	3.54
07/02/2018	9.38	3.65	1.40
08/02/2018	18.18	4.84	1.88
09/02/2018	5.98	1.72	0.58
10/02/2018	8.97	3.22	1.25
11/02/2018	3.75	1.01	0.29
12/02/2018	7.60	2.26	0.78
13/02/2018	8.55	3.70	1.47
14/02/2018	11.80	4.24	1.62
15/02/2018	62.74	9.28	2.09
16/02/2018	13.21	3.46	1.06
17/02/2018	16.73	5.46	2.06
18/02/2018	13.92	6.05	2.71
19/02/2018	48.10	17.09	5.32
20/02/2018	10.04	4.42	1.63
21/02/2018	37.05	19.06	7.29
22/02/2018	18.93	10.33	4.54
23/02/2018	16.72	8.97	3.97
24/02/2018	19.33	10.63	4.83
25/02/2018	9.26	4.11	1.91
26/02/2018	6.07	2.47	1.18
27/02/2018	6.92	3.22	1.55
28/02/2018	16.53	10.56	5.42

Table 4.2 and Figure 4.1 below show the monitored PM₁₀ on the site compared to the closest Urban Background and Roadside monitoring stations operated by the council so as to assess whether the PM₁₀ on site is being distributed in a pattern similar to the local area and to identify any anomalous results.

Table 4.2 PM₁₀ 24 hour monitoring results compared with background levels

Date	Average 24 hr Period PM ₁₀ Monitored (µg/m³) on site	Average 24 hr Period PM ₁₀ Monitored at Urban Background AURN
01/02/2018	7.05	10.30
02/02/2018	8.54	13.37
03/02/2018	10.41	11.68
04/02/2018	6.47	8.00
05/02/2018	8.78	12.60
06/02/2018	14.29	19.55
07/02/2018	9.38	16.37
08/02/2018	18.18	14.87
09/02/2018	5.98	9.89
10/02/2018	8.97	7.17
11/02/2018	3.75	4.70
12/02/2018	7.60	9.82
13/02/2018	8.55	8.65
14/02/2018	11.80	9.57
15/02/2018	62.74	12.53
16/02/2018	13.21	14.02
17/02/2018	16.73	16.51
18/02/2018	13.92	13.59
19/02/2018	48.10	16.28
20/02/2018	10.04	11.04
21/02/2018	37.05	37.27
22/02/2018	18.93	26.85
23/02/2018	16.72	25.31
24/02/2018	19.33	28.42
25/02/2018	9.26	15.14
26/02/2018	6.07	11.12
27/02/2018	6.92	10.99
28/02/2018	16.53	19.69

