Lincoln House, 296-302 High Holborn
Camden Borough

Air Particle (Dust) Baseline Monitoring Report
(23 August 2022 to 22 November 2022)

29389/APR01

24 November 2022

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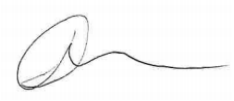
Air Particle (Dust) Monitoring Report
29389/AP01

Document Control

Rev	Date	Comment	Prepared & Authorised by	
0	24/11/2022	-		
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Attachments

1.0 Introduction

It is proposed to redevelop Lincoln House, 296-302 High Holborn, London. The redevelopment involves partly demolishing the rear of the building in order to create a refurbished ten-storey contemporary office building. The proposed site works include demolition, sub-structure, super-structure, envelope and fit out.

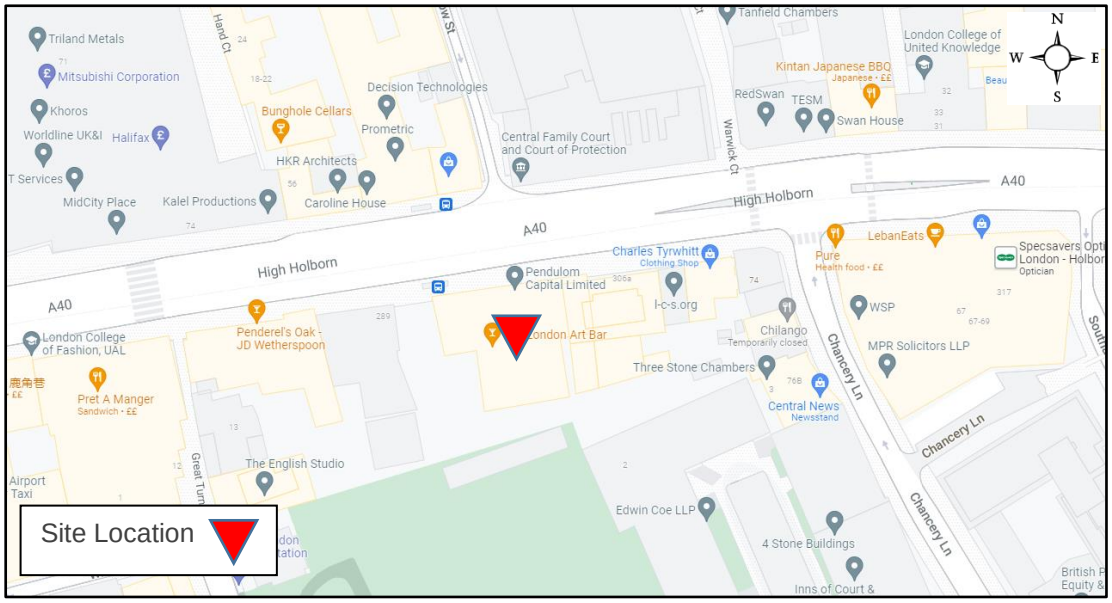
Hann Tucker Associates have been appointed to undertake unmanned air particulate (dust) monitoring at Lincoln House, in order to establish the baseline dust levels prior to the commencement of project works at the aforementioned site.

This report presents the procedures employed for the monitoring and the data obtained during the baseline monitoring period spanning 23 August 2022 to 22 November 2022.

2.0 Site Description

2.1 Location

The site is located at 296-302 High Holborn and falls within the jurisdiction of Camden London Borough Council. See Location Map below.



Location Map (Map data ©Google)

2.2 Description

The current structure at Lincoln House comprises of a 9-storey building including ground level, plus a basement area. The site is approximately 33m long and 30m wide.

The site is situated approximately 200m West of Chancery Lane underground station and is bounded to the North by High Holborn Road (A40).

The surrounding area contains a mixture of building type including residential properties, restaurants, shops, and office space. See Site Plan below.

Site Plan (Imagery ©2022 Bluesky, Getmapping Plc, Infoterra & Bluesky, MAxar Technologies, The Geoinformation Group. Map data ©2022 Google)

The nearest receptors to each side of the site are summarised in the table below.

Receptor	Name/Address	Use(s)	Description	Approximate Distance to Site
North	First Avenue House, 42-49 High Holborn	Court Building	A 10-storey court building including ground floor level.	The receptor is across High Holborn, approximately 21m from the northern edge of site.
	50-51 High Holborn	Commercial Building	A 5-storey commercial building with retails on the ground floor and offices from 1st to 4th floors.	The receptor is across High Holborn, approximately 21m from the northern edge of site.
	High Holborn House, 52-54 High Holborn	Commercial / Residential Building	A 7-storey mixed-use building with retails on the ground floor, offices from 1st to 5th floors and residential properties on the 6th floor.	The receptor is across High Holborn, approximately 21m from the northern edge of site.
West	Celcon House, 289-293 High Holborn	Office Building	A 9-storey office building including ground floor level.	The receptor is approximately 8m from the western edge of site.
East	Northumberland House, 303-306 High Holborn	Commercial Building	A 9-storey commercial building with retails on the ground floor and offices from 1st to 8th floor.	The receptor is connected (from ground floor to 8th floor) to the eastern edge of site.
South	1-7 Stone Buildings	Office / Residential Building	Grade I Listed Building. A 5-storey building with primarily office spaces and several residential properties on the 3rd floor.	The receptor is approximately 6m from the southern edge of site.
	Lincoln's Inn Private Gardens	External Amenity Space	A public green space.	The receptor is approximately 6m from the southern edge of site.