Table 4.3 Exceedances of Traffic Light Criteria for PM₁₀

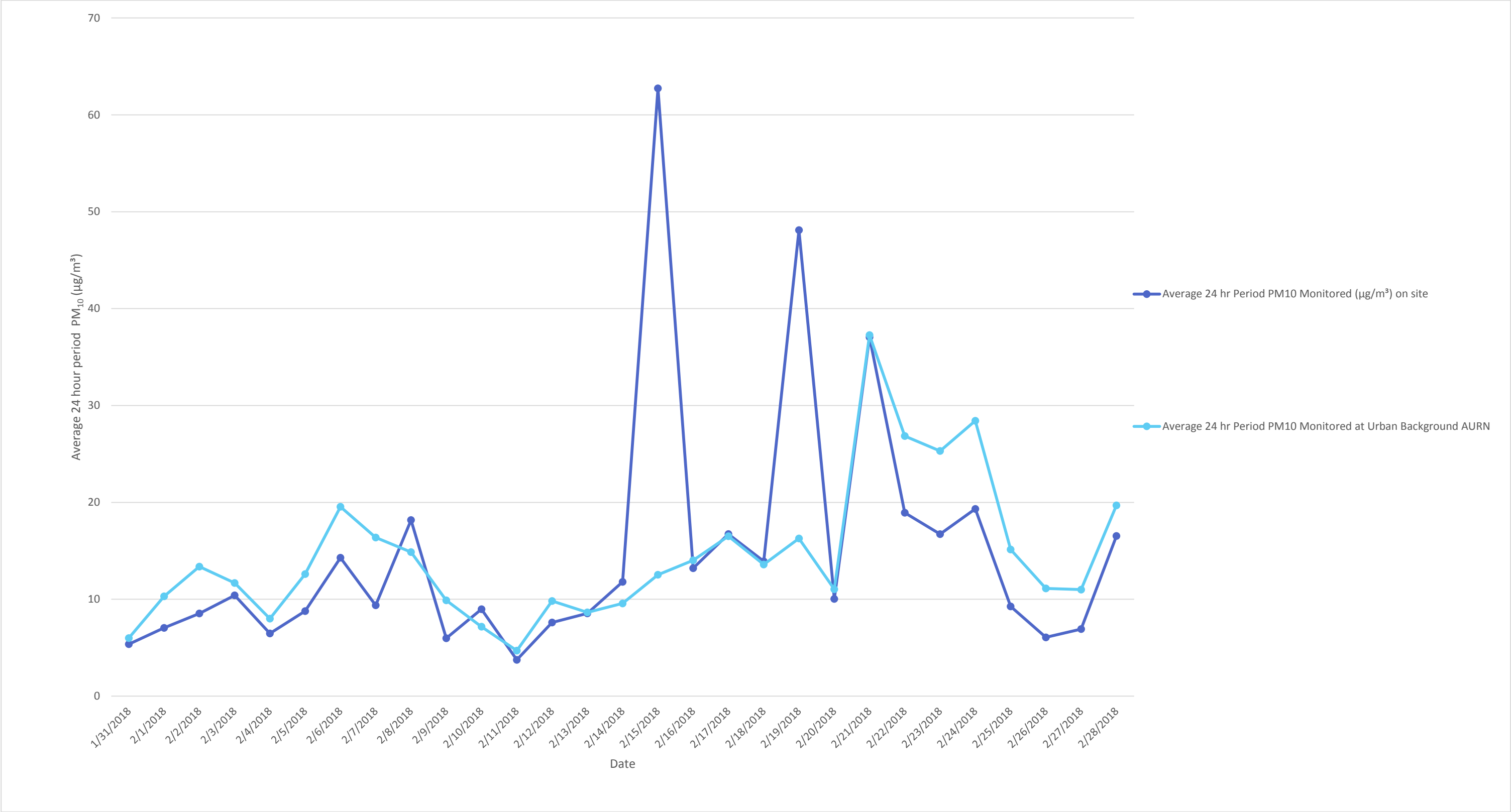
Date	Exceedance of 'Green' Criteria	Exceedance of 'Amber' Criteria	Exceedance of 'Red' Criteria
February 2018			
01/02/2018	0	0	0
02/02/2018	0	0	0
03/02/2018	0	0	0
04/02/2018	0	0	0
05/02/2018	0	0	0
06/02/2018	0	0	0
07/02/2018	0	0	0
08/02/2018	2	0	1
09/02/2018	0	0	0
10/02/2018	0	0	0
11/02/2018	0	0	0
12/02/2018	0	0	0
13/02/2018	0	0	0
14/02/2018	0	0	0
15/02/2018	12*	10*	6*
16/02/2018	0	0	0
17/02/2018	0	0	0



Date	Exceedance of 'Green' Criteria	Exceedance of 'Amber' Criteria	Exceedance of 'Red' Criteria
18/02/2018	0	0	0
19/02/2018	13 (7*)	12 (6*)	1*
20/02/2018	1*	0	0
21/02/2018	7 (2*)	6 (1*)	0
22/02/2018	0	0	0
23/02/2018	0	0	0
24/02/2018	0	0	0
25/02/2018	0	0	0
26/02/2018	0	0	0
27/02/2018	0	0	0
28/02/2018	0	0	0
*recorded outside working hours			



Figure 4.1 Comparison of On Site Monitored PM₁₀ at Phase 1 Monitoring Location 1A and Off Site Monitoring





As shown above, monitoring trends on site generally match trends at surrounding background monitoring sites.