The site and receptor locations are detailed on the Location Plan 29389/LP1 enclosed.

3.0 Methodology

3.1 Equipment

Electronic automated air particle monitors were installed at the development site, and were continuously maintained, since 23 August 2022.

The airborne particle monitoring instruments use proprietary nephelometers, where a pump continuously draws an air sample through the nephelometer which analyses the individual particles as they pass through a laser beam. These same particles are then collected on the reference filter.

The airborne particle monitors are sensitive to airborne particle concentrations down to a fraction of a microgram per cubic metre and the dedicated microprocessor can analyse individual particles even if there are millions per litre. This allows size fractions to be determined at concentrations up to several thousand µg/m^3. Above this level there is an indicator range which can be used without sizing up to 60µg/m^3.

The instruments feature internal data logging for the particle concentrations.

The following equipment was used for the baseline monitoring:

- 2No. Turnkey OSIRIS Monitors.

Each air particle meter was located in an environmental case.

3.2 Procedure

Fully automated air particle measurements were undertaken from 23 August 2022 to 22 November 2022.

The airborne particle monitors measure and report information for total, 10µm, 2.5µm and 1µm size particles. The units have been set to sample continuously and present 15-minute average readings.

3.3 Measurement Positions

The air particle measurements were undertaken at 2No. positions as described in the table below and shown in on the site plan in Appendix B.

Position No	Description
1	The monitor was located approximately 4m above ground-level, towards the south-west of the existing structure. The monitor was fixed to the masonry of the structure via a metal bracket, which extended approximately 0.5m from the façade of the building. This position was chosen to best represent the dust levels experienced by receptors to the south and west of the development.
2	The monitor was located approximately 4m above ground-level, towards the north-east corner of the existing structure. The monitor was fixed to the masonry of the structure, overlooking High Holborn via a metal bracket, which extended approximately 0.5m from the façade of the building. This position was chosen to best represent the dust levels experienced by receptors to the north and east of the development.

Each air particle monitor was calibrated prior to the commencement of monitoring. This calibration is regularly checked and maintained by the equipment manufacturer.

4.0 Results

The measured 15-minute mean PM10 concentration levels are presented on the enclosed Time History Graphs 29389/ATH1.1 – 29389/ATH1.6.

The maximum measured 15-minute mean PM10 concentration levels during site working hours are presented within Appendix C.

5.0 Discussion

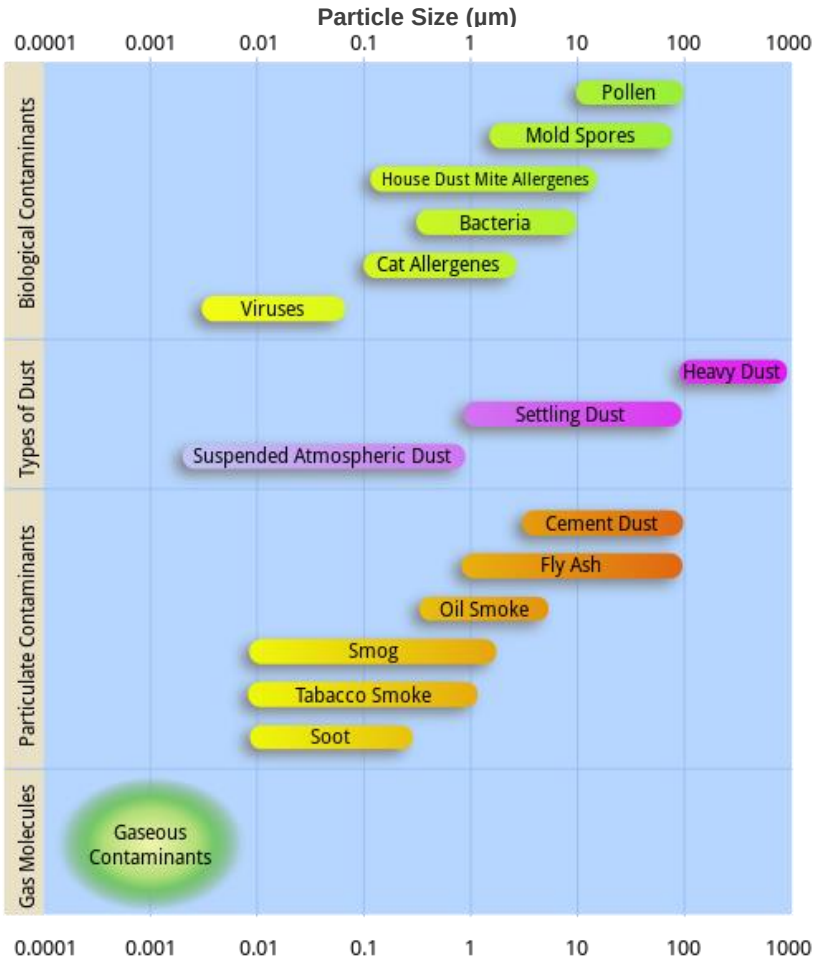
Baseline air particle monitoring has been undertaken at Lincoln House, 296-302 High Holborn Camden Borough during the period of 23 August 2022 to 22 November 2022.