Table 4.4 PM_{2.5} Results 24 hour monitoring results compared with background levels

Date	Average 24 hr Period PM _{2.5} Monitored (µg/m ³) on site	Average 24 hr Period PM _{2.5} Monitored at Urban Background AURN
01/02/2018	1.82	4.68
02/02/2018	2.65	7.13
03/02/2018	5.29	9.00
04/02/2018	2.64	5.68
05/02/2018	3.51	8.15
06/02/2018	7.90	14.31
07/02/2018	3.65	8.65
08/02/2018	4.84	9.00
09/02/2018	1.72	4.21
10/02/2018	3.22	4.30
11/02/2018	1.01	2.53
12/02/2018	2.26	4.71
13/02/2018	3.70	5.03
14/02/2018	4.24	6.23
15/02/2018	9.28	6.32
16/02/2018	3.46	7.08
17/02/2018	5.46	10.65
18/02/2018	6.05	10.35
19/02/2018	17.09	12.14
20/02/2018	4.42	5.87
21/02/2018	19.06	30.68
22/02/2018	10.33	20.86
23/02/2018	8.97	17.58
24/02/2018	10.63	19.82
25/02/2018	4.11	8.96
26/02/2018	2.47	5.79
27/02/2018	3.22	6.07
28/02/2018	10.56	14.85

4.1.1

4.1.2 Table 4.5 Comparison of Weather Conditions and average levels of PM₁₀ and PM_{2.5}

Date	Wind Directions	Wind Speed (km/h)	Weather Conditions	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM _{2.5} Monitored (µg/m ³) on site
February 2018					
01/02/2018	West	18	Cloudy	7.05	1.82
02/02/2018	North-west	14	Overcast	8.54	2.65
03/02/2018	Variable	7	Light Rain	10.41	5.29
04/02/2018	North-east	13	Mostly Cloudy	6.47	2.64
05/02/2018	North-east	11	Mostly Cloudy	8.78	3.51
06/02/2018	North	9	Light Snow	14.29	7.90
07/02/2018	West	8	Cloudy	9.38	3.65
08/02/2018	South-west	11	Mostly Cloudy	18.18	4.84
09/02/2018	West	18	Mostly Cloudy	5.98	1.72
10/02/2018	South-west	14	Rain	8.97	3.22
11/02/2018	West	25	Light Rain	3.75	1.01
12/02/2018	West	15	Scattered Clouds	7.60	2.26
13/02/2018	South	18	Rain	8.55	3.70
14/02/2018	South	14	Light Rain	11.80	4.24



Date	Wind Directions	Wind Speed (km/h)	Weather Conditions	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM _{2.5} Monitored (µg/m ³) on site
15/02/2018	South-west	16	Partly Cloudy	62.74	9.28
16/02/2018	South	10	Unknown	13.21	3.46
17/02/2018	Variable	6	Cloudy	16.73	5.46
18/02/2018	South-east	8	Mostly Cloudy	13.92	6.05
19/02/2018	West	9	Light Rain	48.10	17.09
20/02/2018	North	13	Partly Cloudy	10.04	4.42
21/02/2018	North-east	9	Haze	37.05	19.06
22/02/2018	North-east	12	Mostly Cloudy	18.93	10.33
23/02/2018	East	12	Light Haze	16.72	8.97
24/02/2018	North-east	14	Mostly Cloudy	19.33	10.63
25/02/2018	North-east	17	Unknown	9.26	4.11
26/02/2018	North-east	16	Light Rain	6.07	2.47
27/02/2018	Variable	9	Light Rain	6.92	3.22
28/02/2018	North-east	13	Snow Showers/Light Haze	16.53	10.56

Phase 1 Monitoring Location 1B Results

Table 4.6 Monitoring Results 24 hour averages

Date	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	PM ₁ (µg/m ³)
February 2018			
01/02/2018	7.43	2.85	1.37
02/02/2018	9.27	4.20	2.25
03/02/2018	13.09	8.80	5.19
04/02/2018	8.39	4.76	2.64
05/02/2018	9.23	6.08	3.56
06/02/2018	19.04	14.41	8.25
07/02/2018	11.30	7.09	3.78
08/02/2018	12.24	7.68	4.64
09/02/2018	7.47	3.97	2.48
10/02/2018	10.12	5.68	3.33
11/02/2018	4.62	2.44	1.52
12/02/2018	9.93	5.50	3.07
13/02/2018	10.29	6.29	3.58
14/02/2018	15.41	8.75	5.07
15/02/2018	35.58	7.30	2.48
16/02/2018	11.78	4.73	2.35
17/02/2018	17.72	8.52	4.59
18/02/2018	18.86	11.30	6.52
19/02/2018	44.12	19.64	7.71
20/02/2018	13.36	7.41	3.57
21/02/2018	47.73	30.90	14.34
22/02/2018	27.46	18.42	10.04
23/02/2018	22.79	15.43	8.36
24/02/2018	22.32	16.02	9.11
25/02/2018	10.08	6.45	3.88
26/02/2018	12.46	6.54	4.05
27/02/2018	10.49	6.86	4.35
28/02/2018	20.25	15.94	10.34

Table 4.7 and Figure 4.2 below show the monitored PM₁₀ on the site compared to the closest Urban Background and Roadside monitoring stations operated by the council so as to assess whether the PM₁₀ on site is being distributed in a pattern similar to the



local area and to identify any anomalous results.

Table 4.7 PM₁₀ 24 hour monitoring results compared with background levels

Date	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM ₁₀ Monitored at Urban Background AURN
01/02/2018	7.43	10.30
02/02/2018	9.27	13.37
03/02/2018	13.09	11.68
04/02/2018	8.39	8.00
05/02/2018	9.23	12.60
06/02/2018	19.04	19.55
07/02/2018	11.30	16.37
08/02/2018	12.24	14.87
09/02/2018	7.47	9.89
10/02/2018	10.12	7.17
11/02/2018	4.62	4.70
12/02/2018	9.93	9.82
13/02/2018	10.29	8.65
14/02/2018	15.41	9.57
15/02/2018	35.58	12.53
16/02/2018	11.78	14.02
17/02/2018	17.72	16.51
18/02/2018	18.86	13.59
19/02/2018	44.12	16.28
20/02/2018	13.36	11.04
21/02/2018	47.73	37.27
22/02/2018	27.46	26.85
23/02/2018	22.79	25.31
24/02/2018	22.32	28.42
25/02/2018	10.08	15.14
26/02/2018	12.46	11.12
27/02/2018	10.49	10.99
28/02/2018	20.25	19.69

Table 4.8 Exceedances of Traffic Light Criteria for PM₁₀

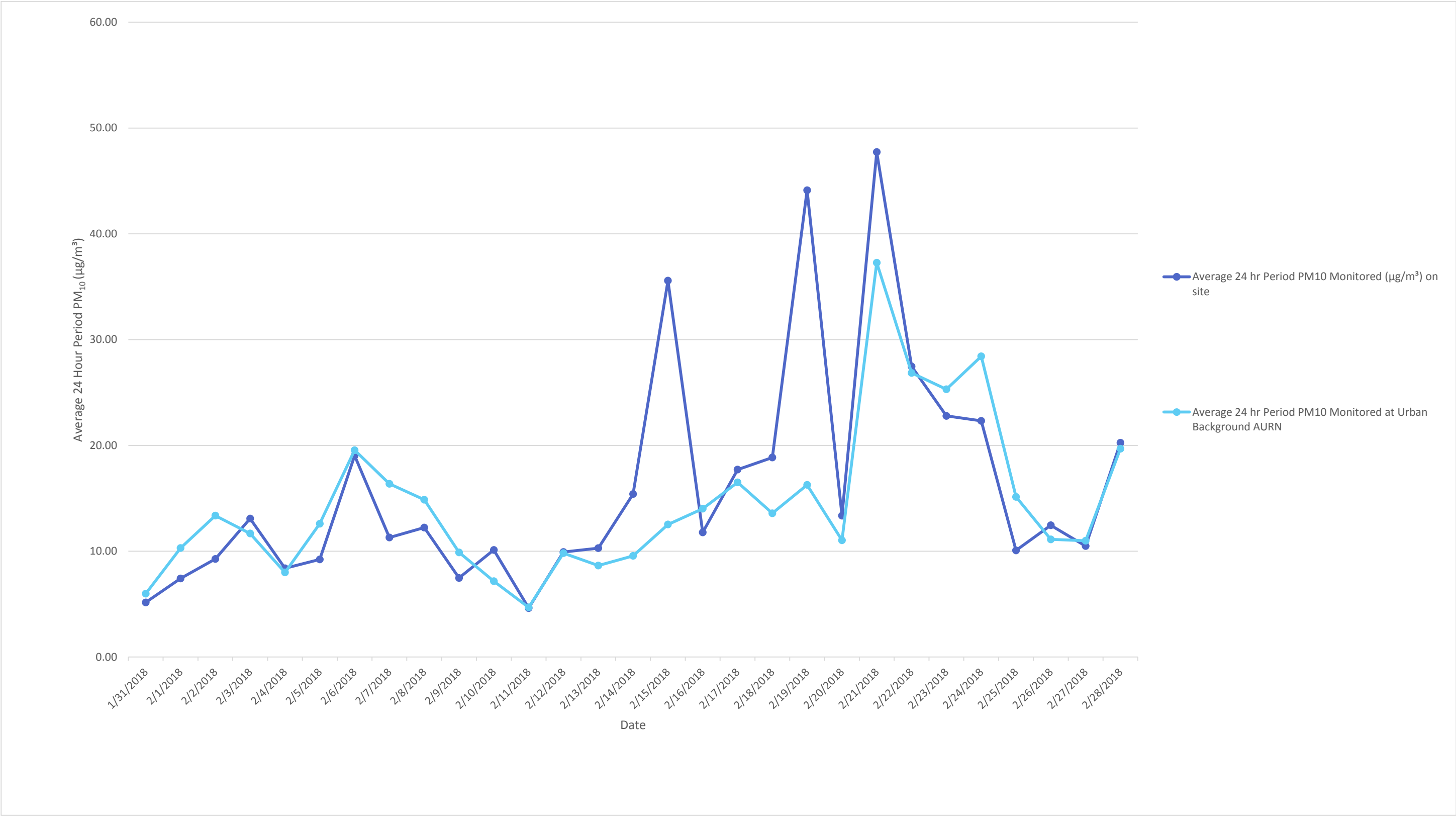
Date	Exceedance of 'Green' Criteria	Exceedance of 'Amber' Criteria	Exceedance of 'Red' Criteria
February 2018			
01/02/2018	0	0	0
02/02/2018	0	0	0
03/02/2018	0	0	0
04/02/2018	0	0	0
05/02/2018	0	0	0
06/02/2018	0	0	0
07/02/2018	0	0	0
08/02/2018	0	0	0
09/02/2018	0	0	0
10/02/2018	0	0	0
11/02/2018	0	0	0
12/02/2018	0	0	0
13/02/2018	0	0	0
14/02/2018	0	0	0
15/02/2018	11*	9*	4*
16/02/2018	0	0	0
17/02/2018	0	0	0
18/02/2018	0	0	0
19/02/2018	12 (6*)	10 (4*)	0
20/02/2018	2*	1*	0
21/02/2018	11 (3*)	10 (2*)	0
22/02/2018	0	0	0