The results are presented herein.

Appendix A – Air Particle Monitoring Terminology

PMx

Particulate Matter - Used as a measurement of air particles where x is the size of the particle measured in micrometres (or µm). PM10 describes inhalable particles, with diameters that are 10 micrometres and smaller. Sources include crushing or grinding operations and dust stirred up by vehicles on roads. PM2.5 describes fine particles that are 2.5 micrometres or smaller in diameter and can only be seen with an electron microscope and are able to penetrate to the lungs. Typical sources include all types of combustion, including motor vehicles, power plants and agricultural burning. PM1 describes particles that are 1 micrometre or smaller in diameter. The diagram below shows common airborne particles and their typical sizes along the PM scale.



TSP

Total Suspended Particles - Used as a measure of the mass concentration of particulate matter in the air. TSP covers the full range of particle sizes and is commonly measured alongside PM10 and PM2.5.

Nephelometer	Sometimes referred to as a turbidimeter, these devices are used to measure the concentration of particulates suspended in a fluid. Suspended particulates are measured by employing a light beam and a light detector set to one side (often 90°) of the source beam. Particle density is then a function of the light reflected into the detector from the particles.
Anemometer	Device used for measuring wind speed and direction. Three-cup anemometers, consisting of three hemispherical cups mounted horizontally on a vertical shaft, are currently used as the industry standard for wind resource assessment studies and practice.

Appendix B – Site Plan and Monitoring Positions

Title:
Site Plan Showing Air Particle Monitoring Positions during the Period 23 August 2022 to 22 November 2022
Project:
Lincoln House, 296-302 High Holborn Camden Borough
Figure:
29389/APSP1
Scale:
Not to scale

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Appendix C – Maximum Measured 15-Minute Mean PM10 Concentration

The following table presents the maximum 15-minute mean PM10 levels measured each day for both of the 2No. positions around the development site during the period 23 August 2022 to 22 November 2022.

Date	Maximum Measured 15-Minute Mean PM10 Concentration (µg/m^3)	
	Position 1	Position 2
Tuesday 23 August 2022	57.4	15.0
Wednesday 24 August 2022	37.3	15.6
Thursday 25 August 2022	99.3	102.0
Friday 26 August 2022	26.1	19.6
Saturday 27 August 2022	26.6	27.1
Sunday 28 August 2022	24.6	20.8
Monday 29 August 2022	19.9	17.3
Tuesday 30 August 2022	44.6	34.7
Wednesday 31 August 2022	26.7	22.2
Thursday 1 September 2022	48.8	35.1
Friday 2 September 2022	62.3	41.8
Saturday 3 September 2022	41.3	33.9
Sunday 4 September 2022	35.5	25.3
Monday 5 September 2022	66.8	90.4
Tuesday 6 September 2022	58.2	49.8
Wednesday 7 September 2022	103.0	80.5
Thursday 8 September 2022	112.0	92.4
Friday 9 September 2022	102.0	97.5
Saturday 10 September 2022	81.0	25.3
Sunday 11 September 2022	109.0	75.1
Monday 12 September 2022	23.3	18.0
Tuesday 13 September 2022	47.1	39.7
Wednesday 14 September 2022	55.1	38.5
Thursday 15 September 2022	40.6	29.8
Friday 16 September 2022	42.0	17.2
Saturday 17 September 2022	31.5	13.5
Sunday 18 September 2022	17.0	9.8
Monday 19 September 2022	24.0	19.9
Tuesday 20 September 2022	16.8	17.0
Wednesday 21 September 2022	31.5	21.5
Thursday 22 September 2022	22.4	32.5

Date	Maximum Measured 15-Minute Mean PM10 Concentration (µg/m^3)	
	Position 1	Position 2
Friday 23 September 2022	30.2	21.6
Saturday 24 September 2022	54.3	33.1
Sunday 25 September 2022	35.2	24.5
Monday 26 September 2022	89.4	80.4
Tuesday 27 September 2022	48.8	41.5
Wednesday 28 September 2022	36.4	27.9
Thursday 29 September 2022	30.9	14.3
Friday 30 September 2022	64.5	51.7
Saturday 1 October 2022	120.0	81.7
Sunday 2 October 2022	68.3	52.3
Monday 3 October 2022	52.7	42.7
Tuesday 4 October 2022	31.0	24.3
Wednesday 5 October 2022	63.2	48.6
Thursday 6 October 2022	138.0	59.9
Friday 7 October 2022	82.6	60.7
Saturday 8 October 2022	72.2	54.2
Sunday 9 October 2022	110.0	166.0
Monday 10 October 2022	54.1	103.0
Tuesday 11 October 2022	121.0	62.7
Wednesday 12 October 2022	47.0	37.4
Thursday 13 October 2022	67.1	65.0
Friday 14 October 2022	40.2	39.0
Saturday 15 October 2022	86.4	64.8
Sunday 16 October 2022	89.4	64.9
Monday 17 October 2022	79.1	56.6
Tuesday 18 October 2022	74.4	60.3
Wednesday 19 October 2022	140.0	77.2
Thursday 20 October 2022	548.0	77.2
Friday 21 October 2022	136.0	83.4
Saturday 22 October 2022	110.0	68.1
Sunday 23 October 2022	92.1	58.0
Monday 24 October 2022	99.6	56.8
Tuesday 25 October 2022	132.0	41.2
Wednesday 26 October 2022	117.0	65.6
Thursday 27 October 2022	88.9	46.3
Friday 28 October 2022	79.3	57.2
Saturday 29 October 2022	285.0	63.0
Sunday 30 October 2022	113.0	89.7