Date	Exceedance of 'Green' Criteria	Exceedance of 'Amber' Criteria	Exceedance of 'Red' Criteria
23/02/2018	0	0	0
24/02/2018	0	0	0
25/02/2018	0	0	0
26/02/2018	1	0	0
27/02/2018	0	0	0
28/02/2018	0	0	0
*recorded outside working hours			



Figure 4.2 Comparison of On Site Monitored PM₁₀ at Phase 1 Monitoring Location 1B Results and Off Site Monitoring





As shown above, monitoring trends on site generally match trends at surrounding background monitoring sites.

Table 4.9 PM_{2.5} Results 24 hour monitoring results compared with background levels

Date	Average 24 hr Period PM _{2.5} Monitored (µg/m ³) on site	Average 24 hr Period PM _{2.5} Monitored at Urban Background AURN (µg/m ³)
01/02/2018	2.85	4.68
02/02/2018	4.20	7.13
03/02/2018	8.80	9.00
04/02/2018	4.76	5.68
05/02/2018	6.08	8.15
06/02/2018	14.41	14.31
07/02/2018	7.09	8.65
08/02/2018	7.68	9.00
09/02/2018	3.97	4.21
10/02/2018	5.68	4.30
11/02/2018	2.44	2.53
12/02/2018	5.50	4.71
13/02/2018	6.29	5.03
14/02/2018	8.75	6.23
15/02/2018	7.30	6.32
16/02/2018	4.73	7.08
17/02/2018	8.52	10.65
18/02/2018	11.30	10.35
19/02/2018	19.64	12.14
20/02/2018	7.41	5.87
21/02/2018	30.90	30.68
22/02/2018	18.42	20.86
23/02/2018	15.43	17.58
24/02/2018	16.02	19.82
25/02/2018	6.45	8.96
26/02/2018	6.54	5.79
27/02/2018	6.86	6.07
28/02/2018	15.94	14.85

Table 4.10 Comparison of Weather Conditions and average levels of PM₁₀ and PM_{2.5}

Date	Wind Directions	Wind Speed (km/h)	Weather Conditions	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM _{2.5} Monitored (µg/m ³) on site
February 2018					
01/02/2018	West	18	Cloudy	7.43	2.85
02/02/2018	North-west	14	Overcast	9.27	4.20
03/02/2018	Variable	7	Light Rain	13.09	8.80
04/02/2018	North-east	13	Mostly Cloudy	8.39	4.76
05/02/2018	North-east	11	Mostly Cloudy	9.23	6.08
06/02/2018	North	9	Light Snow	19.04	14.41
07/02/2018	West	8	Cloudy	11.30	7.09
08/02/2018	South-west	11	Mostly Cloudy	12.24	7.68
09/02/2018	West	18	Mostly Cloudy	7.47	3.97
10/02/2018	South-west	14	Rain	10.12	5.68
11/02/2018	West	25	Light Rain	4.62	2.44
12/02/2018	West	15	Scattered Clouds	9.93	5.50
13/02/2018	South	18	Rain	10.29	6.29
14/02/2018	South	14	Light Rain	15.41	8.75
15/02/2018	South-west	16	Partly Cloudy	35.58	7.30



Date	Wind Directions	Wind Speed (km/h)	Weather Conditions	Average 24 hr Period PM ₁₀ Monitored (µg/m ³) on site	Average 24 hr Period PM _{2.5} Monitored (µg/m ³) on site
16/02/2018	South	10	Unknown	11.78	4.73
17/02/2018	Variable	6	Cloudy	17.72	8.52
18/02/2018	South-east	8	Mostly Cloudy	18.86	11.30
19/02/2018	West	9	Light Rain	44.12	19.64
20/02/2018	North	13	Partly Cloudy	13.36	7.41
21/02/2018	North-east	9	Haze	47.73	30.90
22/02/2018	North-east	12	Mostly Cloudy	27.46	18.42
23/02/2018	East	12	Light Haze	22.79	15.43
24/02/2018	North-east	14	Mostly Cloudy	22.32	16.02
25/02/2018	North-east	17	Unknown	10.08	6.45
26/02/2018	North-east	16	Light Rain	12.46	6.54
27/02/2018	Variable	9	Light Rain	10.49	6.86
28/02/2018	North-east	13	Snow Showers/Light Haze	20.25	15.94

5.0 Discussion and Summary

The monitoring results for the first month at the former NIMR site, Mill Hill, Barnet Phase 1 Monitoring Location 1A shows eight exceedances of the 'red' criteria. Seven of these 'red' exceedances are monitored outside of working hours and are unlikely to be a result of site operations. One 'red' exceedance was monitored within working hours on the 8th February 2018 which was identified as an anomaly due to the high monitored result surrounded by low readings before and after the 15-minute interval at 13:45. A review of site activities at this time period and location will be conducted.