Date	Maximum Measured 15-Minute Mean PM10 Concentration (µg/m^3)	
	Position 1	Position 2
Monday 31 October 2022	114.0	64.5
Tuesday 1 November 2022	111.0	96.0
Wednesday 2 November 2022	140.0	87.3
Thursday 3 November 2022	61.4	69.6
Friday 4 November 2022	52.7	40.2
Saturday 5 November 2022	59.7	37.6
Sunday 6 November 2022	109.0	50.3
Monday 7 November 2022	137.0	80.0
Tuesday 8 November 2022	115.0	71.7
Wednesday 9 November 2022	101.0	57.5
Thursday 10 November 2022	85.4	48.4
Friday 11 November 2022	63.0	25.2
Saturday 12 November 2022	90.9	21.3
Sunday 13 November 2022	198.0	42.8
Monday 14 November 2022	88.8	49.0
Tuesday 15 November 2022	61.6	39.7
Wednesday 16 November 2022	100.0	56.3
Thursday 17 November 2022	169.0	92.3
Friday 18 November 2022	37.5	22.6
Saturday 19 November 2022	57.0	30.2
Sunday 20 November 2022	77.9	60.5
Monday 21 November 2022	100.0	43.6
Tuesday 22 November 2022	38.1	22.7

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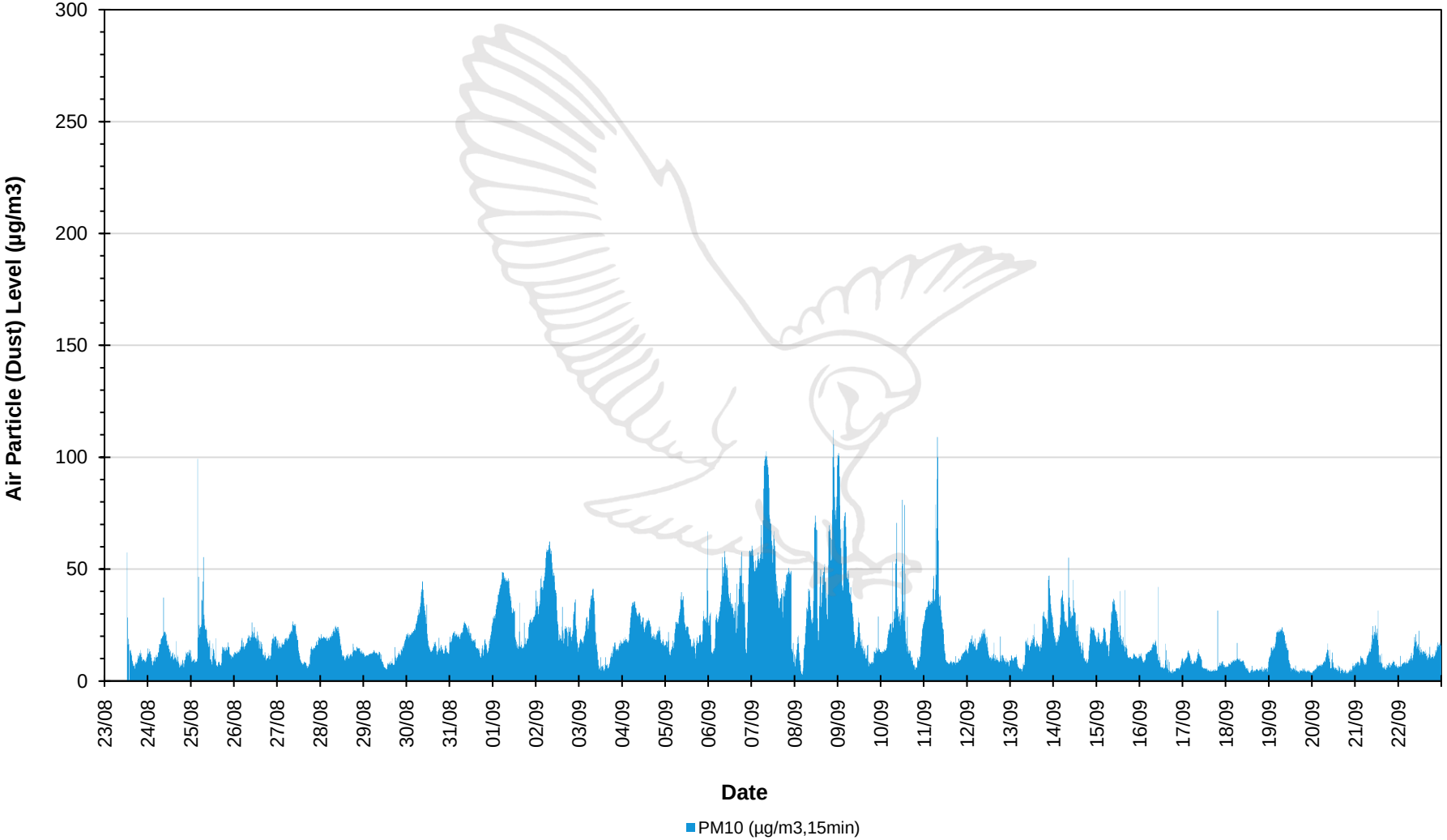
Lincoln House

Position 1

Air Particle (Dust) Level Monitoring

Tuesday 23 August 2022 to Thursday 22 September 2022



29389/ATH1.1

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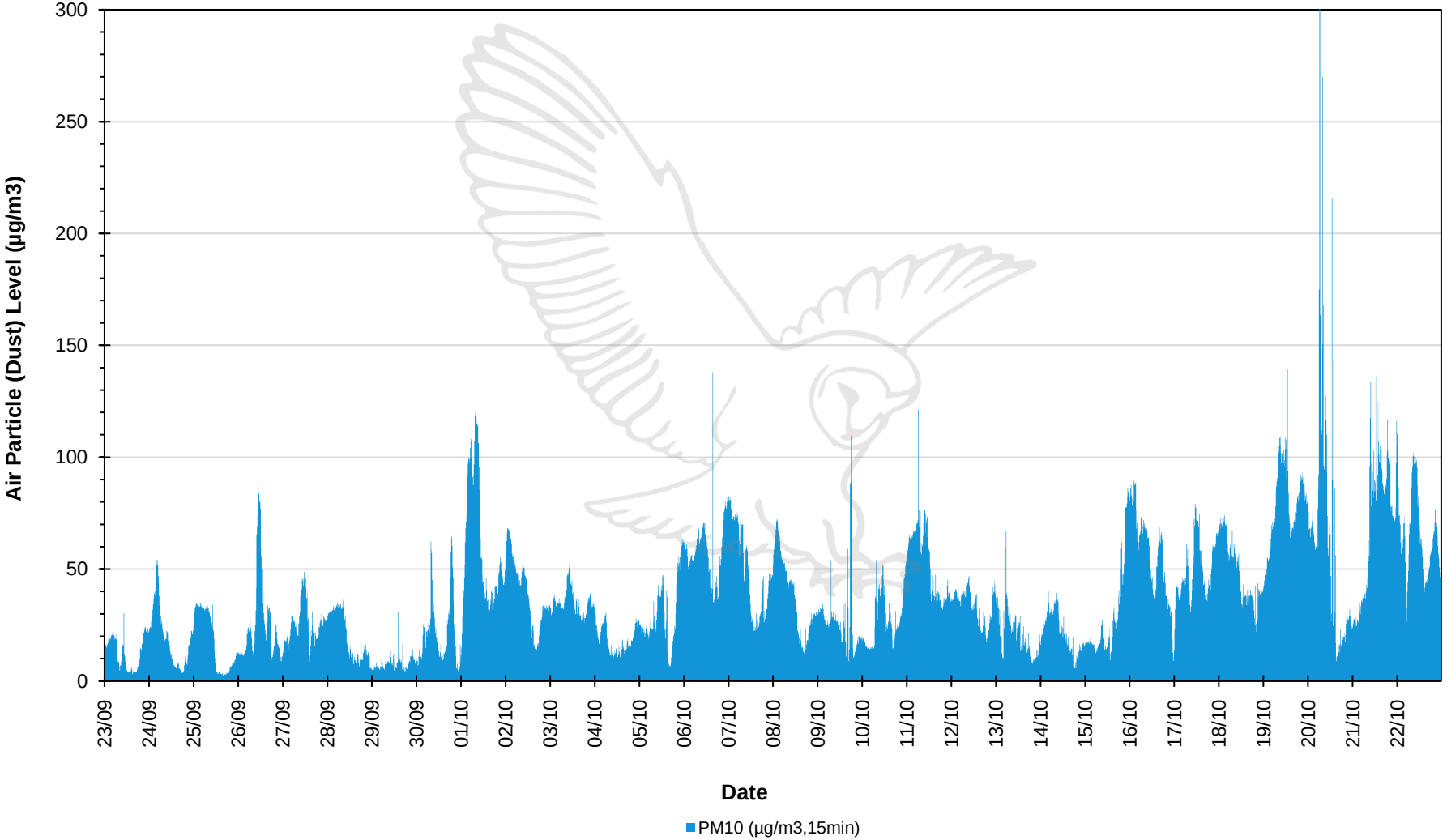
Position 1