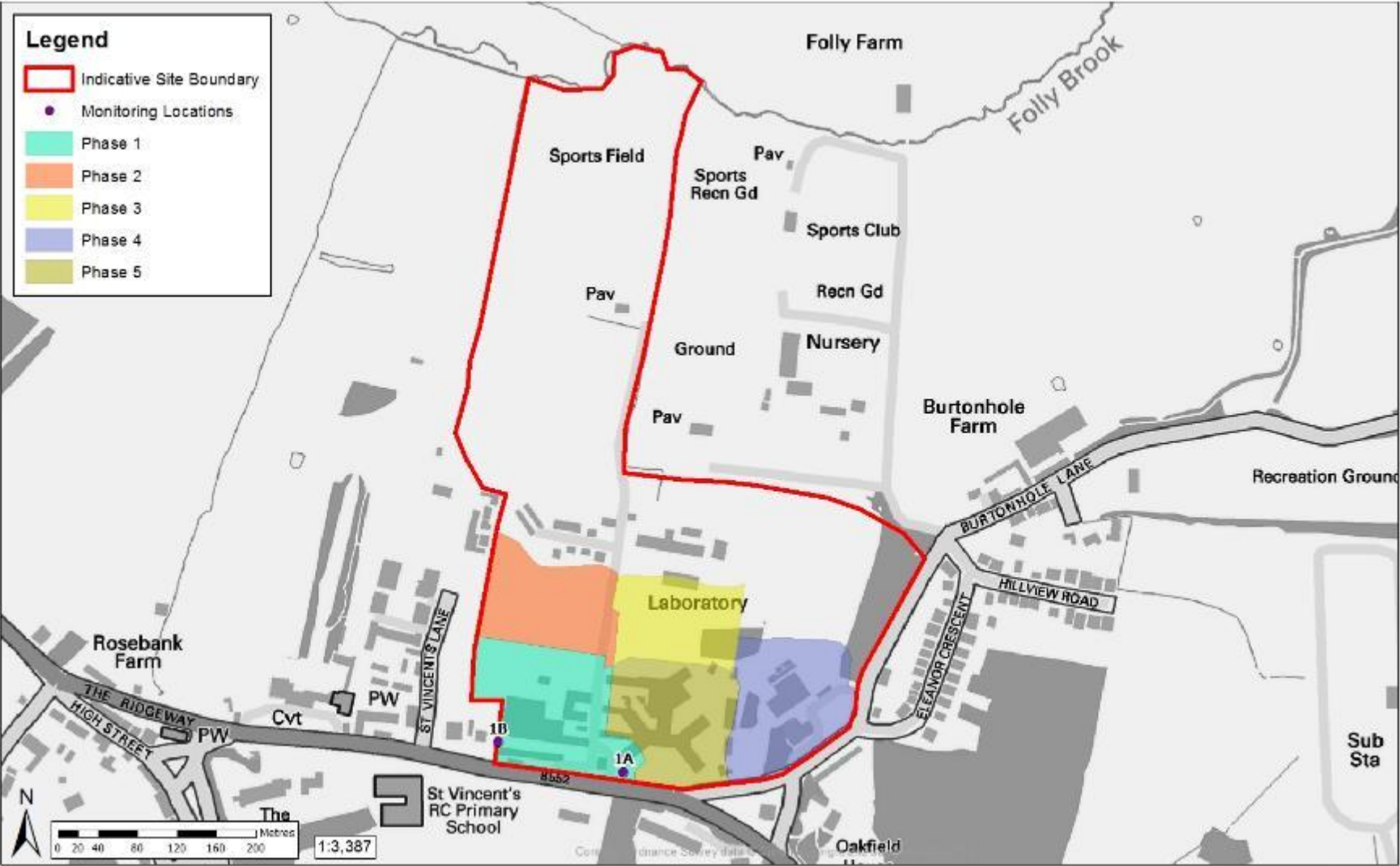
The monitoring results for the first month at the former NIMR site, Mill Hill, Barnet Phase 1 Monitoring Location 1B shows four 'red' exceedances on the 15th February 2018 monitored outside of working hours and therefore unlikely to be a result of site operations.

On the 15th February 2018, 'red' exceedances were monitored at both site locations during the periods between 2:30 and 4:15. Following a review of weather conditions, these exceedances are likely due to incorrect readings of the equipment as a result of the misty weather conditions affecting the laser during this period.

To ensure the effects from the demolition are monitored sufficiently we will continue to monitor the levels of PM₁₀ and PM_{2.5} using the AQ Mesh monitors. This will be cross checked with the demolition schedule to identify whether the works are the main contributing factor.

WYG will continue to monitor and will make the client aware of any further exceedances and the activities which are being undertaken which result in exceedances of the 'red' limit will be reported and reviewed.

Figure 1 Monitoring Locations





Appendix A Red Limit Exceedances



Red Limit Exceedances

An assessment using the traffic light approach based on sections 5.3.2 and the IAQM document 'Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (2012)' was conducted for the site. The in detail results with the date, time and recorded PM₁₀ levels over 250 are outlined in Table A1 and A2. These are regarded as "red" level.

Table A1 Date and Times of PM₁₀ Red Limit Exceedances at Phase 1 Monitoring Location 1A

Date	Time	PM ₁₀ (µg/m ³)	Recorded Weather Conditions
08/02/2018	13:45	489.38	Overcast
15/02/2018	02:30	266.12	Mist
	02:45	537.68	
	03:15	616.07	
	03:30	862.47	
	03:45	1343.72	
	04:00	305.01	
19/02/2018	06:45	279.74	Light Drizzle

Table A2 Date and Times of PM₁₀ Red Limit Exceedances at Phase 1 Monitoring Location 1B

Date	Time	PM ₁₀ (µg/m ³)	Recorded Weather Conditions
15/02/2018	02:45	251.62	Mist
	03:15	344.45	
	03:30	266.17	
	03:45	317.72	