Air Particle (Dust) Level Monitoring

Friday 23 September 2022 to Sunday 23 October 2022



29389/ATH1.2

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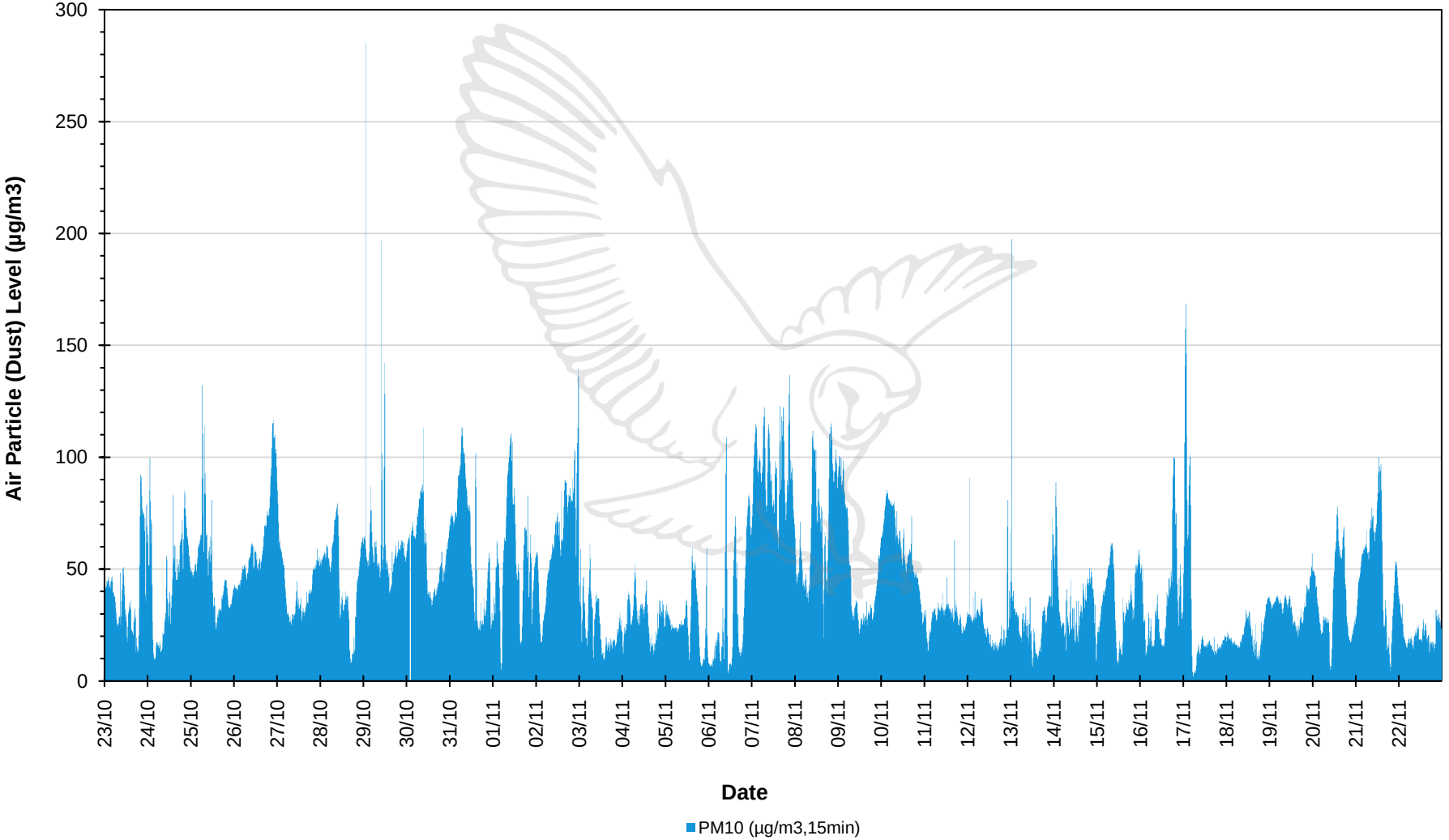
Position 1

Air Particle (Dust) Level Monitoring

Sunday 23 October 2022 to Tuesday 22 November 2022



29389/ATH1.3

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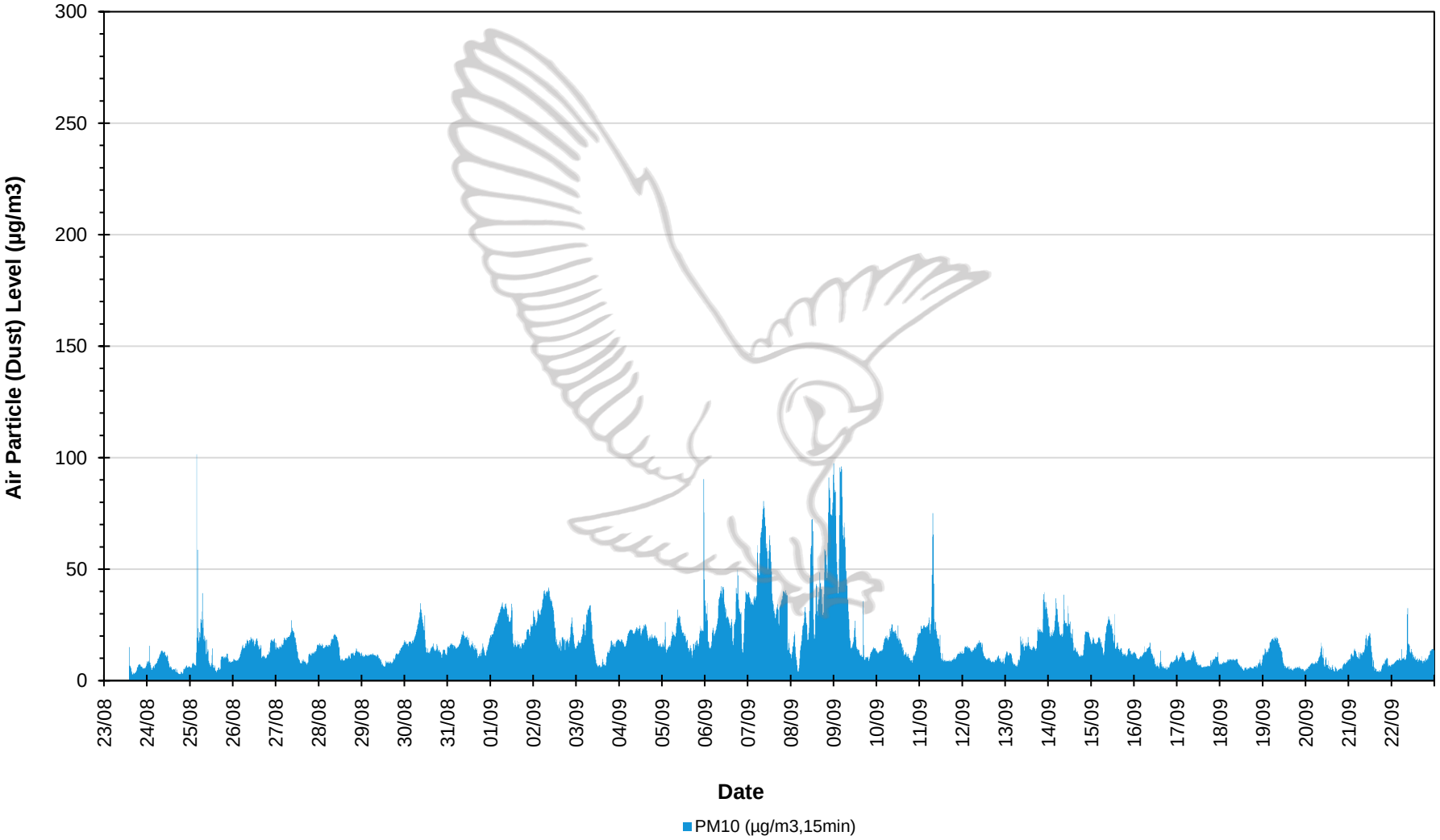
Position 2

Air Particle (Dust) Level Monitoring

Tuesday 23 August 2022 to Thursday 22 September 2022



29389/ATH1.4

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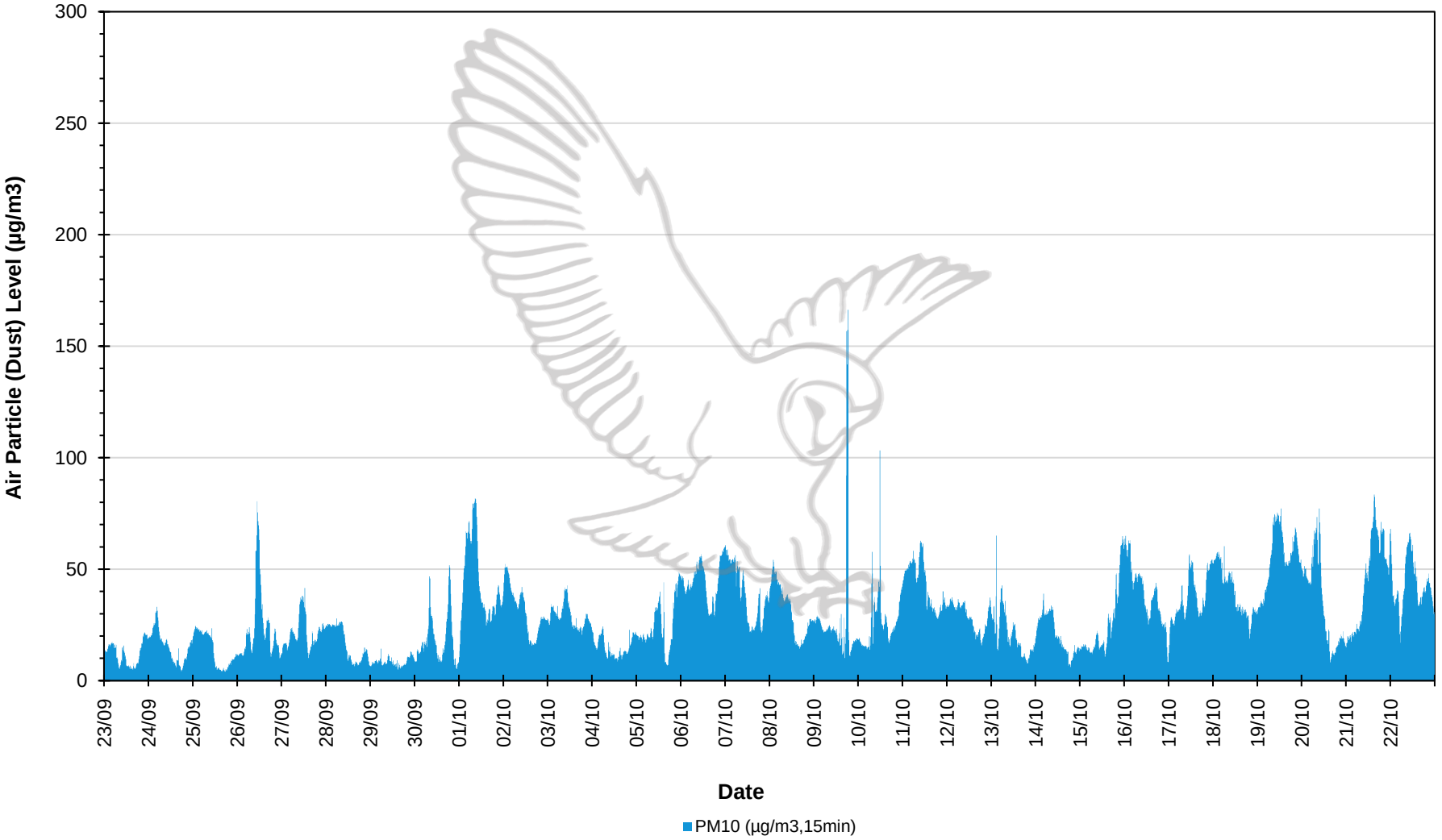
Position 2

Air Particle (Dust) Level Monitoring

Friday 23 September 2022 to Sunday 23 October 2022



29389/ATH1.5

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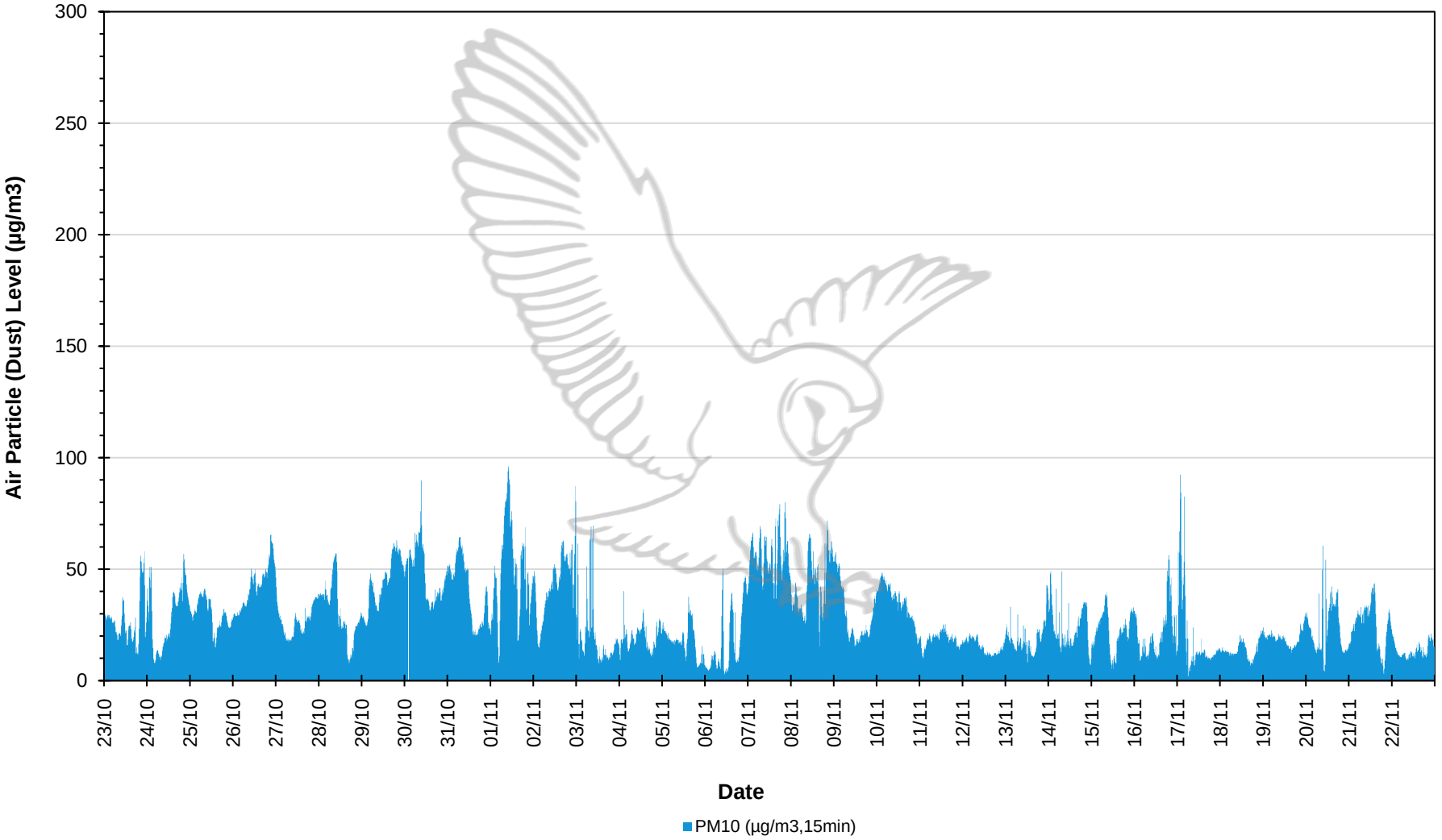
Position 2

Air Particle (Dust) Level Monitoring

Sunday 23 October 2022 to Tuesday 22 November 2022



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